



2870 Gateway Oaks Drive, Suite 150
Sacramento, CA 95833

Job Name: Muscoy OU Remedial Action
WA No.: 016-RARA-09J5
Project Location: San Bernardino, CA
URS Project No.: 18600069.01030

MUSCOY 19th STREET PLANT/ENCANTO PARK TECHNICAL MEETING MINUTES

Date: 03/08/06
Time From: 1030 - 1700

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105
Contract No. 68-W-98-225

Meeting Attendees:

- Kim Hoang/USEPA; Glenn Bruck/USEPA
- Dwayne Deutscher/URS; Adam Harvey/URS; Kit Veldman/URS; Roger Nommensen/URS; Patrick Barbree/URS; Chic Zirjacks/URS (morning only)
- Bob Kemmerle/E2; Tom Perina/CH2M Hill; Mark Wuttig/CH2M Hill

Overview of Performance Period

- URS distributed the new version of the monthly progress report, which was reformatted based on Kim's emails of 10 and 13 February 2006.
- Kim noted that we are currently in the one-year performance period prior to declaring the system Operational and Functional (O&F). We need to show that the system is meeting the three performance criteria required by the consent decree (CD) statement of work (SOW).
 - Extraction rates- is the three-month rolling average extraction meeting the target extraction rate (which accounts for maintenance allowance of 35 days per year).
 - Capture of plume – the capture analyses
 - Chemical concentration in downstream monitoring wells, if increasing or above trigger levels can lead to evaluation for corrective actions.
- To meet this objective of performing an evaluation of the system, monthly sampling was required for the first six months of system operation.
- Kim noted that there are additional questions such as whether there is there capture south of the plume (downgradient).
- Kim noted there would be a 28 March legal meeting with the City. She wants a current overview assessment of whether the system is performing per the requirements of the CD.
- During the pumping (startup) test it was known that the lithology is different at Muscoy than at Newmark.
- At the February 16 meeting, the capture zone analysis methodology was discussed and generally agreed to by attendees, although Kim has noted this is not in concrete yet.
- Glenn noted that recent correspondence with the City indicates that they are leaning toward 0.5 micrograms per liter as the level of concern or a trigger point.
- Kim noted that the City put in place institutional controls to protect the barrier, no new wells are allowed. The City crafted a memorandum of understanding (MOU) with the neighboring water districts.

Performance Criteria

- Flow results
 - Adam and Kit presented the flow results.
 - It was pointed out that the wording in the SOW is confusing and appears to be incorrect on page 37 where it states that 85% capture is required when TER (target extraction rate) is greater than or equal to DER (design extraction rate). This condition is never possible since the TER is always less than DER; TER is derived from the DER, allowing for 35 days of maintenance per year, thus TER is always less than DER. Kim said this would be reviewed.
- Concentration results
 - The statistical calculations of monitoring well concentrations were discussed.



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Meeting Topics Continued:

- Adam and Kit pointed out that MW-135A, MW-137A, and MW-139A all are downgradient wells with an overall increasing trend. MW-135A is above 5 µg/L.
- Tom said that EW-108 was installed as the first well screened in the deeper zone.
- Tom requested cross section in the monthly reports. Kim said to put them in the 6-month report.
- Mark said that it would be better to plot on log plots; 0.1, 1.0, and 10 µg/L on the y-axis.
- Mark requested email of the cross section (PDF format) and statistics graphs.
- Mark suggested spider plots on the cross section and on a map. Dwayne showed a historical plot with spider graphs that used to be produced but was discontinued due to lack of benefit.
- Mark said to take statistics out of the report, Kim agreed. Adam clarified that URS will only leave the concentration versus time graphs in the monthly report.
- Kim requested a detailed list of who is working on what at URS. Dwayne said URS would provide this.

□ Lunch Break

□ Capture Zone Discussion

- It was discussed that water flows to the lowest elevation on the flow diagrams.
- Roger noted that it takes time for the system to reach equilibrium after the August 2005 startup.
- Kim wanted to know if EW-1A is capturing what went by EW-108A.
- Roger said that EW-108A has no shallow capture. The water level in EW-109A is corrected.
- Roger used Tech Plot software and kriging for the capture analyses.
- Roger noted that Darby well and Muni-103 water level data are important in defining the groundwater isocontours on the west side of the plume.
- Roger stated that Newmark data east of the Muscoy plume do not correlate with data in the Muscoy area. No valid upgradient data on the east side (Newmark area) have been found to enhance groundwater contours in the upgradient Muscoy area. Reasons for this include: long screen wells through multiple zones, the fact that these are active pumping wells, and an apparent break or change in hydrogeologic continuity between the Newmark and Muscoy areas.
- Analyses show that by October, there was 100% upgradient plume capture within the 2.5 ug/L contours of both the shallow and intermediate zones.
- Kim said that before we started Muscoy, there was contamination downgradient of the extraction wells.
- Tom said to mark screen intervals on the cross section as shallow or intermediate.
- Mark asked if the City would agree with Table 3-2 (monitoring well screens and designation as shallow or intermediate layer). Roger said there had been numerous meetings with the City so the answer was yes.
- Mark said the approach so far was correct (contour real data, conduct particle analysis to determine capture). Next step would be to construct a numerical model (It was noted that Mark at Secor is doing this).
- Kim said we have used the best tools we have now. Both sides (EPA and City) have agreed on methodology.
- Mark asked what if we have 12 months of good data and EPA is ready to declare O&F, but the City model shows only 75% capture?



