Mackenzie Valley Land and Water Board
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P.O. Box 2130
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Staff Report

Applicant: Avalon Rare Metals (Avalon)	
Location: Thor Lake, NT	**Application:** MV2014D0001 & MV2014L2-0001
Date Prepared: June 30, 2014	**Meeting Date:** July 17, 2014
Subject: Updated Spill Contingency Plan	

1. Purpose/Report Summary

The purpose of this report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) the updated Spill Contingency Plan submitted by Avalon in accordance with their Land Use Permit (LUP) MV2014D0001 and Water Licence (WL) MV2014L2-0001.

2. Background

- April 14, 2014 – LUP issued;
- May 22, 2014 – WL issued;
- May 23, 2014 – Spill Contingency Plan (Plan) submitted to the Board;
- May 26, 2014 – Plan uploaded to the Online Review System (ORS) and distributed to reviewers for comment;
- June 19, 2014 – Comments from reviewers received;
- June 26, 2014 – Responses from Avalon received; and
- July 17, 2014 – Presented to the Board for decision.

3. Discussion

Avalon submitted the updated Plan in accordance with their LUP and WL, specifically:

Condition 57 of the LUP:

> The Permittee shall submit a revised Spill Contingency Plan for Early Works Activities to the Board for approval, in accordance with"Aboriginal Affairs and Northern Development Canada's 2007 "Guidelines for Spill Contingency Planning", within 30 days of the issuance date of this permit.

Part H, Item 2 of the WL:

> The Licensee shall submit a revised Spill Contingency Plan to the Board for approval, in accordance with Indian and Northern Affairs Canada's Guidelines for Spill Contingency Planning, 2007 or subsequent editions, within 30 days of the issuance of this Licence.

4. Comments

During the initial review of the application comments were received from the GNWT- Environment and Natural Resources requesting that the Spill Contingency Plan be updated and resubmitted to the Board.

5. Review Comments

During the review comments were received from Environment Canada (EC) and GNWT- Environment and Natural Resources (GNWT-ENR).

Comments and responses from Avalon can be found in the attached Online Review System Comment Summary Table.

6. Security

n/a

7. Conclusion

During the review there were five items that staff feel were not fully responded to or addressed. Updating the Plan to include these items would provide further clarity and instruction to site personnel using the Plan, however; these items do not fundamentally change the purpose of the Plan. These items are described in Table 1 below.

Table 1: Spill Contingency Plan

#	Topic	Recommendation	Item to be addressed
1	Section 2.2: Preliminary Site Preparation and Construction Phase (page 4)	EC request that the proponent provide more detailed information regarding the fuel storage tanks in accordance with the Storage Tank Systems for Petroleum Products and Applied Petroleum Products Regulations. This includes the location and the spill containment infrastructure for all	Avalon is committed to constructing and storing all fuel and other hydrocarbons in accordance with the CCME environmental code of practice for storage of these products (CCME 2003) and the Canadian petroleum products storage tank regulations (CEPA 2008). Further details on the design of the

		tanks. EC recommends that the Proponent use secondary containments (i.e. berms, double-walled tanks, etc.) for all stationary hazardous materials storage systems.	fuel storage tank system will be provided when this information become available. This information will be incorporated into the next updated version of the Spill Contingency Plan for the preliminary site preparation and construction program.
2	Section 10.2: Spill Response Equipment - Spill Kits (page 16)	EC recommends that a spill kit should be readily available at all locations where fuel is being stored or transferred and should accompany ATVs and snowmobiles in order to provide immediate response in the event of a spill.	Avalon is committed to locating suitably equipped spill kits in all fuel and lube storage areas and other locations where significant spills of such products could potentially occur. Given the proximity of these spill kits to the potential sites where spills could occur, available communications capability, small volumes of petroleum products utilized and planned preventative maintenance programs, Avalon does not believe that it would be practical or necessary to have ATVs or snowmobiles equipped with spill kits. Furthermore, additional loading of these working vehicles represents a potential safety hazard to the employee that is not warranted by the low spill risk of these vehicles.

