

**North Pole Refinery Technical Project Team**  
**February 16, 2011**  
**DEC Fairbanks Offices - First Floor Conference Room**  
**610 University Avenue**  
**Fairbanks, AK**

***Summary Comments***

**Technical Project Team Members in Attendance**

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

**Support Personnel**

Rebecca Andresen	Arcadis
Stephanie Buss	SPB Consulting, Toxicologist
Cody Black	OASIS Environmental
Todd Dejournett	Barr Engineering (via telecon)
John Elliott	Johnson Wright, Senior Project Manager (via telecon)
JoAnn Grady	Grady and Associates, Team Facilitator
Ty Keltner	DEC Commissioner's Office, Information Officer (via telecon)
Johnny Mendez	DEC, Drinking Water Program, Environmental Engineer
Meg Michell	Environmental Standards (via telecon)
Gary Remple	Barr Engineering (via telecon)
Rock Vitale	Environmental Standards, Inc. (via telecon)
Eric Zentner	OASIS Environmental, Asst. Facilitator

**INTRODUCTIONS AND DISCUSSION OF MEETING AGENDA**

The meeting began at 9:00 a.m. Alaska Time as team members introduced themselves and approved various adjustments to the meeting's agenda. The team introduced itself to guest Mr. Larry Dietrick, Director of DEC's Spill Prevention and Response Division (SPAR). Mr. Dietrick commended the team for working together to successfully address the challenges of the project, and promised his support to the project team.

Introductions continued with Mr. John Elliot, Senior Project Manager at Johnson and Wright, stating he was joining in his capacity as the insurance representative for Flint Hills. Mr. Ty Keltner introduced himself as the new Information Officer from the DEC Commissioner's Office. Mr. Gary Remple of Barr Engineering also introduced himself as a resource to Flint Hills.

## **REVIEW OF ACTION ITEMS FROM THE PREVIOUS MEETING**

The team reviewed the completion status of action items from the previous TPT meeting. The team determined that most of the action items had been completed.

In regard to Action Item One, Mr. Perkins said that the EPA is waiting to determine whether a Provisional Peer Reviewed Toxicity Value (PPRTV) will be assigned for sulfolane. He said that it is important for the EPA to wait to determine whether a value can be established before proceeding with its assessment of the site so that the agency does not have to backtrack once it begins its investigation.

In regard to Action Item Three, Dr. Barnes said that after discussing the possibility of conducting a garden study with certain personnel at the University of Alaska Fairbanks (UAF), he has decided that the team should consider contacting other institutions to conduct this research.

With regard to Action Item Four, Ms. Page said that FHRA has not received the request for queries that DEC asked to be included in the database. Ms. Farris agreed to follow up on Ms. Elston's suggestion to update the database queries.

In regard to Action Item 11, Ms. Farris said that she discussed the key criteria document with the group hired to conduct the 3<sup>rd</sup> party verification of the in-home treatment system. She said she hopes that FHRA will take steps to ensure that all laboratories requested to analyze for sulfolane related to the FHRA project receive a copy of the key criteria document.

**ACTION ITEM:** Ms. Farris will follow up on Ms. Elston's suggestion to update the database queries.

## **SITE CHARACTERIZATION**

Ms. Page gave an overview of the ongoing efforts to characterize the site. She presented slides showing the structural organization of the FHRA personnel involved in the various aspects of the project as well as slides summarizing the plume delineation efforts that have been carried out according to the Site Characterization Work Plan (SCWP) and the Interim Remedial Action Plan (IRAP). She presented a series of maps and cross sectional diagrams showing the depths and locations of the active project wells along with the concentration of sulfolane that was found in samples taken from them. She briefly described the justification and proposed locations for new wells which will be installed to further delineate the plume.

The team took up discussion of the overview of the site characterization efforts. The team agreed that it would be useful to review the data from monitoring wells that are equipped with pressure transducers to determine the extent of the vertical mixing within the plume area, particularly during dynamic events such as breakup or during episodes of heavy rainfall. Ms. Farris said that she would include queries for pressure transducer, data and water level elevations, in the list of queries that she will submit in the near future.

**ACTION ITEM:** Ms. Page will determine which of the project's monitoring wells are equipped with pressure transducers and provide that information to DEC.

**ACTION ITEM:** Ms. Page will provide Ms. Farris with the cross sectional displays of monitoring well information presented during today's TPT meeting.

The team took up consideration of various suggestions and concerns related to the ongoing efforts to characterize the site. Ms. Farris said that she would like to determine why there is so little difference between the relatively high concentrations of sulfolane in both the deep and shallow wells located to the North Northwest of the refinery. She suggested that an inquiry into this phenomenon may require further investigation of the permafrost configuration of the area and, perhaps, the installation of additional wells. Dr. Barnes reiterated his suggestion that the team further investigate factors such as water ponding that may be causing mixing throughout the vertical gradient. He added that it would be useful to review the data on the mole fraction of sulfolane within the original contaminant source to more accurately evaluate the effect that its solubility has on the structure of its concentration gradient within the site area.

