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

IN THE MATTER OF:

FLINT HILLS RESOURCES ALASKA, LLC'S PETITION TO MODIFY GROUNDWATER EXTRACTION SYSTEM PERFORMANCE STANDARD (JULY 27, 2015)

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" or "FHRA") requests an adjudicatory hearing with respect to the Alaska Department of Environmental Conservation's Division of Spill Prevention and Response ("Division") decision dated July 27, 2015, denying Flint Hills' Petition to Modify Groundwater Extraction System Performance Standard dated June 29, 2015.[1] The Division determined that it would not address the merits of Flint Hills' request to change the performance standard for the on-site cleanup plan to 362 ug/L, a number supported by the best available, peer-reviewed science. This means that the existing on-site cleanup performance standard -- 15 ug/L -- will continue to govern the on-site

[1] Exhibits K and L.

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work into the indefinite future. The 15 ug/L standard has been discredited by independent scientists, and the Division has provided *no* rationale why that standard is appropriate and should continue to govern the on-site cleanup into the indefinite future.

II. BACKGROUND FACTS

In 2010, the Division directed Flint Hills to submit various reports and plans to address sulfolane in the groundwater at the North Pole Refinery site. Preparation of these reports and plans required a determination concerning the cleanup level for sulfolane in groundwater. Cleanup levels for groundwater are governed by 18 AAC 75.345(b), which states two relevant alternatives to determine cleanup levels. One alternative is to use the cleanup level stated in Table C to this regulation. 18 AAC 75.345(b)(1). That option was not available here, because Table C does not state a value for sulfolane. The second option is for DEC to review and accept a groundwater cleanup level that is based on an approved site-specific risk assessment that is developed by a responsible party.[2] 18 AAC 75.345(b)(2).

Flint Hills' HHRA and Proposed Sulfolane Cleanup Level

In accordance with this regulation, Flint Hills retained experts at ARCADIS U.S., Inc. ("ARCADIS") to prepare a site-specific risk assessment for sulfolane. Flint

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

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Hills submitted its Revised Draft Final Human Health Risk Assessment ("the HHRA") to the Division, on or about May 23, 2012.[3]

The HHRA discussed toxicity criteria for sulfolane described in the Environmental Protection Agency's ("EPA") 2012 document, "Provisional Peer-Reviewed Toxicity Values for Sulfolane" ("PPRTV"), and toxicity criteria developed by ARCADIS. EPA's PPRTV had identified a reference dose for sulfolane of .001 mg/kg-day. ARCADIS's analysis identified a reference dose for sulfolane of .01 mg/kg-day. Chapter 5 of the HHRA provided alternative groundwater cleanup levels, based on these alternative reference doses and relevant exposure parameters. These cleanup levels ranged from 14 ug/L (based on EPA's reference dose and chronic exposure for a child) to 362 ug/L(based on ARCADIS's reference dose and chronic exposure for an adult).

On November 27, 2013, the Division issued a letter to Flint Hills stating that the Division had completed its review of the HHRA. In this letter, the Division 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, the Division 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

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[3] Exhibit A.

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protective of human health, safety and welfare, and of the environment and approves the HHRA" on that basis. This directive constituted the Division's final decision to adopt 14 ug/L as the cleanup level for sulfolane at the North Pole site.

The Commissioner's Decision to Vacate the Selection of 14 ug/L as the Cleanup Level at the North Pole Site

In December 2013, Flint Hills filed a Request for Adjudicatory Hearing, asking the Commissioner to review the Division's November 27, 2013 decision. On April 4, 2014, the Commissioner issued a decision.[4] The Commissioner vacated the Division's approval of 14 ug/L as the cleanup level for sulfolane, and remanded the matter to the Division "for further development of the record *and a decision on an approved alternative cleanup level under 18 AAC 75.345(b)(2)*." (emphasis added).[5] The Commissioner provided the Division with instructions for its actions on remand. Among other things, the Commissioner instructed the Division that it was not prohibited from approving the use of professionally peer-reviewed documents other than the PPRTV as a source for toxicity criteria, and that the Division must "provide its rationale and reasoning" for disapproving Flint Hills' proposed HHRA, and for the Division's final decision regarding an alternative clean up level for sulfolane.[6]

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[4] Exhibit B.

