

APPENDIX I – INTERVIEWS

This page intentionally left blank

Interview Record

SITE IDENTIFICATION			
Site Name: Former Naval Air Station Moffett Field		EPA ID: CA2170090078	
Subject: Five-Year Review of IR Sites 1, 22, 26, and 28		Time:	Date: 7/8/2009
Type: <input type="checkbox"/> Telephone <input type="checkbox"/> Visit <input checked="" type="checkbox"/> Email <input type="checkbox"/> Other			
Location of Visit:			
CONTACT MADE BY:			
Name: Michael Anderson		Title: Environmental Scientist	Organization: ChaduxTt
INDIVIDUAL CONTACTED			
Name: Chris Rummel		Title: Inspector	Organization: Santa Clara County Dept. of Environmental Health
Telephone:		Address:	
Fax:	City:		State:
Zip:			
E-mail address:			
SUMMARY OF CONVERSATION			
<p><u>Regarding the Site 1 Landfill:</u></p> <ol style="list-style-type: none"> 1. What is your overall impression of the project (remediation activities) at Landfill Site 1? <i>The Installation Restoration Site 1 Landfill has been well maintained.</i> 2. How long have you been involved with former NAS Moffett Field and what has your role been? <i>I have inspected the site since the year 2002 to assure that the landfill is maintained per state requirements of Title 27 of the California Code of Regulations for closed landfills.</i> 3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results. <i>The quarterly inspections at Installation Restoration Site 1 Landfill are performed while accompanied by Navy personnel and maintenance contractor. In addition, there have been telephone calls, post-inspection interviews, and in-person discussions with the</i> 			

accompanying staff. Reports are prepared and submitted quarterly after each inspection.

4. Have there been any community concerns, complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

There have been no complaints reported to our office. The only incident investigated by our office concerned the possibility of raptor depredations to prevent aircraft bird strikes. Fish and Game investigated the allegations and determined that the birds were not being killed. This raises the question about the use of raptor perches to attract birds for the control of rodents. The Navy and NASA should consider other means of controlling rodents.

There have been no other violations or other incidents reported requiring our response.

5. Do you feel well informed about the site's monitoring and O & M activities and progress?

Yes. When necessary, the Navy and/or consultants communicate readily with me in person, by telephone, and email.

6. Do you have any comments, suggestions, or recommendations regarding the site's management and operation?

The Navy should use a lower detection range for gas monitoring. Surface sweeps should be done in parts per million (PPM). Perimeter gas wells should be monitored in percent of lower explosive limit (%LEL). Gas vent structures should be monitored in progressively more sensitive scales if nothing is detected in the high ranges. Current monitoring is done in percent Methane gas by volume and is not consistent with expected gas ranges or Air Board requirements.

The Navy should continue to monitor and mitigate burrowing rodent activity at the Site 1 landfill. Also, the Navy should routinely inspect and effectively eradicate burrowing rodent colonies.

Regarding the Site 22 Landfill:

1. What is your overall impression of the project (remediation activities) at Landfill Site 22?

The Installation Restoration Site 22 Landfill has been well maintained.

2. How long have you been involved with former NASA Moffett Field and what has your role been?

I have inspected the site since the year 2002 to assure that the landfill is maintained per state requirements of Title 27 of the California Code of Regulations for closed landfills.

3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose

and results.

The quarterly inspections at Installation Restoration Site 22 Landfill are performed while accompanied by Navy personnel and maintenance contractor. In addition, there have been telephone calls, post-inspection interviews, and in-person discussions with the accompanying staff. Reports are prepared and submitted quarterly after each inspection.

4. Have there been any community concerns, complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

There have been no complaints reported to our office. The past incident of elevated methane levels in one of the wells adjacent to the perimeter channel work has abated naturally now that the disturbance work has subsided. Degradation of two of the well caused by Golf Course grading has been remedied by the improvements to the monitoring well to preclude water intrusion. There have been no other violations or other incidents reported requiring our response.

