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December 20, 2013

VIA OVERNIGHT DELIVERY and EMAIL

Commissioner Larry Hartig
Alaska Department of Environmental Conservation
410 Willoughby Ave., Ste. 303
P.O. Box 111800
Juneau, AK 99811-1800

Steve Bainbridge
Division of Spill Prevention and Response
Contaminated Sites Program
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501-2617

Re: Flint Hills Resources Alaska, LLC
North Pole Refinery, File No. 100.30.090

Dear Commissioner Hartig and Mr. Bainbridge:

On behalf of Flint Hills Resources Alaska, LLC, please find the enclosed Request for Adjudicatory Hearing, Memorandum in Support of Request for Adjudicatory Hearing, Request for Stay, and Memorandum in Support of Request for Stay regarding the above-referenced matter.

Please direct any inquiries concerning this proceeding to the undersigned or Jim Leik at (907) 263-6923 or jleik@perkinscoie.com.

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Perkins Coie LLP

Very truly yours,

Eric B. Fjelstad

EBF:kp

Enclosures

cc: Kristin Ryan (via email)
Dr. Tamara Cardona, Ph.D. (via email)
Lauri Adams (via email)
Mike Brose, Flint Hills Resources Alaska, LLC (via email)
Dave Smith, Koch Remediation and Environmental Services, LLC (via email)
Linda Tape, Flint Hills Resource, LP (via mail and email)
Jim Leik, Perkins Coie LLP

BEFORE THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION FOR THE STATE OF ALASKA

IN THE MATTER OF:

CONDITIONAL APPROVAL OF REVISED DRAFT FINAL HUMAN HEALTH RISK ASSESSMENT, FLINT HILLS RESOURCES ALASKA, LLC, NORTH POLE REFINERY (NOVEMBER 27, 2013)

REQUEST FOR ADJUDICATORY HEARING
18 AAC 15.200
SUBMITTED BY FLINT HILLS RESOURCES ALASKA, LLC

Pursuant to 18 AAC 75.385 and 18 AAC 15.200, Flint Hills Resources Alaska, LLC ("Flint Hills") requests an adjudicatory hearing with respect to the Alaska Department of Environmental Conservation's ("DEC") decision in DEC's letter to Flint Hills dated November 27, 2013. A copy of the letter is attached. This request is supported by a memorandum and exhibits submitted concurrently with this request, pursuant to 18 AAC 15.200(a)(3).

The Requestor's name, address and telephone number are as follows:

Flint Hills Resources Alaska, LLC
1100 H & H Lane
North Pole, Alaska 99705
Phone: (907) 488-2741

PERKINS COIE LLP
1029 West Third Avenue, Suite 300
Anchorage, AK 99501-1981
907.279.8561 / Facsimile 907.276.3108

In this matter, Requestor is represented by the undersigned attorneys, who are authorized to submit this request on its behalf.

DATED: December 20, 2013.

PERKINS COIE LLP

By: _____

Eric B. Fjelstad, Alaska Bar No. 9505020
EFjelstad@perkinscoie.com
James N. Leik, Alaska Bar No. 8111109
JLeik@perkinscoie.com

Attorneys for Requestor

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THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

Division of Spill Prevention and Response
Contaminated Sites Program

610 University Ave.
Fairbanks, Alaska 99709-3643
Main: 907.451.2192
Fax: 907.451.5105

File: 100.38.090

November 27, 2013

David Smith
Koch Remediation & Environmental Services
4111 E 37th St N
Wichita, KS 67220-3203

Loren Garner
Flint Hills North Pole Refinery
1150 H&H Lane
North Pole, AK 99705

Re: Conditional Approval of the Revised Draft Final Human Health Risk Assessment, Flint Hills Resources Alaska, LLC, North Pole Refinery; North Pole, Alaska; May 2012

Dear Mr. Smith and Mr. Garner:

The Alaska Department of Environmental Conservation (DEC) has completed its review of the Revised Draft Final Human Health Risk Assessment (HHRA) submitted by Flint Hills Resources (FHR), dated May 2012. Subsequent to the submission of the document, DEC and FHR have also had many discussions related to cleanup and risk management at the site. As noted below, some of the information and analyses made in the Revised Draft Final HHRA are no longer accurate or representative of the most current conditions at the site. In addition, FHR included in the HHRA two different risk assessments for sulfolane, based on differing assumptions, but only one of these (in Chapter 3) meets DEC's criteria for approval. In accordance with 18 AAC 75.345(b)(2), DEC finds that the groundwater alternative cleanup level for sulfolane derived in Chapter 5 of 14 µg/L based on the risk characterization in Chapter 3 is protective of human health, safety and welfare, and of the environment, and approves the HHRA subject to the following three conditions:

1) Chapter 4 of the Revised Draft Final HHRA, as well as its supporting appendices (i.e., portions of Appendix D, portions of Appendix E, Appendix F, Appendix G, derivation of the alternative reference dose for sulfolane from Appendix H, and portions of Appendix J) is not approved in the final HHRA. The approach taken in Chapter 4 of the Revised Draft Final HHRA, as well as its appendices as listed above, is not an approach authorized by DEC regulations or risk assessment guidance documents and is, therefore, not approved and should not be included in the HHRA. Chapter 5 of the HHRA is approved only as regards the alternative cleanup levels (ACLs) derived using the reference dose from the United States Environmental Protection Agency's Provisional Peer-Revised Toxicity Value (PPRTV) for Sulfolane (dated January 30, 2012) and the DEC approved exposure assumptions. DEC will make site determinations based on the assessment from Chapter 3 of the HHRA, which is approved. Chapter 3 includes exposure and toxicity assessments that follow the DEC-approved approach.

2) FHR shall incorporate DEC's required changes to the HHRA as outlined in the attached comment matrix. All comments need to be addressed to DEC's satisfaction and as described in the comment matrix.

3) The HHRA shall be updated to include the most recent site data. Significant additional site characterization work has been conducted since the Revised Draft Final HHRA was submitted. In addition, DEC and FHR

have had many discussions related to cleanup and risk management at the site in the past year, and these efforts have shown that some of the assumptions made in the Revised Draft Final HHRA are no longer accurate or representative of current conditions. To document these changes FHR must include a reference to the revised conceptual site model and must also include all substantial updates in the site data, including the documented increases in sulfolane concentrations in groundwater. The new data must be included in the risk assessment to ensure the increased risk to human health posed by exposure to sulfolane through various pathways is mitigated in the final cleanup decisions at the site. These changes are not expected to change the site-specific cleanup level or the overall direction of the work. Specifically, the following items must be added to the HHRA:

- Discuss current groundwater sulfolane plume dynamics at the site (including a consideration of the 2013 data) in the HHRA.
- Update reported groundwater concentrations of sulfolane both on and off the refinery property using currently available data, and re-calculate and evaluate the hazards of revised exposure point concentrations (EPCs) based on the updated groundwater concentrations.
- Re-evaluate groundwater concentrations for all compounds of potential concern (COPCs) on the refinery property based on the most current data and to determine if updated EPCs are needed, and if so, include the revised EPCs in the HHRA.
- Revise the evaluation of surface water, including the updates to the ecological and human health conceptual site models and hazard evaluations for off-site receptors, to incorporate the 2013 surface water results.
- Update and incorporate the most recent data regarding on-site soil concentrations of sulfolane and other COPCs. For sulfolane, revised EPCs and hazards must be calculated based on the updated soils data.
- Add a discussion of perfluorinated compounds, specifically PFOS and PFOA, to the HHRA as compounds of potential concern at the site.
- Add an evaluation of the vapor intrusion of volatile compounds from wells with LNAPL in the HHRA.
- Revise the HHRA to incorporate the data obtained during the 2013 field season, which was required to fill particular data gaps. Those remaining data gaps addressed during 2013 include:
    - Soil sampling from residential gardens off-site.
    - Soil gas sampling from on-site locations.
    - Analysis of potential intermediates in groundwater.

The HHRA shall be resubmitted to DEC by March 28, 2014 with the required updates and additions. If you have any further questions regarding this approval or the attached comment matrix, please contact me at 907-451-2192 or via e-mail at tamara.cardona@alaska.gov.

Sincerely,

T Cardona

Tamara Cardona, PhD
Contaminated Sites Project Manager

Enclosure: Comment Matrix: Draft Final Human Health Risk Assessment; Flint Hills North Pole Refinery; North Pole, Alaska; May 2012

CC. Rick Albright, EPA Region 10
Kristin Ryan, DEC Division of Spill Prevention and Response Division Director
Steve Bainbridge, DEC Contaminated Sites Program Manager

Comment Matrix: Draft Final Human Health Risk Assessment; Flint Hills North Pole Refinery; North Pole, Alaska; May 2012

<table>
<tr><th>No.</th><th>Section</th><th>Comment / Recommendation</th><th>Status</th></tr>
<tr><td>1</td><td>General</td><td>Based on the results presented in the Perfluorinated Compounds Investigation Report (February 2013), perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) have been found in groundwater onsite at concentrations above Alaska Department of Environmental Conservation (DEC) risk-based levels of 3.1 ug/L for PFOA and 1.3 ug/L PFOS. Based on these results, PFOA and PFOS must be included as compounds of potential concern (COPCs) and evaluated in the human health risk assessment (HHRA).</td><td>Medium, Technical</td></tr>
<tr><td>2</td><td>General</td><td>Previous residential off-site soil samples consisted of 4 samples from two separate properties, each had a greenhouse and outdoor soil sample from the gardens. The samples were taken in October 2011 and sulfolane-free water was used to water all the locations during the 2011 growing season. In addition, at the time information on potential uptake of sulfolane in soil to plants was trying to be obtained so the top three inches was removed and the soil was taken from the 3 to 9 in. below ground surface interval (root area). For direct human exposure, the top two inches of soil would be of interest, as well as an area where the well water was used for watering, i.e., lawn or flower bed. In 2013, ERM for DEC collected samples at various residences known to water their gardens with impacted water. Samples resulted in non-detectable concentrations but were analyzed outside of holding time due to matrix interference with the sample; thus, these samples have been rejected. Additional surface soil samples from off-site areas watered by sulfolane-impacted water should be collected to confirm the summer 2013 sulfolane results.</td><td>Medium, Technical</td></tr>
<tr><td>3</td><td>General</td><td>Additional information is known regarding the groundwater sulfolane plume dynamics since the time of the draft final HHRA. The stability of the plume boundaries and concentrations must be discussed in the HHRA. Increasing sulfolane concentrations or additional areas being impacted could result in the assumptions used in the HHRA to be no longer valid and may result in the HHRA needing to be updated or re-evaluated.</td><td>High, Technical</td></tr>
<tr><td>4</td><td>General</td><td>The maximum off-site groundwater sulfolane concentration used in the HHRA is 443 ug/L from PW-0228 sampled in November 28, 2009. Since the HHRA, higher concentrations have been found off-site including the maximum detected concentration of 558 ug/L in PW-1230 (this value is based on the First Quarter 2013 monitoring report. The maximum detected concentration has increased in subsequent monitoring reports). Using the higher concentration of 558 ug/L in groundwater, the hazard quotients (HQs) for off-site residents change slightly, as shown in the table below:
<table>
<tr><th rowspan="2">Route of Exposure</th><th colspan="3">HQ using sulfolane @ 443 ug/L</th><th colspan="3">HQ using sulfolane @ 558 ug/L</th></tr>
<tr><th>Adult</th><th>Child</th><th>Infant</th><th>Adult</th><th>Child</th><th>Infant</th></tr>
<tr><td>Ingestion of Groundwater</td><td>12</td><td>28</td><td>7</td><td>15</td><td>36</td><td>8</td></tr>
<tr><td>Ingestion of Home Grown Produce</td><td>0.8</td><td>2.3</td><td>0.3</td><td>1.0</td><td>2.9</td><td>0.4</td></tr>
</table></td><td>Medium, Technical</td></tr>
</table>

