INUVIALUIT SIVUNNIUQPAIT IMAKKUN

INUVIALUIT WATER BOARD

July 25, 2025

Kyle Thompson
Senior Program Manager
Shell Canada Limited
Suite 4000, 500 Centre Street SE
Calgary, Alberta T2G 1A6

Dear Mr. Thompson:

Re: N5L8-1848 Shell Canada Limited, Water Licence Application - Former Unipkat I-22 Wellsite Soil Remediation, Mackenzie Delta, Inuvialuit Settlement Region, Northwest Territories

The Inuvialuit Water Board (IWB) acknowledges receipt of the water licence application package for the Former Unipkat I-22 Wellsite Soil Remediation project, Mackenzie Delta - Inuvialuit Settlement Region (ISR), Northwest Territories (NWT) on June 16, 2025. The IWB has completed an initial review of the application package and as a result requires additional information and / or clarification to consider the application complete.

Please provide the following additional information and / or clarification to enable the IWB to proceed with the water licence application review and comment process:

A. Water Licence Application Fee and Water Use Fee:

1. The water licence fee was not included with the water licence application package received by the IWB on June 16, 2025. On the same day, IWB staff sent a letter to the applicant (i.e. Shell Canada Limited) requesting the submission of the $30.00 water licence application fee to the IWB, by cheque payable to the GNWT – Department of Finance. As of today, the IWB has not received the water licence application fee. This fee is required for further processing of the water licence application. Please submit the water licence fee as outlined in the IWB correspondence sent to the applicant on June 16, 2025. If the fee has already been submitted directly to the GNWT - Department of Finance, the IWB requires a copy of the receipt for the IWB Public Register.

2. The water licence application package includes a water use fee calculator indicating a water use fee of $138.60. The water use fees were not included with the water licence application fee and submission package. IWB staff distributed correspondence to the applicant (i.e. Shell Canada Limited) on June 16, 2025 requesting submission of the water use fees by cheque payable to the GNWT – Department of Finance. As of today, the IWB has not received the water use fees. Please submit the water use fees as outlined in the IWB correspondence dated June 16, 2025. If the fees have already been submitted directly to the GNWT - Department of Finance, the IWB requires a copy of the receipt for IWB Public Register.

B. Project Description (PD):

1. Page 5, section 5.2.1, Paragraph 1 states: "Accommodations for the crew during soil remediation (summer / fall of 2025 to the summer / fall of 2026) and wood piling removal (planned for winter 2028) may either be provided by a self-contained barge camp or a self-contained winter camp (Figure A5, Appendix A)".

   Appendix A, Figure A5 does not indicate the location of the self-contained barge camp and / or the self-contained winter camp on land and on ice. Please provide an updated Figure A5 showing the locations of the self-contained barge camp and the self-contained winter camp, both on land and / or on ice, including Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (Latitude and Longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to use Google Earth latitude and longitude values as the GPS points.

2. Page 6, section 5.2.4, bullet 4 states that "The ETC treatment process involves the transfer of a heated airstream (typically between 300 and 450 degrees Celsius [°C]) to volatilize and destroy PHCs in soil whose concentrations are above the proposed SQOs".

   The elevated temperatures (typically ranging from 300 to 450°C) may cause changes in the physical properties of the soil, including a loss of organic matter, which can inhibit soil biological activity and vegetation re-growth. Consequently, this change may alter the site hydrology (e.g., runoff, soil erosion kinetics, etc.) of the backfilled area. The modification to site hydrology could negatively impact adjacent water bodies due to increased erosion and soil loss.

   Please provide a description of the potential impacts of the backfilled ETC treated soil on site hydrology, the subsequent effects on adjacent water bodies and the proposed mitigation and monitoring measures.

3. Page 7, bullet 6 states: "Soil that does not meet the proposed site specific SQOs following subsequent treatment will be placed in closed 1 m^3 mega sacks and staged temporarily in the secondary containment (i.e., fuel storage area [Figure A5, Appendix A].....".

   Please clarify whether the secondary containment capacity of the fuel storage area will be designed to accommodate the combined containment requirements for both fuel and mega sacks of soil. Additionally, a contingency plan is required to manage fuel-impacted soil in the event of a fuel spill.

