

North Pole Refinery Technical Project Team
November 3, 2010
ADEC Fairbanks Offices - First Floor Conference Room
610 University Avenue
Fairbanks, AK

Technical Project Team Members

Bill Butler	City of North Pole, Director of City Services
Dr. Dave Barnes	UAF, Department Chair, Civil and Environmental Engineering
Cindy Christian	DEC Drinking Water Program, Compliance Program Manager
Marc Coggeshall	Flint Hills Resources, Project Manager
Thomas DeRuyter	DEC, Spill Prevention/Emergency Response
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
Lee Johnson	DEC, Drinking Water Program
Cassie Kirk	DHSS, Environmental Toxicologist, EPHP (via telecon)
Elizabeth Page	Reiss Remediation
Brandon Perkins	EPA Region 10
Jeanne Swartz	DEC, Industry Preparedness Program (IPP) (via telecon)
Bob Tisserand	DEC, Industry Preparedness Program

Support Personnel

Rebecca Andresen	Arcadis
Brian Angermann	Barr Engineering (via telecon)
Stephanie Buss	SPB Consulting, Toxicologist
Marlena Brewer	DEC, Spill Prevention/Emergency Response (via telecon)
Todd Dejournett	Barr Engineering (via telecon)
Susan Erben	DEC, Contaminated Sites Program, Community Involvement Specialist
JoAnn Grady	Grady and Associates, Team Facilitator
John Lindstrom	Shannon & Wilson (via telecon)
Johnny Mendez	DEC, Drinking Water Program, Environmental Engineer
Lisa Minnear	OASIS Environmental, Project Manager
Meg Michell	Environmental Standards Inc. (via telecon)
Dave Verbrugge	DHSS, Chemist (via telecon)
Rock Vitalie	Environmental Standards, Inc. (via telecon)
Eric Zentner	OASIS Environmental, Asst. Facilitator

INTRODUCTIONS AND DISCUSSION OF MEETING AGENDA

The meeting began at 9:00 AM as the team introduced themselves to Dr. Dave Barnes, a new member of the TPT. The team revised its agenda to coordinate the presentations of members who would not be able to attend the entire meeting. Ms. Grady informed the team that Brandon Perkins had informed her that the EPA would not be able to make its presentation on the CERCLA assessment of the refinery site until the following TPT meeting.

The team agreed to add a discussion of the ATSDR report and a recent Petro Star spill to the meeting's agenda.

REVIEW OF ACTION ITEMS

The team reviewed the completion status of action items from the previous TPT and determined that most of the action items had been completed. In regard to Action Item 8, Ms. Farris remarked that while they had discussed the possibility of refining the protocols for the transfer of project data, nothing has changed with regard to the way that the data is delivered to ADEC. She said that she would contact Ms. Page to follow up on the refinement of protocols for monthly reports and the electronic delivery of information to ADEC. In regard to Action Item 13, Ms. Farris remarked that she did not have a photograph delineating the location of the bolted tanks. Ms. Page replied that she would attempt to obtain aerial photos showing the historical location of the bolted tanks at the North Pole Refinery to bring to next TPT meeting. In regard to Action Item 18, Ms. Page said that an FHR representative will provide Ms. Erben with electronic copies of the poster boards and other information it presented during the open house meeting so that she can place them on ADEC's website.

ACTION ITEM: *Ms. Farris will contact Ms. Page to follow up on the refinement of protocols for monthly reports and the electronic delivery of information to ADEC.*

ACTION ITEM: *Ms. Page will attempt to obtain aerial photos showing the historical location of bolted tanks at the North Pole Refinery to bring to next TPT meeting.*

ACTION ITEM: *An FHR representative will provide Ms. Erben with electronic copies of the poster boards and other information it presented during the open house meeting so that she can place them on ADEC's website.*

REVIEW OF THE OCTOBER 5TH TPT OPEN HOUSE MEETING

The team took up discussion of the October 5th TPT Open House Meeting. Ms. Ha remarked that she spent much more time answering questions from the public in this meeting than Lori Verbrugge did during the last open house. She commented that she was surprised that there were so many questions about whether the Alaska Department of Health and Social Services (DHSS) would perform a health study on sulfolane. She said that this was addressed in a prior fact sheet but, based on her experience in the open house, it is clear that the department will have to highlight the reasons that it will not conduct such a study in its forthcoming health consultation.

