

**North Pole Refinery Technical Project Team**  
**June 18, 2010**  
**ADEC Fairbanks Offices - First Floor Conference Room**  
**610 University Avenue**  
**Fairbanks, AK**

**SUMMARY COMMENTS**

**Technical Project Team Members**

Bill Butler	City of North Pole, Director of City Services
Cindy Christian	DEC Drinking Water Program, Compliance Program Manager
Mark Coggeshall	Flint Hills, Project Manager
Dennis Elliott	Williams, Director of Environment, Health and Safety
Ann Farris	DEC Contaminated Sites Program, Project Manager
Brian Jackson	DEC Prevention and Emergency Response Program (PERP)
Elizabeth Page	Reiss Remediation, Internal remediation resource for Flint Hills
Jeanne Swartz	DEC Industry Preparedness Program (IPP)
Bob Tisserand	DEC- IPP
Dr. Lori Verbrugge	DHSS, Toxicologist
Bob Whittier	EPA Region 10 Offices, Anchorage Offices

**Support Personnel**

Rebecca Anderson	Arcadis (via telecon)
Cody Black	OASIS Environmental (via telecon)
Mike Brose	Flint Hills, Vice President and Refinery Manager
Stephanie Buss	E & E Toxicologist
Susan Erben	DEC Cont. Sites Program, Community Involvement Specialist
JoAnn Grady	Grady and Associates, Team Facilitator
Nim Ha	H&SS Health Educator
Dr. Laurie Haws	Tox Strategies (via Telecon)
Daren Knowles	EH&S manager for Flint Hills
Lisa Minnear	OASIS Environmental, Project Manager
Brandon Perkins	EPA Region 10 (via telecon for morning discussion only)
Pat Conlon	Environmental Standards, Inc. (via telecon)
Eric Zentner	OASIS Environmental, Asst. Facilitator

- **INTRODUCTIONS AND DISCUSSION OF MEETING AGENDA**

The meeting began at 8:00 AM as team members introduced themselves and briefly discussed and approved the team's agenda for the meeting.

- **STATUS OF EPA PRELIMINARY ASSESSMENT AND HAZARD RANKING**

Mr. Whittier presented a brief overview of the process used by the EPA to determine whether a particular site is eligible for designation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). He stated that the EPA has received a petition from Alaska Community Action on Toxics (ACAT) to conduct a preliminary assessment on the North Pole Refinery.

He remarked that this process typically takes three to four months but there is a chance that it could be completed more quickly. He asserted that while the ACAT petition stated that ADEC's response to North Pole site has not been sufficiently proactive, he felt that, to all appearance, the state has shown a satisfactory response.

The team discussed various factors that the EPA might consider while it is making its decision of whether to designate the North Pole Refinery as a CERCLA site, particularly how the toxicity of sulfolane would play in its decision. Mr. Whittier said that the toxicity of contaminants is a major factor in the process but that EPA toxicologists have yet to assign a toxicity factor to sulfolane.

- **UPDATE ON THE RECENT SPILLS AT THE REFINERY**

The team reviewed reports on recent spills at the refinery, discussion of a contingency plan to avoid future leaks and spills, and a summary of the recent refinery turnaround activities. Mr. Coggeshall, Mr. Knowles, and Mr. Tisserand presented a brief overview of reported spills year to date and during turnaround at the North Pole Refinery. They also described the refinery's turnaround process. One of the reported spills, from the laboratory sump system, is still under investigation. They said that FHR and a third-party engineering group is currently performing additional tests and research on the sump system to determine the leakage rates, estimated volumes of spilled contaminants, and a list of potentially spilled chemicals. They said that while they could not provide an exact date, they estimated that they would be able to report their findings by the third week of July.

**ACTION ITEM:** *By the third week of July, FHR will submit a report to the State of Alaska on the recent leaks at the refinery. The report will note: The review of engineering plans, estimate of leakage rates, estimate of the volume of chemicals used in the lab, a rough estimate of the volumes of spilled chemicals (with certain assumptions), and a list of chemicals used at the refinery.*

The team discussed the fate of wastewater from the refinery's onsite treatment system. Mr. Coggeshall informed the team that, in addition to other factors, the decision of whether or not to recycle wastewater through the onsite treatment system was based on its concentration of sulfolane. Wastewater with a concentration of sulfolane greater than 1000 ppm is recycled, while wastewater with a sulfolane concentration of less than 100 ppm is sent through treatment to the North Pole municipal wastewater facility for ultimate disposal.

