

North Pole Refinery Technical Project Team
May 17, 2011
ADEC Fairbanks Offices - First Floor Conference Room
610 University Avenue
Fairbanks, AK

Technical Project Team Members

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| Bill Butler | City of North Pole, Director of City Services |
| Dr. Dave Barnes | University of Alaska Fairbanks |
| Cindy Christian | DEC, Drinking Water Program, Compliance Program Manager |
| Dennis Elliott | Williams, Director of Environment, Health and Safety (via telecon) |
| Ann Farris | DEC, Contaminated Sites Program, Project Manager |
| Nim Ha | DHSS, Acting Program Manager, EPHP |
| Brian Jackson | DEC Prevention and Emergency Response Program (PERP) |
| Lee Johnson | DEC Drinking Water Program |
| Dr. Cassie Kirk | DHSS, Environmental Toxicologist, EPHP |
| Elizabeth Page | Reiss/FHRA Project Manager |
| Brandon Perkins | EPA Region 10 (via telecon) |
| Shannon Price | FHRA, Project Engineer |
| Jeanne Swartz | DEC, Industry Preparedness Program (IPP) (via telecon) |

Support Personnel in Attendance

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| Rebecca Andresen | Arcadis |
| Brian Angerman | Barr Engineering (via telecon) |
| Stephanie Buss | SPB Consulting, Toxicologist |
| Todd DeJournett | Barr Engineering (via telecon) |
| John Elliott | Johnson Wright, Senior Project Manager (via telecon) |
| Denise Elston | DEC, Contaminated Sites Program, Program Specialist |
| JoAnn Grady | Grady and Associates, Team Facilitator |
| Ty Keltner | DEC Public Information Officer |
| Meg Michell | Environmental Standards (via telecon) |
| Lisa Minnear | OASIS Environmental |
| Max Schwenne | OASIS Environmental |
| Rock Vitale | Environmental Standards, Inc. (via telecon) |
| Eric Zentner | Boreal Communication Strategies |

Invited Guest

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| Mr. Jim Durant | Agency for Toxic Substances and Disease Registry (ATSDR) |
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INTRODUCTIONS AND ACTION ITEM REVIEW

The meeting began at 9:00 Alaska Time as team members introduced themselves and welcomed invited guest Mr. Jim Durant to the meeting. The team reviewed the action items from the previous meeting. The team determined that all of the action items had been completed. The team reviewed and approved the agenda for the upcoming meeting.

OVERVIEW OF THE SITE CHARACTERIZATION REPORT

Ms. Page previewed the upcoming Site Characterization Report (SCR). She reminded the team that the report covers everything that has been done from the point of discovery to one month ago. Ms. Page described the activities outlined in each section of the report as well as the sections containing the results and findings associated with these activities. The team discussed the overview; Ms. Farris requested that Shannon and Wilson send her a table with a consolidated list of all of the lab reports and the work order numbers for their respective samples.

ACTION ITEM: Ms. Farris requests Shannon & Wilson send her a table with a consolidated list of the lab reports that have been submitted to date and the work order numbers for their respective samples.

Ms. Page continued her presentation on the upcoming SCR. She presented a series of charts and figures showing the results of efforts to delineate the horizontal and vertical extent of the sulfolane plume.

Ms. Page pointed out the proposed locations for additional monitoring wells that Flint Hills Resources Alaska (FHRA) intend to install during the upcoming field season as part of their ongoing efforts to delineate the vertical extent of the plume. She expressed concern about the possibility of losing contact with project vendors while waiting for approval for the additional wells. Ms. Farris restated her verbal approval for the proposed monitoring wells but added that the department must review the Site Characterization Work Plan (SCWP) before giving its final written approval regarding whether additional wells would be needed.

INVESTIGATION OF THE POTENTIAL RELEASE AT THE REFINERY LABORATORY

Ms. Andresen updated the team on the status of the investigation of the potential release at the refinery laboratory. Five soil borings have been drilled through the laboratory floor with hand augers, but the soil beneath the concrete proved to be poorly consolidated and they could not drill deeper than two feet before the holes began to collapse. PID samples were taken at each foot and the holes were drilled as deep as possible before a final sample was taken from them. Only Soil Boring 4 had exceedences; for DRO and 2-methylnaphthelene. A sample taken from a depth of four feet from Soil Boring 4 showed a substantially reduced level of DRO which was just above the cleanup level. Other detections were found, but none were above the cleanup levels for their respective substances. FHRA concluded that the concentrations of substances found are not indicative of any significant source of contamination. All findings from the investigation will be in the SCWP.