[5] Exhibit B at 8.

[6] Exhibit B at 9.

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In June 2014, Flint Hills submitted a Supplement to the May 2012 HHRA.[7] This supplement included a 2012 peer-reviewed article from the Journal of Applied Toxicology (JAT) addressing toxicity criteria for sulfolane;[8] proposed a reference dose for sulfolane (.01 mg/kg-day) based on the analysis in the JAT article and other relevant materials; and proposed a groundwater cleanup level based on this toxicity value and other relevant materials (362 ug/L).

Following the Commissioner's April 4 remand decision, the Division stated its intention to make a decision on the sulfolane ACL by end of 2014. The Division's April 2014 "Update on Sulfolane" described the Commissioner's decision, and stated:

> A report containing an in-depth review of all the information and reevaluation of the cleanup level is anticipated to be delivered to the Commissioner *before the end of the year. This report will document the Division's approved cleanup level for sulfolane.*[9]

ADEC's Referral of the Sulfolane Reference Dose to Its Panel of Experts

In furtherance of its evaluation, the Division retained Toxicology Excellence for Risk Assessment, or "TERA." "TERA is an independent non-profit organization

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[7] Exhibit D.

[8] Thompson, C.M., Gaylor, D.W., Tachovsky, J.A., Perry, C., Carakostas, M.C., Haws, L.C., "Development of a Chronic Noncancer Oral Reference Dose and Drinking Water Screening Level of Sulfolane Using Benchmark Dose Modeling", J. Appl. Toxicol. 33(12): 1395-1406 (2012).

[9] Exhibit C (emphasis added).

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whose mission is to support the protection of public health by developing, reviewing, and communicating risk assessment values and analyses; improving risk methods through research; and educating risk assessors, managers and the public on risk assessment issues."[10] At DEC's direction, TERA identified the experts, established the peer review process, determined that the experts were free of potential conflicts of interest and bias, developed the charge to the experts to identify the important relevant scientific issues and questions, and ensured the experts had available all relevant background documents, copies of the reference doses and key references.[11]

In an initial report dated August 17, 2014, TERA indicated that DEC had tasked TERA with conducting an independent, expert peer review of the available chronic, oral reference doses for sulfolane.[12] This initial report identified two key studies (Huntington Life Sciences, 2001, and Zhu, et. al, 1987) and 8 chronic oral reference doses for further evaluation.[13]

On September 2, 2014, the Division issued a press release, announcing that the panel of independent experts would meet in Fairbanks to publicly review the available

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[10] Exhibit I at 16.

[11] Exhibit I at 16-19 and Appendix A.

[12] Exhibit E at 8.

[13] Exhibit E at 8-9.

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reference doses for sulfolane.[14] The Division described the panel as "national experts in toxicology, immunology, risk assessment, and contaminated sites" and stated that "the results will help assure DEC utilizes the most scientifically defensible reference dose when calculating a groundwater cleanup level for sulfolane."[15] All members of the expert panel hold Ph.D. degrees. The Panel included an individual currently employed by EPA, and several university professors.[16] Once again, the Division stated that it expected to make a decision on the sulfolane cleanup level "by the end of 2014."[17]

The Division asked the Expert Panel to use its independent professional scientific judgment to evaluate the available toxicity values and to identify the most adequate reference doses for sulfolane for consideration by the Division.[18] The Expert Panel met on September 16 and 17, 2014. Following the meeting, TERA drafted a report to summarize the Expert Panel's discussions and conclusions, and to serve as the official record of the expert review.[19]

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[14] Exhibit F.

[15] Id.

[16] See Exhibit I, Appendix A at 9-11.

[17] Exhibit F.

[18] Exhibit I at 9.

[19] Exhibit I at 19.

