



Sahtu Land and Water Board

Staff Information Report

Division: Land and Water Program	Report No.:
Date Prepared: July 12, 2018	File No.: S04A-006/S04L1-006 S02A-004/S02L1-003 S05A-007/S05L1-004
Meeting Date: August 24, 2018	
Subject: Husky Oil Operations Sah Cho L-71 Site Reclamation Work Plan and Summit Creek B-44 and K-44 Wellsites Remediation Program Work Plan	

1. Purpose/Report Summary

The purpose of this Report is to present to the Sahtu Land and Water Board for information:

- a) Requests made by Husky Oil Operations for approval of 2018-2019 Work Plans related to Wellsite Reclamation Programs and Request for Site Closure
- b) Summary of stakeholder review comments.

2. Background

- **May 3, 2018** - The Sahtu Land & Water Board (SLWB or Board) received a Site Reclamation Work Plan and Request for Closure for Sah Cho L-71 Wellsite and a 2013-2015 Phytoremediation Validation Report;
- **May 7, 2018** - Review packages were sent out electronically to members of the Tulita Distribution List using the Online Review System with a request for comments by May 24, 2018;
- **May 24, 2018** – Reviewer comments received and deadline;
- **May 31, 2018** - Proponent response deadline;
- **June 8, 2018** – Staff Confirmation of Notification L-71 Site Reclamation 2018-19 Work Plan.

- **May 25, 2018** – The SLWB received a Site Reclamation Work Plan and Request for Closure for Summit Creek B-44 and K-44 Wellsites and 2017 Soil Monitoring Programs for B-44 and K-44 Wellsites;
- **June 4, 2018** – Review packages were sent out electronically to members of the Tulita Distribution List using the Online Review System with a request for comments by June 18, 2018;
- **June 18, 2018** - Reviewer comments received and deadline;
- **June 21, 2018** - Proponent response deadline;
- **July 3, 2018** - Staff Confirmation of Notification B-44 and K-44 Site Reclamation 2018 Work Plan;

- **July 20, 2018** - Presentation to the Board for information.

3. Discussion – Project Overview

Husky Oil Operations previously obtained Land Use Permits and Water Licences to complete exploratory oil and gas drilling at various locations approximately 60 km SSW of Tulita in the Summit Creek area on Exploration Licence 394 and 397. All of these Licences and Permits have expired; however there has been ongoing soil remediation at many of the wellsites to meet Closure and Reclamation conditions. In 2010, MWH Canada Inc (MWH) was retained by Husky to identify outstanding or non-compliant items at each of Husky's wellsites and prepare a reclamation plan based on findings of past Summer Site Inspections. Based on the findings and recommendations Husky planned to conduct an Abandonment and Restoration program for the B-44, L-71, K-44, D-57, B-20 and L-52 leases as well as associated campsites and staging areas. Environmental Inspections on September 20, 2010 revealed concerns with L-71, K-44 and B-44 wellcentres in that soil sampling had returned in excess of CCME Guidelines. MWH has since focussed reclamation efforts on these three wellsites using phytoremediation at L-71 and natural attenuation and biodegradation at the K-44 and B-44 wellsites.

Sah Cho L-71 Wellsite Site Reclamation Project (S04A-006/S04L1-006)

Since 2012, a remedial program for Petroleum Hydrocarbon (PHC) contaminated soils has occurred on the Sah Cho L-71 Wellsite. Phytoremediation methods have been used, and the results of this program are contained in the Northern Envirosearch (Tulita) Ltd. document "[2013-2015 Phytoremediation Validation Report](#)". Based on the 2015 sampling program results, all impacted soils meet or exceed Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME SQG) Tier 1 values for fine grained soils. There is approximately 180 – 200 m³ of affected soil, which were recommended by Northern Envirosearch (Tulita) Ltd. to replace within the excavated area on site.

Husky Oil Operations Limited submitted a proposed Work Plan for 2018-2019 for the Sah Cho L-71 Wellsite Site Reclamation Project. .

The scope of the reclamation plan is as follows:

May/June 2018 (project timing based on regulator and vendor personnel availability):

- 1) Gain approval from the regulator (GNWT-Lands & Sahtu Land and Water Board) to replace soils:
 - a. Review site reports with regulators.
 - b. Meet with regulators to discuss the work plan and tour the site, if required.
- 2) Project planning:
 - a. Build logistics plan to mobilize equipment /personnel based on contracted vendors.
 - b. Ensure there is an agreement and understanding with the local regulators on the scope of work and gain approval.
- 3) Field visit to site:
 - a. Complete inspection, confirm reclamation plan.
 - b. Manage /pump-off surface water if required.