5. Do you feel well informed about the site's monitoring and O & M activities and progress?

Yes. When necessary, the Navy and/or consultants communicate readily with me in person, by telephone, and email.

6. Do you have any comments, suggestions, or recommendations regarding the site's management and operation?

The Navy should use a lower detection range for gas monitoring. Surface sweeps and tree well monitoring should be done in parts per million (PPM). Perimeter gas wells should be monitored in percent of lower explosive limit (%LEL). Current monitoring is done in percent Methane gas by volume and is not consistent with expected gas ranges or Air Board requirements.

The Navy should continue to monitor and mitigate burrowing rodent activity at the Site 22 landfill. Also, the Navy should routinely inspect and maintain perimeter gas monitoring wells for minor defects.

Interview Record

SITE IDENTIFICATION			
Site Name: Former Naval Air Station Moffett Field		EPA ID: CA2170090078	
Subject: Five-Year Review of IR Sites 1, 22, 26, and 28		Time: 9:30 am	Date: 1/13/2010
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Email <input type="checkbox"/> Other			
Location of Visit: call-in teleconference			
CONTACT MADE BY:			
Name: Michael Anderson		Title: Environmental Scientist	Organization: ChaduxTt
INDIVIDUAL CONTACTED			
Name: Don Chuck		Title: Restoration PM	Organization: NASA Ames
Telephone:		Address:	
Fax:	City: Mountain View		State: CA
Zip:			
E-mail address:			
SUMMARY OF CONVERSATION			
<p>1. How long have you been involved with NASA and what has your primary role been?</p> <p style="margin-left: 40px;">My current title is Restoration Project Manager. I have been involved with the Moffett sites for 19 years.</p> <p>2. Do you feel well informed about the Navy's environmental activities and progress at Sites 1, 22, 26, and 28?</p> <p style="margin-left: 40px;">Yes</p> <p>3. How often do NASA and the Navy communicate?</p> <p style="margin-left: 40px;">We communicate every other month at BCT meetings and by telephone on an as-needed basis.</p> <p>4. Please describe what efforts NASA is currently taking to implement permanent restrictions on land use and domestic groundwater use in NASA's land use planning and environmental resource documents, in accordance with the MOA for OU5 (Sites 1 and 26), signed in 1999, and the MOA for Site 22, signed in 2008.</p> <p style="margin-left: 40px;">The language has not yet been incorporated into the Master Plan. However, NASA's Facilities</p>			

Group is currently revising the Master Plan with input from the Environmental Department. NASA will incorporate institutional controls for Sites 1, 22, and 26 into the Master Plan.

The environmental department reviews all construction permits, so any planned use of groundwater would be stopped during the in-place review process.

NASA's March 2005 Research Park Environmental Issues Management Plan places restrictions on groundwater use in the Research Park boundary. Although similar restrictions for the remaining NASA property at Moffett Field have not been put into environmental documents, NASA applies the groundwater restrictions for Research Park to all of Moffett Field. This is an understood working policy at NASA.

5. In the 1999 MOA for OU5, NASA agreed to "maintain the Building 191 pump station and drain/subdrain system as long as NASA either owns the property or maintains operations control over the site." This restriction was to be recorded in NASA's Environmental Resources Document. Please describe what efforts NASA is currently taking to implement this restriction.

This restriction will be recorded in revisions to NASA's Master Plan, which was discussed in #4 above.

6. In what year will implementation of the land and groundwater restrictions take effect?

I am not sure when revisions to the Master Plan will be completed since others are involved in revising NASA Ames planning documents.

7. What is the pumping capacity of the Building 191 pump station, i.e. how many inches of rainwater can it pump per hour, what level storm surge can it handle, and to what extent can the capacity be increased to offset rising sea level in the event of an extreme storm?

I am not sure of the exact capacity. There are two pumps at the Building 191 station – the existing pump and an auxiliary pump that NASA added next to Building 191 after NASA took ownership. There are also two auxiliary pumps along the northern channel that can be turned on during heavy rain events. However, the base does occasionally get flooded because of limitations on capacity and number of discharge points. NASA is looking for additional discharge points, potentially the FWS ponds. The pumps can handle most rainfall events, but if there was for instance a 100 year flood, they probably couldn't discharge all the water right away.