4. Appendix A, Figure A5 indicates the location of the "Temporary Soil Storage" area. However, it is unclear whether this area is intended for:
   - soil excavated prior to ETC treatment, or
   - ETC treated soil prior to backfilling, or
   - soil that does not meet the proposed site-specific SQOs following ETC treatment.

   Please clarify.

   Additionally, indicate the temporary soil storage locations for each of the following on Appendix A, Figure A5:

   1) Soil excavated prior to ETC treatment,
   2) ETC treated soil prior to backfilling, and
   3) Soil that does not meet the proposed site-specific SQOs following ETC treatment.

Please include Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (Latitude and Longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.

5. Page 71, Section 16.0, Table V, Row 10 indicates "ECT - Fuel." Please clarify whether this refers to "Enhanced Thermal Conduction (ETC) - Fuel".

C. Remedial Action Plan (RAP):

1. Page ii, Executive Summary, paragraph 1: The GPS coordinates of the project site are listed as 69°11'37.00"N latitude and 135°20'36.95"W longitude. However, the GPS coordinates provided in Schedule C, Section 3, and in the Project Description (Page 1, Section 4.1) are 69°11'36.07" N latitude and 135°20'33.88" W longitude. Please clarify these discrepancies.

2. Page 4, Paragraph 3 describes the remediation activities conducted in 2011 and mentions the issue of river water seeping into the excavation, filling it, and halting the work. If a similar issue arises during the upcoming proposed excavation of contaminated soil, please describe the preventive and mitigation measures that will be implemented.

3. Page 25, the text below Table J states: "Although source excavation is common to both ETC and off-site disposal, soil hauling is expected to result in increased greenhouse emissions as compared to a remedial option on-site treatment". PD, Page 71, Section 16.0, Table V, provides the estimated GHG emissions for on-site treatment using the ETC soil treatment method, with a total estimated GHG emissions of 4,330 tonnes CO_2e. For the support of statement, is there a corresponding estimate for GHG emissions associated with off-site disposal for comparison with the on-site ETC treatment?

4. Page 26, section 5.2, last paragraph states: "Given the low volume of soil exceeding the proposed SQOs for barite, no backfill is expected to be required and the excavated areas will be recontoured using balanced grading".

   Is there a contingency plan for borrow source requirements if volumes of soil containing barite exceeds the expected volume and requires backfill material while doing real onsite soil excavation? If the use of a borrow source is expected as a contingency, please indicate the location of the potential borrow source on Appendix A, Figure A5, including Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (Latitude and Longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.

5. Page 26, section 6.1, Paragraph 2 states: "To accommodate personnel on site, it is anticipated that a barge camp will be transported via the Mackenzie River (and connected channels) to the site prior to freezing conditions. A winter camp may be used instead, either on land or on river ice".

   Please provide an updated Figure A5 under Appendix A, showing the location of the self-contained barge camp and the self-contained winter camp on land and on river ice, including Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (Latitude and Longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.

6. Page 27, section 6.1, last paragraph states: "The Site is known to flood during freshet, and as such, if remedial activities coincide with this timeframe, activities at the Site will be temporarily halted".

   If the excavated area, contaminated soil staging area, soil treatment area and contact water storage area becomes flooded, there is a risk that contaminants could be washed into adjacent water bodies. If this worst-case scenario occurs, what contingency plan for preventive and mitigative measures will be implemented to protect such worst-case scenario.

7. Page 34, second paragraph from top of the page states: "The thermal oxidizer is operated such that minimum temperatures in the chamber, combined with chamber volume / residence time during treatment allows for CoC destruction efficiencies of greater than 99%. This will be verified through data collected by the treatment contractor at regular intervals (i.e., a datalogger set at 30-minute intervals) from airflow and temperature sensors (see Appendix F for an example) within the thermal oxidizer exhaust. In addition, air quality measurements will be collected using hand-held photoionization detectors twice daily during operational time in the predominant downwind direction of the exhaust".

   The air quality parameters to be measured are not specified. For additional clarity, please provide a description of the parameters to be monitored (i.e. off-gas CoCs). This information will help confirm that the thermal oxidizer is operating optimally for the destruction of CoCs and that off-gases are not releasing CoCs into the atmosphere or depositing them aerially into the adjacent water body.