No.	Section	Comment / Recommendation	Status
		Total Hazard Index from Exposure to Groundwater 12.8 30.3 7.3 16 38.9 8.4 Hazards for all off-site scenarios must be recalculated using the most recent groundwater concentrations.	
5	1 and throughout	The third paragraph indicates the results of the pore-water evaluation do not change the conclusions of the ecological conceptual site model (CSM). Previous versions of the HHRA stated that the ecological CSM will be revisited, if necessary, after evaluating the new data. In June 2013, ERM, for DEC, collected surface water samples off-site, including three sampling locations along Badger Slough, and found no detections of sulfolane in surface water (data are presented in the November 2013 *Final Report, North Pole Gravel Pond and Slough Sampling Pits*). The ecological CSM must be updated to include this information. Exposure of ecological receptors to sulfolane in surface water is considered an incomplete pathway.	Medium, Technical
6	1, 4, 5 and throughout	DEC's July 19, 2012 letter to Loren Garner, Flint Hills Resources-Alaska (FHR-Alaska), states that, "…the Department has concluded that the EPA's PPRTV of 0.001 milligrams per kilogram body weight per day (mg/kg-d) for chronic oral exposure should be used to finalize the HHRA. Furthermore, the Department has determined that the ADEC accepted exposure parameters for the child chronically exposed to sulfolane in groundwater, as presented in the HHRA, should be used to determine the alternative cleanup level (ACL) at the site. This results in an ACL of 14 microgram per liter (ug/L) for sulfolane." This letter should be referenced and all references to a range of potential ACLs at the site must be removed. The ARCADIS Comparative Scenario, as presented in Chapter 4 of the HHRA, is not acceptable or approved by DEC.	High, Policy
7	2.6, 3.1.2.4 and General	Eliminate the discussion of work "to be" performed in 2012. A risk assessment is a snap shot in time of potential hazards and risks based on current contaminant concentrations. At the time of the *Revised Draft Final Human Health Risk Assessment* (May 2012) there were a number of data gaps identified. Since then a significant amount of field work has been conducted to address those data gaps. The risk assessment must be updated to incorporate this additional data from 2012 and 2013. This includes additional groundwater, soil and surface water data. COPC concentrations should be updated and additional compounds of interest (COIs; i.e., PFOA, PFOS) must be included as COIs and evaluated in the HHRA.	High, Technical
8	2.4	Other uses of groundwater, besides just ingestion, must be discussed. For those residents using bulk water tanks (depending on set-up) or bottled water, exposure may not have been eliminated, but controlled and reduced. Exposure through other routes of exposure may not pose a health risk, as described by Alaska Department of Health and Social Services (DHSS; January 2012) but could be complete exposure pathways. Specifically, DHSS (January 2012) concluded that using water containing sulfolane from North Pole private wells for most household activities will not harm people's health. These household activities include bathing, washing clothes and dishes, rinsing foods, and making foods where the water is discarded, e.g., boiling eggs.	Medium, Technical

No.	Section	Comment / Recommendation	Status
		DHSS indicated that based on currently available information, using well water to shower does not pose a health risk for North Pole residents.	
9	2.6.3 3.1, 3.1.1.2 and Figure 3-1 and throughout	It is assumed in the report that the water collected from piezometers in 2012 potentially resulted in higher concentrations than would be found in true pore-water samples. In June 2013, surface water samples from off-site gravel pits and ponds were collected and were reported in the November 2013 the *Final Report, North Pole Gravel Pond and Slough Sampling Pits*. All surface water sample results were non-detect for sulfolane. This data must be incorporated into the risk assessment. The quantitative evaluation of ingestion of sulfolane while swimming using the 2012 piezometer data can remain in the report but discussion must be added to indicate that the assumptions are conservative and health protective estimates of surface water concentrations based on the 2013 results. The off-site conceptual site model (CSM) and associated text must also be updated to incorporate this data.	Medium, Technical
10	2.6.1	There has been significant additional soil sampling on-site since the HHRA. The concentrations used in the HHRA are no longer representative of current knowledge of soil concentrations. For instance, the maximum sulfolane concentration found in on-site soil at the time of the HHRA was 18.5 mg/kg. Per the *Site Characterization Report, 2012 Addendum (2013)*, the highest on-site sulfolane concentration in soil is 724 mg/kg, and additional work in 2013 indicates that even higher concentrations are found on site. These changes in concentration will impact the hazard quotients for onsite receptors. As an example, the change in concentration to 724 mg/kg sulfolane in soil results in a change in the HQ from trench worker exposure to sulfolane in soil from 0.003 to 0.1, both still below DEC's criteria. Soil exposure point concentration (EPCs) must be re-calculated for all COPCs using the most recent concentrations..	High, Technical
11	2.6.1, 3.1.2.1, and Table 3-2a	Please reference the Level IV validation and review by Environmental Standards, Inc. that supports rejecting the O-2 sample from 2010. As discussed previously, rejecting this sample is appropriate with the proper documentation and explanation. That material must be provided or referenced here. The result from the rejected sample O-2 still shows up in Table 3-2a, please update. Please verify that this value is not used in the EPC calculations.	Medium, Technical
12	2.6.3 and 3.1.2.4	The degradation of sulfolane in surface water has not been shown. Results from the 2013 surface water sampling event, showing no detections of sulfolane in surface water off-site, must be incorporated into this discussion. Eliminate references to degradation of sulfolane in surface water.	Medium, Technical
13	3.1.1.3	The statement that assessment of infants is included in the HHRA "…because the Agency for Toxic Substances and Disease Registry and the State of Alaska Department of Health and Social Services have addressed infants as a separate receptor group in their Health Consultation" does not address the main reason for evaluating infants as a separate receptor group for exposure to sulfolane. Infants are a receptor group that potentially was exposed to sulfolane in groundwater. Please eliminate the second sentence on page 15.	Medium, Policy

No.	Section	Comment / Recommendation	Status
14	3.1.1.3	The statement, "There is evidence that sulfolane does not present a significant risk for developmental effects and it is not mutagenic," is not fully accurate and must be reworded. There is only one developmental study (Zhu et al. 1987). In addition, the developmental study did show skeletal abnormalities in mice pups, albeit at high concentrations.	Medium, Technical
15	3.1.1.1	Please indicate that sulfolane, in addition to petroleum hydrocarbons, had been detected in historical groundwater samples collected from onsite monitoring wells (e.g., sulfolane detections from 2001 on-site investigation). Also, for sulfolane, it appears that there was sulfolane in wastewater so the wastewater lagoons, especially Lagoon B, are also primary sources. A site conceptual site model further evaluating sources and fate and transport of contaminants must be referenced.	Medium, Technical
16	3.2.3, 3.5.3 and Table 3-13	USEPA also developed a PPRTV subchronic inhalation reference concentration (RfC) of 2×10^{-2} mg/m^3. USEPA indicated there is low confidence in this value and no chronic inhalation reference concentration could be developed because of the high level of uncertainty. This should be discussed in Section 3.2.3 and qualitative discussion of the inhalation pathway should be included in Section 3.5.3.In addition, hazards from inhalation of particulates must be evaluated for the trench worker using the subchronic RfC for sulfolane. Using the current maximum onsite soil concentration for sulfolane and the subchronic RfC, these hazards would be minimal and should not impact overall site hazards or contribute to the risk-based cleanup level calculations.	Medium, Technical
17	2.6.1 and 3.1.2.1	The reason for rejecting some of the sulfolane data, specifically the soil data from the 2011 sampling event, must be discussed. Non-detected sulfolane samples outside of holding time are correctly identified as rejected in Appendix A, but must also be discussed in more detail in Section 2.6.1 or validation reports should be referenced.	Medium, Technical
18	2.6.2 and 3.5.2	Isopropanol and propylene glycol were analyzed in groundwater in 2012 sampling events. According Table B-6 of the 1st Quarter 2013 Groundwater Monitoring Report (May 2013), neither isopropanol nor propylene glycol were detected in groundwater on-site. As stated in Section 3.5.2, not including these two compounds as COPCs in the HHRA does not impact the overall risk at the site. The text should be revised to incorporate the new data.	Low, Technical
19	3.1.2.1	If FHR chooses to continue to include the exposure unit (EU) approach, additional information regarding how the contours and EUs are defined must be included, as agreed to in the January 20 comment resolution meeting. Further justification for averaging and use of the EU approach must be included. Also, please clarify that the three contours represent > 100 ug/L, <u>25-99 ug/L, and non-detect to 24.9 ug/L.</u> The description in Section 3.1.2.1 and Figure 3-3 does not match the description in Section 3.1.3.2. In addition, EPCs for each EU should be recalculated using the most current groundwater data.	High, Technical

No.	Section	Comment / Recommendation	Status
20	3.1.3.1.6	The text indicating that 14 of the plant types tested were confirmed to contain sulfolane, *primarily in the leaves and stems* (emphasis added), is misleading. Of the 14 plant types that had detectable levels of sulfolane, 5 were in leaves, 4 in fruits, 3 in roots and 2 in flowers. Please add a sentence that sulfolane was found in leaves, fruits, roots and flowers of the plants tested.	Low, Technical
21	3.5.4	During the HHRA comment resolution meetings, it was agreed that calculations will be presented for the alternative bioconcentration factor (BCF), please provide these calculations. Site-specific BCFs ranged significantly from no detected uptake to 127% (irrigation water to plant tissue). There is not sufficient data to average BCFs or calculate 95th UCLs from the data. For instance, averaging species-specific BCFs results in averaging at most four samples and, as in the case of green leaf lettuce, there is high variability within those four samples (i.e., BCFs of 18% to 100%). It was also agreed by the Toxicology Subgroup that the 2010 Garden Sampling Project did not provide sufficient data to derive BCFs. Use of a BCF of less than 100% is not approved by DEC.	High, Technical
22	3.1.3.2	The text states, "…unless there is site-specific evidence to the contrary, an individual receptor is assumed to be equally exposed to media within all portions of the EU during the time of the risk assessment." For this site, individual private drinking wells have been sampled. That is sufficient evidence to indicate that individual receptors are not being equally exposed to sulfolane in groundwater. EPCs within each exposure unit (EU) do not represent true exposure but provide information on management units or ranges of risk levels. If the EU approach is maintained, this difference must be clarified in the HHRA.	High, Technical
23	3.1.1.2, 3.1.3.2.6	Groundwater samples evaluated in this risk assessment only include wells that do not contain LNAPL. This is primarily a concern for indoor air evaluations. Impacts of contaminants in LNAPL on vapor intrusion to indoor air have not been evaluated in this risk assessment. Please evaluate the potential impact of LNAPL on indoor air quality at the site. Solely making this evaluation using groundwater data may not be appropriate and soil gas samples (collected in 2013) may be needed. In addition, a more complete evaluation of areas on-site where vapor intrusion to indoor air may be a potential issue must be provided. Please refer to DEC's *Vapor Intrusion Guidance for Contaminated Sites (October 2012)*, for additional guidance on evaluating this pathway.	High, Technical
24	3.1.3.2	Onsite wells with multiple sampling rounds were averaged together. Discussion of variability within rounds of sampling and potential impact of seasonal variability must be added to this section. Averaging multiple rounds of sampling, as to not weight the overall EU average by number of sampling events, is only valid if there is small variability within sampling events.	High, Technical
25	3.1.2.2 and Table 3-2a	Please note since May 2012, the USEPA's Regional Screening Levels (RSL) include sulfolane. These screening levels must be incorporated into the screening tables or footnoted. Since sulfolane was maintained as a COPC, adding the RSL values will not impact the hazard or risk-based cleanup levels calculated in the HHRA.	Low, Technical