- **DRINKING WATER SUB GROUP UPDATE**

The team reviewed the results of ongoing sampling of North Pole city wells, the progress on new well siting, and the engineering plan of the proposed distribution system extension. Ms. Christian presented an update on the results of the analysis of samples taken from North Pole's municipal wells on May 19<sup>th</sup> and 26<sup>th</sup> as part of the ongoing weekly sampling effort. She said that the results of these samples showed concentrations of 5.8 ppb and 4.4 ppb respectively and that the distribution was non-detect as it has been all along.

Mr. Butler explained that the City of North Pole uses two wells, a deeper well which is used in the winter, and an older, shallower well that is used in the summer. He said that the city has decided to continue to use its winter well instead of switching to the summer well this summer since the concentration of sulfolane detected in the winter well is lower than that of the summer well. He noted the possibility that sulfolane concentrations in water from the second well may increase as a result of an expected dramatic increase in demand on the well as residents began watering their lawns in the summer. Ms. Farris stated that an increase in water use may provide a greater dilution factor possibly causing a decrease in concentrations and that it would be very interesting to study the results after more summer sampling rounds.

Ms. Christian discussed the engineering plan review for the extension of municipal water to the Ford subdivision. She said that the review was approved on June 15<sup>th</sup> and would add 26 homes to the municipal water system.

Mr. Coggeshall presented an update on the progress of the siting efforts for the proposed new well for the Fairbanks North Star Borough (FNSB) service area. He presented a map showing the proposed location of the wells along with the results of sampling from well nests at other potential well locations. He briefly described hydrological considerations made in determining the potential well sites as well as some of the design specifications of the proposed system. He said that FHR plans to have the 95% drawings ready by July 4<sup>th</sup> and the modeling report approval for construction by the middle of July. He said that thus far, efforts towards the construction of the new well are proceeding according to schedule.

The team discussed concerns about samples taken from test wells showing concentrations of arsenic and antimony that are above the maximum contaminant level (MCL). The team agreed that this could be a problem since the City of North Pole does not currently treat its water for arsenic and antimony and it will have to do so if water from its production wells is found to have concentrations of these elements that are above their MCLs.

- **REVIEW AND UPDATE OF THE REVISED SITE CHARACTERIZATION WORK**

Ms. Page updated the team on the development of Site Characterization Work Plan (SCWP). She said that she had uploaded the work plan and Interim Remedial Action Plan (IRAP) to SharePoint and these documents can be found on the site characterization page. She said that the SharePoint files include text, tables, figures, and appendices. The team decided that she should submit an informal draft of the SCWP to the DEC and schedule a follow up conference call to discuss comments on the draft so that FHR can take them into account before submitting its final plan.

**ACTION ITEM:** *Ann Farris agreed to review an informal draft of the SCWP from Ms. Page. Ms Page will schedule a conference call with the DEC to discuss comments on the informal plan so that FHR can take them into account before submitting its final plan.*

Ms. Page explained that the SCWP was updated to comply with the March 3<sup>rd</sup> letter from the DEC and provide a go-to, one-source document. She said that backup data was added to the plan and increased its level of detail to the extent that it now contains all the information FHR has regarding its site characterization. She stated that the document now has information to address all of the former data gaps as well as a comprehensive Sampling Analysis Plan (SAP) She remarked that she believes this revised document now covers all reasonable possible sampling scenarios.

Ms. Page continued her review, listing the overall objectives of the work plan which include: updating the list of contaminants of potential concern (COPC), identifying all potential sources of sulfolane and the potential for ongoing releases, improving their understanding of the onsite and offsite physical setting, characterizing the nature and extent of soil impacts based on COPC evaluation, characterizing the nature and occurrence of light non-aqueous phase liquids (LNAPL) at NPR, improving the understanding of petroleum constituents in groundwater at NPR, completing delineation of sulfolane in groundwater downgradient of NPR, evaluating the potential for natural attenuation of sulfolane in groundwater, characterizing the water quality of the north and south gravel pits at the North Pole Refinery, updating the conceptual site model to account for analytical modeling to define the migration of sulfolane, and monitoring the effectiveness of the Interim Remediation Action Plan (IRAP).

Ms. Page explained the process according to which information about new COPC would be incorporated into the SCWP. She said that FHR was currently reviewing a comprehensive list of spills that it has on file from the date the refinery began its operations to the present. She said that they are looking at the volume of each spill to determine whether it was reportable, whether it was over ten gallons, where it was located, and whether it was completely contained. She said that if it is determined that it was completely contained; it will be removed from consideration, otherwise FHR will review all documentation related to its remediation and whether the spill was cleaned to background conditions. She stressed that such information must be documented and that anecdotal information will not be considered. She stated that the spills that make it through these steps are considered and compared to the list of COPC. If they are not on the list, they will be considered as a new constituent. She remarked that she hoped to finish this process for the entire list in about a month.