8. Page 41, section 8.3 states that "Wastewater is expected to be limited to sewage from portable washroom facilities. The proposed barge camp will include water and sewage tanks mobilized from and back to Inuvik for disposal during and at the completion of the project".

   It is unclear whether "sewage" in this context includes both toilet waste and greywater. Other associated documents, such as the Waste Management Plan (Page 8, Section 3.2) refer to "sewage and greywater." For consistency and clarity, the statement on Page 41, Section 8.3 should be revised.

D. Wildlife Management Plan (WMP)

1. Page 19, Section 6.0, Bullet 3 states: "For bear encounters, the GNWT's Bear Encounter Response Guidelines will be followed, including completion of the Bear Complaint Checklist (Appendix B)".

   The information under "Contacts" and "Response Personnel" listed in Appendix B, Bear Encounter Response Guidelines, Section III, may be outdated.

   Please contact the GNWT ECC Regional Office in Inuvik – Wildlife and Forestry at 1-867-678-8091 ext. 53661 to verify whether the "Contacts" and "Response Personnel" information in Appendix B, Section III are still valid. If the information is outdated, please include updated contact details under Page 19, Section 6.0, Bullet 3. Up-to-date contact information is essential for reporting human-wildlife incidents.

E. Waste Management Plan (WMP)

1. Page 5, section 3.1 states: "Construction materials and other non-hazardous (domestic) waste will be stored temporarily at the Site inside the office trailer and / or inside the barge or winter camp (Figure A3, Appendix A),……".

   Figure A3 in Appendix A does not indicate the location of the office trailer, barge camp and winter camp on land or on river ice. Please indicate the location of the office trailer, barge camp and winter camp on land and on river ice, including Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (latitude and longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.

2. Appendix A, Figure A3 indicates location of "Water Treatment System." Please clarify whether this refers to the "Activated Carbon Water Treatment System".

3. Page 5, section 3.1 states that "……and will be transported periodically to be disposed of at an approved landfill facility in Inuvik. The Inuvik Solid Waste Disposal Facility is aware of the upcoming domestic waste disposal requirements for the Project. Approval from the local Authority is provided in Appendix B".

   Appendix B includes the email approval from the Water Resource Officer, GNWT Environment and Climate Change (ECC), Inuvik Region. The Town of Inuvik holds a Water Licence (#G17L3-001) for water use and waste disposal. To confirm the Town of Inuvik's acceptance of such waste, please provide the IWB with copies of a Third Party Agreement or letters between the applicant (i.e. Shell Canada Limited) and third parties (i.e. the Town of Inuvik) in which the third parties agree to dispose of each type of construction material and other non-hazardous (domestic) waste at the Inuvik Municipal Solid Waste Disposal Facility, including:
   - type and estimated quantities of each waste; and
   - disposal location(s) and proof of acceptance from third parties.

4. Page 5, Section 3.1 states: "...will be transported periodically...". Please provide clarification on whether the waste will be transported daily, weekly, bi-weekly or monthly.

5. Page 6, section 3.1.1 describes a pre-existing incinerator installed on-board the barge camp for incineration of non-hazardous (domestic, combustible solid waste produced during the camp operation). The PD (Page 17, section 6.3.1, Paragraph 1 states: "To accommodations for the crew during soil remediation (summer / fall of 2025 to the summer / fall of 2026) and wood pilling removal (planned for winter 2028) may either be provided by a self-contained barge camp or a self-contained winter camp (Figure A5, Appendix A)".

   Please clarify whether the winter camp on land and on river ice will utilize an incinerator for the incineration of non-hazardous (domestic), combustible solid waste generated during winter camp operations on land and on river ice. If yes, provide the following information:
   - Specifications of the incinerator to be used at the winter camp;
   - Operational procedures for the incinerator;
   - Bottom ash testing protocols; and
   - Disposal location(s) for incinerator bottom ash.

6. Page 6, Incinerator Ash Testing and Disposal, line 3 states: "Based on the test results, ash will be classified and then transported and disposed of accordingly". Please provide a copy of the agreement between the applicant (i.e. Shell Canada Limited) and the licensed facility that will accept and dispose of the incinerator bottom ash.