UPDATE ON SURFACE WATER AND SOIL SAMPLING

Ms. Page presented an update on recent surface water and soil sampling efforts. Sulfolane was not detected in any of the samples that were recently taken from the gravel pits and the slough. FHRA may take additional surface water samples in anticipation of the risk assessment (RA) for the project. Soil samples have been taken from the delineation and observation wells and they intend to collect additional samples along a grid pattern across the refinery. The team deliberated on how FHRA should submit detailed procedures made in addition to the SCWP. The team agreed that detailed information

such as SOPs, etc made in addition to the SCWP should be sent in the form of a supplementary work plan so that the development of the SCWP can proceed according to schedule.

FATE AND TRANSPORT MODELING

Ms. Page outlined the schedule for the development of the fate and transport model for the project. The model for the site will be updated about 90 days after the site characterization (SC) tasks are completed, sometime towards the end of 2011. She reminded the team that the fate and transport model will be updated throughout the project as new data are received.

NEXT STEPS

Ms. Page said that the SCR and the first quarter groundwater report will be ready by May 31st. She reminded the team that vertical delineation, soil sampling, light non-aqueous phase liquids (LNAPL) characterization, the conceptual model for LNAPL, and the fate and transport model are still outstanding. Data gaps in these and other project areas will be outlined in the recommendations section of the SCR.

The feasibility study will include all available project data as well as the reports on residential, remediation and point of entry testing, and as bench and pilot testing.

RISK ASSESSMENT

Ms. Page suggested that the scoping meeting be held sometime soon so that elements of the Risk Assessment (RA) can be addressed during the upcoming summer field season. The scoping meeting should include a discussion on the updated Conceptual Site Model (CSM) and outstanding data gaps. A draft of the RA, which will contain a human health and ecology component, will be submitted during the first quarter of 2012.

THE PUMP AND TREAT SYSTEM

Ms. Page presented a brief overview of the status of the project's pump and treat system and reiterated the objectives of the system and the definition of "source" that was presented during the last team meeting. She outlined the basic components of the system as well as recent improvements that have been made to it, including the installation of GAC vessels and new recovery wells. FHRA is currently modifying their permits to allow for increased groundwater recovery, but they will not be able to turn on their new recovery system until they receive approval from the Department of Natural Resources (DNR). Ms. Page said that DNR gave them interim approval to operate the GAC systems, which are currently being operated as part of a pilot study.

ACTION ITEM: Ms. Page will send Ms. Farris a copy of the wastewater amendment for the permit.

IRAP STATUS UPDATE

Ms. Page transitioned to an update on the completion status of tasks outlined in the Interim Remedial Action Plan (IRAP). The majority of the tasks outlined in the IRAP are now complete. Piping, heat

tracing, and sludge cleanouts have been installed, R-35 had been reconnected and R-42 will be reactivated as soon as approval is granted. The sand filters will be fully installed in the GAC vessels as soon as the last piece of equipment is received. The operator's manual has been updated and the recovery pumps are on site. They are currently waiting on the arrival of the storage tank. The design package has been submitted and the development of the system is proceeding according to an ongoing schedule.

SOURCE REMEDIATION AND IRAP CONSTRUCTION

Ms. Page briefly reviewed FHRA's plans to test the remediation system. Sometime between mid and late June, they intend to shut down the wells and measure the ground water elevation of the capture zone once it has returned to a static state. Once the static state measurements are taken, the wells will be restarted at once and the groundwater elevation will be measured again. Measurements taken from the testing will be used to update the model for horizontal and vertical capture. Ms. Page described the schedule and the procedures to be applied during the testing period. These tests should give them a good indication of the operational limits of the system and thus allow them to make several important decisions such as whether the system's wells should be deepened. Ms. Farris commented that it may be prudent to send a schedule of the proposed testing to Mr. William Smyth for his consideration as he evaluates the disposal amendment for the system.