No.	Section	Comment / Recommendation	Status
26	3.1.3.4 and 3.4	Current research shows that blood lead levels of 10 micrograms per deciliter of blood (µg/dL) in young children can result in lowered intelligence, reading and learning disabilities, impaired hearing, reduced attention span, hyperactivity, and antisocial behavior. However, there currently is no demonstrated safe concentration of lead in blood, and adverse health effects can occur at lower concentrations. On May 16, 2012 the CDC changed their definition of lead poisoning in children from 10 micrograms per deciliter (ug/dL) of blood to 5 ug/dL. Please revise this section to reflect a value of 5 ug/dL of blood as the blood lead level of concern. This should be referenced in this section and 5 ug/dL should be used as the threshold in the characterization of exposure to lead.	Medium, Technical
27	3.5.5	See comment regarding the statement that, "sulfolane presents no special concerns to children." Please note, a developmental study in mice was conducted and identified teratogenic effects but only a screening-level one-generation reproduction study in rats via the oral route is available (USEPA 2012).	Medium, Technical
28	4	Chapter 4, including supporting appendices (i.e., portions of Appendix D, portions of Appendix E, Appendix F, Appendix G, derivation of the alternative reference dose for sulfolane from Appendix H, and portions of Appendix J) shall not be included in the HHRA. The approach taken in Chapter 4, as well as supporting appendices, is not an approach supported by DEC regulations or guidance documents and is, therefore, not approved. No additional comments will be made on these sections of the HHRA.	High, Technical and Policy
29	5	Chapter 5 of the HHRA must only include alternative cleanup levels (ACLs) derived using the reference dose from the United States Environmental Protection Agency's Provisional Peer-Revised Toxicity Value (PPRTV) for Sulfolane (dated January 30, 2012) and the DEC approved exposure assumptions. The appropriate ACL for sulfolane in groundwater is 14 ug/L, derived from the PPRTV RfD and the ADEC-approved exposure assumptions.	High, Technical and Policy
30	Table 3-1 and Table 3-13	Note that an inhalation RfC (subchronic) is available from USEPA's PPRTV. This value must be added to the tables.	Low, Technical
31	Table 3-2a	Footnote i is not being correctly applied in this table. A number of detection limits have been added to this table from previous versions of the HHRA. In many instances the detection limits are sufficient for determining that the chemical is not a COPC. The table should be updated. A few instances, especially in groundwater, the detection limit is greater than the screening level but not identified as a COPC. This should be discussed in more detail as well as the impacts of excluding these compounds in the uncertainty analysis. Please clarify what <1 - <400 (as is shown for chlorobenzene, as an example) means. Please provide additional information regarding elimination of sulfate as a COPC.	Medium, Policy
32	Table 3-2a	Please indicate if diethyl phthalate is identified is a COPC is groundwater or not. Based on screening data provided the reviewer has assumed it is not a COPC in groundwater but this should be clarified.	Low, Technical

No.	Section	Comment / Recommendation	Status
33	Table 3-2a	A number of compounds have been identified as COPCs but needing further discussion with DEC (as indicated by footnote). Please provide status of these discussions in the response to the comments.	Medium, Technical
34	Table 3-2a and 3-2b	This table has a number of additional detection limits than have been provided in previous versions of the HHRA or RAWP. Please indicate how this table was updated in the response to comments and indicate the reason for these differences. Also, it appears Table 3-2b has not been updated to incorporate the additional detection limit information. A number of compounds still have "—" in the table when data is available. The table should be updated.	Low, Technical
35	Tables 3-2a, 3-2b and throughout	There are a number of compounds that have been identified as COPCs in Table 3-2b but where no EPC has been calculated and the compound is not included in the tables (i.e., 1,2,4-TMB, or chlorobenzene in Tables 3-2a and b). Based on comparison of tables to April 9, 2012 draft of the HHRA, it appears this is due to some COPCs identified as COPC based on elevated detection limits but no detections in the media of interest. Please clarify if this is the case or provide discussion of the reason. Add compounds to table, if appropriate. If compounds are identified as COPCs based on elevated detection limits but not quantitatively assessed in the HHRA, discuss in the Uncertainty Analysis.	Medium, Technical
36	Table 3-8a and b	Footnote b references LNAPL offsite. It is assumed this footnote is incorrect. No LNAPL has been identified offsite.	Low, Technical
37	Table 3-11	The Henry's Law Constant for sulfolane is reported in EPI v4.1 as 4.85E-6 atm-m^3/mol (H' = 1.98E-4) from Henrywin v 3.2 using the Bond Method. This value has also been used by USEPA in their Superfund Chemical Data Matrix (SCDM) entry for sulfolane. DEC prefers use of this value and method for derivation of the Henry's Law Constant for sulfolane.	Low, Technical
38	Table 3-3 and throughout	Please indicate what version of ProUCL was used. ProUCL v4.1 was available since July 2011 and should have been used to calculate the 95% upper confidence limit on the mean. Spot-checks of calculations indicate that v.4.1 was most likely used. Please clarify.	Medium, Technical
39	Table 3-13	ABS_{GI} values must be provided.	Medium, Technical
40	Appendix H	Derivation of an alternative reference dose for sulfolane is not supported by DEC. The memo by Dr. Brian Magee must be removed from this appendix. No further comments on the memo from this appendix will be made. Reference to this memo must be eliminated from the sulfolane toxicology profile included in this appendix.	High, Technical and Policy
41	Appendix K	Thank you for Dr. Farland's assessment. DEC has no comments on the content of the review since this represents Dr. Farland's evaluation and opinion of the data. Dr. Farland's assessment strongly supports the uncertainty in the sulfolane toxicity data and derivation of a single reference dose. His assessment also supports the need to be health protective when making regulatory decisions. The National Toxicity Program is undergoing additional toxicity studies on sulfolane to address some of these uncertainties. In the	High, Technical

No.	Section	Comment / Recommendation	Status
		meantime, the USEPA's PPRTV provides a health-protective reference dose value of which to base hazard estimates and which can be used to determine alternative cleanup levels at the site.	
42	July 18, 2012 Memo	Alternative ACL Calculations for Sulfolane in Groundwater (July 18, 2012) Consistent with DEC and USEPA RSLs, child assessment must use chronic toxicity values. This is consistent with the determination in DEC's July 19, 2012 letter to Loren Garner; therefore, no additional comments on this memorandum are necessary.	High, Policy

BEFORE THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION FOR THE STATE OF ALASKA

IN THE MATTER OF:

CONDITIONAL APPROVAL OF REVISED DRAFT FINAL HUMAN HEALTH RISK ASSESSMENT, FLINT HILLS RESOURCES ALASKA, LLC, NORTH POLE REFINERY (NOVEMBER 27, 2013)

MEMORANDUM IN SUPPORT OF REQUEST FOR ADJUDICATORY HEARING 18 AAC 15.200 SUBMITTED BY FLINT HILLS RESOURCES ALASKA, LLC

I. INTRODUCTION

Pursuant to 18 AAC 75.385 and 18 AAC 15.200, Flint Hills Resources Alaska, LLC ("Flint Hills") requests an adjudicatory hearing with respect to the Alaska Department of Environmental Conservation's ("DEC") decision regarding the groundwater cleanup level that is asserted in its letter to Flint Hills dated November 27, 2013.[1] DEC's decision is based on an incorrect interpretation of the regulations and inadequate scientific justification.

Of the three potential responsible parties at the North Pole Refinery site--the State of Alaska, Williams Alaska Petroleum and Flint Hills--only Flint Hills has been participating in the ongoing process to address sulfolane contamination of

[1] Ex. E.

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groundwater at the North Pole Refinery site, pursuant to DEC cleanup regulations. One of the key steps in the DEC process is to determine a protective groundwater cleanup level for sulfolane. Because DEC regulations do not set a groundwater cleanup level for sulfolane, a determination of a cleanup level must be made via a risk assessment. In 2012, Flint Hills submitted extensive and detailed scientific analyses in a site specific human health risk assessment, demonstrating scientifically-supported toxicity values for sulfolane, and a proposed groundwater cleanup level for sulfolane consistent with those toxicity values and other relevant data. The sulfolane cleanup level proposed by Flint Hills--362 micrograms per liter (µg/L)-- is fully protective of human health and the environment. DEC summarily rejected the scientific information submitted by Flint Hills in its November 27 letter. Without giving any explanation for its decision, and without explaining any reason for its rejection of alternative toxicity values and alternative cleanup levels, DEC determined that the groundwater cleanup level for sulfolane at the North Pole Refinery site is 14 µg/L, and directed Flint Hills to excise all contrary scientific information from future reports and plans.

As set forth in detail below, DEC's decision is not mandated by the regulations, and is contrary to sound science. Adoption of the sulfolane cleanup level selected by DEC would impose enormous cleanup costs, without any corresponding benefit to human health or the environment. Flint Hills therefore respectfully requests

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an adjudicatory hearing to fully address and determine the proper groundwater cleanup level for sulfolane at the North Pole Refinery site.

II. BACKGROUND FACTS

The North Pole Refinery ("NPR") is located on 240 acres just outside the city limits of North Pole, Alaska and 13 miles southeast of Fairbanks, Alaska, within the Fairbanks North Star Borough. Earth Resources Corporation of Alaska built the refinery in 1976-77 on land leased from the State of Alaska, and the refinery began operations in August 1977. MAPCO, Inc. acquired Earth Resources Corp. in 1980, and continued operations under a newly formed company, MAPCO Alaska Petroleum, Inc. In 1998, Williams Alaska Petroleum, Inc. acquired MAPCO through a stock purchase, thereby succeeding to MAPCO's operations as Williams Alaska Petroleum, Inc. ("Williams").

Williams acquired the land beneath the refinery from the State of Alaska on March 24, 2004. Williams conveyed the refinery assets and land to Flint Hills Resources Alaska, LLC ("Flint Hills") effective on March 31, 2004. Flint Hills has owned and operated the refinery since then. Williams and its predecessors operated the NPR for almost 25 years before Flint Hills acquired the refinery assets from Williams in 2004.