The team continued discussing the format of the open house meetings and reviewing particular questions and concerns that were frequently put forth by the public. Several team members remarked that they prefer the format of the open house meetings to that of the town hall meeting since it allows them to discuss project issues with the attendees on a one-on-one basis. The team agreed that it would most likely continue hosting the open house meetings, but it may attempt to augment them with public workshops where particular project issues can be discussed in a more specific manner. The team agreed that at some point it should transition from scheduling open house meetings at regular intervals to

scheduling them to follow particular project events so that the emphasis of the meetings can be more directed towards particular issues.

COMMUNITY OUTREACH

Ms. Grady informed the team that the Alaska Department of Environmental Conservation (ADEC) intends to revamp its website to make it more interactive for the benefit of the public. She said that the department is currently considering whether to add an online survey component to the website wherein public members can list specific questions and concerns as well as provide feedback on the various elements of the department's public outreach efforts. She said that she hopes that a more interactive website may better direct the public towards the answers to questions that have been reoccurring frequently at the open house meetings.

The team continued discussing possible ways that ADEC could bolster its outreach efforts. Ms. Grady informed the team that she has been asked to contact Ms. Sherry Smith, a North Pole resident who recently published an editorial in the Fairbanks News Miner inviting residents to discuss issues relating to their affected wells. Ms. Grady commented that she would like to offer the team's assistance to Ms. Smith in her efforts to provide information to affected residents. Mr. Butler suggested that it may be useful to address concerns over proximity and property value issues by contacting local realtors and offering to add them to the list serve to keep them informed on project information and developments.

The team considered the possibility of establishing a seat on the TPT to represent North Pole residents living with affected wells. The team agreed that the possibility should be further discussed at the next meeting of the Risk Communication Subgroup.

ACTION ITEM: *Ms. Grady will continue to try and contact Ms. Sherry Smith and offer to assist her effort to provide North Pole community members with information on sulfolane. Ms Grady will also add 'community outreach' as an agenda item when she convenes the next Risk Communication subgroup meeting.*

ACTION ITEM: *The subgroup will consider the possibility of contacting local realtors and offering to add resources for them to the project's web site.*

ACTION ITEM: *The subgroup will consider the possibility of establishing a seat on the TPT to represent North Pole residents living with affected wells.*

Ms. Ha notified the team that DHSS intends to release another fact sheet on the garden sampling project results sometime this month. She said that the department also plans to release a health consultation that evaluates the potential pathways of exposure that have been identified for sulfolane. She said that the department hopes to issue this consultation sometime in late December or January but added that it would not do so until it was vetted through the TPT and two external reviews, after which it would go to ATSDR in Atlanta for their internal and external review process.

The team also agreed that DEC's concerns regarding exposure pathways might also be touched on in the DHSS update, and/or in a separate information sheet, produced by DEC, to address the concerns of the completed pathway as shown in the garden study results.

MUNICIPAL WATER UPDATE

The team reviewed the results of the ongoing sampling of North Pole city wells, the progress on the development of the new wells, and the development of the in-home treatment system. Mr. Coggeshall informed the team that as of October 30th, FHR has visited 791 locations and sampled 430 wells. He said that 129 showed concentrations of sulfolane higher than 25 ppb, 64 showed concentrations between 10 and 25 ppb, and 225 of the sampled wells showed a concentration of less than 10 ppb. He added that FHR is still waiting on the results from 12 additional wells. He related that FHR is currently providing bottled water at 320 locations and has connected city water at 29 locations. FHR installed seven bulk water tanks at residential locations and six bulk water tanks at four commercial/public locations. He said that FHR is currently monitoring five water treatment systems that it installed as part of the development of the in-home treatment option.

Mr. Coggeshall briefly described factors that affect the timing for the installation of bulk water tanks that are still in the installation process. He said that FHR would follow up with ADEC to address the expiration of ADEC's interim approval for the installation of public water system tanks.