ACTION ITEM: Mr. Angerman will send Mr. Smyth a copy of the schedule from the upcoming tests scheduled to be performed on the remediation system.

STATUS OF THE FEASIBILITY STUDY

Mr. Dejournett gave a brief presentation on the status of the Feasibility Study (FS) as it pertains to the pump and treat system and the pilot testing of the GAC vessels. The FS includes an evaluation of the trends in apparent LNAPL thicknesses from wells on-site as well as an estimate of the amount of recoverable LNAPL both on and off-site. The Remediation Subgroup is currently working to apply the results of recent bench and pilot tests to their analysis of remedial alternatives. The results of the ongoing examination of the geological, hydrological, and other aspects of the project are being applied to update the Site Characterization Model (SCM). He described recent activities such as isotherm testing, the monitoring of natural attenuation parameters, and the application of Mann Kendall analysis to project data to determine the potential for natural attenuation at the project's off-site locations.

DRINKING WATER

Ms. Page updated the team on the status of the new municipal wells. The exploratory wells associated with the municipal wells were recently closed and the nest of observation wells located near Lincoln Boulevard will be decommissioned sometime this month. Ms. Farris asked Ms. Page to find out whether the observation wells were ever tested for sulfolane. Ms. Farris also asked Ms. Christian if she would send her the sampling results from the municipal wells.

ACTION ITEM: Ms. Page will inform Ms. Farris of whether the observation wells located near the new municipal wells were ever tested for sulfolane.

ACTION ITEM: Ms. Christian will send Ms Farris the sampling results from the municipal wells.

Mr. Price brought the team up to date on the status of the Water Quality Association's (WQA) certification of the in-home treatment system. The system was recently approved under the association's Gold Seal certification process. Mr. Price briefly described the methodology and results of recent tests performed on the in-home treatment system. Information gathered from these tests will allow the team to determine the optimum time interval between service visits to the system's owners. He reiterated that much of the information gathered during the testing of the system is being applied to the remediation project at the refinery. Ms. Farris asked whether they have seen a decrease in the concentration of sulfolane in the wells of homes with the treatment system. Ms. Page replied that while they have not seen drastic changes, the concentration seems to decrease as the amount of water treated by the system increases. Ms. Page presented a series of slides on the in-home treatment system.

ACTION ITEM: Ms. Page will ask her management if it is possible for the team to use the pictures of the treatment system for the project newsletter.

Ms. Page presented a series of slides summarizing FHRA's efforts to sample residential wells and provide affected residents an alternative water source. She said 879 locations have been visited and 489 wells have been sampled as of the date of the TPT meeting. Of the 489 sampled wells, 290 have shown a concentration of sulfolane that is less than 10 ppb, 67 have shown a concentration between 10 ppb and 25 ppb, and 132 have shown a concentration of sulfolane that is above 25 ppb. Bottled water is currently being provided at 318 locations. Access to the municipal water system has been established at 29 locations, seven residential bulk water tanks and five in-home treatment systems have been installed, and six public/commercial water tanks have been installed including one frac tank to irrigate plants.

Mr. Price briefly reviewed the settlement options that FHRA is offering to affected homeowners. He said that of the 134 homeowners visited, 73 have chosen one of the three settlement options, 31 chose bulk tanks, 28 chose the treatment system, 8 chose out-building treatment, and 6 chose bottled water. At the present time, 12 homeowners have opted for a garden tank. Mr. Price briefly explained the settlement that is being offered to homeowners. He reiterated that annual garden tank refills will be offered until the sulfolane concentration is below the reporting level or until a final regulatory level has been established by the State.

THE TOXICOLOGY AND CHEMISTRY SUBGROUPS

Ms. Buss updated the team on recent developments within the Chemistry and Toxicology subgroups. The SOP document for the analysis of groundwater is complete and the subgroup hopes to have the SOP document for the analysis of soil solids approved by June 1st. All elements of the SOP document for the analysis of garden produce have been finalized except the extraction procedure.