7. Page 8, section 3.2, Paragraph 1 states: "Soil that does not meet the SQO for PHCs following secondary treatment will be stockpiled for off-site disposal at an appropriately licensed solid waste management facility (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia) via winter road or barge, depending on quantity. Soils containing barite above the proposed SQOs will be excavated for off-site disposal at an approved facility outside the NWT".

   The Waste Management Plan (Appendix B) includes an acceptance letter from KBL for all waste streams and criteria. However, the text on Page 8, Section 3.2, Paragraph 1 refers to Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia. A copy of the Third Party Agreement or letters between the applicant (i.e. Shell Canada Limited) and the third party (i.e. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia) is not included in Appendix B.

   Please provide the IWB with copies of a Third Party Agreement or letters between the applicant (i.e. Shell Canada Limited) and the third party (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia) in which the third party agrees to accept and dispose of PHC contaminated soil and barite contaminated soil. Each agreement or letter should include:
   - type (e.g. PHC contaminated soil, barite contaminated soil) and estimated quantities of each soil type; and
   - disposal location(s) and proof of acceptance from third parties.

8. For the disposal of all hazardous waste expected to be generated during project activities, as described on Page 8, Section 3.2, Paragraphs 2, 3, and 4, please provide the IWB with copies of Third Party Agreements or letters between the applicant (i.e. Shell Canada Limited) and the third party (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia) confirming that the third party has agreed to accept and dispose of the hazardous waste specified in those sections. Each agreement or letter should include:
   - type and estimated quantities of each hazardous waste; and
   - disposal location(s) and proof of acceptance from third parties.

9. Page 8, section 3.2, Paragraph 5 states: "Greywater and sewage will be stored in the camp's holding tanks. Grey water and sewage will be securely transported for disposal at the licensed facility in Inuvik. The Inuvik Sewage Lagoon Facility is aware of the upcoming grey water and sewage disposal requirements for the Project. Approval from the local Authority is provided in Appendix B".

   The Waste Management Plan (Appendix B) includes an email approval from the Water Resource Officer, GNWT ECC, Inuvik Region. The Town of Inuvik holds a Water Licence (#G17L3-001) for water use and waste disposal. To further confirm the Town's acceptance of greywater and sewage, please provide the IWB with a copy of the Third Party Agreement or letter between the applicant (i.e. Shell Canada Limited) and the third party (i.e. Town of Inuvik) confirming that the Town has agreed to accept greywater and sewage generated from the barge camp and the winter camp, located on land or on river ice, into the Inuvik Municipal Sewage Disposal Facility. Each agreement or letter should include:

- type and estimated quantities of each waste; and
- disposal location(s) and proof of acceptance from third parties.

10. Page 8, section 3.2, Paragraph 6 states: "Solid waste generated from the wood pilings removal activities is expected to include a mix of wood piling debris and soil. It is estimated that the volume of waste generated by the wood pilings removal activities will be approximately 1.5 m^3 / piling. During the Project, the wood piling debris will be removed and transported to Inuvik for final off-site disposal at an appropriately licensed solid waste management facility (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia)".

    Please provide the IWB with a copy of the Third Party Agreement or letters between the applicant (i.e. Shell Canada Limited) and a third party (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia) confirming that the third party has agreed to accept and dispose of the mixed wood piling debris and soil described in the Waste Management Plan (Page 8, Section 3.2, Paragraph 6). Each agreement or letter should include:
    - type and estimated quantities of each waste; and
    - disposal location(s) and proof of acceptance from third parties.

F. Spill Contingency Plan (SCP):

1. Appendix A, Figure A3 indicates the location of "Temporary Soil Storage." Please clarify whether this is the staging area for excavated soil (i.e. soil prior to ETC treatment).

2. Appendix A, Figure A3 indicates the "Direction of Water Channel Flow." Please clarify whether this is the Arvoknar Channel. Figure A1 indicates the Mackenzie River. If the channel shown is the Arvoknar Channel of the Mackenzie River, please label it accordingly on the figures in Appendix A.