The worst flood I recall left 1 to 1.5 feet of water at Moffett Field. The landfills can get surrounded by water, but there have been no issues resulting from that, and the water does not stay that long.

8. Is there a backup plan should the Building 191 pump station fail?

The auxiliary pump that NASA installed next to Building 191 and the two auxiliary pumps along the northern channel (one at end of Marriage Road ditch and one at the end of East Patrol Road Ditch) provide additional capacity.

9. The pump station was constructed in the 1950s. Please describe how NASA maintains and

updates the components.

The facilities department maintains the pump station and components. NASA added an auxiliary diesel pump next to the Building 191 station to provide additional capacity during high flows or heavy rainfall events. The main pump has not been updated since the Navy transferred the property to NASA. The pumps are maintained on a regular schedule.

10. What is NASA currently doing to address vapor intrusion risks in existing buildings in the EPA's Vapor Intrusion Study Area?

NASA has adjusted HVAC systems to improve airflow through some of the buildings. NASA also periodically monitors some of the buildings for VI problems. NASA will begin sampling on a quarterly basis in March 2010. NASA will conduct indoor air sampling in several buildings, and add soil gas measurements and groundwater measurements to determine if NASA can get correlations in results from the three different sampling protocols.

11. When will NASA conduct indoor air sampling in the buildings in the EPA's Vapor Intrusion Study Area where such sampling has not yet been conducted?

Not all of the buildings are occupied. NASA does not plan to sample buildings that are unoccupied or that are only occupied occasionally. NASA will focus sampling efforts on buildings that are occupied most or all of the time. NASA's previous air sampling occurred in the WATS area and new air sampling will continue in the WATS area.

12. What measures are in place for new construction or renovation of buildings located in the EPA's Vapor Intrusion Study Area?

Vapor intrusion mitigation measures are required for all new construction. When NASA leases land for new construction, this requirement is included in tenant leases. The method selected to mitigate vapor intrusion is up to the lessee, but it is usually done with sub slab vapor barriers or subsurface ventilation. A lessee's proposed method to address vapor intrusion has to be reviewed and approved by NASA.

Facility-specific or Regional Program Site Interview Questionnaire

Name of Facility or Program: West-Side Aquifers Treatment System (WATS)

Respondents (Name, Title, and Company):

Duane Harrison, Treatment System Operator, and Gordon Jamieson, Western Regional Science Manager, Tetra Tech, EC, Inc.

Date Completed: April 23, 2009 _____

1. What is your overall impression of the project?

The West-Side Aquifers Treatment System (WATS) is functioning as intended. The system is intercepting the groundwater contamination and properly treating and discharging the treated water. The system is dependable, operating at least 97 percent of the time.

2. Briefly describe the remedy.

WATS is the Installation Restoration (IR) Site 28 groundwater treatment system located on the west side of the runways near Hangar 1. WATS began operating in November 1998. WATS remediates groundwater contaminants originating from Navy sources that have commingled with a regional volatile organics plume originating from off-site sources south of U.S. Highway 101. Contaminants present in IR Site 28 groundwater include trichloroethene (TCE), tetrachloroethene (PCE), and their breakdown products, cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC). The chemicals of concern (COCs) identified at IR Site 28 in the MEW Record of Decision (ROD) include chloroform, 1,2-dichlorobenzene (1,2-DCB), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), Freon 113, phenol, PCE, 1,1,1-trichloroethane (1,1,1-TCA), TCE, and VC (EPA 1989).

WATS uses an advanced oxidation process (AOP) and granular activated carbon (GAC) to treat groundwater. The AOP unit destroys the majority of the influent volatile organic carbons (VOCs). The liquid-phase GAC unit removes any remaining VOCs. To eliminate discharge of VOCs to the air, the WATS air stripper was removed from the treatment train on May 8, 2003.