The team discussed possible discrepancies between FHR's list and DEC's list. Ms. Farris stressed that the FHR list should include all known unreported spills in addition to all of the spills that were reported. Mr. Coggeshall remarked that FHR has reviewed the information in its file from the beginning of the refinery's operation to the present and that, in addition to all known unreported spills, it also contained spills originating from sources that are not reportable such as those from labs, bolted tanks, rail transfer apparatus etc. He said he felt confident that the FHR list addresses all the major sources of the historical spills.

**ACTION ITEM:** *Ms. Page will mail the list of documented spills to Brian Jackson and Ann Farris at DEC to ensure FHR's and DEC's lists are consistent with each other.*

Ms. Page continued her description of the SCWP. She said that new COPC locations discovered in the aforementioned process would be incorporated into the SCWP's characterization of soil impacts. She said that she hoped to complete the characterization of soil impacts by August but this was contingent upon her completing her analysis in July. She commented that FHR hoped to simultaneously characterize the light non-aqueous phase liquid (LNAPL) phase while it was characterizing COPC. She stated that FHR has taken many samples at the North Pole Refinery which have given them a good idea of the location of the LNAPL, but they must do more work to characterize its horizontal extent. Ms. Page remarked that FHR is currently modifying its monitoring program to characterize the horizontal extent of the LNAPL since the current system is not extensive enough to make an adequate determination. She described modifications such as a program to consider every well for LNAPL and a procedure to determine the actual vs. apparent thickness of the LNAPL plume.

Ms. Page remarked that they hoped to determine the nature and extent of the LNAPL plume by the end of the year but they wanted to define it within the context of seasonal variations and this may require them to extend their study to the spring of the following year. She said that, in addition to characterizing the extent of contamination, another objective of the work plan activities is to acquire a better understating of the on and off-site physical setting. She said that to achieve this, they planned to collect more data to further define the geology, hydrology, permafrost extent, and natural groundwater chemistry of the site. She said that they planned to further characterize the dissolved phase plume and analyze historical trends using Mann-Kendall statistics to delineate the deeper portions of the aquifer, including subpermafrost areas if necessary. She said that she believed that they were close to delineating sulfolane in shallow water and will continue working on delineating the deeper portions of the aquifer. She said that, depending on approval, and what they find, they believe they can finish these characterizations by October of this year.

Ms. Page said that her team was researching the potential for natural attenuation processes to remediate sulfolane contamination located off the property site. She said that at the present time they were exploring the potential of aerobic attenuation and they were hoping to establish a system to monitor the attenuation process. She said that her team hoped to have a workable understanding of the potential for natural attenuation by December.

The team briefly discussed the Conceptual Site Model (CSM). Ms Page said that there is a Preliminary CSM in the work plan and they expect to revise and update it after additional site characterization activities are completed. The team agreed that the CSM should be regarded as a living document which could be revised as further information becomes available. The team revisited the topic of natural attenuation in the context of the discussion of the CSM and decided that a monitoring plan should be established based on consideration of all reasonably possible processes by which natural attenuation could occur in the area before making any efforts to show the efficacy of a particular natural attenuation process.

Ms. Page described plans to model the fate of sulfolane in surface water based on information gathered from the study of the area's natural attenuation mechanisms and other information gathered through the summer's IRAP activity. The team discussed the possibility of creating models to evaluate the fate of sulfolane released from spills in the past to determine the health effects of past exposures. While the team considered the concern that there may not be enough information available to conduct such a study, Ms. Farris remarked that they should consider the possibility of historical modeling once they had a better understanding of the vertical extent of the contamination, the permafrost, and the fate and transport of sulfolane.

- **INTERIM REMEDIAL ACTION PLAN UPDATE**

Ms. Page presented an overview of the IRAP to the team. She said that there are three primary elements of the plan; groundwater capture, groundwater treatment, and LNAPL capture. She said that the plan will be implemented this summer and fall. She described various improvements FHR intended to make to its existing LNAPL system to improve its capture range. She said that once FHR has its remediation system's wastewater treatment permit and its water appropriations permit, they will attempt to maximize the capacity of the existing system by consistently enlarging pipes to prevent interpipe friction, elevating pipes into pipe racks, covering the system with heat tracing or glycol, and adding an additional recovery well to determine if the capture data is consistent with their model.

Ms. Page described a pilot study referenced in the IRAP to use granulated activated carbon vessels placed down-gradient of the gallery pond. She said that this study is still in its early phases and they do not yet know certain important information such as the residence time or the life expectancy of the carbon. The team discussed various concerns associated with the proposed system particularly with regard to mineral and biological contamination as well as improvements and suggestions of how to address these concerns.