ACTION ITEM: *FHR will follow up with Mr. Mendez to address the expiration of ADEC's approval for the installation of certain bulk water tanks.*

Pursuant to the recommendations of the TPT Chemistry subgroup, Mr. Coggeshall informed the team that FHR intends to use the isotope dilution sampling method to resample the non-detect wells that are currently being served by bottled water. He explained that some locations with wells showing non-detect were located near wells where sulfolane had been detected and therefore the location was placed on bottled water as a precautionary measure. Other residents with non-detect results that are located outside the plume were not offered this service. Mr. Coggeshall said that FHR intends to resample the wells that were non-detect but that have been placed on bottled water as a precautionary measure. FHR intends to discontinue their bottled water service if their wells are found to be non-detect following the proposed resampling.

Mr. Coggeshall presented a brief overview of the design specifications of the proposed municipal water well and an update on its current status within the construction process. He said that at this point the bulk of the well water main, the well house design, and the aquifer testing have been completed. The water line routing is nearly complete except for the connection between the wells and the well house, which FHR has scheduled to finish by the end of the month. Mr. Coggeshall added that the next steps in the construction process will include the installation of the pitless adaptors, the installation of the pumps, connection of the well to water pipes, disinfection of the pumps and wells, and finally, the well startup. Mr. Coggeshall said that FHR hopes to finish the well project by the end of this year or the beginning of the next year, but commented that they are still waiting for certain parts and final approvals which may delay the startup date.

The team took up discussion of the aquifer testing. Mr. Coggeshall said that the water quality protocol requested analysis of total coliform, inorganic chemicals, nitrate, nitrite, volatile organic compounds (VOCs), total organic compounds (TOC), and sulfolane. He mentioned that FHR would update its model of the aquifer and provide ADEC with the results of the aquifer tests once they are available.

ACTION ITEM: *FHR will provide the results from samples taken from the new North Pole municipal well to ADEC once they have received and validated them.*

The team took up consideration of the monitoring wells located near the proposed municipal production wells. Mr. Coggeshall informed the team that FHR intends to maintain these wells for monitoring purposes. Mr. Mendez expressed concern that the wells may become a conduit for potential contamination. He requested that Mr. Coggeshall send the department information on the way that they were constructed and verification that they meet their minimum requirements for sanitation.

ACTION ITEM: *In the event that FHR decides to preserve the monitoring wells located near the proposed municipal production wells, FHR will contact ADEC to verify that these wells meet minimum requirements for sanitation.*

STATUS OF THE DEVELOPMENT OF THE IN-HOME TREATMENT SYSTEM

Mr. Coggeshall and Mr. Todd Dejournett presented an overview on the status of the development of the in-home treatment system. Mr. Coggeshall reiterated FHR's opinion that the in-home treatment system is probably the best option for most residents, but added that at this time they have identified roughly 40 locations where spatial constraints and other factors may make bulk water deliveries a more preferable option. Mr. Coggeshall said that FHR will work with all residents to find the best alternative for their particular circumstances.

Mr. Coggeshall informed the team that sulfolane breakthrough has been detected in the pilot in-home treatment systems that were installed in late August as the peroxide oxidation was not successful in completing breakdown of sulfolane in the pilot systems. He said that FHR contracted Barr Engineering to review the design and performance of the systems. Mr. Coggeshall said that Barr Engineering determined that while the peroxide component is not performing as well as they anticipated the performance of the carbon component has exceeded expectations. Mr. Coggeshall said that FHR and Barr Engineering are currently evaluating the capacity of carbon for sulfolane adsorption in the hopes that a carbon based system may prove more viable than the original peroxide based model. Early reports from laboratory studies indicate the activated-carbon adsorbs sulfolane at a high rate. The team indicated these data are also positive for the remediation system design. Dr. Barnes suggested specific methodology for testing adsorption rates in the aquifer which FHR agreed to evaluate in their analysis of remediation alternatives.

Mr. Coggeshall added that FHR is also investigating the possibility of enhancing the peroxide reaction with UV light to further energize the break down reaction of sulfolane. He said once the most effective system is identified, FHR will provide key documents to ADEC that will include the testing program

description, the system design documents, the owner's manual, and the schedule for the installation of the system.