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The NPR is an active petroleum refinery that receives crude oil feedstock from the Trans-Alaska Pipeline System ("TAPS").[2] Three crude oil processing units and an extraction unit are located in the southern portion of the refinery, making up the process area.[3] Tank farms are located in the central portion of the NPR.[4] Wastewater treatment lagoons, storage areas, and two flooded gravel pits (the North and South Gravel pits) are located in the western portion of the site.[5] Rail lines and access roads are located in the northernmost portion of the site.[6]

Sulfolane (or tetrahydrothiophene 1, 1-dioxide) has been used at the refinery since approximately September 1985, when construction of the extraction unit was completed. Sulfolane is used to remove aromatic hydrocarbons, including BTEX compounds, from petroleum feedstock.[7] Further processing captures those aromatics from the sulfolane and returns the sulfolane portion back into the process. The aromatics are then blended with other hydrocarbon mixtures to produce gasoline.[8]

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[2] 2013 On-Site Characterization Work Plan, Feb. 1, 2013. [available at http://dec.alaska.gov/spar/csp/sites/north-pole-refinery/docs/2013scwp-on-site.pdf]

[3] *Id.*

[4] *Id.*

[5] *Id.*

[6] *Id.*

[7] *Id.*

[8] *Id.*

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Historic releases of sulfolane occurred at NPR not only in the extraction unit but also in wastewater releases, particularly at Lagoon B, in sumps, and in areas where extraction unit equipment was cleaned. The vast majority of these releases occurred during the operation of the plant by Williams (and its predecessor, MAPCO).

In 2001, Williams reported to DEC that it had discovered the presence of sulfolane in groundwater within the NPR property boundary. Williams conducted limited sampling for sulfolane in 2001 and 2002. Upon acquiring the refinery in 2004, Flint Hills promptly resumed groundwater sampling for sulfolane and evaluating potential sulfolane sources. Those efforts led to Flint Hills' discovery of sulfolane at the northern refinery boundary in October 2008, which discovery was communicated to DEC.[9] Thereafter, Flint Hills began diligently surveying potential offsite receptors for contaminated groundwater and installing groundwater monitoring wells beyond the property boundary.[10] In October 2009, those initial offsite wells demonstrated that sulfolane contamination had migrated well beyond the property boundary.[11]

Upon the discovery of the offsite migration of sulfolane, Flint Hills took decisive action and initiated a program to provide bottled water to all affected residents. Flint Hills also began developing sulfolane treatment technologies for

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[9] *Id.*

[10] *Id.*

[11] *Id.*

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household use. Extensive bench and pilot testing programs demonstrated the successful design and implementation of a point-of-entry ("POE") treatment system that was certified by the Water Quality Association for public use.[12] The POE treatment system is one of the alternative water solutions Flint Hills has included in an Alternative Water Solutions Program, which program is documented in the Alternative Water Solutions Program – Management Plan that Flint Hills most recently revised and submitted to DEC in December 2013.

In March 2010, DEC directed Flint Hills to submit a Site Characterization Report and a Feasibility Study. Since then, Flint Hills has submitted numerous work plans, studies and reports to DEC.[13] In July 2013, DEC issued a schedule for future submittals to Flint Hills (without requiring the participation by any other responsible party).[14] This schedule calls for Flint Hills to submit the following reports over the next fifteen months, culminating in Final Cleanup Plans in March 2015:

Draft Site Characterization Reports	December 20, 2013
Final Site Characterization Reports	February 28, 2014

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[12] *Id.*

[13] These include: Revised Site Characterization Report (March 2012) and 2012 Addendum (January 2013); 2013 On-Site Site Characterization Work Plan (February 2013); 2013 Off-Site Site Characterization Work Plan (March 2013); Interim Remedial Action Plan Addendum (January 2013) and Revised Interim Remedial Action Plan Addendum (July 2013); Draft Final Onsite Feasibility Study (May 2012), and Quarterly Groundwater Monitoring Reports.

[14] Ex. D.

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Draft On-Site Feasibility Study	June 20, 2014
Draft Off-Site Feasibility Study	July 25, 2014
Final On-Site Feasibility Study	October 24, 2014
Final [Off-Site] Feasibility Study	November 14, 2014
Draft On-Site Cleanup Plan	December 19, 2014
Draft Off-Site Cleanup Plan	January 23, 2015
Final Cleanup Plans	March 28, 2015

None of the above reports can be undertaken without a sulfolane cleanup number in place. For groundwater, applicable cleanup levels are governed by 18 AAC 75.345(b), which states two relevant alternatives to determine cleanup levels. One alternative is for a responsible party to use cleanup levels stated in Table C to this regulation. 18 AAC 75.345(b)(1). That option is not available here because Table C does not state a value for sulfolane. The second option is to establish groundwater cleanup levels based on an approved site-specific risk assessment conducted under the *Risk Assessment Procedures Manual.*[15] 18 AAC 75.345(b)(2).

In order to determine a risk-based groundwater cleanup level, Flint Hills retained experts at ARCADIS U.S., Inc. ("ARCADIS") to prepare a site-specific risk assessment. In 2011 ARCADIS submitted to DEC a Work Plan to Conduct a Human

[15] A third option is available for ADEC in situations not applicable here. See 18 AAC 75.345(c).

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Health Risk Assessment. After revisions, DEC approved the Work Plan. Flint Hills submitted its Revised Draft Final Human Health Risk Assessment to DEC, on or about May 23, 2012 (the "HHRA"). With appendices, the full report is 746 pages.[16]

The key sections of the Flint Hills' HHRA are:

- Section Three, which addressed risks using toxicity criteria for sulfolane that were described in an EPA report issued in January 2012, titled the "Provisional Peer-Reviewed Toxicity Values for Sulfolane," and exposure assumptions provided by DEC.

- Section Four, which addressed risks using toxicity criteria developed by ARCADIS based on its extensive review and analysis of scientific literature and data on sulfolane, and two sets of exposure assumptions: exposure assumptions provided by DEC, and exposure assumptions selected by ARCADIS based on the relevant data.

- Section 5, which presented alternative cleanup levels for sulfolane based on the foregoing analysis. These cleanup levels ranged from 14 µg/L to 362 µg/L.

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[16] Ex. A.

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Less than 60 days after Flint Hills submitted its the HHRA to DEC, DEC sent Flint Hills a one-page letter dated July 19, 2012.[17] Even though DEC acknowledged in the letter that it was still in the process of reviewing the HHRA, DEC concluded that the sulfolane toxicity values reported in EPA's PPRTV should be used to finalize the HHRA, and that the Feasibility Study for the NPR site should use 14 μg/L as "an applicable or relevant or appropriate requirement and in development of remedial action objectives and evaluation of remedial options." This one-page letter did not discuss or analyze any of the scientific analysis submitted by Flint Hills, or give any rationale for directing Flint Hills to use 14 μg/L instead of the other groundwater cleanup levels discussed in the HHRA.

Flint Hills responded to DEC's July 19 correspondence with a letter dated August 20, 2012.[18] Flint Hills expressed its disagreement with DEC's July 19 letter, and specifically stated that it "respectfully disagrees that 14 ppb is the appropriate ACL for the site" and that "the most appropriate and data-supported parameters are expressed in the ARCADIS Scenario in the HHRA. . . . Using the ARCADIS Scenario, . . . the resulting sulfolane ACL is 362 ppb." Flint Hills reserved its right to seek formal or informal review of final DEC actions concerning sulfolane.

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[17] Ex. B.

[18] Ex. C.

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On November 27, 2013, DEC issued a letter to Flint Hills stating that DEC had completed its review of the HHRA.[19] In this letter, DEC rejected all of Section Four of the HHRA (the discussion of alternatives to the sulfolane toxicity values stated in the EPA's PPRTV report, and alternatives to DEC's exposure assumptions). As discussed in detail below, DEC directed Flint Hills to delete all materials from the HHRA that discussed, proposed or supported cleanup levels other than 14 µg/L. Concurrent with its directives to exclude all contrary data from the reports, DEC stated that it "finds that the groundwater alternative cleanup level for sulfolane derived in Chapter 5 [of the HHRA] of 14 µg/L based on the risk characterization in Chapter 3 [of the HHRA] is protective of human health, safety and welfare, and of the environment and approves the HHRA" on that basis.

Flint Hills reasonably interprets DEC's November 27, 2013 letter as DEC's final decision regarding the cleanup level for sulfolane in groundwater at the NPR site. The letter states that DEC has "completed its review" of the HHRA, and the letter gives Flint Hills final directives concerning the sulfolane cleanup level at the site. DEC provides no indication that further consideration of the sulfolane cleanup level may be requested or will be granted. Therefore, DEC's decision meets the requirement for final department action under 18 AAC 75.385.

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[19] Ex. E.

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III. FLINT HILLS HAS A DIRECT INTEREST IN DEC'S ERRONEOUS DECISION CONCERNING THE SULFOLANE CLEANUP LEVEL, AND WILL BE DIRECTLY AND ADVERSELY AFFECTED BY THE DECISION

Flint Hills has completed extensive site characterization, interim remedy implementation and risk assessment activities pursuant to relevant provisions of 18 AAC, Article 3 governing site cleanup. Flint Hills is the recipient of DEC's November 27, 2013 letter, rejecting the HHRA and approving 14 µg/L as the cleanup level for sulfolane at the NPR site. As discussed below, DEC's decision to set 14 µg/L as the cleanup level for sulfolane at the NPR site will directly and adversely affect Flint Hills, because achieving this cleanup level would impose enormous costs on Flint Hills that are not justified by risk to human health or the environment.

IV. STATEMENT OF ISSUES FOR HEARING

A. List of Disputed Issues of Law and Fact

1. What groundwater cleanup level should be required for sulfolane at the North Pole Refinery site, under 18 AAC 75.345(b)(2)?

2. In approving a groundwater cleanup level for the North Pole Refinery site, should DEC accept the toxicology values / reference doses for sulfolane derived by ARCADIS U.S., as set forth in Flint Hills' HHRA, including Appendix H (chronic reference dose .01 mg/kg/day and subchronic reference dose .1 mg/kg/day)?

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3. Should DEC approve a groundwater cleanup level for sulfolane at the North Pole Refinery site of 362 μg/L, as supported by Flint Hills' HHRA, including Appendix H?

4. In approving a groundwater cleanup level for sulfolane at the North Pole Refinery site pursuant to AAC 75.345(b)(2), should DEC fully consider all materials submitted by Flint Hills in its HHRA, and state its reasoning and rationale for its decision?

5. Was DEC wrong in concluding that the approach taken in Chapter 4 of Flint Hills' HHRA is not an approach authorized by DEC regulations or risk assessment guidance, wrong in excluding Chapter 4 from DEC's consideration on that basis, and wrong in selecting a cleanup level of 14 μg/L on that basis?

B. Relevance of Each Issue to DEC's Cleanup Level Decision

Each issue set forth above is directly relevant to DEC's determination of the sulfolane groundwater cleanup level at the North Pole Refinery under 18 AAC 75.345(b)(2). Issues 2, 3 and 5 are specific elements of the decision that is described in Issue 1, and Issue 4 addresses DEC's process for reaching a decision on the cleanup level.

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C. Estimate Of Time Needed For Hearing

Flint Hills estimates that an adjudicatory hearing on the issues raised in this request would take approximately 6 to 8 days.