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Meeting Topics Continued:

- Roger said there were startup tests (rolling startup of the 5 Muscoy extraction wells).
- Tom said that Mark has the City step drawdown test results for tests performed after Lane installed the wells. Mark said these might be helpful to compare to the startup test results.
- Tom requested the extraction well correction spreadsheet from URS.
- There has been 100% capture since September/October in the shallow and intermediate zones.

- Monthly Reports
 - Tom stated that most of his list could be placed in the 6-month report.
 - Tom presented his new table of contents for the monthly report. He said there should be a hydrogeologic section summarized by unit.
 - Adam recommended that since the current format of the monthly report handed out at this meeting incorporated the format requested by Kim, that Kim should review Tom's new table of contents, approve of any changes, and issue written direction on how to modify the monthly report.
 - Dwayne stated that Tom and Kim should first review the current monthly report to see if it contains what is required.
 - Bob requested clarification of roles in this reporting process.
 - Kim stated that URS is writing the report. Need a more detailed explanation of the methodology for capture analysis.
 - Note from earlier discussion: Mark said to take statistics out of the monthly report, Kim agreed. Adam clarified that URS will only leave the concentration versus time graphs in the monthly report.
 - Word format documents of the monthly report and the capture analysis will be sent to Kim and Tom for their review, comment, markup, and direction. Tom will send recommendations to Kim. Kim will send approved changes to URS for implementation into the report.
 - Note: Mark, Tom, and Glenn departed the meeting.

- 6-Month Report
 - Kim stated that any data in the back, should have supporting data in the front.
 - For example, MW-11A needs to be in a table showing screen intervals.
 - Need comprehensive analysis of data, references, and documentation.
 - URS to provide an annotated table of contents to Kim for review. Should confer with Bob prior to sending to Kim.
 - Kim said to include: startup data, shakedown, tests (zone sampling, spinner tests), methodology, results, copy of first 6 months capture zone analysis in an appendix with a summary in the text, Tom's list, cross sections, more comprehensive discussion of flow; contaminants; capture, push envelope, boundary conditions.
 - Bob reviewed his understanding of what is required in the 6-month report:
 - Background
 - Shakedown description
 - Testing (spinner, zone)
 - Startup
 - Performance criteria (Kim said only TCE and PCE need to be statistically evaluated)
 - Capture zone analysis (show capture figures for entire period); Comprehensive analysis of first 6-months of data
 - Kim agreed. She said to make sure methodology section is separate from results section.
 - Shallow and intermediate zones (associated with well screen intervals) will be specified in the 6-month report.



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Meeting Topics Continued:

- O&M Manual
 - Review the change orders for any needed updates.
 - Include chlorine system changes.
 - Draft a letter for EPA to send to City asking for comments and lessons learned, give them 30 days.

- RA Report
 - Kim noted that it needs a good reference system.
 - Dennis does need to coordinate with Mark to ensure all test results or data is included in a report.
 - Need to draft a letter for Kim to send to the City requesting data, items needed for reports.
 - Kim noted that the three main reference documents for the project in years to come would be the O&M Manual, 6-Month Report, and the RA Report.
 - Aim for a couple page section in the text explaining each construction report and refer to the report in the appendix.
 - Need a good cross-reference list.
 - Place meeting minutes in the RA Report in an appendix.
 - Place schedule in the appendix including Phase 1 and 2 pipelines.
 - Performance standards in the RA report are the performance criteria.
 - Once O&F slip in final pages into the report. Can do 90% now.

- Cost and Performance Report
 - Cost per system (pipelines, treatment plant, GAC). City by system or contractor. Work with Lana to get data. May need to go visit her.
 - Costs no greater than \$10 Million per line item.

- Wrap-up
 - Kim requested email of the OSAP and O&M Plan comments from URS.
 - Dwayne noted that the period of performance on WA069 expires on 31 March 2006 and that budget will be expended at about the same time. Kim said she was working on this.
 - Kim intends to finish the remaining reports and documentation under WA069.
 - New WA will be for oversight of City activities.

- Next Meeting
 - The next Technical meeting is scheduled for 13 April 2006 in San Bernardino.

The minutes of this meeting represent the writer's understanding of the events as discussed. Should an attendees understanding differ, please contact Adam Harvey at (916) 679-2002 or adam_harvey@urscorp.com. The minutes contained herein will stand if not corrected within ten (10) days of this writing.