Project Execution — Replacing Remediated Soils

July 2018 based on equipment /barge availability, and timing with other scopes of work:

- 1) Obtain and stage required equipment and consumables:

a. Stage tracked skid steer (or other equipment, heli-portable only), wheelbarrows, tools, plywood sheets, fuel, helicopter fuel cash, shovels, approved grass seed, straw erosion matting, water pumps /hose, quad and trailer (if required) out to site.

b. Set up site and dismantle lined pad, and package to remove the liner and any waste including rough lumber.

2) Replace soils into excavation:

a. Complete any surface water discharge or water management activities as required.

b. Use plywood (or alternative) if required, as matting and solid surface area, to move remediated soils into the excavation from the lined area.

c. Use the skid steer to stage soils beside and within the excavation. Work with labourers and wheelbarrows to move soils into areas where skid steer cannot access.

d. Once soils are levelled, rototill the soil, seed (with approved seed mix) & fertilize, and lay out biodegradable erosion matting. This will help keep the soils insulated from the heat of the sun.

e. Clean up and haul out waste via bulk bags and netting using a helicopter. Stage waste material in Tulita and haul out via scheduled barges.

3) Regulatory tour during project execution phase, if requested.

Project Execution — Rototill and Support Vegetation Growth

June or July 2019 based on equipment /barge availability, and timing with other scopes of work:

1) Obtain and stage required equipment and consumables:

a. Stage rototiller (or other equipment heli-portable only), tools, fuel, helicopter fuel cash, approved grass seed, water pumps /hose, out to site.

2) Fertilize and re-seed any stressed areas:

a. Complete any surface water discharge or water management activities as required.

b. Rototill and use government approved seed mix /fertilizer on any stressed vegetative areas.

c. Clean up any remaining litter, and complete site inspection /photos.

d. Return to site in late-Summer to inspect vegetation growth on site.

3) Regulatory tour during project execution, if requested.

Site inspections after 2019 may be required to ensure that vegetation is recovering and that there are no slumping or erosion issues within the reclaimed areas. This work can be planned in accordance with follow-up reports and discussions with local regulators.

Representatives met with the communities of Norman Wells and Tulita and also hosted meetings with the Fort Norman Metis Land Corporation, Norman Wells Land Corporation, Tulita Land Corporation, and the Tulita District Land Corporation during the week of January 29, 2018 to outline the proposed activities. Members support the plan and are also keen to have these sites closed.

In summary, Husky is requesting approval to close the L-71 phytoremediation pad by returning the remediated soil back to well center, rototill, seed, & fertilize the soil and dismantle /remove the berm liner and fencing in the summer of 2018.

Summit Creek B-44 and K-44 Wellsites Reclamation Project (S02A-004/S02L1-003 and S05A-007/S05L1-004)

Since 2011, a remedial program for Petroleum Hydrocarbon (PHC) contaminated soils has occurred on the B-44 and K-44 wellsites. The results of the soil remediation program have shown that the levels of PHCs have

decreased dramatically. Results of the soil monitoring programs are contained in the Northern Envirosearch (Tulita) Ltd. documents - [Soil Monitoring Program 2017 for Summit Creek B-44 Wellsite](#) and [Soil Monitoring Program 2017 for Summit Creek K-44 Wellsite](#).

The Land Use Inspector's reports on the B-44 and K-44 wellsites from 2013 and 2016 indicate that both sites are in generally good condition:

- The site is well vegetated.
- No signs of contamination (spills etc.) found on site.
- No debris or waste found.
- Well center shows no sign of slumping or water pooling.

The results have shown that the remediation program was nearing completion in 2013 as the levels of PHCs have decreased dramatically. The Inspection report from 2013 also confirmed that no further inspections of the shared sump or campsite were required as all previous reports were favourable. The Inspector had indicated that once a follow-up set of soil sample analyses was submitted they would be able to confirm if CCME guidelines were met. Husky confirmed that upon reviewing internal records, this data was not previously submitted. It was submitted with this report.

The wellsite reviews, confirmatory discreet sampling, and vegetation growth of the surface inspections have shown further improvements found at the well centres. After reviewing results from the B-44 and K-44 wellsite soil sampling programs, Husky is requesting approval to conclude monitoring in 2018 and close the B-44 and K-44 wellsites in 2018 pending inspector approval.

Husky Oil Operations has submitted a proposed work Plan for 2018 for the Summit Creek B-44 and K-44 Wellsites Reclamation Project as follows:

June and August 2018 (project timing based on regulator /vendor personnel availability):

- 1) Complete a field visit to each well site and note overall vegetation growth and site stability in both June and August. The visits can coincide with regulatory inspections.
- 2) If required, use approved seed mix to help aid in revegetation of any areas of concern in June.
- 3) Complete site close-out inspection report for submission.