The team discussed off-site monitoring well MW-160A, which was destroyed by snow plow equipment during the winter of 2010. After reviewing the analytical data from this well, and evaluating proximity and spatial coverage of nearby wells, the team agreed that this well does not need to be replaced.

The team discussed the development of the protocols for the analysis of sulfolane in Light Non-Aqueous Phase Liquid (LNAPL). Ms. Page informed the team that SGS and ESI laboratories have nearly completed the protocols which will outline the procedures for the analysis of LNAPL samples. Mr. Vitale briefly described the process used to develop the analysis protocols. The team discussed how it would review and approve the protocol document. Ms. Farris said that DEC would appreciate an opportunity to review the protocol but understood the need for FHRA to move forward with its development in order to develop data in time for inclusion in the Site Characterization Report. The team agreed to defer its review of the protocol document to the Chemistry Subgroup.

**ACTION ITEM:** Ms. Page will provide Ms. Farris with a rough timeline for the development of the LNAPL protocol. Mr. Vitale will provide the Chemistry Subgroup with the rough draft work plan for the development of the LNAPL protocol.

## **THE SUMP AND LAB DRAIN INVESTIGATION**

Ms. Page described the status of the ongoing investigation into the sump and drainage system at the North Pole Refinery. The report for the sump system was submitted in December. With regard to the investigation of the lab drain, representatives of FHRA walked through the facility with DEC's Mr. Brian Jackson and pointed out proposed sampling locations where they felt they could find the most data. The locations were preliminarily approved and the plan was sent to DEC on the day of the TPT meeting for its formal approval. Ms. Page presented a slide showing the proposed sampling locations superimposed over a diagram of the floor plan of the lab. Due to spatial constraints around the proposed sampling locations, FHRA personnel will have to use hand augers to collect the soil borings once cement coring equipment has bored through the laboratory floor. Since the laboratory is a 24-hour facility, the field crew will coordinate closely with the lab manager to schedule the activities.

Since the last meeting there was an incident at the refinery laboratory in which the sinks of the facility backed up. Ms. Page presented slides showing the plumbing system associated with the affected sinks and added that the cause of the backup has been corrected. She said that FHRA does not believe that the backup resulted in any contamination below the lab floor but added that hand-auguring in the proposed sampling locations will provide a good visual indication of whether or not there was any release below the laboratory floor.

## **PROJECT REPORTS AND DATA DELIVERABLES**

Ms. Page presented a slide showing the most recent timeline for project reports and data deliverables. FHRA has transitioned to quarterly reporting. FHRA still needs to upgrade the database to satisfy the request for additional queries but at this point they are waiting for the queries themselves. They will make all the upgrades within four to five weeks of the day that they receive the queries. FHRA hopes to make all of the upgrades to the database for offsite data by April 2011. Ms. Farris commented that the most important thing is that all of the pertinent data is available in the data base in some form.

The team took up discussion of the format and schedule for project reporting. Ms. Farris reiterated her request that all information on 1) groundwater, 2) the performance reports for the remediation system, and 3) copies of the remediation system discharge reports be sent to her, while permit data (i.e., remediation system discharge reports) be sent separately to the other appropriate DEC program. Ms. Buss reminded the team that the first quarterly report will be combined with the SCWP and submitted in May and the second quarterly report will be submitted in July. After the July report is submitted, all reports will be submitted at the end of the month following the end of the applicable quarter.

## **THE TOXICOLOGY AND CHEMISTRY SUBGROUPS**

Ms. Buss updated the team on recent developments within the Chemistry and Toxicology Subgroups. FHRA recently passed on to the project laboratories the key elements document for groundwater analytical procedures that it received from the state. After FHRA receives the requested information from the laboratories, FHRA will submit the information as a single package to DEC for its review.

The Chemistry Subgroup has nearly completed a draft version of the key elements document for soil analysis. After this document is completed, it will be sent out for review and then returned to the subgroup for further development. The Chemistry Subgroup recently calculated a data quality objective value using the standard DEC value equations and the Agency for Toxic Substances and Disease Registry (ATSDR) toxicity value. This value is subject to change if the ATSDR values change.

The Chemistry Subgroup is also working on issues related to the comparison of historical “pre-isotope dilution” groundwater data to groundwater data generated after the laboratory SOP is approved to include the isotope dilution methodology of analysis for sulfolane in water. The subgroup will not know whether it will be possible to make such a comparison until the subgroup has data generated per the new SOP. The first groundwater sampling event to follow the new SOP will be conducted in second quarter, and the report will be submitted in July.