Groundwater is pumped from nine extraction wells to maintain a capture zone adequate to create hydraulic control of affected groundwater downgradient of Navy sources at IR Site 28. Six groundwater extraction wells (EA1-1 through EA1-6) are completed in the upper A aquifer, and three extraction wells (EA2-1 through EA2-3) are completed in the lower A aquifer. WATS also treats contaminated water collected in two on-site sumps near Hangar 1 (storm drain action [SDA] water). The first sump, the Electrical Vault #5

sump, collects stormwater. The second sump, the Hangar 1 sump, collects groundwater that infiltrates into the Hangar 1 tunnel and flows into the sump. In addition, a small quantity of condensate from the steam trench collects in the Hangar 1 sump.

Is the remedy functioning as expected? How well is the remedy performing?

Time series concentrations graphs show decreasing or stable TCE concentration trends for A aquifer wells located downgradient of the WATS extraction wells. Potentiometric surface map interpretations, which are based on a flow-net method of well pumping and capture analysis, indicate that the target capture zone was maintained throughout 2003 to 2008. Decreasing or stable contaminant concentrations in downgradient wells combined with potentiometric evidence of hydraulic capture support the conclusion that WATS is achieving complete hydraulic containment of the target contaminant capture zone.

Although WATS is functioning as intended, dissolved VOCs in the regional plume continue to migrate north into IR Site 28 with groundwater underflow from off-site areas. As long as contaminant flow continues to migrate into IR Site 28 from an upgradient source (south of U.S. Highway 101), the remedial action objective will not be achieved.

3. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing or increasing?

Analytical data collected from wells in November/December 2008 indicate that there have been some changes in the shape and/or extent of the TCE, cis-1,2-DCE, PCE, and VC plumes in the upper A and lower A aquifers since 2007. These changes are generally due to the sampling of additional monitoring wells by the U.S. Department of the Navy (Navy) and MEW companies in 2008. TCE and cis-1,2-DCE made up approximately 95.7 percent of the mass removed by WATS in 2008. Sampling analytical data from monitoring wells located in areas considered representative of WATS groundwater contamination exhibit long-term trends of decreasing or stable TCE concentrations (88 percent of evaluated wells in the upper A aquifer and 90 percent of evaluated wells in the lower A aquifer). Groundwater samples from monitoring wells evaluated for long-term trends have decreasing or stable cis-1,2-DCE concentrations (92 percent in the upper A aquifer and 80 percent in the lower A aquifer).

4. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

No, there is not a continuous on-site presence. Operation and maintenance (O&M) staff is present 8 hours a day from Monday to Friday and performs a brief system inspection on Saturday and Sunday. Duane Harrison is the system operator from Monday to Friday and on Saturday and Sunday as well. The WATS on-site operator monitors system performance, adjusts operating parameters as needed, and plans and executes all system maintenance or repairs in accordance with the O&M Manual and best management

practices. The operator also performs monthly National Pollutant Discharge Elimination System (NPDES) sampling of the treatment system and documents all site activities.

5. Have there been any significant changes in the O&M requirements, maintenance schedules or sampling routines in the last five years (e.g., since December 2003)? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

See the attached WATS Operating Summary 2003 to 2008. Since construction of an air stripper bypass in 2003 and replacement of an ozone generator in 2004, WATS has operated at least 97 percent of the time, with downtime primarily associated with routine maintenance. In 2007 and 2008, WATS operated 98.9 percent of the time. Recent modifications have not significantly impacted the effectiveness of the remedy.

6. Have there been unexpected O&M difficulties or costs at the specific project site in the last five years (e.g., since December 2003)? If so, please provide details.

No.

7. Have there been opportunities to optimize O&M, sampling efforts, or the remedy? Please describe changes and resultant or desired cost savings or improved efficiency and effectiveness. Please reference document(s), as appropriate.

On November 21, 2008, the Draft WATS IR Site 28 Optimization Evaluation Report was submitted for agency review (reference SES-TECH. 2008. Draft West-Side Aquifers Treatment System Site 28 Optimization Evaluation Report. November 21). The purpose of the report is to identify ways to optimize WATS in terms of its effectiveness in achieving the existing remedial action objectives and cleanup goals identified in the MEW ROD (EPA 1989) and the Federal Facilities Agreement for the IR Site 28 area of Moffett.