Due to the remoteness of the wellsites, the present land-use, lack of ground water /potential receptors, a shallow rooting zone, and the localized areas of impact, an intrusive sampling program may cause a set back to the current revegetation of the well sites. The contamination may have been managed through natural attenuation and biodegradation.

Representatives met with the communities of Norman Wells and Tulita and also hosted meetings with the Fort Norman Metis Land Corporation, Norman Wells Land Corporation, Tulita Land Corporation, and the Tulita District Land Corporation during the week of January 29, 2018 to provide a summary of the soil monitoring program and outline the proposed site closure activities. In general, community members in attendance supported the plan and are also keen to have these sites closed.

In summary, Husky is proposing that no further work is required on the B-44 and K-44 wellsites and closure inspections should be completed in 2018.

4. Other Agency Comments

The L-71 and B-44 and K-44 Work Plans and Monitoring Reports were distributed to members of the current SLWB Tulita Distribution List which includes 35 review organizations. Of the 35 organizations to which the reports were distributed, 15 are represented within the Sahtu Settlement Area. Review comments were received from:

- Environment and Climate Change Canada (ECCC)
- GNWT – Department of Environment and Natural Resources (ENR)
- GNWT – Department of Lands – Sahtu Region
- Sahtu Renewable Resources Board (SRRB)

For the **Sah Cho L-71 Wellsite Reclamation Project** GNWT-ENR submitted the following comment: “ENR has reviewed the updated Work Plan for the Sah Cho L-71 site and notes that the Phytoremediation Validation Report submitted supports the recommendation to close the phytoremediation pad by backfilling. ENR has no further comments at this time”.

For the **B-44 and K-44 Wellsite Reclamation Project** both ECCC and GNWT-ENR had no comments or recommendations.

GNWT Lands – Sahtu Region noted that “they have been working with Husky Oil to address past concerns on the B-44 and K-44 wellsite. As shown in the Environmental Inspection reports, the sites are both now due for final closure. Lands support the proposal made by Husky, although it is understood that a final inspection and recommendation from an inspector must be made before the file is closed. No other comments at this time”.

The SRRB commented on the B-44 Wellsite: “ In general, the case to close B-44 is supported, due to the attenuation of hydrocarbon contamination at the site and improving physical condition of the site, however inconsistencies in the supporting data weaken the case. If the site is formally closed, a monitoring program with an extended time scale (every 5-10 years) is recommended to ensure the condition of the site continues to improve”.

The SRRB commented on the K-44 Wellsite: “ The case for closure is strong given the improving physical condition of the site and the apparent attenuation of the hydrocarbon contamination. The site is remote and the lack of surface or groundwater at the site suggests that the small amount of contamination will not spread. Monitoring of the physical condition of the site should continue, but with an extended time period (5-10 years)”.

There were no proponent responses to reviewer comments.

5. Conclusion

Board Staff prepared a letter dated [June 8, 2018](#) confirming that the Board has received notification of the 2018-2019 Work Plans for the Sah Cho L71 Wellsite with details of remediation activities from 2013 to 2015 and a letter dated [July 3, 2018](#) confirming that the Board has received notification of the 2018 Work Plan for the Summit Creek B-44 and K-44 Wellsites with details of remediation activities from 2011 to 2014.

In these letters, Board Staff noted that the Work Plans are not a requirement of the above-noted Water Licences or Permits; however, the Reports describe reclamation activities that have been ongoing since the last Annual Reports (2013) received by the Board on September 30, 2013, as required by Part B, condition 2(g) of Licence S02L1-003 and Part B, condition 2(j) of Licence S05L1-004, and since the last Annual Report (2012) received by the Board on September 20, 2013, as required by Part B, condition 2(j) of Licence S04L1-006. Board Staff noted

that no additional Annual Reports have been received. The Work Plans were circulated for review on the Online Review System and reviewer comments generally supported the proposed Work Plans. Board staff review also confirms that the Reports support the proposed Work Plans for 2018-2019 for L-71 and for 2018 for K-44 and B-44.

Board Staff also drew attention to the requirement for Summer Site Inspections to ensure that vegetation is recovering and that there are no slumping or erosions issues with the reclaimed areas and conditions in the Water Licences and Land Use Permits applying to Abandonment and Restoration.

The Licensee shall monitor the project area affected by activities related to the issued Water Licence for a minimum of 5 years to ensure that mitigation, reseeding, erosion control and restoration efforts have been successful. These efforts shall be performed to the satisfaction of the Board and the Water Licence Inspector.