The team discussed various considerations and concerns associated with the proposed design including the critical route water parameters, the potential for microbial activity, the expected range of UV light transmittance through water, the potential for calcium or organic encrustation on the components, and various options for the disposal of used carbon from the system. Mr. Coggeshall said that, at this point, FHR intends to replace the carbon currently used in the in-home treatment systems with the optimized coconut shell carbon and then restart the pilot testing. He mentioned that FHR is developing the in-home treatment system in concert with research for the feasibility study since they both require further examination of carbon's adsorption of sulfolane. He said that FHR's goal is to begin installing the in-home treatment systems after the New Year.

The team took up consideration of the review process for the in-home treatment system. Ms. Farris suggested that ADEC and a third party company should perform an engineering review of the system. Mr. Mendez said that he described the system to representatives of NSF International, but they replied that the system seemed too complex for their current protocols. He said that they will probably conduct their review in conjunction with ETT Environmental, a company that generally verifies water treatment systems of a larger scale. Mr. Mendez said that he would provide Mr. Coggeshall the contact information for NSF and ETT but he cautioned that it may take them two or three months to develop the testing protocol and up to a year to determine the breakthrough level.

ACTION ITEM: *Mr. Mendez will send Mr. Coggeshall the contact information for ETT and NSF International.*

THE PETROSTAR SPILL

Mr. Tisserand presented an overview on a recent spill at the North Pole Petrostar refinery. He remarked that the spill occurred as a result of a failed gasket in one of the valves of an 8 inch line running from a regulated diesel fuel tank to a device used to load fuel trucks. He said that it is currently estimated that 2000 gallons were spilled, 500 of which was spilled beyond the pipe's secondary containment system.

THE SITE CHARACTERIZATION WORK PLAN

Ms. Page presented an overview of the current status of the Site Characterization Work Plan (SCWP). She said that since October 2009, FHR has installed 78 delineation wells associated with sulfolane, 30 of which have been installed since the last meeting in accordance with the work plan. She said that they have installed all of the wells that they said they would install except those of well A which is located to the far northwest of the plume. She said that they were not able to install wells in the proposed location of well A since they encountered permafrost at the surface during both of their attempts to install the well. Ms. Farris requested that Ms. Page provide her with information indicating where FHR attempted to establish monitoring wells in the areas northwest of the refinery.

ACTION ITEM: *Ms. Page will provide Ms. Farris with information indicating where FHR attempted to establish monitoring wells in the area northwest of the refinery between the refinery and the A well, but was unable to because of permafrost. This item can be delivered in the site characterization report.*

Ms. Page presented figures showing the shallow and mid-range wells with their associated depths and the depths where permafrost was encountered. She presented a slide showing the location of the new offsite wells and a slide of the contour of the shallow wells as of September of this year. She informed the group that a sample plume had been analyzed and the results were non-detect for sulfolane. In light of the monitoring well data combined with this recent surface water sample, she said that, at this point, she feels comfortable that the edges of the shallow plume have been delineated.

The team discussed the possibility of preferential channeling through the permafrost area. Ms. Farris said that she is concerned that the permafrost may be driving the plume deeper. Mr. Coggeshall remarked that FHR, through the site characterization process, is working to understand the vertical delineation of the plume above the permafrost and added that additional wells in specific areas of concern may be warranted if data gaps are identified.

Ms. Page described recent efforts to test the desorption rate of sulfolane from aquifer sediment collected from observation wells installed in areas that are known to be contaminated. The team discussed the testing methods described by Ms. Page and suggested various ways to improve the procedures of the test. Ms. Farris said that, given recent discoveries concerning the capacity of carbon to bind sulfolane and recent issues with the SOPs of the project's laboratories, she would like to be sure that the SOPs for soil sampling are reviewed by the Chemistry subgroup before making any decisions on the basis of the aforementioned desorption data. Ms. Farris added that recent findings on the absorption capacity of sulfolane have conferred a new significance on the importance of testing the soil and pore water in residential gardens. She requested that a member of the Chemistry Subgroup provide the DEC a copy of SGS' soil sampling SOP.

ACTION ITEM: *Mr. Lindstrom will obtain a copy of the SGS soil sampling SOP and provide it to the Chemistry Subgroup for review. Ms. Michell and/or another member of the Chemistry Subgroup will provide the DEC with a copy of SGS' soil sampling SOP along with the evaluation of that SOP.*

Ms. Page informed the team that the results of the ground penetrating radar (GRP) project will be included in the Site Characterization Work Plan (SCWP). She said that the GPR operators were able to access all of the locations specified in the project plan and that they are currently analyzing the data which they intend to present the Site Characterization Report.