3	Spill Contingency Plan Topic 1: Spill Contingency Plan	1) As this is an updated the spill contingency plan, ENR requests that the proponent re-submit the SCP to follow the format and details required in the AANDC Guidelines for Spill Contingency Planning (INAC 2007) as noted above, and ensure that all designs are finalized and provided to the board for approval prior to construction of the Site. To Note for the Proponent: In addition to recommendation 1, the proponents training program should satisfy the requirements of Section 2.5 of the AANDC Guidelines for Spill Contingency Planning. Detailed information including the following should be included with the plan: a) outline of the company's training program, including a description of training materials and simulation exercises. The training program should ensure that employees understand the procedures in the action plan, the hazards of the materials stored on-site, where to find response equipment and how to operate it, and how to obtain off-site resources. Copies	As more detailed information becomes available on the proposed fuel and waste storage facilities and other project infrastructure, and the proposed spill response training program, the current version of the Spill Contingency Plan for the Site Preparation and Construction Phase will be updated as necessary. Avalon currently completes some form of emergency simulation exercise at least annually and when there is a significant level of activity on the site, and proposes to continue to do these in the future. Confidential training records are maintained by the HR department, and further development of training and record keeping will occur as the project develops.

		of training materials are not required in the plan but should be referenced b) A training schedule, indicating when training has occurred and future training dates c) A commitment to notify Inspectors and other relevant regulators of planned upcoming mock spill exercises so that regulators have the option of observing the on-site exercise d) A description of the record keeping procedures that will document which employees have received training and when e) Records of recent employee training (e.g. personnel sign-off sheets)	
4	Topic 2: Establishment of Petroleum Fuel Storage Facilities	1) The Spill Contingency Plan may also include the following: a) Project Name and Location on the title page b) All storage and transfer areas are at a distance greater than 100 meters from any local high water marks/drainage channels and within a secondary containment (i.e. berms, impermeable liner, double walled tank, etc.) c) Site map(s) with fuel storage and transfer areas clearly identified	Item to be incorporated into the Plan and re-submitted to the Board.

		and location of spill response equipment. d) Contact information for local contractor and clean up specialists who can be called upon to assist with spill clean-up and remediation.	
5	Topic 4: Spill Contingency Plan	1) Sewage is an infectious substance and must be included in the Spill Contingency Response Action Plan.	As requested, potential sewage spills will be addressed in the in the next version of the Spill Contingency Plan for the Site Preparation and Construction Program.

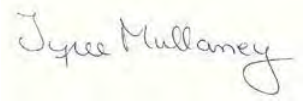
8. Recommendation

Board staff recommend that the Board approve the Spill Contingency Plan conditionally upon receipt of the items identified in Table 1.

9. Attachments

- Updated Spill Contingency Plan
- Online Review System Comment Summary Table
- Draft Letter

Respectfully submitted,



Tyree Mullaney
Regulatory Officer

Review Comment Table

Board:	MVLWB
Review Item:	Avalon Rare Metals - (Early Works) - Spill Contingency Plan - MV2014D001 & MV2014L2-0001
File(s):	
Proponent:	Avalon Rare Metals
Document(s):	Avalon Rare Metals - Spill Contingency Plan - MV2014D0001 & MV2014L2-0001 (5 MB)
Item For Review Distributed On:	
Reviewer Comments Due By:	June 19, 2014
Proponent Responses Due By:	June 26, 2014

Item Description:

Organization	Contact Name	Contact Position/Title	Email/Fax
Fort Resolution Métis Council	Trudy King		(867)394-3322; Fieldworker.frmc53@northwestel.net;
Hay River Metis Council	Wally Shuman	President	(867)874-4472; hrmc@northwestel.net;
NWT Metis Nation	Tim Heron	NWTMN IMA Coordinator	(867)872-2772; rcc.nwtmn@northwestel.net;
Smith Landing First Nation	Andrew Wanderingspirit	Chief	(867)872-5154; chief@slfn196.com;