The Permittee shall establish vegetation on all areas stripped of vegetation during this land use operation to a minimum of seventy (70%) per cent ground cover, unless otherwise authorized in writing by the Land Use Inspector.

Board staff also reminded Husky to submit a written report documenting the Annual Summer Site Inspection as set out in conditions of the Water Licences S02L1-003, S04L1-006 and S05L1-004 which are to be submitted as part of the Annual Water Licence Report.

Finally Board Staff shared the requirements for final clearance of Land Use Permits S02A-004, S04A-006 and S05A-007. Once a Final Plan has been received and processed, which includes confirmation by an Inspector and recommendation for file closure, the SLWB will be able to issue a Letter of Clearance, thereby closing the Land Use Permit.

6. Recommendation

Board staff recommend that the Board receive this report for information and notification of ongoing reclamation activities for 2018 and 2019 for the Sah Cho L-71 Wellsite and the Summit Creek B-44 and K-44 Wellsites and the request for closure of these wellsites upon Inspector approval.

7. Attachments

- 7.1 Review Comments Table for Sah Cho L-71 Work Plan
- 7.2 Review Comment Table for Summit Creek B-44 and K-44 Work Plan

Respectfully submitted,



Bonnie Bergsma
Regulatory Specialist

Review Comment Table

Board:	SLWB
Review Item:	Husky Oil Operations Summit Creek B-44 and K-44 Wellsites Remediation Program
File(s):	S02A-004 S02L1-003 S05A-007 S05L1-004
Proponent:	Husky Oil Operations Ltd.
Document(s):	S05A-007 and S02A-004 Request for Site Closure (1.1 MB) Summit Creek K-44 Soil Monitoring Program 2017 (19 MB) K-44 AGAT Lab Analyses (1.3 MB) Summit Creek B-44 Soil Monitoring Program 2017 (19 MB) B-44 AGAT Lab Analyses (1.3 MB)
Item For Review Distributed On:	June 4 at 16:17 Distribution List
Reviewer Comments Due By:	June 18, 2018
Proponent Responses Due By:	June 21, 2018
Item Description:	<p>Husky Oil Operations has submitted a proposed work Plan for 2018 for the Summit Creek B-44 and K-44 Wellsites Reclamation Project associated with Land Use Permit S02A-004 and Water Licence S02L1-003 (B-44) and Land Use Permit S05A-007 and Water Licence S05L1-004 (K-44).</p> <p>Since 2011, a remedial program for Petroleum Hydrocarbon (PHC) contaminated soils has occurred on the B-44 and K-44 wellsites. The results of the soil remediation program have shown that the levels of PHCs have decreased dramatically. Results of the soil monitoring programs are contained in the Northern Envirosearch (Tulita) Ltd. documents - Soil Monitoring Program 2017 for Summit Creek B-44 and K-44 Wellsites. Based on the findings of these reports, Husky is requesting approval to conclude monitoring in 2018 and close the B-44 and K-44 wellsites in 2018 pending inspector approval.</p> <p>Reviewers are invited to submit comments and recommendations about the proposed Work Plan by June 18, 2018. Please submit comments on:</p> <ul style="list-style-type: none"> • Summit Creek K-44 and B-44 Summary of Reclamation Activities - Request for Site Closure • Soil Monitoring Program 2017 Summit Creek B-44 Wellsite

	<ul style="list-style-type: none"> • Soil Monitoring Program 2017 Summit Creek K-44 Wellsite • Laboratory Analyses of Soil Samples for B-44 and K-44
General Reviewer Information:	All documents that have been uploaded to this review are also available on our public registry. If you have any questions or comments regarding this review or the Online Review System, please contact Bonnie Bergsma at (867) 496-2778 or by email bonnie.bergsma@slwb.com .
Contact Information:	Bonnie Bergsma Sabrina Sturman 867-598-2413

Comment Summary

Environment and Climate Change Canada: Petrel Liu				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General	<p>Comment ECCC has reviewed the remediation program in accordance with its mandate and has no comments at this time.</p> <p>Recommendation N/A</p>		
GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General File	<p>Comment (doc) ENR Letter - No Comments or Recommendations at this time.</p> <p>Recommendation</p>		
GNWT - Lands - Sahtu Region: Trevor Bremner				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Remediation Program	<p>Comment The Department of Lands has been working with Husky Oil to address past concerns on the B-44 and K-44 wellsite. As shown in the Environmental Inspection reports, the sites are both now due for final closure. Lands support the proposal made by Husky,</p>		