Ms. Page gave an overview of the status of the development of the remediation system. She presented a slide showing the location of the recovery wells, and the various components of the product recovery systems. She said that FHR has installed the concrete slab for the carbon vessels and they are currently putting in the new piping for the four existing recovery wells. She said they are completing the design for the recovery system and the sediment filter system, but they are still trying to figure out how best to address the backwash from the system. She said that at the moment they are considering routing the backwash through the plant's water treatment facility.

The team took up discussion of the development of the remediation system. Ms. Farris remarked that there has been a lot of discussion in the department recently over the upgrade to Lagoon C. She suggested that Ms. Page contact Ms. Renee Evans, Mr. Shawn Stokes, and Mr. Wes Harvey of ADEC and keep them updated on the planning and installation of the remediation system, particularly the elements that pertain to wastewater management. Mr. Coggeshall said that FHR would make an effort to contact the appropriate personnel at ADEC after they have determined the technical feasibility of the system.

The team took up discussion of the monthly ground water reports. Ms. Farris said that she would send an email to FHR regarding data delivery and monthly groundwater reports to clarify the data deliverables that Mr. Verbrugge and Mr. Crapps have requested (with regard to quality assurance) so that they can be formalized in writing.

ACTION ITEM: *Ms. Farris will send an email to FHR regarding data delivery and monthly groundwater reports to clarify the data deliverables that Mr. Verbrugge and Mr. Crapps have requested with regard to quality assurance so that they can be formalized in writing.*

THE TOXICOLOGY SUGROUP

Ms. Buss presented a summary of the results of the garden sampling project. She said that, at this point, the department has received all of the validated data and Mr. Verbrugge is reviewing the validation reports. Ms. Buss informed the team that 27 types of vegetable parts were sampled. The five major plant parts (stem, leaf, root, fruit, and flower) were analyzed and a water sample was taken during each sampling event. Overall, 86 samples were analyzed, 17 of which were water samples and 69 of which were vegetable samples. There were detections in about 40 percent of the vegetable samples with the highest detection recorded at 198 ppb. Samples of beet leaf, green lettuce, and red lettuce were the only samples that showed concentrations of sulfolane above 62 ppb. Sulfolane was detected in at least one sample from each plant part. It was detected in a sample from a root vegetable, which the researchers did not expect. Ms. Buss related that there was a high degree of variability in the concentration of sulfolane among the samples. She said that few of the samples exceeded 62 ppb which is the screening value for an infant, and none of the samples exceeded the screening level set for adults. Ms. Buss said that the highest concentration of sulfolane found in the water samples was 247 ppb.

Ms. Ha said that she intends to send letters to participants of the garden sampling project that summarizes each of their results, providing explanations of the EMPC flags. She said that she hopes to send these letters out by the following Friday after they are reviewed by Mr. Verbrugge.

Ms. Ha said that the department also intends to publish a fact sheet by the end of the year to provide context for the objectives and results of the garden sampling project. Mr. Coggeshall remarked that FHR would work to publish a final report on the garden sampling before the fact sheet is made public. This would later be included as an addendum to the SCWP. Ms. Buss offered to help organize the various resources required for the report. Mr. Coggeshall welcomed her offer and said that he would contact her if he found that he needed her assistance.

The team took up discussion of the SOPs of the project's laboratories. Mr. Verbrugge said that he completed a basic review of the SGS' SOP for analyzing the vegetable and water samples and he is reviewing Pace's SOP concurrently with the validation packages. Mr. Verbrugge expressed his concern that the team may be missing some data or overstating some of its estimates of the concentration of sulfolane in various samples. He said that he is comfortable with the EMPC calculations and he is trying to recode the J flags so that he can better communicate their significance. He commented that sulfolane is a small molecule and there is a dearth of information available on it which complicates the analysis at lower concentrations. He said that while he supports the team's approach in assigning EMPC values to samples, a formalized lab study will require additional effort to better define the lower range of the sulfolane values.