General Reviewer Information:	Good afternoon, Attached you will find the Spill Contingency Plan submitted by Avalon Rare Metals in accordance with their LUP and WL. If you have any questions please feel free to contact me.
Contact Information:	Jen Potten 867-766-7468 Tyree Mullaney 867-766-7464

Comment Summary

Environment Canada: Sarah-Lacey McMillan				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Response**
1	General File	**Comment** (doc) EC cover letter **Recommendation**		
2	General	**Comment** Implementation of the following measures may help to reduce or eliminate potential harmful effects of the project on the environment, but will not necessarily ensure that the proponent remains in compliance with the Canadian Environmental Protection Act 1999 (CEPA 1999). The proponent must ensure they remain in compliance with CEPA 1999 during all phases and in all undertakings related to the project. **Recommendation** For proponents information	**June 26:** Avalon is committed to ensuring compliance with all applicable provisions of the Canadian Environmental Protection Act (CEPA 1999) during all phases and in all undertakings related to the project.	Response is satisfactory
3	Section 2.2: Preliminary Site Preparation and Construction Phase (page 4)	**Comment** Avalon plans on constructing a diesel fuel storage tank of 1.4 ML and smaller, 25 000L Enviro-Tanks. EC would like to have more details on these tanks such as the location, the spill containment infrastructure and the secondary containment aspects. **Recommendation** EC request that the proponent provide more detailed information regarding the fuel storage tanks in accordance with the Storage Tank Systems for Petroleum Products and Applied Petroleum Products Regulations. This includes the location and the spill containment infrastructure for all tanks. EC recommends that the Proponent use secondary containments (i.e. berms, double-walled tanks, etc.) for all stationary hazardous materials storage systems.	**June 26:** Avalon is committed to constructing and storing all fuel and other hydrocarbons in accordance with the CCME environmental code of practice for storage of these products (CCME 2003) and the Canadian petroleum products storage tank regulations (CEPA 2008). Further details on the design of the fuel storage tank system will be provided when this information become available. This information will be incorporated into the next updated version of the Spill Contingency Plan for the preliminary site preparation and construction program.	Item to be incorporated into the Plan and re-submitted to the Board.
4	Section 3.3: Hazardous materials - Explosives (page 6)	**Comment** Avalon plans on using powder and cap magazines during construction. The magazines will be located approximately 300 meters south of the Portal construction area. **Recommendation** EC recommends that the proponent provide the location of the stockpiles of explosives.	**June 26:** Information on the location of the explosives magazines is provided in Avalon's Explosives Management Plan which is on the MVLWB Public Registry.	Response is satisfactory
5	Section 5.0: Spill Notification (page 7)	**Comment** Section 5.0 states: "a major spill is defined as an accidental release of hazardous product into the natural environment that has the potential for significant adverse impact." and "A minor spill is defined as any hazardous chemical spill to the natural environment that exceeds the reporting limits, does not involve highly toxic, highly reactive, or explosive chemicals, in a situation that is not life threatening and is unlikely to have a significant environmental impact." EC seeks further details on the classification of major and minor spills such quantity and identification of hazardous materials as well as the sensitivity of the receiving environment	**June 26:** Avalon is comfortable with the current definitions provided in the Spill Contingency Plan for major and minor spills. The MSDS sheets for all of the products onsite that could potentially be spilled provide information on the environmentally hazardous properties and available mitigation measures for responding to spills of these products. The potential environmental consequences of a spill are typically determined by a number of other factors beyond the quantity of a spill or the type of product spilled. These include the spill location, the season of the year, prevailing weather conditions, effectiveness of the spill response organization and many other considerations. A significant effect is an impact that can only be rectified in the	Response is satisfactory