V. REASONS THAT A HEARING SHOULD BE GRANTED

DEC regulations authorize responsible parties to propose a cleanup level. Flint Hills participated in this process in good faith, submitting a comprehensive analysis of sulfolane toxicity, and proposing a conservative alternative cleanup level supported by good science. Eighteen months later, DEC summarily rejected Flint Hills' submission, without analysis, reasoning or explanation, and ordered Flint Hills to delete all materials that support a cleanup level other than the one selected by DEC. DEC adopted a sulfolane cleanup level that is not consistent with best current science. DEC's approach produced a cleanup level that is 3000 times below the level where the most subtle potential adverse effects were *not* seen in animal studies, and about 11,000 times below the level at which there was even a subtle effect from exposure to sulfolane in animal studies.[20]

There is inadequate scientific justification for this sulfolane cleanup level. It would impose enormous and unnecessary costs on Flint Hills, while providing no additional benefit to public health or the environment.

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[20] Ex. A, App. K at pp. 2, 6.

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A. DEC's 14 µg/L Cleanup Level is Not Required by the Applicable Alaska Regulations

In its November 27 letter, DEC states that the approach taken by ARCADIS in drafting the HHRA Section 4 is "not an approach authorized by DEC regulations or risk assessment guidance documents and is, therefore, not approved and should not be included in the HHRA."[21] The applicable regulations regarding groundwater cleanup levels states, at 18 AAC 75.345(b)(2):

> Contaminated groundwater must meet: . . . .
>
> (2) an approved cleanup level based on an approved site-specific risk assessment conducted under the *Risk Assessment Procedures Manual* adopted by reference in 18 AAC 75.340.

DEC has pointed to nothing in this regulation or the cited Risk Assessment Manual that supports the conclusion that the approach used in Section 4 of the HHRA is "not authorized by DEC regulations or risk assessment guidance documents." In fact, as discussed later in this brief, the approach taken in Section 4 of the HHRA is authorized by the regulation and guidance documents.

In its July 19, 2012 letter, DEC stated that an EPA and DEC hierarchy "identifies use of the PPRTV when no Integrated Risk Information System ("IRIS")

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[21] Ex. E.

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value is available."[22] As a source for this "hierarchy," DEC referred to DEC's draft Risk Assessment Procedures Manual (November 2011). This draft manual, while available as a guidance document for ADEC, is not in effect as a regulation. The applicable Risk Assessment Procedures Manual (2000) (referenced in the regulation above) does not refer to EPA PPRTV values at all. In addition, the 2011 Draft Manual does not require rigid application of the PPRTV toxicity values, with no discretion to use other toxicity values that are supported by science. To the contrary, relevant EPA guidance describing this hierarchy says that officials have discretion to take different approaches: "EPA and state personnel may use and accept other technically sound approaches, either on their own initiative, or at the suggestion of potentially responsible parties, or other interested parties."[23]

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[22] Ex. B.

[23] U.S. EPA, Human Health Toxicity Values in Superfund Risk Assessments, Directive 9285.7-53 at p. 1 (EPA 2003). DEC cited this publication in its July 19, 2012 letter.

When DEC approved the Work Plan for the HHRA in December 2011, EPA had not yet issued the PPRTV for sulfolane. The Work Plan recognized that EPA might issue a PPRTV before ARCADIS finished its work on the HHRA. In that event, the Work Plan did not direct ARCADIS to simply adopt the PPRTV toxicity value and proceed to calculate the cleanup level on that basis. To the contrary, the Work Plan said that if EPA issued a PPRTV, ARCADIS would evaluate the toxicity value derived by EPA, but that toxicity criteria for sulfolane developed by other reputable entities would also be reviewed. Second Revision, Work Plan to Conduct a [HHRA], Dec. 2011, at pp. 36-37. That is what ARCADIS did.

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Based on all the above, DEC's statement that Section 4 of the HHRA is contrary to DEC regulations is wrong. Reliance by DEC on such a regulatory interpretation to support its 14 µg/L cleanup level is, therefore, not appropriate.

B. DEC Refused to Consider Relevant Scientific Information Concerning the Cleanup Level for Sulfolane, and Rejected Proposed Alternative Cleanup Levels Without Stating Any Basis for Its Decision

1. Flint Hills Followed DEC Regulations and Process to Arrive at a Cleanup Level for Sulfolane

DEC regulations provide two relevant alternatives for determining groundwater cleanup levels. The first alternative is for DEC to go through a rulemaking process and set a groundwater cleanup level which is then included in 18 AAC 75.345(b)(1), Table C. The second option (discussed in Section V.A above) is for a responsible party to conduct a risk assessment and for DEC to approve a site-specific cleanup level based on an approved site-specific assessment conducted under the Risk Assessment Procedures Manual adopted in 18 AAC 75.340. 18 AAC 75.345(b)(2).[24]

Notably, the site-specific option is available even if Table C states a value. In that situation, the responsible party can still seek approval of an alternative groundwater cleanup level. Here, however, section 345(b)(1) and Table C simply did not apply, because Table C does not have a published value for sulfolane. In other

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[24] A third option in the regulation is not applicable here. 18 AAC 75.345(c).

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words, because DEC has not established a cleanup value by rulemaking, the sulfolane cleanup level at the North Pole refinery site must, necessarily, be established through an approved risk assessment.

Flint Hills followed DEC's regulations and procedures in good faith, to propose a cleanup level for sulfolane at the North Pole refinery. Flint Hills hired experienced experts at ARCADIS to assist Flint Hills in submitting materials to DEC, including a HHRA. In 2011, ARCADIS participated in extensive discussions with DEC, and submitted a Risk Assessment Work Plan that DEC approved.

On May 23, 2012, Flint Hills submitted a 746-page HHRA, prepared by ARCADIS.[25] The HHRA included reports from ARCADIS's principal toxicologist, Dr. Brian Magee, and Dr. William Farland, former EPA Deputy Assistant Administrator for Science.[26] The ARCADIS HHRA analyzed all available data concerning potential human health risks attributable to sulfolane exposure. This report included extensive and careful assessment of the toxicological data, and addressed the ways this data had been evaluated by other experts and regulatory agencies.

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[25] Ex. A.

[26] Ex. A, Apps. H, K.

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As part of its analysis, ARCADIS analyzed a report that had been issued four months earlier (January 2012), by the EPA's Superfund Health Risk Technical Support Center entitled "Provisional Peer-Reviewed Toxicity Values for Sulfolane." This PPRTV report was prepared by a contractor hired by EPA. EPA's PPRTV report did not involve any new testing of how sulfolane affects animals or humans. The EPA process simply analyzed prior studies and data, and from these studies and data reached conclusions about provisional reference doses for sulfolane. A chronic provisional reference dose of .001 mg/kg/day and a subchronic reference dose of .01 mg/kg/day were identified.[27] In the PPRTV report, these values were not translated into cleanup levels for sulfolane.

It is important to note that EPA PPRTV reports are not the primary (nor the most thorough) review done at the EPA to set toxicity values. The provisional reference doses are used by EPA to set Regional Screening Levels ("RSLs") for purposes of the Superfund Chemical Data Matrix, where they are used as a screening tool to identify potential chemicals of concern at sites that may warrant additional investigation. Per EPA itself, it should be emphasized that RSLs "are not cleanup

[27] The reference dose is an estimate of a daily oral exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. EPA, Risk Assessment, Step 2 - Dose Response Assessment, at epa.gov. riskassessment/dose-response.htm.

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standards" and are meant for use in preliminary assessments. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm.[28]

In its report, ARCADIS fully considered the EPA PPRTV work. Based on its independent review of the data and relevant scientific principles, ARCADIS concluded that it was unable to endorse the provisional reference doses set forth in EPA's PPRTV Report (for detailed reasons set forth in the HHRA, including Appendices H and K).[29] ARCADIS made an independent derivation of reference doses for sulfolane in accordance with the best available science, and EPA guidance.[30] ARCADIS determined a chronic reference dose for sulfolane of .01 mg/kg/day, and a subchronic reference dose of .1 mg/kg/day.[31] From these reference doses, ARCADIS developed groundwater cleanup levels for sulfolane.[32]

In the HHRA, ARCADIS presented three alternative sulfolane cleanup levels.

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[28] Similarly, the federal Agency for Toxic Substances and Disease Registry (February 10, 2010 and May 2, 2011) issued two Health Consultations setting a "public health action level" for sulfolane. This type of value is intended to serve as a screening tool to help decide whether to more closely evaluate exposure to a substance, but is not meant for use in conducting human health risk assessments or setting cleanup levels. Ex. A, App. H, Magee Report at pp. 2-3. The second ATSDR report identified screening levels for sulfolane of 70 µg/L (adults), 32 µg/L (children) and 20 µg/L (infants). Serious deficiencies in the study used as the basis for the ATSDR level were identified by both ARCADIS and the EPA.

[29] Ex. A at p. 96 and App. H, Magee Report at p. 1.

[30] Ex. A at pp. 93-97 and App. H.

[31] Ex. A at p. 96 and App. H.

[32] Ex. A at p. 123 and Table 5.2.

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One alternative is based on the provisional toxicity values in the EPA PPRTV Report. The other two alternatives reflect the toxicity value for sulfolane determined by ARCADIS based on the best available science and EPA guidance, as set forth in the HHRA. The three alternative sulfolane cleanup levels are set forth in the table below. The sulfolane cleanup levels in column A reflect the provisional toxicity values in EPA's January 2012 report. The sulfolane cleanup levels in columns B and C reflect the toxicity values derived by ARCADIS.[33]

SUMMARY OF ALTERNATIVE CLEANUP LEVELS			
Receptor	**A** **ACL - PPRTV Scenario**	**B** **ACL - ARCADIS Comparative Scenario**	**C** **ACL - ARCADIS Scenario**
Infant (0-1 yr.) – Subchronic	64 µg/L	637 µg/L	664 µg/L
Child (1-6 yrs.) – Chronic	14 µg/L	145 µg/L	155 µg/L
Child (1-6) yrs. – Subchronic	--	--	1,550 µg/L
Adult – Chronic	34 µg/L	343 µg/L	362 µg/L

[33] Ex. A at p. 123 and Table 5.2. More specifically, the PPRTV Scenario in Column A pairs the EPA-derived toxicity value with exposure parameters selected by DEC. The ARCADIS Comparative Scenario in Column B pairs the toxicity value derived by ARCADIS with DEC's exposure parameters. The ARCADIS Scenario in Column C uses the toxicity values and exposure parameters derived by ARCADIS to reflect best science and guidance.

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2. DEC Rejected the Sulfolane Toxicity Values and Cleanup Levels Proposed by Flint Hills Without Analysis or Explanation

Less than 60 days after Flint Hills submitted its HHRA, DEC issued a one-page letter dated July 19, 2012.[34] Although this letter acknowledged that DEC was still in the process of reviewing the HHRA, DEC went on to assert that EPA's PPRTV should be used to finalize the HHRA, and that the Feasibility Study for the site should use 14 µg/L as "an applicable or relevant or appropriate requirement and in development of remedial action objectives and evaluation of remedial options." This one-page letter did not discuss or analyze any of the scientific analysis submitted by Flint Hills/ARCADIS. It did not state any rationale for directing Flint Hills to use 14 µg/L as the sulfolane cleanup level, and did not explain any rationale for its failure to consider (much less reject) the alternative cleanup levels for sulfolane presented in the HHRA.

Sixteen months later, on November 27, 2013, DEC issued a two-page letter to Flint Hills concerning the HHRA, along with DEC's comments on the document.[35] DEC's November 27, 2013 letter stated that DEC had now completed its review of the HHRA. As noted in Section V.A above, DEC rejected the entire section of the HHRA that discussed alternatives to the provisional sulfolane toxicity values stated in

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[34] Ex. B.