		although it is understood that a final inspection and recommendation from an inspector must be made before the file is closed. No other comments at this time. Recommendation NA		
Sahtu Renewable Resource Board: Colin Macdonald				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Request for Site Closure B-44	Comment The request for site closure provides a case for declining hydrocarbon contamination and revegetation at the B-44 well site. The data largely support the case but some questions remain. The inspectors report also provides evidence that the physical condition of the site supports closure. Recommendation In general, the case to close B-44 is supported, due to the attenuation of hydrocarbon contamination at the site and improving physical condition of the site, however inconsistencies in the supporting data weaken the case. If the site is formally closed, a monitoring program with an extended time scale (every 5-10 years) is recommended to ensure the condition of the site continues to improve. 		
2	Table 1 “Request for Closure	Comment 2014 sample Sites B44-S01 to S03 show declining PHC values and low toluene concentrations. There is no map of the sampling sites in relation to the 2011 and 2012 boreholes.		

		<p>Also, selenium exceeded CCME soil quality guidelines in earlier sampling, but metals were not analysed in the 2014 analysis by AGAT labs. Selenium exceeded CCME values in 2011 (Note: the background site is indicated in Table 3 of the Aug 2017 report to have exceeded the CCME guideline although it appears to be less than 1).</p> <p>Recommendation Provide map of the 2014 sampling locations. Review data tables to ensure consistency with CCME guidelines.</p>		
3	B-44 Site	<p>Comment Sump</p> <p>Recommendation Please indicate if a sump is present on the B-44 site, its current condition and the long-term plans for removal or monitoring its condition.</p>		
4	K-44	<p>Comment The report provides a case for the closure of the K-44 site. Contamination on site has declined since 2012 and attenuation of the residual contamination of the hydrocarbons on site should continue. The case is supported by the inspector's report which says that the site is well vegetated, no waste and no slumping around the well center. Metals were not analysed in the 2014 soil collections even though selenium was high in some samples in 2012.</p> <p>Recommendation The case for closure is strong given the improving physical condition</p>		

		<p>of the site and the apparent attenuation of the hydrocarbon contamination. The site is remote and the lack of surface or groundwater at the site suggests that the small amount of contamination will not spread. Monitoring of the physical condition of the site should continue, but with an extended time period (5-10 years). Please specify if there is a sump on-site and, if so, whether it will be drained or monitored for a long period of time.</p>		
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Review Comment Table

Board:	SLWB
Review Item:	S04A-006/S04L1-006 - Husky Oil Operations Sah Cho L-71 Site Reclamation Work Plan
File(s):	S04A-006
Proponent:	Husky Oil Operations Ltd.
Document(s):	Sah Cho L-71 Site Reclamation Work Plan (325.9 kB) 2013-2015 Phytoremediation Validation Report (21.1 MB)
Item For Review Distributed On:	May 7 at 14:51 Distribution List
Reviewer Comments Due By:	May 24, 2018
Proponent Responses Due By:	May 31, 2018
Item Description:	<p>Husky Oil Operations Limited submitted a proposed Work Plan for 2018-2019 for the Sah Cho L-71 Wellsite Site Reclamation Project associated with Land Use Permit S04A-006 and Water Licence S04L1-006.</p> <p>Since 2012, a remedial program for Petroleum Hydrocarbon (PHC) contaminated soils has occurred on the Sah Cho L-71 Wellsite ' Phytoremediation methods have been used, and the results of this program are contained in the Northern Envirosearch (Tulita) Ltd. document "2013-2015 Phytoremedaition Validation Report". Based on the findings of this report, Husky is requesting approval to close the L-71 phytoremediation pad in the summer of 2018.</p> <p>Reviewers are requested to submit comments and recommendations about the proposed work plan by May 24, 2018. Please submit comments on:</p> <ul style="list-style-type: none"> • Sah Cho L-71 Site Reclamation - Proposed Work Plan for 2018-2019; • 2013-2015 Phytoremediation Validation Report.
General Reviewer Information:	All documents that have been uploaded to this review are also available on our Public Registry. If you have any questions or comments regarding this review or the Online Review System, please contact Bonnie Bergsma at (867)496-2778 or email bonnie.bergsma@slwb.com .

Contact Information:	Bonnie Bergsma Sabrina Sturman 867-598-2413
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Comment Summary

GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
2	General File	Comment (doc) ENR Letter with Comments and Recommendations Recommendation		
1	Topic: General	Comment ENR has reviewed the updated Work Plan for the Sah Cho L-71 site and notes that the Phytoremediation Validation Report submitted supports the recommendation to close the phytoremediation pad by backfilling. ENR has no further comments at this time. Recommendation None.		