The team took up discussion of how to best explain changes in the sampling results from the wells of homeowners that are the result of the implementation of isotope dilution. The team agreed that it will be important to explain that any changes in the sampling results do not indicate growth or movement of the plume and they will not change FHRA’s approach to homeowners with affected wells or to the remediation of the site. Ms. Farris suggested that it might be useful to present the results with brackets of uncertainty and to emphasize that, given the lack of information available on sulfolane, it is reasonable to expect that sampling results may change as more is understood about the chemical. The team agreed to work to develop message points to present in project newsletters and public meetings that provide the appropriate context to explain expected changes in the sampling results.

#### **PPRTV**

Ms. Buss presented a brief overview of her recent meetings with the EPA and ATSDR to discuss the development of the PPRTV for sulfolane. She said that the EPA conducted a preliminary review of the Zhu and Huntingdon Life Sciences studies and determined that while it can probably assign an inhalation value for sulfolane, the agency will most likely not be able determine a corresponding oral value since the Huntingdon Life Sciences study was not peer-reviewed and the Zhu study is missing important dosing information. A provisional value for the oral pathway may be included as part of the appendix. Ms. Buss noted that it may still be possible to establish an oral value if the deficiencies in the aforementioned studies are corrected. ATSDR will attempt to contact the people involved in the studies to see if they might be willing to take steps to enhance them so that they can be used to meet the criteria needed to establish an oral PPRTV for sulfolane.

The team discussed some of the possible implications that the various potential outcomes that the EPA hazard ranking may have for the project. Mr. Perkins briefly described other ways that the site’s score may be evaluated in the event that it is not possible to establish the appropriate benchmark values. Ms. Farris agreed to schedule a teleconference with Mr. Perkins in early March to discuss how the DEC should respond to various possible outcomes of the EPA’s hazard ranking for the site.

**ACTION ITEM:** Ms. Farris will schedule a teleconference with Mr. Perkins in early March to discuss how the DEC should respond to various possible outcomes of the EPA’s hazard ranking for the site.

The team took up discussion of the status of the proposed greenhouse study. Ms. Buss informed the team that the Toxicology Subgroup has decided to postpone its evaluation of the possibility of conducting the study. Ms. Farris remarked that the need for a greenhouse study seems to hinge on whether there is a reasonable expectation that at least some North Pole residents will continue using sulfolane-impacted water to grow produce, and that's something the team should attempt to determine.

Dr. Barnes added that he thought the greenhouse study was worthwhile and would be willing to continue to try and contact the appropriate personnel at UAF to discuss sampling procedures and other considerations necessary to evaluate the feasibility of conducting the proposed greenhouse study.

**ACTION ITEM:** Dr. Barnes will contact pertinent staff members at UAF to discuss sampling procedures and other considerations necessary to evaluate the feasibility of the proposed greenhouse study.

### **SITE CHARACTERIZATION AND INTERIM REMEDIATION EFFORTS**

Ms. Page resumed the morning's discussion on the ongoing site characterization and interim remediation efforts. She updated the team on the operational status of the active elements within the remediation system as well as progress that has been made toward implementing proposed improvements. The team took up consideration of a chart showing the system's rate of product recovery over the past several months. The team deliberated on the significance of the relationship between various expansions and improvements that have been made to the system and the system's rate of product recovery. The team acknowledged several factors that may complicate this relationship such as changes in precipitation and groundwater levels, episodes of extreme cold, and various factors relating to the operational efficiency of the system and its staff.

**ACTION ITEM:** Ms. Page will attempt to locate information on the flow rates of the recovery wells prior to the upgrades.

Ms. Page described an exceedance event that occurred since the last meeting in which the product thickness in one of the recovery wells may have been the cause of dissolved phase constituents exceeding the limits set forth in the operating permit for the remediation system air strippers. She described FHRA's evaluation of the event and its conclusions concerning the nature of its cause and the appropriate measure which should be taken to prevent similar events in the future. The team briefly discussed the evaluation of the event. Dr. Barnes remarked that when water levels decrease, the system may begin accessing submerged product which will cause the thickness of the recovered product to increase. He suggested that the operators might consider using data loggers to determine the water level at which the thickness of the product begins to increase.

The team talked at length about how to best measure the efficacy of the remediation system. Dr. Barnes remarked that before the team can establish benchmarks, it needs to better understand some of the basic elements of the system such as how sulfolane absorbs and desorbs from soil, seasonal changes in the elevation and directional flow of groundwater, and the properties of the attenuation of sulfolane within the subsurface. He remarked that he is particularly interested in whether the limits of the plume

represent the edge of natural attenuation or dilution and added that the team needs to try to get its hands around the mass balance equation for the sulfolane that has been released. Dr. Barnes offered to look into the possibility of conducting studies on the attenuation parameters of sulfolane at the University of Alaska Fairbanks in order to address the aforementioned gaps in the conceptual site model.