[35] Ex. E.

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the EPA's PPRTV and alternatives to DEC's exposure assumptions, and DEC rejected all alternatives to the 14 µg/L cleanup level for sulfolane. Concurrent with its rejection of all contrary data and analysis, DEC stated that it "finds that the groundwater alternative cleanup level for sulfolane derived in Chapter 5 [of the HHRA] of 14 µg/L based on the risk characterization in Chapter 3 [of the HHRA] is protective of human health, safety and welfare, and of the environment, and approves the HHRA" on that basis.[36]

Despite the passage of 16 months since its July 2012 letter, and despite the statement that DEC has now completed its review of the HHRA, DEC's November 27 letter contains no discussion of any reasoning behind DEC's decision on the applicable toxicity value, its choice of exposure assumptions, or its adoption of 14 µg/L as the alternative cleanup value. The November 27 letter is conclusory, and contains no explanation of the agency's rationale other than an erroneous statement that the approach is not authorized by DEC regulations and assessment guidance.

A table of comments attached to the November 27 letter provides no further analysis or explanation for DEC's rejection of the toxicity values doses derived by

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[36] Note that this letter was received by Flint Hills just two and a half weeks before major reports were due to DEC. These reports had to use a cleanup level for analysis. The letter gave Flint Hills' consultants no time to address the DEC demands in the November 27th letter. The reports due to DEC on December 20th are the Onsite and Offsite Site Characterization Reports and the Conceptual Site Model.

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ARCADIS, or the alternative cleanup levels proposed in the HHRA.[37] DEC simply repeated its summary rejections, based on the directives DEC issued in July 2012 (before it had completed its review of the HHRA). DEC explicitly stated that it will not comment on the portions of the HHRA that are contrary to its thinking. As the following comments demonstrate, rather than address and analyze those portions of the HHRA that do not support its decision, DEC simply ordered them expunged from the record, as if they never existed:

> [DEC's July 19 2012] letter should be referenced and all references to a range of potential ACLs at the site must be removed. The ARCADIS Comparative Scenario, as presented in Chapter 4 of the HHRA, is not acceptable or approved by DEC.
>
> . . . .
>
> Chapter 4, including supporting appendices . . . shall not be included in the HHRA. The approach taken in Chapter 4, as well as supporting appendices, is not an approach supported by DEC regulations or guidance documents and is, therefore, not approved. No additional comments will be made on these sections of the HHRA.
>
> . . . .
>
> Chapter 5 of the HHRA must only include alternative cleanup levels (ACLs) derived using the reference dose from the [US EPA's] Provisional Peer-Revised [sic] Toxicity Value (PPRTV) for Sulfolane (dated January 30, 2012) and the DEC approved exposure assumptions. The appropriate ACL for sulfolane in groundwater is 14 µg/L, derived from the PPRTV RfD and the DEC-approved exposure assumptions.

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[37] Ex. E.

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. . . .

> Derivation of an alternative reference dose for sulfolane is not supported by DEC. The memo by Dr. Brian Magee must be removed from this appendix. No further comments on the memo from this appendix will be made. Reference to this memo must be eliminated from the sulfolane toxicology profile included in this appendix.

DEC's statements in its November 27 letter and comments vividly demonstrate why an administrative hearing is needed. Instead of addressing the information submitted by Flint Hills and stating reasons for its decisions, DEC simply ordered all inconvenient or conflicting data removed from the record, and directed compliance with a cleanup level stated in the letter. This kind of unsupported agency decision-making cannot be sustained.[38]

3. The Cleanup Level Selected By DEC Is Not Supported By Best Current Science

DEC's selection of 14 µg/L as the groundwater cleanup level is not consistent with current EPA guidance or best science and policy decision-making, and is contrary to the sound approach taken in several other jurisdictions that have considered sulfolane exposure limits. The Commissioner should order a hearing to evaluate the appropriateness of the 14 µg/L limit.

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[38] "The very essence of arbitrariness is to have one's status redefined by the state without an adequate explanation of its reason for doing so." *Ship Creek Hydraulic Syndicate v. State*, 685 P.2d 715, 717 (Alaska 1984) (quoting Rabin, 44 U.Chi.L. Rev. 60, 77-78 (1976)). *See also Kachemak Bay Watch, Inc. v. Noah*, 935 P.2d 816, 822 & n. 4 (Alaska 1997) (reversing DNR decision).

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a. DEC Imposed EPA's Provisional Toxicity Value Without Good Scientific Reason

At the core of DEC's error is its reliance on the provisional toxicity value determined through an EPA process designed to set screening levels for Superfund sites. There is a ten-fold difference between these screening levels (a chronic value of .001 mg/kg/day, and a subchronic value of .01 mg/kg/day) and the oral reference doses derived by ARCADIS and fully supported by other independent studies: .01 mg/kg/day for chronic exposure, and .1 mg/kg/day for subchronic exposures.

A major reason for the difference is explained by Dr. Brian Magee, in Appendix H to the HHRA.[39] He observes that EPA reached its conclusion on the reference doses by emphasizing an approach that used the "no observed adverse effect level" (NOAEL) for sulfolane to determine the reference dose, rather than using a "benchmark dose modeling" approach that is preferred as the current standard and is recommended in EPA's own guidance.[40] There are serious limits to the NOAEL approach, including its dependence on the placement of the particular doses tested in the studies: gaps between doses can lead to large exposure ranges that are not

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[39] Ex. A., App. H, Magee Report. See also Ex. A at p. 96.

[40] Ex. A, App. H, Magee Report at p. 8. In general terms, a "No-Observed-Adverse-Effect Level" (NOAEL) is the highest exposure level at which no statistically or biologically significant increases are seen in the frequency or severity of adverse effect between the exposed population and the control population. EPA, Risk Assessment, Step 2 - Dose Response Assessment, at epa.gov. riskassessment/dose-response.htm.

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characterized for risk. In contrast, benchmark dose modeling uses all the data and provides an estimate of the entire dose-response curve. EPA said that it did not use the benchmark dose modeling approach in the sulfolane PPRTV because of a lack of "fit" with the data, but EPA failed to use a standard, current statistical technique that would have enabled EPA to achieve the desired "fit" for use of the benchmark dose modeling approach.[41] When ARCADIS used this statistical technique, ARCADIS obtained an "excellent fit" for the sulfolane data.[42] EPA itself has used this statistical technique, and in a situation very similar to the data set presented for sulfolane.[43] This standard technique would have allowed EPA to use the preferred benchmark dose modeling approach, as demonstrated by ARCADIS and others. Applying the benchmark dose approach yields more accurate values, in this case significantly higher than the provisional reference doses produced by using the NOAEL data. These higher reference doses translate into a significantly higher groundwater cleanup level for sulfolane, while still being fully protective of the public health.

In calculating the provisional reference dose, EPA also applied the maximum "uncertainty factor" allowed by EPA guidance. The combination of using a "NOAEL" level as a starting point, and then applying a high (maximum) uncertainty factor

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[41] This statistical technique involves logarithmic transformation of the data.

[42] Ex. A at 96.

[43] Ex. A, App. H, Magee Report at p. 8.

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produces an excessively conservative cleanup level. A safe drinking water value based on these calculations is 3000 times below the level where the most subtle potential adverse effects were ***not*** seen in animal studies, and about 11,000 times below the level at which there was even a subtle effect from exposure to sulfolane in animal studies.[44] There is inadequate scientific justification for this cleanup level.

DEC's directive to use 14 μg/L as the sulfolane cleanup level is scientifically unsupportable for an additional reason. DEC's 14 μg/L cleanup level is based on a chronic exposure scenario for a child. This means that in setting the cleanup level, DEC assumed that a person exposed to sulfolane would have a child's body weight throughout their entire lifetime. DEC should have determined the cleanup level based on chronic exposure for adults, because the chronic exposure value for adults is developed in a way that fully accounts for children or sensitive populations.[45] The most current DEC guidance recommends an adult scenario to derive cleanup levels

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[44] Ex. A, App. K at pp. 2, 6.

[45] As Dr. Farland explained, consideration of sensitive populations, including children, is built into the process of setting an oral reference dose for exposure to a chemical. Therefore, unless there are special considerations of risk to developing children posed by a particular chemical, a scenario using an adult body weight for chronic exposure is considered to be protective of human health. The sulfolane database reveals no special risks for children, meaning that an adult scenario is appropriately health protective. Exhibit A, App. K at p. 7. See also Ex. A at pp. 62 and 118.

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for non-carcinogenic chemicals, which is consistent with calculations used by USEPA and states in accordance with the Safe Drinking Water Act.[46]

b. Other Scientists and Regulators Support the Cleanup Levels Proposed by Flint Hills.

ARCADIS is not alone in its evaluation of the toxicity of sulfolane and development of acceptable cleanup levels. To the contrary, EPA's provisional toxicity values and DEC's sulfolane cleanup level (14 µg/L) are inconsistent with determinations made by other regulatory bodies, by a significant margin. Four other evaluations have reached essentially the same conclusion as ARCADIS with respect to the chronic toxicity value/reference dose for sulfolane, .01 mg/kg/day, and reached similar conclusions regarding the cleanup level for sulfolane in groundwater:[47]

- Texas: In 2011, the Texas Commission on Environmental Quality ("TCEQ") identified a chronic response dose of .013 mg/kg/day, which TCEQ translated in 2012 to a 320 µg/L groundwater cleanup level. The toxicity value of .013 can be rounded to .01, which is the same chronic dose value identified by ARCADIS.

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[46] 7/18/12 Alternative ACL Calculation for Sulfolane in Groundwater, Dr. Brian Magee, pp. 2, 4.

[47] Ex. C and Ex. A, App. H, Magee Report.

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- British Columbia Ministry of Water, Land and Air Protection: The British Columbia Ministry arrived at a toxicity value of .0097 mg/kg/day, which can be rounded to .01, the same value derived by ARCADIS. This value was used to set a 260 µg/L drinking water guideline for children and a 460 µg/L guideline for adults.

- Canadian Council of Ministers of the Environment: The CCME also identified a toxicity value of .0097 mg/kg/day, which can be rounded to .01 mg/kg/day--again, the same value identified by ARCADIS.

- ToxStrategies: Sulfolane analysis by ToxStrategies (2012) derived a "lowest, most conservative" value of .01 mg/kg/day, the same level as proposed by ARCADIS. This translates to a cleanup level of 365 µg/L. ToxStrategies' work has been published in a peer-reviewed journal. C. Thompson, et al., 33 Journal of Applied Technology 1395 (Dec. 2013).

In summary, in each instance these regulators or scientists arrived at a chronic toxicity value for sulfolane that is essentially the same as the toxicity value determined by ARCADIS, and submitted by Flint Hills. From these toxicity values, regulators determined cleanup levels for sulfolane similar to the 362 µg/L level proposed by ARCADIS, and certainly multiple times higher than the 14 µg/L level imposed by DEC. The scientific data presented by ARCADIS on behalf of Flint Hills

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and the consistent results reached by other scientists and regulators raise serious questions about DEC's adoption of a standard developed by EPA and demonstrate a basis for the Commissioner to order a hearing to evaluate this evidence, and determine a cleanup level for sulfolane.