The Navy, MEW companies, and NASA should continue to coordinate efforts to develop the regional Focused Feasibility Study. In the interim, however, the existing WATS should be optimized to perform more efficiently. Additionally, pilot testing of alternative remedial options ~~may~~ should be considered in the WATS area, in coordination with pilot testing by the MEW companies and NASA.

8. Have any problems been encountered which required or may require changes to the remedial design or Record of Decision (ROD)?

No.

9. Have there been any exceedances or Notices of Violations (NOVs) in the last 5 years (since December 2003)?

See the attached Table 5, Permit Compliance Summary. There were potential exceedances of VOCs and total petroleum hydrocarbons (TPH) in May 2003 and of TPH in August 2003 and again in April 2005. In each case, in compliance with NPDES permitting, a confirmation sample was collected and analyzed. The compounds were reported as not detected, and a normal sampling schedule was resumed. In September 2005, NPDES trigger compounds were detected. In accordance with NPDES permitting, additional sampling was conducted for 3 months, during which these compounds were reported as not detected. In April 2006, a potential exceedance of TPH was considered to be a false positive. In both cases, a normal sampling schedule was resumed.

In December 2007, zinc was detected in effluent. While not a COC at former NAS Moffett Field, zinc is considered an NPDES trigger compound. Additional sampling was conducted for the first quarter calendar year 2008, and zinc was reported as not detected in March 2008. Zinc results during additional sampling were inconclusive. See the attached Table 5 for further details.

10. Describe any modifications to the remedy (including groundwater extraction and treatment system) in the last 5 years (since December 2003) and explain rationale?

See the attached WATS Operating Summary 2003 to 2008. The only major modifications to the remedy since 2003 have been the construction of the air stripper bypass in 2003 and installation of a new extraction well (EA2-3), which began operating in January 2004.

11. Provide table and report references to trends in the influent VOC concentrations with time over the Five-Year review period. Total VOCs, PCE, TCE, cis-1,2-DCE, and vinyl chloride influent concentrations

The attached Graph 2, WATS Average and Sum of Average TCE, PCE, cis-1,2-DCE, and VC Influent Concentrations for Extraction Wells, illustrates PCE, TCE, cis-1,2-DCE, and VC average influent concentrations and the sum of these average concentrations to WATS from 1999 through 2008. Average influent VOC concentrations have declined during the period from system startup in November 1998 through late (November-December) 2005. The average influent VOC concentrations increased in late 2006, followed by a decrease in late 2007 (November-December 2006 and 2007 sampling events, respectively). Average influent VOC concentrations increased slightly in 2008.

12. Indicate typical frequency of granular activated carbon (GAC) change-outs, if applicable.

GAC change-outs occur every 2 to 4 months.

13. Current typical system flow rate in gallons per minute (gpm). Total pounds of VOCs removed from since system startup through December 2008.

See attached Graph 1, Cumulative Groundwater Extracted and Mass Removed (1998 to 2008) and Table 3, Mass Removal Table for WATS (1998 to 2008)). Approximate system flow rate is 65 to 75 gpm. Total VOC mass removed since system startup through December 2008 is 4,362 pounds.

14. Any comments, suggestions, or recommendations regarding the project?

WATS is functioning as intended. However, it appears that the pumping rates for extraction wells EA1-1, EA1-3, EA1-4, EA1-5, and EA1-6 are decreasing over time. Extraction well pump replacement is completed routinely; therefore, it is likely that biofouling may be occurring. Redevelopment and pump replacement of these WATS extraction wells was conducted in April 2009. WATS recommendations are as follows:

- Continue to operate, maintain, and monitor WATS and monitoring wells west of the runways as scheduled.*
- Evaluate long-term alternatives to pump and treat technology for contamination west of the runways as discussed in the Draft IR Site 28 Optimization Evaluation Report (SES-TECH 2008).*