3. Indicate the following additional features on Figure A3 under Appendix A:
    - Flow direction of leachate from untreated soil stockpile, contaminated soil staging area and flow direction of ponded water from proposed contaminated soil excavation area, all surface water bodies and direction of water flow.
    - Storage locations of each hazardous material; probable spill locations and direction of flow on land and in water.
    - Locations of all emergency and spill response equipment.
    - Indicate proposed temporary locations of barge camp, winter camp on land and on river ice, office trailer, excavated soil prior to ETC treatment, ETC treated soil prior to backfilling, contaminated soil that does not meet the SQO after ETC treatment, and barite contaminated soil including Global Positioning System (GPS) coordinates of all features in Degrees, Minutes, Seconds (DMS) format (latitude and longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.
    - Environmentally sensitive areas; and any other important on or off-site features.

4. Page 6, Section 2.3 describes the approximate capacity of the heated sewage tank for the barge camp and the sewage tank for the winter camp. Please clarify the following:
    - Confirm whether the sewage tank is intended to hold both sewage and greywater.
    - Provide a worst-case scenario description of a sewage / greywater spill.

5. If the public may be impacted by a spill, describe notification procedures to alert the public.

6. Page 19, Section 7.2 refers to Off-Site Resources: "Spill response contact numbers are provided in Table C." However, on Page 9, Table C provides information on communication equipment for the Project, not off-site contact numbers. Please clarify and provide the "Off-Site Resources".

G. Erosion and Sediment Control Plan (E&SCP)

1. Page 6, section 2.2.3, Paragraph 2, line 5 states that "Holes generated by the removal of the pilings will be backfilled and compacted with the drill cuttings".

   Please clarify how it will be ensured that the drill cuttings are not contaminated with any contaminants of potential concern (CoPCs). Will the drill cuttings be tested for CoPCs prior to backfilling? If the drill cuttings are found to be unsuitable for backfilling, please describe the alternative method(s) that will be used to backfill the holes created by the removal of the pilings.

2. Page 7, Section 3.0, Paragraph 1 mentions that additional Erosion and Sediment Control (ESC) measures may be required and will be documented. However, these additional ESC measures are not described further. Please clarify and provide a description of the additional ESC measures that may be required during and following the remediation activities.

H. Reclamation, Closure and Monitoring Plan (RC&MP)

1. Page 7, Section 3.1.3.1, Paragraphs 1 and 3 refer to Appendix A, Figure A5. However, Appendix A includes only Figures A1, A2, A3, A4a and A4b. Figure A5 is not included in Appendix A. Please submit Figure A5 as referenced in Page 7, Section 3.1.3.1, Paragraphs 1 and 3.

2. Page 18, Section 4.4, Paragraph 2 states: "In the unlikely event that bench-scale testing determines that the soil is not suitable for ETC treatment, soils exceeding the proposed SQOs for PHC will instead be excavated for appropriate out-of-territory disposal (e.g. Secure Energy's Fox Creek facility in Alberta or a similar facility in British Columbia). In this instance, an evaluation will be completed to determine if the excavations can be levelled through balanced grading or if a borrow source may be required".

   This statement indicates that a borrow source may be required under certain conditions. In this case, please describe the potential borrow source location and include it on Figure A3 along with Global Positioning System (GPS) coordinates in Degrees, Minutes, Seconds (DMS) format (Latitude and Longitude). Note: Due to potential inconsistencies among individual GPS units, it is recommended to utilize Google Earth latitude and longitude as the GPS points.

I. As per the Inuvialuit Final Agreement (IFA) and Section 11, all projects must undergo the Environmental Impact Screening Committee (EISC) process. The IWB requires the EISC decision letter before a decision on the water licence application. Please submit the EISC decision letter.

As per the IWB document submission standards, submit two (2) hard copies and two (2) electronic copies (USBs) of the requested additional information and / or clarifications (A to I),

along with a cover letter and a summary table indicating how and where (e.g. page and section numbers) the requested information is addressed. This will assist the IWB with the continuation of processing your water licence application in a timely manner.

The submitted documentation, including all related IWB correspondence, will be placed on the IWB Public Register. Should you have any questions regarding this correspondence, contact me at 867-678-8610 or adhikarib@inuvwb.ca or Mardy Semmler, Executive Director, at 867-678-8609 or semmlerm@inuvwb.ca.

Sincerely,

Bijaya Adhikari, PhD
Science and Regulatory Coordinator

Cc: Stephanie Villeneuve, Environmental Scientist, WSP