4. DEC's Arbitrary And Unexplained Decision To Choose 14 µG/L as the Sulfolane Cleanup Level Will Impose Enormous and Unnecessary Cleanup Costs

Selection of the proper ACL for sulfolane in groundwater is central to the future direction of the NPR cleanup. Tens of millions of dollars and decades of future effort will be wasted if DEC adopts an unjustifiably low cleanup level. According to Alaska regulations and DEC guidance, the cleanup level is meant to reflect risk-based considerations for human health and the environment. When the cleanup level is derived through choices made in the absence of good scientific reasons, the result may alarm the public, require unnecessary controls, and impact property values and population growth without providing any more protection for the public health than would a carefully derived, data-supported value.

The 362 µg/L cleanup level proposed by Flint Hills is protective of human health and the environment, by a significant margin, and no additional protection would be gained by selecting an artificially low standard set through choices that do not reflect the science and data. As noted above, comparable numbers have already been adopted in other jurisdictions. The selected standard will dictate the scope of

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remedial alternatives that are considered during the Feasibility Study (FS) process, which is currently scheduled for draft submittal to DEC by June (onsite) and July (offsite) 2014. The cleanup level will also substantially affect the scope of groundwater monitoring required in the short and long term. The cleanup level not only affects the scope of groundwater monitoring and cleanup, but also the soil cleanup level, which is derived from the groundwater cleanup level. Ultimately, the groundwater cleanup level will be a central consideration in determining where future cleanup actions will take place and how long they will last. These decisions will be made in the Cleanup Plans that are currently due in draft form to the DEC by November (onsite) and December (offsite) 2014. Because the majority of groundwater impacts at the site are greater than DEC's stated 14 μg/L cleanup level, the standard, if applied, is expected to drive the expenditure of substantial resources to achieve this artificial standard with no meaningful additional level of protection to public health or the environment.

5. Due to Steps Already Taken by Flint Hills to Protect Residents From Any Risk from Sulfolane Exposure, DEC has Time to Properly Evaluate the Cleanup Level at the Site.

DEC may oppose a hearing on grounds that a hearing to address the cleanup level will delay completion of other steps in the cleanup planning sequence, and thus ultimately delay cleanup activities. Flint Hills disagrees. First, any problem with timing is DEC's own making. Flint Hills submitted the HHRA to DEC in May 2012.

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DEC took 18 months -- until November 2013 -- to issue a decision on the HHRA. Second, as detailed below, because Flint Hills has acted affirmatively to protect the public health and limit off-site migration, the sulfolane contamination situation is stabilized, and delay in commencing further cleanup activity poses no threat to people or the environment. This means there is time to make a reasoned determination about the right cleanup level for sulfolane, before embarking on extraordinarily expensive cleanup activities that offer no meaningful added protections for public health.

a. Groundwater Extraction and Treatment

Flint Hills is currently operating a groundwater extraction system that removes groundwater from remediation wells on the facility, treats the extracted groundwater, and discharges the treated water into the South Gravel Pit. Approximately 155 million gallons of groundwater were extracted and treated in 2013 (through September). The groundwater extraction system is capturing the bulk of the sulfolane-impacted groundwater coming from sulfolane source areas at the site.

In response to the discovery of sulfolane impacts in groundwater, Flint Hills completed extensive upgrades to the groundwater extraction system since 2009 to increase the remediation efficacy, expand the width and depth of capture and increase operational efficiency. In addition to treating sulfolane, the groundwater extraction system is also recovering light non-aqueous phase liquid and petroleum hydrocarbon-impacted groundwater.

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A groundwater extraction system expansion is underway and additional groundwater extraction wells and a second treatment system will be installed to the west of the current groundwater extraction well network. With that expansion, the remediation system design will offer comprehensive capture and treatment of sulfolane and all other COCs in groundwater from all identified sources within the refinery property. The system expansion is scheduled to be operational by the summer of 2014.

b. Alternative Water Solutions Program

Flint Hills immediately began sampling private wells of residents and businesses near the NPR upon detection of sulfolane in an offsite monitoring well in October 2009. Alternative drinking water sources were provided to those with impacted wells. Approximately 800 private wells have been sampled and 354 have contained sulfolane as of September 2013. Flint Hills additionally offered to collect samples from garden wells for property owners and properties within the zone of detectable sulfolane concentrations area were offered an outside hose spigot connected to the property's city-water system or were offered a bulk tank for gardening.

Flint Hills has completed the following mitigation actions to address potential drinking water risks associated with offsite dissolved-phase sulfolane impacts:

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- Replaced municipal wells owned by the City of North Pole that were affected by sulfolane.

- Extended municipal water service to residents within the City of North Pole service area.

- Provided alternative water solutions to approximately 350 residences and businesses with wells that have tested positive for sulfolane.

    - As of September 30, 2013, Flint Hills has installed and maintains 158 point of entry (POE) treatment systems;

    - 113 bulk water tanks have been installed;

    - 32 properties have chosen ongoing bottled water service as their permanent solution; and

    - 48 garden tanks have been installed for those outside the City's water main system.

- Established a buffer zone around the known extent of sulfolane where private wells have been sampled and bottled water is provided as a precautionary measure to prevent exposure to sulfolane.

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VI. PROPOSED ALTERNATIVES TO DEC'S DECISION

Pursuant to 18 AAC 15.200(a)(3)(D), Flint Hills requests that DEC accept the toxicology values / reference doses for sulfolane derived by ARCADIS, set forth in Flint Hills' HHRA, including Appendix H (chronic reference dose .01 mg/kg/day and subchronic reference dose .1 mg/kg/day), and accept a cleanup level for sulfolane at the North Pole Refinery site of 362 μg/L.

VII. CONCLUSION

For the foregoing reasons, Flint Hills respectfully requests that the Commissioner grant its Request for an Adjudicatory Hearing.

DATED: December 20, 2013.

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BEFORE THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION FOR THE STATE OF ALASKA

IN THE MATTER OF:

CONDITIONAL APPROVAL OF REVISED DRAFT FINAL HUMAN HEALTH RISK ASSESSMENT, FLINT HILLS RESOURCES ALASKA, LLC, NORTH POLE REFINERY (NOVEMBER 27, 2013)

REQUEST FOR STAY

Pursuant to 18 AAC 15.210, Requestor Flint Hills Resources Alaska, LLC, hereby requests that the Commissioner of the Department of Environmental Conservation (DEC) issue a stay during the pendency of Flint Hills' Request for Adjudicatory Hearing concerning the groundwater cleanup level for sulfolane applicable to Flint Hills Resources Alaska, LLC, North Pole Refinery, File No. 100.38.090. Flint Hills requests that the stay abate the following activities:

1. Completion of a revised Human Health Risk Assessment (HHRA) as directed by DEC in its November 27, 2013 letter to Flint Hills.

2. Preparation or revisions of onsite or offsite feasibility studies, site characterization reports or cleanup plans, as directed by DEC in its July 25, 2013 letter to Flint Hills.

3. Remedial actions, <u>except</u>: (a) ongoing implementation of the *Alternative Water Solutions Program – Management Plan* with the most recent revisions submitted to DEC in December 2013; (b) operation of the current onsite groundwater remediation system and existing light non-aqueous phase liquid recovery efforts; (c) expansion of the groundwater

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extraction system as set forth in the *Revised IRAP Addendum* submitted to DEC in July 2013; and (d) groundwater monitoring.

This Request for Stay is accompanied by a memorandum of law describing the reasons for granting a stay.

DATED: December 20, 2013.

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BEFORE THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION FOR THE STATE OF ALASKA

IN THE MATTER OF:

CONDITIONAL APPROVAL OF REVISED DRAFT FINAL HUMAN HEALTH RISK ASSESSMENT, FLINT HILLS RESOURCES ALASKA, LLC, NORTH POLE REFINERY (NOVEMBER 27, 2013)

MEMORANDUM IN SUPPORT OF REQUEST FOR STAY

Flint Hills Resources Alaska, LLC (Flint Hills) has filed a Request for Adjudicatory Hearing to address DEC's determination of the groundwater cleanup level for sulfolane at the North Pole Refinery (NPR). The resolution of this issue, and the resulting alternative cleanup level (ACL), will shape all future evaluations and decisions about how, where, and to what degree sulfolane cleanup is needed at the NPR. Per Alaska regulations and equitable considerations, it is critical for DEC to set an ACL that is tied to a data-supported, science-based evaluation of potential risk. DEC's task is to get the right answer. There is time to arrive at that answer after a full and fair hearing because Flint Hills has already taken affirmative and effective steps to protect public health, and these initiatives will continue while the ACL appeal is pending.[1] More specifically, during the pendency of the appeal, Flint Hills will

[1] As Flint Hills has emphasized to the State of Alaska, Williams Alaska Petroleum Inc. and its affiliates ("Williams") and the State of Alaska itself are liable parties and bear responsibility for contamination issues at

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continue to supply alternative water solutions to offsite residents and monitor the groundwater on and off the refinery to be sure any changes in conditions are evaluated. In addition, Flint Hills will continue to operate, and in 2014 expand, the onsite remediation system that is designed to stop the migration of detectable sulfolane and other contaminants of concern (COCs) from identified sources at the refinery. With these protections, there is no reasonable basis for DEC to require the additional work that would be connected to the disputed 14 µg/L cleanup level while Flint Hills challenges DEC's view of that cleanup level on the legal and scientific merits. This Request for Stay should be granted.

I. SCOPE OF THE REQUESTED STAY

Flint Hills requests that the following activities be stayed until the time that the Commissioner renders a decision on the groundwater cleanup level for sulfolane at the NPR site, or if applicable, until the time that the matter has been fully and finally resolved upon remand to DEC:

1. Completion of a revised HHRA as directed by DEC in its November 27, 2013 letter to Flint Hills.
2. Preparation or revisions of onsite or offsite feasibility studies, site characterization reports or cleanup plans, as directed by DEC in its July 25, 2013 letter to Flint Hills.

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the North Pole Refinery and surrounding areas. Flint Hills strongly believes that the funding of the work and the carrying out of the work must be allocated between the parties according to their respective liabilities. Nothing in this request for stay and the associated hearing request should be construed as a change in Flint Hills' position or a waiver of, or intent to waive, any of Flint Hills' rights.

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3. Remedial actions, except: (a) ongoing implementation of the *Alternative Water Solutions Program – Management Plan* with the most recent revisions submitted to DEC in December 2013; (b) operation of the current onsite groundwater remediation system and existing light non-aqueous phase liquid (LNAPL) recovery efforts; (c) expansion of the groundwater extraction system as set forth in the *Revised IRAP Addendum* submitted to DEC in July 2013; and (d) groundwater monitoring.

II. LEGAL STANDARD

The following factors apply to determining a stay under 18 AAC 15.210:

(1) the relative harm to the person requesting the stay, the permit applicant, and public health, safety, and the environment, if a stay were granted or denied;

(2) the resources that would be committed during the pendency of proceedings under this chapter if a stay were granted or denied; and

(3) the likelihood that the person requesting the stay will prevail in the proceedings on the merits.