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ADEC's Approval of the Final Onsite Cleanup Plan

While TERA and the Expert Panel worked to complete the Expert Panel Report, the Division and Flint Hills negotiated a Final Onsite Cleanup Plan ("OCP"). DEC approved the OCP on October 16, 2014.[20]

The OCP calls for Flint Hills to continue operation of nine recovery wells and two groundwater remediation systems to address sulfolane in the groundwater. The OCP requires Flint Hills to operate the groundwater remediation and treatment system to address sulfolane at concentrations in excess of 15 ug/L.[21] In light of the Division's imminent evaluation of sulfolane toxicity and its determination of an approved cleanup level for sulfolane, the ADEC-approved OCP expressly recognized the need to adjust the system's performance standard to meet the specified cleanup level:

> [I]n the event that the cleanup level for the site is instituted at a level different than the 15 ug/L, the system's performance will be adjusted to meet the cleanup level. Prior to any adjustment, a pre-scoping meeting will be held if FHRA deems it necessary. Upon request by FHRA to adjust the system's performance, ADEC will act upon the request within thirty days provided the submittal is complete.

OCP at 11.

> Operation of the nine-well recovery and treatment system prevents further migration (beyond the recovery zone) of

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[20] Exhibits G and H.

[21] Exhibit G at 35-36.

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> sulfolane with concentrations greater than 15 ug/L. The concentrations of sulfolane beyond the recovery zone will continue to decrease, as documented through groundwater monitoring, until there is no further offsite migration of sulfolane with concentrations greater than 15 ug/L. In the event that a final determination of the sulfolane cleanup level is instituted at a level different than the 15 ug/L, the system's performance will be adjusted to meet the cleanup level. Prior to any adjustment, a pre-scoping meeting will be held if FHRA deems it necessary. Upon request by FHRA to adjust the system's performance, ADEC will act upon the request within 30 days provided the submittal is complete.

OCP at 36.

The Expert Panel's Report

On December 18, 2014, ADEC's Expert Panel issued its report.[22] The Report reflects the Panel's final opinion and conclusions. According to the Expert Panel, it evaluated the data, methods and decisions for a sulfolane reference dose, and made recommendations regarding the most scientifically appropriate decisions. The Expert Panel based its conclusions on application of the "best science" within the framework of EPA reference dose derivation methods.[23] The panel endorsed a reference dose for sulfolane that is consistent with ARCADIS's and FHRA's previous submissions, and it rejected the reference dose identified in EPA's PPRTV.

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[22] Exhibit I. The Panel members reviewed and revised the Report, and approved the final report. Exhibit I at 19.

[23] Exhibit I at 14.

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ADEC's Expert Panel reviewed six sulfolane reference doses (or "RfDs"). The panel conducted a close and systematic evaluation of the quality and reliability of the underlying scientific data, the scientific methods used, and the decision process for deriving each respective reference dose. ADEC's Expert Panel made the following key findings and conclusions:

- That the sulfolane toxicity study on which FHR based its reference dose analysis (the HLS study) was "sufficiently well conducted to serve as a reliable study for developing an RfD" and that it was "the most appropriate choice for developing the dose-response assessment" of an RfD. Exhibit I at 26. See also Exhibit I at 27, 52.
- That the scientific consensus in risk assessment is that Benchmark Dose Modeling ("BMD") "offers advantages" over alternative approaches and that log transformation of dose is an appropriate approach to use based on the data sets for sulfolane. Id. at 10-11, 33-34, 52.
- That the BMD model endpoint used by FHR in its analysis (the white blood cell count) "is the biologically most appropriate endpoint to use." Id. at 12, 43, 52.
- That the appropriate Point of Departure dose should be the Benchmark Dose Lower Confidence Limit (BMDL) value of 12.66 mg/kg-day. Id. at 12, 43.

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- That allometric scaling should be performed on the Point of Departure dose to convert the rodent dose to a Human Equivalent Dose using current EPA guidance. Id. at 13, 32.
- That the most appropriate composite Uncertainty Factor should be 300. All expert panel members agreed on this Uncertainty Factor, and recommended against a higher composite Uncertainty Factor because of "concerns with compounding precautionary decisions." Id. at 13, 50.
- That the reference dose derived by Thompson, et al. -- .01 mg/kg-day-- most closely aligned with the panel's conclusions. The panel observed that the reference doses derived by Thompson, et. al, ARCADIS and the Texas Council of Environmental Quality all were similar, at .01 mg/kg-day. Id. at 14, 54-55.