The team discussed considerations associated with the possibility of conducting a greenhouse study. Ms. Farris reported that Dr. Barnes is currently investigating possibilities for such a study. She said that while she feels that a toxicology study may be more valuable, the risk assessment process requires that all complete pathways be assessed. She commented that there is a question on how to quantitatively address the produce pathway using existing information and reiterated that produce grown using sulfolane impacted water must be considered a complete pathway. She cited that one of the local gardeners has indicated to DEC that he intends to continue using sulfolane impacted water to grow produce. The team agreed the issue will be taken up for further consideration during the RA scoping meeting and during subsequent subgroup meetings.

LNAPL: Mr. Vitale reported that he recently received the final SGS report on the method validation study they developed to perform trace-level analysis for sulfolane in LNAPL. He briefly described the extraction and analysis method and added that he should be able to review the report in less than a week. Ms. Buss asked Mr. Vitale to contact her when he knows when he will be able to give her the results referenced in the SGS report.

ACTION ITEM: Mr. Vitale will contact Ms. Buss and provide her the results of sulfolane in LNAPL referenced in the SGS report.

EPA AND ATSDR VALUES

Mr. Durant updated the team on the status of the Environmental Protection Agency (EPA) and Agency for Toxic Substances and Disease Registry's (ATSDR) efforts to establish toxicity values for sulfolane. While the EPA investigation is still ongoing, the ATSDR's investigation is now complete. The major change made to the final numbers for sulfolane in drinking water is a slight reduction of the action value to 20 ppb for infants, 32 ppb for children, and 70 ppb for adults (previously 25, 40, and 87.5 ppb, respectively). Mr. Durant added that changes were also made to the benchmark dose analysis and in the agency's belief that the spleen, rather than the liver, is the more sensitive endpoint. As described in ATSDR's second health consultation (dated May 2, 2011), the methodology behind the ATSDR value is more robust and it now reflects the work of several government agencies whose representatives were consulted throughout the investigation.

Mr. Durant recently contacted the office director of the National Toxicology Program (NTP), Dr. Scott Masten. During their discussion, Dr. Masten stated that since sulfolane is a high-production, high-volume chemical, it could be considered for nomination into the NTP program. The nomination process is open, and if the Technical Project Team (TPT) decides to nominate sulfolane for consideration, the program's science board will not be able to decide on whether to accept it until December at the earliest. Mr. Durant offered to facilitate discussions with Dr. Masten on how the program might assist the team in moving forward in its considerations of a possible toxicology study. He suggested that the Toxicology subgroup coordinate with representatives of the EPA and Dr. Matson to discuss the nomination process.

ACTION ITEM: Mr. Durant will schedule a meeting of the Toxicology subgroup, representatives of the EPA, and Dr. Masten to discuss the possibility of nominating sulfolane to the NTP.

THE DEPARTMENT OF HEALTH AND SOCIAL SERVICES' HEALTH CONSULTATION

Ms. Ha informed the team of the status of the Department of Health and Social Services' (DHSS) Health Consultation. The document is nearly finished, but they are waiting to incorporate new information from analyses performed by the Alaska Cancer Registry and the Alaska Birth Defects Registry. She remarked that this new information from the Registries is the summary of statistical analyses performed to determine whether there is an elevated incidence of cancer or birth defects in the affected area. She emphasized that the analyses did not indicate an elevated incidence of either.

Ms Ha mentioned the Department did not have time to publish a companion guide or fact sheet to accompany the Health Consult, and reported that the Risk Communication subgroup would be discussing whether a companion document is needed for the Health Consult, or if another communication tool should be used to distribute the information to the public.

THE RISK COMMUNICATION SUBGROUP

The team discussed the community workshop that was held on the previous day. The team agreed that the workshop format is only one of a number of tools that can be used to disseminate project information to the public, and before hosting another such event, they would have to seriously consider whether it is the most appropriate means of publicizing a given set of information. Several team members made suggestions on how to improve future presentations made by the team, all of which will be discussed at subsequent Risk Communication Subgroup meetings.

Ms. Grady thanked Mr. Durant on behalf of the team for his efforts in presenting ATSDRs information to the public. Ms. Grady suggested the Risk Communication Subgroup meet after the TPT to further debrief and set up a schedule to address suggestions and concerns presented by the public at the meeting.

ACTION ITEM: Ms. Grady will call a meeting of the Risk Communication subgroup and set up a schedule to address suggestions and concerns presented by the public at the meeting.

The meeting adjourned at 4:00 Alaska Time