The team further deliberated on the differences between the SOPs of SGS and Pace Analytical. Mr. Verbrugge made various suggestions concerning team's efforts to match sample data from SGS and Pace Analytical. He said that until the ground water data sets are adjusted for the surrogate recoveries from each analysis, the uncorrected SGS data should be considered as a grey value, which, while appropriate for emergency response, can certainly be improved. Ms. Michell said that SGS uses a different quantitation ion than Pace Analytical. She said that while she did not feel that this would be a concern for well water samples, it might become an issue if it is used to analyze surface water or vegetable samples. The issue is that the quantitation ion is similar to something in organic matter and surface water and vegetable samples are likely to have this organic interferrant. The team agreed that SGS should use the same quantitation ion as Pace Analytical and discussed how it might prompt the laboratory to make this change. The team agreed that the issue would be further considered in the Chemistry Subgroup. Ms. Buss agreed to provide Ms. Page the Chemistry Subgroup's evaluation of the SOPs for water and soil sampling submitted by Pace and SGS. Ms. Page said that she would present these recommendations to the labs to ensure that they consistently use the techniques and procedures recommended by the Chemistry Subgroup.

ACTION ITEM: *Chemistry subgroup will review the SOPs and develop a single SOP for each media that can be given to the labs.*

THE ATSDR EVALUATION

Ms. Kirk gave a brief update on the status of the ongoing ATSDR evaluation of the action level for sulfolane in drinking water for this site. She said Mr. Durant is currently incorporating feedback that he received from the interagency MRL group into a report that he intends to submit for peer review. He told her that he believes that the peer review process will probably be completed by the end of the month and a recommendation will be made by the end of the year. Ms. Kirk said she discussed the possibility of conducting a chronic toxicity study on sulfolane with Mr. Durant, who commented that he felt that this would probably be the best use of project resources. She said that Mr. Durant told her that he would further discuss the possibility of conducting a chronic toxicity study with the interagency work group.

THE SUMP/DRAINAGE REPORT

Mr. Coggeshall presented an overview of the status of the investigation of a potential release from the sump and drainage system of the laboratory at the North Pole refinery. He said that FHR intends to install a new drain and trench system to replace the lab piping system which was found to have potential failures. He said that FHR will probably not be able to replace this system until sometime in the late spring due to the expected winter temperatures. He said they are currently using a temporary above ground system.

Mr. Coggeshall described FHR's plans to install a permanent alternative to the refinery's lab drainage system. He said they are currently building a permanent utility corridor which will allow inspectors to easily access the pipes that will be routed through it. He said that the corridor will be constructed in such a way that if any of the pipes begin to leak, the leak will be contained within the corridor.

Ms. Farris said that she is concerned that the same type of gaskets that failed earlier may have been installed in other parts of the refinery. Mr. Coggeshall replied that the systems have been tested with the exception of a few sections and FHR now considers the system to be low risk. Ms. Farris replied that the earlier failure of the system may have been systematic and thus some of the gaskets may be considered to be a potential source of release even though they are working at the present time.

Mr. Coggeshall continued his discussion of the refinery's underground piping and infrastructure. He said that they completed the investigation of the sumps and the associated piping. He said that FHR plans on submitting a summary report to ADEC on their investigation targeting the end of the month. Ms. Farris requested that Mr. Coggeshall include a summary of the voluntary inspection process at the refinery in the report. Mr. Coggeshall suggested that Ms. Farris and Mr. Jackson meet with himself and Mr. Knowles to further discuss the reporting requirements for FHR's refinery inspection process.

ACTION ITEM: *Ms. Farris and Mr. Jackson, DEC, PERP, will meet with Mr. Coggeshall and Mr. Knowles to further discuss the reporting requirements of FHR's refinery inspection process.*

FUTURE MEETINGS:

The team discussed the agenda for the upcoming December 14th meeting. The team agreed that the agenda should include an update on the status of the ATSDR hazard ranking, a review of the recommendations of the Chemistry Subgroup for the SOP s for the analysis of soil, groundwater, surface water, and vegetable samples, a review of the Garden Study Report, the fact sheet, and the health consult issued by DHSS, an update on the bench and pilot testing, and possibly, the design and technical documents for the in-home treatment system, a review of the CERCLA and ATSDR investigations, an update on the results of the resampling of non-detect locations that have been placed on bottled water, an update on the adsorption study, and an update on the expansion of the ADEC's project website.

The meeting adjourned at 5:10 PM Alaska Time