At no point in the panel proceedings or in their findings did the experts suggest that they lacked information sufficient to calculate a reference dose, or that completion of pending studies by the Natural Toxicology Program (NTP) was needed for establishing a cleanup level at the North Pole Site. When the Division's representatives were specifically asked by the panel chair whether the panel had answered the Division's outstanding questions and covered the issues that the Division wanted discussed, the Division's representatives confirmed that the panel had addressed the charge. Id. at 57.

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The Division's June 9, 2015 Letter Postponing a Decision on the Sulfolane Cleanup Level

Over a year after the Commissioner directed the Division to determine the cleanup level for sulfolane, and six months after its own Expert Panel issued its report, the Division issued a letter dated June 9, 2015.[24] In this letter, the Division announced that it would take no action regarding the cleanup level for sulfolane at the North Pole site, pending further studies of sulfolane by the NTP.

The Division's June 9 letter was contrary to the Commissioner's April 4, 2014 Order, directing the Division to determine a sulfolane cleanup level. Instead of determining a cleanup level for sulfolane, as directed, the Division postponed a decision for years. NTP's laboratory tests on animals are expected to continue for at least 2 years, and analyses of the results and publication of the findings could take at least an additional 3 years after the tests are done.

The Division's refusal to make a decision on the sulfolane cleanup level has a direct impact on FHRA's obligations under the OCP. When the Division and FHRA entered into the OCP in October 2014, FHRA operated with the understanding that the Division would fulfill its regulatory obligations--and the Commissioner's mandate--and set a sulfolane cleanup level later in 2014. This expectation was reasonable:

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[24] Exhibit J.

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- FHRA's request for an ACL had already been pending for over two years. Flint Hills submitted a fully-supported ACL proposal in May 2012, supplemented in June 2014.
- In April 2014, the Commissioner directed the Division to set a cleanup level. After receiving the Commissioner's instructions, the Division made repeated public statements of its intent to determine a cleanup level by the end of 2014.
- TERA had completed its public review meetings during September 2014. This included an oral debriefing to the assembled group (including the Division) describing the Expert Panel's conclusions.

In that light, in October 2014, ADEC made it clear to Flint Hills that a decision on the sulfolane cleanup level was imminent. Flint Hills agreed to the OCP's on-site performance standard only because the Division actively represented that this standard would be in place only *during the short period* until the Division complied with its obligations under its regulations and the Commissioner's mandate and set a sulfolane cleanup level. ADEC made no indication during the OCP negotiations that it was contemplating deferral of its decision on a sulfolane cleanup level, let alone a deferral that would last for years.

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Flint Hills' June 29, 2015 Letter Requesting Modification of the OCP

After the Division issued its June 9, 2015 letter postponing indefinitely any decision on the sulfolane cleanup level for the North Pole site, FHRA submitted a letter to the Division dated June 29, 2015.[25] FHRA requested modification of the interim performance standard for the groundwater extraction and treatment system from 15 ug/L to 362 ug/L.[26] FHRA based its request in part on the Expert Panel's report, which fully supports a reference dose for sulfolane consistent with a cleanup level of 362/ug/L.

The Division's Response to Flint Hills' Request for Modification to the OCP

On July 27, 2015, the Division responded to FHRA's June 29 letter.[27] The Division declined FHRA's request, stating that it would address FHRA's request "[o]nce a cleanup level for sulfolane has been established . . ." -- which is years away. By refusing to modify the OCP, and deferring a decision on the cleanup standard for years, the Division has adopted 15 ug/L as the de facto sulfolane cleanup level at the

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[25] Exhibit K.