**ACTION ITEM:** Dr. Barnes will inquire into the possibility of conducting studies on the attenuation parameters of sulfolane at the University of Alaska Fairbanks in order to address gaps in the conceptual site model.

### **THE DRINKING WATER SUBGROUP**

The team reviewed the results of the ongoing sampling of residential wells in or around the plume area, the progress on the development of the new municipal wells, and the development of the in-home treatment system. Mr. Butler said that the new municipal well was approved for interim operation on December 23, 2010 and is soon available for manual startup.

The team took up discussion of the development of the in-home treatment system. Ms. Page described the methodology and results of an accelerated pilot test of the in-home system. She said the test could be described as a stress test in which the system was “run to failure” by being subjected to flow rates that were constant and much higher than would be expected under normal circumstances in an average residence. The tests confirmed that the system was removing sulfolane according to the intent of its design.

Ms. Page described other testing that FHRA has performed in accordance with the protocols that were set forth by the third-party water quality testing agency that is reviewing the development of the system. She described an ongoing test in which the system is being subject to conditions that more closely represent normal residential usage. Ms. Page presented slides showing various measures of the performance of the system throughout the accelerated and ongoing pilot tests and briefly reviewed the other elements of the verification process for the treatment system. She said that after the data from the pilot tests are verified, the third-party agency will inspect and certify the manufacturing facility and equipment. The agency expects to certify the in-home treatment system sometime during the spring of 2011.

The team took up consideration of the pilot testing and certification process. Mr. Mendez asked whether anyone has tried to determine if the water softening component has any effect on the sulfolane concentration of the water that is running through it. Ms. Page agreed to contact the developers of the in-home treatment system and ensure that they take at least one measurement to determine whether the water softening component of the treatment system has any affect on the concentration of sulfolane in the pretreated water.

**ACTION ITEM:** Ms. Page will contact the developers of the in-home treatment system and ensure they take at least one measurement to determine whether the water softening component of the treatment system has any affect on the concentration of sulfolane in the water that moves through it.

Ms. Page presented an overview of the settlement that FHRA is offering to affected well owners and described the outcome of some of the initial meetings in which they proposed the settlement. She said that as of February 14<sup>th</sup>, 2011, FHRA has met with 11 homeowners, two of which have opted for the in-home treatment system and one that has indicated that he will opt for bottled water. She said that the meetings have generally been positive and that most seem pleased to have options made available to them.

**ACTION ITEM:** Ms. Page will provide Ms. Farris with a blank copy of the homeowner's settlement.

The team discussed whether team members or their respective state agencies (DEC and DHSS) should be referenced in contact information accompanying Flint Hills summary document. After a lengthy discussion, the team agreed to place contact information for the departments represented on "resources" reference sheet in the packet and remove the DHSS and DEC reference from the summary page.

**ACTION ITEM:** Ms. Page will make sure the names are removed from the summary page and placed on the "resources" reference page.

#### **THE RISK COMMUNICATION SUBGROUP**

Ms. Grady and Ms. Ha updated the team on recent developments within the Risk Communication Subgroup. Ms. Ha described the upcoming Gardening Workshop scheduled for the evening of March 29<sup>th</sup> at the Grange in North Pole. She asked the team for its suggestions on the content and format of the workshop and added that she would like to use the workshop as an opportunity address potential concerns among affected residents who intend to garden this summer. She would like to describe the development of the action levels and the health screening levels and explain why they are different and perhaps discuss the DHSS advisory on eating sulfolane-impacted produce.

The team discussed the format and content of the upcoming workshop. The workshop will consist of a panel most likely consisting of Ms. Kirk, Ms. Buss, and herself which will give a presentation on the aforementioned issues through the first half of the workshop and then answer question during the second half. Ms. Farris said that it would be helpful if the focus of the workshop were oriented toward a more practical discussion on how to reduce the potential risk associated with using sulfolane-impacted water. Mr. Butler felt if the title of the workshop were gardening, then most people would think they were attending a workshop on how to garden, but perhaps not specifically on gardening with sulfolane-impacted water. The team agreed there may need to be changes to the overall workshop content. It was agreed that further discussion of the format and content of the workshop will be the topic of the next Risk Communication Subgroup.

**UPCOMING TPT MEETINGS SCHEDULED:** The team confirmed March 30 as the date for the next meeting and tentatively scheduled the date of the following meetings for May 4 and June 22. The meeting adjourned at 4:30 p.m. Alaska Time.