- **THE TOXICOLOGY SUB GROUP DISCUSSIONS**

As the Toxicology Subgroup began opening its discussions, Ms. Christian took the opportunity to inform the team that the DEC would have to make additional arrangements to process samples since its mass spectrometer is malfunctioning.

**ACTION ITEM:** *Ms. Christian said she would inform the team of the length of time that the DEC Environmental Health Lab would be out of service due to a malfunctioning mass spectrometer.*

The Toxicology Subgroup began its discussions by considering how samples from the Garden Study should be prepared prior to their analysis in the lab. The team agreed that minimal field preparation is preferable and that vegetables should be kept whole to prevent oxidation and spoilage. The team agreed that it should provide the lab with instructions for preparation and analysis and that these instructions should be included in the work plan and the standard operating procedures (SOP) of the lab.

The team discussed issues associated with their current protocol for labeling and classifying vegetable samples, particularly how they would identify different organ tissues originating from the same plant. The team decided that Shannon & Wilson should establish protocols for the sampling procedure to ensure that each individual plant from which tissues had been taken could be easily identified.

**ACTION ITEM:** *Shannon & Wilson shall establish protocols for the sampling procedure to ensure that each individual plant from which tissues had been taken could be easily identified.*

The team discussed the objectives and scope of the Greenhouse Study and took up consideration of a list of comments made by Ms. Ha and Dr. Verbrugge concerning various inconsistencies between the Garden Study's SAP and the work plan; such as how to make the appropriate distinction between field weight and edible tissue weight and how to cool samples during shipment and storage. The team agreed that it should use separate coolers for water and tissues.

**ACTION ITEM:** *Dr. Lori Verbrugge will send information to Mr. Coggeshall regarding specific gel packs for shipping.*

**ACTION ITEM:** *Dr. Verbrugge and Ms. Ha will submit their comments on the Garden Study work plan to Ms. Buss early next week for her review.*

**ACTION ITEM:** *Ms. Buss will schedule the next toxicology sub group meeting upon receipt of the list of objectives from Ms. Haws.*

**ACTION ITEM:** *Mr. Coggeshall and/or Ms. Haws will forward, to the Toxicology Subgroup, a draft list of objectives and draft scope of the Greenhouse Study.*

The team discussed the interference observed from spinach during the lab validation study. Mr. Vitalie said that he understood that the interference detected in spinach was the result of a naturally occurring insect repellent that was secreted from the leaves and that it could be addressed by simply washing the leaves. The team discussed whether the substance was water soluble enough to wash off, and the need for crop-specific method validation to account for crop-specific interferences. They also discussed whether there might be more general issues related to using store-bought vegetables in the study. Ms. Ha informed the team that she had put together a list of vegetables that participants were growing in their greenhouses as well as in their fields and asked how the study would address different methods of cultivation being used by its participants. The team discussed the issue of whether the study would account for vegetables grown by the participants that were not on the sampling list. The team affirmed that the sample list was established to test tissues considered most likely to concentrate sulfolane and only the samples on the work plan list would be analyzed. The team agreed to revise the crop list in the work plan to more accurately reflect the crops being grown by participating gardeners.

The team compared the advantages of using a cellulose blank as opposed to using store bought vegetables as a method blank. The team agreed that since the method blank was used to test for possible sources of contamination within laboratory processes, it would be best to use the cellulose blank instead of store bought vegetables due to concerns about interference associated with the vegetables.

Ms. Ha informed the team that one of the participants of the study had told her that his family intended to eat their harvest this year. Ms. Farris stressed that the Garden Study itself is not scientifically robust enough to be used to make any general recommendations regarding the safety of growing produce with sulfolane-contaminated water. It is only going to provide some data to DPH so they can make recommendations to these particular growers about eating their vegetables this year.

The team discussed some of the confidentiality concerns associated with the Garden Study and well sampling efforts, particularly whether data related to sample locations and levels of contamination might affect the study's participants once they are made public. The team acknowledged that while the results of the study must be made available to the public if requested, the team would make reasonable efforts to protect participant confidentiality and that it would be prudent to relate these concerns to the DEC's legal department. The team further deliberated on the importance of identifying sulfolane concentrations in well and vegetable samples with the exact location at which they were sampled. Ms. Farris commented that this association is important for the sake of addressing concerns about the fate of sulfolane in the environment.