18 AAC 15.210(a).

III. ARGUMENT

A. The Analysis of Relative Harm Favors A Stay

1. Issuance of a Stay is Necessary to Avoid Activity and Expenses that May be Unnecessary, Misdirected or Wasteful if Undertaken Before the Cleanup Level is Decided

The scope of Flint Hills's proposed stay is limited to actions that depend directly upon the resolution of the appropriate ACL. The requested stay is designed to ensure protection of public health and to limit the waste of resources while the merits of the ACL dispute are decided. Granting Flint Hills' request will operate to

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protect all responsible parties from incurrence of such costs.

a. HHRA Revisions should be Stayed

Flint Hills seeks a stay of DEC's November 27, 2013 directive to revise the HHRA to include information only relevant to the 14 µg/L ACL and expunge any scientific data or analysis to the contrary. This directive is at the heart of the hearing request and compliance with DEC's improper directive should be stayed. While this dispute is being resolved, Flint Hills should not have to choose between non-compliance with a directive that is not well-grounded in science, versus potential waste. Flint Hills estimates that it will cost $50,000 to revise the HHRA, which would be wasted if Flint Hills proceeded with preparing it using the wrong ACL.

b. Feasibility Studies should be Stayed

Flint Hills cannot properly complete the onsite and offsite feasibility studies without knowing the appropriate groundwater ACL. The feasibility study process evaluates potential cleanup options based on how those options contribute to attaining cleanup goals, one of which is the applicable groundwater cleanup standard. The choice of cleanup options and the evaluation of how and where they could be applied will depend on knowing the cleanup goals. Those goals will remain uncertain while this dispute about the proper ACL is being resolved. Again, Flint Hills should not have to choose between not complying with DEC's directive to prepare feasibility studies by June and July 2014, or risk preparing them using a cleanup standard that

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may change. Flint Hills estimates it would cost approximately $675,000 to prepare those studies, which money would be wasted, along with DEC's resources, if the studies were to be prepared using the wrong standard.

c. Remedial Activities should be Stayed

Flint Hills also should not be required to proceed with developing site cleanup plans, revising Site Characterization Reports or the Conceptual Site Model, or implementing remedial actions beyond the interim actions currently in place while the cleanup standard is in dispute. DEC has approved the necessary interim remedial actions, which include providing alternative water to impacted residents and extracting and treating groundwater using the onsite remediation system. Flint Hills will continue with those activities during a stay. The necessity and scope of any further remedial actions should be addressed in the feasibility study process, which for the reasons discussed above, should not proceed while the ACL is in dispute. Flint Hills would be irreparably harmed by wasting substantial resources if it were to engage in cleanup efforts that were targeted on the wrong standard. DEC's resources would also be wasted.

2. The Requested Stay Will Not Harm the Public or the Environment

Staying DEC's enforcement of a 14 μg/L sulfolane ACL will not result in harm to the public because during the stay, Flint Hills will, as discussed below, continue programs and activities that are protective of human health and the environment,

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including the alternative water solutions program and groundwater remediation.

a. Alternative Water Solutions

During the stay, Flint Hills will continue to provide alternative water solutions (AWS) to affected residents as set forth in the *Alternative Water Solutions Program – Management Plan*, submitted to DEC on December 19, 2013, which incorporates changes to address DEC comments to the July 2013 draft. The AWS program not only provides for the protection of currently impacted residents, but also for the identification and protection of residents—through residential sampling—who are not yet impacted but may be in the future. By continuing the AWS program throughout the stay, Flint Hills will assure that all residents are protected from exposure to sulfolane in drinking water at any detectable level, which is below even the cleanup standard that DEC seeks to impose.

Flint Hills's commitment to provide alternative water has been, and continues to be, significant. The AWS program quickly evolved since the initial detection of sulfolane in an offsite monitoring well in October 2009. Flint Hills quickly began surveying potential receptors and then sampling private wells near the NPR. Residents with impacted wells were immediately provided with bottled water, and later, a long-term AWS.

Most residents whose wells are affected now were enrolled early in the program, and have been receiving replacement water for years. As of September 20,

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2013, approximately 800 private wells have been sampled and 354 of them have contained detectable sulfolane. Flint Hills committed substantial resources to engineer and test a new point of entry (POE) treatment system design for individual properties, which was exhaustively tested and then certified by the Water Quality Association. These systems have successfully treated over 12 million gallons of groundwater since their installation. Properties outside the city service area received individual AWS, as described in *Alternative Water Solutions Program – Management Plan*. And to address several properties within the North Pole city limits, Flint Hills replaced the existing municipal wells and extended municipal water service at a cost of over $7 million.

All told, Flint Hills has spent approximately over $13 million to-date to design, develop, install, and operate 158 POE treatment systems, 113 bulk water tanks, 48 garden water tanks, and place 32 properties on long-term bottled water, plus an additional 240 properties on bottled water with wells that do not yet have a detection but are located near properties that do. Going forward, Flint Hills estimates that the costs to operate and maintain the AWS program in 2014 will be approximately $2,256,000. These efforts will protect the public while Flint Hills and DEC work through the process of determining the proper ACL.

b. Groundwater Quality Will Continue to Be Monitored and Improved

Throughout the stay, Flint Hills will also continue its onsite groundwater

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cleanup efforts by continuing to operate the groundwater extraction and treatment system, recover LNAPL, and proceed to implement the 2014 expansion of the groundwater remediation program as described in the *Revised IRAP Addendum* that was submitted to DEC in July 2013. This commitment is substantial and will assure that sulfolane and other COCs continue to be removed from the environment during the stay.

Flint Hills currently recovers groundwater at the refinery using seven recovery wells and skims LNAPL from the top of the groundwater using manual and mechanical procedures. Recovered groundwater is treated to remove sulfolane, hydrocarbons, and any remaining LNAPL. Flint Hills has improved the groundwater treatment system over time, including installing four new recovery wells in 2013 to enhance the reach and depth of water captured and treated. The treatment statistics demonstrate the impact of these improvements: treated groundwater volumes increased from 69 million gallons in 2009 to over 188 million gallons in 2012, with an additional 154 million gallons already captured and treated through September 2013.[2] The groundwater quality data shows that the system is working. Sulfolane and dissolved hydrocarbon concentrations are declining in groundwater samples collected from wells beyond the treatment zone. The concentrations measured in monitoring wells downgradient of the treatment zone are lower than concentrations upgradient.

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[2] *Third Quarter 2013 Groundwater Monitoring Report* at p. 30.

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This data demonstrates that ongoing groundwater extraction is successfully recovering impacted groundwater and improving groundwater quality beyond the remediation system.

The final phase of treatment system improvements, which Flint Hills will continue implementing throughout the stay, involves building a second treatment system serving two new wells that is designed to capture the western edge of the onsite sulfolane plume. With that expansion, the remediation system design will offer comprehensive capture and treatment of sulfolane and all other COCs in groundwater from all identified sources within the refinery property. Flint Hills proposed those improvements in the *Revised IRAP Addendum* in July 2013, and has been working with DEC since then to complete the final engineering design, secure permitting, and move to construction in early 2014.

During the stay, Flint Hills will also track remediation performance by continuing to monitor groundwater treatment rates and chemical concentrations in monitoring wells. Flint Hills will also test groundwater in additional wells both on- and offsite to assess whether there are any material changes to the locations or concentrations of detectable sulfolane and COCs. Under these conditions, the requested stay will have no impact on the measures that DEC is already requiring of Flint Hills to protect human health and the environment.

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B. The Commitment of Resources During a Stay Weighs in Favor of the Requested Stay

There are three components to evaluating the use of resources with and without a stay, and all three of them weigh in favor of granting it. First, to sustain the activities described above, Flint Hills will commit substantial people and financial resources to ensure that public health and the environment are protected during the stay. In relative terms, Flint Hills will expend far more resources during the stay than it will defer. Second, the resources that Flint Hills seeks to defer would be wasted if the stay is not granted and Flint Hills prevails on the merits of the dispute. That waste would arise if Flint Hills were forced to conduct work using the wrong cleanup standard, which work would have to be re-done if DEC's imposed ACL is supplanted. And third, DEC will preserve its own resources by not going to wasted effort trying to enforce or oversee the development of a revised HHRA, site investigation, and implementation of remediation-driven tasks that are based on the wrong ACL.

The resources that would be deferred during the requested stay and saved from the risk of waste if Flint Hills prevails are estimated, in part, as follows:

Task	Estimated Deferral / Potential Waste
Abate preparation of revised HHRA	$ 50,000
Abate preparation of onsite and offsite Feasibility Studies	$ 675,000
Abate preparation of onsite and offsite Cleanup Plans	$ 460,000
Abate remediation implementation	Unknown – scope dependent
Total	**$ 1,184,000 +**

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As discussed above, with the stay in place, Flint Hills will continue significant activities related to the site. Under the conditions of the stay as proposed, Flint Hills projects that in 2014 it will spend $7.2 million for the work it proposes to continue throughout the stay:

Task	Estimated Cost
Alternative Water System Program - operation and maintenance only	$ 2,256,000
Groundwater remediation system expansion – engineering and construction	$ 3,190,000
Groundwater remediation system operation and maintenance - not including expanded portion of system	$ 458,268
Groundwater monitoring – includes onsite and offsite	$ 1,392,576
Total	**$ 7,296,844**

This stay request is grounded in Flint Hills' expectation that its environmental work at the NPR site will be driven by high quality, science-based decisions about the relationship between sulfolane exposure and potential risk. This foundational principle is required by both Alaska regulations and basic fairness. The stay is needed to allow a pause for careful expert evaluation about these issues, and to assure that future work will be performed as is necessary and appropriate to protect human health and the environment. Flint Hills has administered this project with that single goal in mind, and it now looks to the Commissioner to assure that DEC does the same.

This Request for Stay also is grounded in another notion of fundamental

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fairness: Flint Hills has expended substantial resources to address an environmental problem caused by Williams, the party that previously operated the refinery, at a time when the State of Alaska owned the land. Flint Hills has spent over $55 million to address sulfolane issues since 2009. Some of those costs, but certainly not all of them, have been reimbursed through insurance. Even so, Flint Hills has depleted a valuable resource: the insurance is gone and unavailable for any other purpose. Flint Hills has borne the sulfolane problem on its own, without any meaningful participation from the party that caused it, or the State of Alaska. Fairness dictates that Flint Hills be given a meaningful opportunity to avoid unnecessary costs because Flint Hills has acted purposefully and affirmatively to protect the public health. Flint Hills should be granted the opportunity for a full and fair DEC review process to ensure that the most appropriate cleanup standard is implemented at NPR.

C. Flint Hills is Likely to Succeed on the Merits

In support of its Request for Stay, Flint Hills incorporates its Request for Adjudicatory Hearing and the materials submitted in support of the Request, which sets forth the reasons relief should be granted on the merits.

IV. CONCLUSION

Flint Hills' commitments to provide AWS, conduct onsite groundwater remediation, and monitor groundwater for all COCs during the stay remove any urgency to proceed with finalization of the outstanding cleanup deliverables. These

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commitments assure that the public will remain safe and that ongoing environmental cleanup of the groundwater at NPR will continue. If a stay is not granted, Flint Hills and DEC could both be harmed by wasting substantial resources to perform work using a cleanup standard that could soon change as a result of Flint Hills' challenge. Because Flint Hills is committed to protecting receptors and operating and expanding the groundwater treatment system during the stay, no reasonable purpose is served by allowing DEC to enforce the 14 µg/L cleanup standard or require the pursuit of activities that depend on that standard. For these reasons, Flint Hills respectfully requests that the stay be granted.

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