		. **Recommendation** EC recommends that the Proponent defines clearly what a major spill and a minor spill consist of by providing more detailed definitions of threshold for each type of hazardous material.	medium to long term or is irreversible, causes a serious breach of environmental regulation, serious disruption to neighbors, negative impact to an endangered or threatened species or result in community outrage. Avalon would be pleased to meet with Environment Canada to discuss this subject further.	
6	Section 10.2: Spill Response Equipment - Spill Kits (page 16)	**Comment** Avalon has indicated that spill kits will be located in the Maintenance Shop and the Fuel and Lube Storage Area. **Recommendation** EC recommends that a spill kit should be readily available at all locations where fuel is being stored or transferred and should accompany ATVs and snowmobiles in order to provide immediate response in the event of a spill.	**June 26:** Avalon is committed to locating suitably equipped spill kits in all fuel and lube storage areas and other locations where significant spills of such products could potentially occur. Given the proximity of these spill kits to the potential sites where spills could occur, available communications capability, small volumes of petroleum products utilized and planned preventative maintenance programs, Avalon does not believe that it would be practical or necessary to have ATVs or snowmobiles equipped with spill kits. Furthermore, additional loading of these working vehicles represents a potential safety hazard to the employee that is not warranted by the low spill risk of these vehicles.	Item to be incorporated into the Plan and re-submitted to the Board. Response is acceptable, update plan to include commitment to have spill kits located suitably equipped spill kits in all fuel and lube storage areas and other locations where significant spills of such products could potentially occur and how this addresses the concern by EC
GNWT - Environment and Natural Resources: Central Email GNWT				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Response**
5	General File	**Comment** (doc) ENR Comments and Recommendations on Spill Contingency Plan **Recommendation**		
1	Spill Contingency Plan Topic 1: Spill Contingency Plan	**Comment** Comment(s): ENR notes that the proponents SCP has been developed based upon preliminary information prior to the completion of the mine design. The SCP will require updating prior to the construction of the Site once the mine design is finalized. ENR notes that SCP requires the following: a) The proponent has only provided a preliminary site map indicating the location of all spill containment equipment and fuel storage. ENR notes that the figure provided is sufficient, however once all structures are completed all figures should be updated and included in future iterations of the SCP. b) The proponent as per its Water Licence should include all as-built drawings to the MVLWB and the inspector. Additionally, ENR notes that the proponent has not provided preliminary designs for its infrastructure. For all hazardous waste storage there should be 110% capacity of the largest storage tank included in the design (double walled tanks, bermed areas, etc.) c) ENR notes that the training program identified in the SCP is insufficient. Further details are required as described in the note below. d) Section 11.1 Disposal Methods- the proponent states that it may potentially incinerate liquid products. ENR notes that approval for incineration must be provided by a regulator (i.e. Inspector). e) The proponent has not included SOPs or described how fuel will be transferred on-site other than a brief description. A detailed	**June 26:** As more detailed information becomes available on the proposed fuel and waste storage facilities and other project infrastructure, and the proposed spill response training program, the current version of the Spill Contingency Plan for the Site Preparation and Construction Phase will be updated as necessary. Avalon currently completes some form of emergency simulation exercise at least annually and when there is a significant level of activity on the site, and proposes to continue to do these in the future. Confidential training records are maintained by the HR department, and further development of training and record keeping will occur as the project develops.	Item to be incorporated into the Plan and re-submitted to the Board.