**ACTION ITEM:** *Ms. Farris will contact the State's attorneys regarding the confidentiality issue.*

The team considered the schedule of the upcoming sampling phase of the Garden Study. The team agreed that Garden Study Gantt chart should be incorporated into the overall work plan. The team concluded that all documents related to the Garden Study could be submitted by July 1<sup>st</sup> and approved by July 4<sup>th</sup>. Mr. Coggeshall said that he would tell Shannon & Wilson that they could begin sampling by July 5<sup>th</sup>.

**ACTION ITEM:** *Mr. Coggeshall will instruct Shannon & Wilson to begin Garden Study samples by July 5<sup>th</sup>.*

The team briefly discussed the issue of compensation for the participants of the Garden Study. Mr. Coggeshall informed the team that compensation would be provided in the form of a \$50 gift card from a local store.

The team briefly discussed the possibility of sampling outside the plume area and decided that it would not likely provide useful information. However, using a control garden plot with clean water will be important in the greenhouse study. The team discussed concerns about possible interactions between contractors carrying out the sampling and the public and media. The team agreed that the contractors should be accompanied by someone who would be able to answer technical questions about the garden study.

The team closed the toxicology sub-group portion by discussing the schedule for the review of the SAP. Ms. Buss said that she expected to complete her review of the SAP and provide her comments on Monday or early Tuesday. She informed the team that the last version of the SAP was uploaded to Basecamp but it would be transferred to SharePoint as soon as possible. Several members of the team expressed concerns about the new SharePoint system and agreed that all concerns and suggestions related to SharePoint should be directed to Mr. Sapp, the DEC's IT specialist managing the program. Ms. Minnear agreed to send all pertinent contact information of the toxicology subgroup to each member of the group.

**ACTION ITEM:** *The team will send any comments regarding difficulty using SharePoint, or related questions, directly to Ben Sapp and cc Ms Farris.*

**ACTION ITEM:** *Ms. Minnear agreed to send all pertinent contact information of the toxicology subgroup to each member of that group.*

- **THE GREENHOUSE STUDY**

The team discussed the Greenhouse study. Ms. Farris stressed that from the DEC's perspective there are many challenges associated with the study and thus it is important to begin outlining its schedule, task assignment, and scope. Ms. Buss informed the team that the university may have limited staff and greenhouse space to contribute due to the demands of the academic year and a current transition between greenhouses. Mr. Jackson suggested that the USDA office in Fairbanks may be able to contribute greenhouse space and science staff. He informed the team that he has a background in agronomy and plant physiology so he will be involved in looking at the work plan and data as it becomes available and as his time allows.

**ACTION ITEM:** *Mr. Jackson said that he would investigate USDA resources that may be available for use in the Greenhouse study.*

- **RISK COMMUNICATION SUB GROUP**

The Risk Communication Sub-group discussed various ways to improve communications between the TPT and residents of North Pole. The team discussed the benefits of transitioning from factsheets to a regularly published newsletter. The team agreed that a newsletter would be more beneficial since it would be better suited to address varying levels of familiarity with the issue amongst the public. The team discussed the possibility of publishing an opinion piece to the editor to address misperceptions and rumors circulating about the issue. The team considered creating online and mail-out surveys to assess and compare particular areas of public concern and it discussed the possibility of establishing a permanent information display in the Northway Mall.

**ACTION ITEM:** *Susan Erban will confirm the next meeting of the risk communication sub group, tentatively set for next Friday, June 25<sup>th</sup>, at 1 PM. Topics for discussion will include:*

- *Newsletter*
- *Display at NP Mall*
- *Editorials*
- *September Open House details.*

**ACTION ITEM:** *Susan Erban will confirm the next meeting of the Risk Communication Sub-group tentatively set for next Friday, June 25<sup>th</sup>, at 1:00 pm. Topics for discussion will include: the newsletter, the permanent information display at the Northway Mall, editorials, and the details of the open house scheduled for September.*

- **Develop list of Agenda Items for the July 14<sup>th</sup> meeting**

The team concluded the meeting by discussing the agenda items for the upcoming July 14<sup>th</sup> meeting. The team agreed to consider the effect that the contamination and the remediation efforts may have on the North Pole wastewater system and the contribution and/or effects of the wastewater system at the refinery on the contamination. The team agreed to discuss developments in the planning and construction of the new well. The team agreed to discuss updates on the Garden Study and an update on SCWP, the IRAP, and the installation of the new wells. The team agreed to schedule discussions on the development of the report on the lab leak as well as an update on the preliminary CERCLA investigation of the site.

The team discussed changing the dates of the scheduled August 25<sup>th</sup> TPT meeting and Open House, to September 9<sup>th</sup> 2010 so that the results of the summer's sampling efforts for the Garden Study can be during the Open House.