[26] As indicated above, the OCP explicitly recognized that Flint Hills has the right to request that DEC modify the performance standard for the groundwater extraction and treatment system. DEC's regulations provide a similar right, making clear that a responsible person can request that DEC modify the terms of an approved site cleanup plan. See 18 AAC 75.360(4). This right is separate and distinct from the OCP and applies to any DEC-approved cleanup deliverable. Flint Hills' present request to modify the OCP is made under the terms of the OCP and under 18 AAC 75.360(4), which provide overlapping – but independent – authority.

[27] Exhibit L.

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North Pole site, subject to an undefined willingness to consider some other cleanup level at some time in the future. The Division has not stated any rationale why 15 ug/L is an appropriate performance standard and has now, contrary to the language of the OCP, refused to reconsider the OCP's performance standard even though its own experts indicate that "best science" dictates otherwise.

III. FLINT HILLS HAS A DIRECT INTEREST IN THE DIVISION'S ERRONEOUS REFUSAL TO MODIFY THE FINAL ONSITE CLEANUP PLAN, AND WILL BE DIRECTLY AND ADVERSELY AFFECTED BY THE DIVISION'S DECISION

Pursuant to 18 AAC 75.360(4), Flint Hills was required to submit a cleanup plan for DEC's approval. DEC approved the OCP on October 16, 2014.

The OCP currently requires Flint Hills to operate the groundwater remediation and treatment system to address sulfolane at concentrations in excess of 15 ug/L. This 15 ug/L standard imposes millions of dollars in costs on Flint Hills each year, in excess of what it would cost Flint Hills to operate this system to address sulfolane concentrations in excess of 362 ug/L--and with no measurable benefit to human health or the environment from these additional costs. Modification of the OCP to require operation of the groundwater remediation and treatment system to address sulfolane at concentrations in excess of 362 ug/L will significantly reduce the activity and expense required to operate this system, and will be consistent with the scientific analysis of DEC's own retained experts.

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IV. STATEMENT OF ISSUES FOR HEARING

A. List of Disputed Issues of Law and Fact

1. Was the Division justified in refusing to modify the OCP to reflect the sulfolane cleanup standard requested by Flint Hills under 18 AAC 75.345(b)(2), and supported by the reference dose identified by the Division's Expert Panel?

2. Is the Division authorized to require Flint Hills to achieve a 15 ug/L performance standard for sulfolane at the North Pole site, even though a) the Division has not set a groundwater cleanup level for sulfolane in Table C, and b) the Division refuses to approve or reject the sulfolane groundwater cleanup level proposed by Flint Hills pursuant to 18 AAC 75.345(b)(2)?

3. Does the Division's refusal to modify the OCP violate the mandate in the Commissioner's Order dated April 4, 2014, which required the Division to determine a cleanup level for sulfolane?

4. Did the Division provide an appropriate rationale and reasoning, within the meaning of the Commissioner's Order dated April 4, 2014, when refusing FHRA's request to modify the OCP pursuant to the OCP and 18 AAC 75.360(4)?

5. Was the Division's refusal to modify the OCP justified in light of the scientific information, including the information submitted by FHRA and by the Division's Expert Panel?

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B. Relevance of Each Issue to DEC's Decision

Each issue set forth above is directly relevant to DEC's July 27, 2015 decision rejecting Flint Hills' request to modify the OCP.

C. Estimate Of Time Needed For Hearing

Flint Hills estimates that an adjudicatory hearing on the issues raised in this request would take approximately 5 days.

V. REASONS THAT A HEARING SHOULD BE GRANTED

The Division's refusal to modify the OCP imposes significant costs on FHRA, without legal or scientific justification.

First, the Division's actions lack any legal justification. The Division has legal authority to require a party to address contamination. But it does not have authority to require a party to achieve cleanup levels that are not supported by any regulatory finding. The applicable regulations give the Division two options for making the necessary regulatory findings. One route is to follow rulemaking procedures to adopt a Table C value. The other route is to act on a site-specific cleanup level proposed by a responsible party based on a risk assessment. The Division has not followed either route. There is no Table C value. Flint Hills submitted a risk assessment over three years ago (May 2012), proposing a site-specific cleanup level. Flint Hills reiterated its proposal in June 2014. In June 2015, the Division announced that it will not act on Flint Hills' risk assessment and proposed cleanup level until an indefinite date, years

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in the future. In the meantime, the Division asserts that it can require Flint Hills to conduct very expensive remediation activities to remove sulfolane from the groundwater to levels that are not the product of any regulatory action, and that are not supported by science.

Second, the Division's actions lack any scientific justification. The cleanup level required by the OCP -- i.e., sulfolane in excess of 15 ug/L -- can be justified only if the reference dose for sulfolane is in the range of .001, as proposed in EPA's PPRTV. That reference dose was fully rejected by ADEC's own Expert Panel. Key deficiencies in the PPRTV included: 1) failure to use Benchmark Dose Modeling; 2) failure to use logarithmic transformation of the data; and 3) use of an excessive uncertainty factor (3000).

The Expert Panel not only rejected the analysis in EPA's PPRTV, but it affirmatively endorsed the analytical steps that produced the sulfolane reference dose (.01)-- that Flint Hills used to determine its proposed ACL of 362 ug/L. ARCADIS proposed this reference dose in its May 2012 risk assessment, and in its June 2014 supplement. This reference dose is also determined in Thompson, et al.'s 2012 peer reviewed article in the Journal of Applied Toxicology. The Expert Panel endorsed all of the methodological choices that produced this reference dose: the choice of the HLS study to develop the reference dose; the use of Benchmark Dose Modeling and logarithmic transformation to analyze the data; and use of a composite Uncertainty

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Factor of 300 (compared to EPA's 3000). Moreover, the panel concluded that "after a close and systematic evaluation of the steps and decisions for calculation of an RfD . . . the Thompson et al. RfD most closely aligns with the panel's conclusions."[28]

In short, exhaustive scientific analysis by an expert panel chosen by ADEC supports a reference dose of .01 for sulfolane. This reference dose does not support the cleanup level currently required under the OCP. Instead, this reference dose supports the cleanup level proposed by Flint Hills, and the modification of the OCP set forth here.

The Division's June 9 letter postponing any decision on sulfolane suggested that the open-ended delay was somehow justified by uncertainty that would be addressed by on-going studies at the National Toxicology Program. The Expert Panel's report does not support this claim. To the contrary, the Expert Panel concluded that the existing HLS study on sulfolane was "sufficiently well conducted to serve as a reliable [basis] for developing an RfD."[29] To the extent that there is uncertainty, this uncertainty is addressed by the EPA's reference dose methodology which was used by ARCADIS, Thompson, et al., and the Expert Panel. Under this methodology, any proposed reference dose is adjusted downward in proportion to the level of uncertainty. In other words, the higher the uncertainty, the lower the

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[28] Ex. I at 14, 55.

[29] Exhibit I at 26.

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reference dose will be. By way of illustration, if the data suggested a reference dose of 1000, with an uncertainty factor of 100, the reference dose would be 10. If the uncertainty factor was 1000, the reference dose would be 10 times lower--in this example, 1 rather than 10. This lower reference dose, in turn, would ultimately translate into a much lower (more stringent) cleanup level that the responsible party would be required to achieve. Here, the Expert Panel agreed unanimously on a Composite Uncertainty factor of 300. This means that the reference dose of .01 endorsed by the Expert Panel *already accounts for uncertainty*, by setting the reference dose at a level that is 1/300th of what it would otherwise be if there was no uncertainty. This approach insures that the reference dose is fully protective of human health.

VI. PROPOSED ALTERNATIVES TO THE DIVISION'S DECISION

The Commissioner should order the Division to modify the OCP to require FHRA to operate the groundwater remediation and treatment system to address sulfolane at the level proposed by Flint Hills and fully supported by the Expert Panel's report: concentrations in excess of 362 ug/L, subject to modification if the Division determines a different cleanup level for sulfolane in groundwater pursuant to 18 AAC 75.345(b).

VII. CONCLUSION

For the reasons stated above, Flint Hills Resources Alaska, LLC respectfully

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requests that the Commissioner grant its Request for an Adjudicatory Hearing.

DATED: August 14, 2015.

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