		SOP is required for review of this procedure. **Recommendation** Recommendation(s): 1) As this is an updated the spill contingency plan, ENR requests that the proponent re-submit the SCP to follow the format and details required in the AANDC Guidelines for Spill Contingency Planning (INAC 2007) as noted above, and ensure that all designs are finalized and provided to the board for approval prior to construction of the Site. To Note for the Proponent: In addition to recommendation 1, the proponents training program should satisfy the requirements of Section 2.5 of the AANDC Guidelines for Spill Contingency Planning. Detailed information including the following should be included with the plan: a) outline of the company's training program, including a description of training materials and simulation exercises. The training program should ensure that employees understand the procedures in the action plan, the hazards of the materials stored on-site, where to find response equipment and how to operate it, and how to obtain off-site resources. Copies of training materials are not required in the plan but should be referenced b) A training schedule, indicating when training has occurred and future training dates c) A commitment to notify Inspectors and other relevant regulators of planned upcoming mock spill exercises so that regulators have the option of observing the on-site exercise d) A description of the record keeping procedures that will document which employees have received training and when e) Records of recent employee training (e.g. personnel sign-off sheets)		
2	Topic 2: Establishment of Petroleum Fuel Storage Facilities	**Comment** Comment(s): Ensure provisions are in place for appropriate storage of fuel and disposal fuel contaminated materials. Ensure mitigation measures are in place in the event of spills of any hazardous materials and reduce the release of contaminated materials. ENR has reviewed the May 2014 Spill Contingency Plan prepared for the project and has the following recommendations. **Recommendation** Recommendation(s): 1) The Spill Contingency Plan may also include the following: a) Project Name and Location on the title page b) All storage and transfer areas are at a distance greater than 100 meters from any local high water marks/drainage channels and within a secondary containment (i.e. berms, impermeable liner, double walled tank, etc.) c) Site map(s) with fuel storage and transfer areas clearly identified and location of spill response equipment. d) Contact information for local contractor and clean up specialists who can be called upon to assist with spill clean-up and remediation.	**June 26:** a) The project name is identified in the header of every page and the location of the site is identified in Figure 1. b) all fuel and waste storage areas will be located more than 100 metres from any local water bodies. Any modification to this will require approval by the appropriate inspector/regulator in advance. c) An updated site map showing all fuel storage and transfer areas and the location of spill kits will be provided in the next version of the Spill Contingency Plan for the Site Preparation and Construction Program. d) Spill response contacts and contractors are identified in Section 8.0 of the Spill Contingency Plan	Item to be incorporated into the Plan and re-submitted to the Board.
3	Topic 3: Spill Contingency Plan	**Comment** Comment(s): North Slave Regional Inspector contact information has been omitted.	**June 26:** The North Slave Regional Inspector contact information is provided in Section 8.0 of the Spill Contingency Plan.	Response is satisfactory

		Recommendation Recommendation(s): 1) GNWT ENR North Slave Regional Inspector can be contacted at 867-873-7443. This information must be included in the Spill Contingency Plan.		
4	Topic 4: Spill Contingency Plan	**Comment** Comment(s): Section 9.0 Spill Response Action Plan does not contain information pertaining to the potential spillage of sewage. **Recommendation** Recommendation(s): 1) Sewage is an infectious substance and must be included in the Spill Contingency Response Action Plan.	**June 26:** As requested, potential sewage spills will be addressed in the in the next version of the Spill Contingency Plan for the Site Preparation and Construction Program.	Item to be incorporated into the Plan and re-submitted to the Board.

Environment Canada | Environnement Canada

Environmental Protection Operations (EPO)
Prairie and Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife NT X1A 2P7

June 19, 2014

EC files: 5100 000 016 008/009
MVLWB files: MV2014D0001 / MV2014L2-0001

Jen Potten, Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor, 4922 48th St
PO Box 2130
Yellowknife NT X1A 2P6

via online submission

Attention: Ms. Potten

RE: MVLWB Item - MV2014D0001 & MV2014L2-0001 - Avalon Rare Metals Inc. - (Early Works) – Spill Contingency Plan

Environment Canada (EC) has reviewed the Spill Contingency Plan submitted by Avalon Rare Metals Inc. The following specialist advice, in the attached "Reviewer Comment Table", is provided pursuant to EC's mandated responsibilities arising from the *Canadian Environmental Protection Act, 1999* (CEPA), the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act* (MBCA) and the *Species at Risk Act* (SARA).

If there are any changes to the provided plans and/or more information becomes available, EC should be notified, as further review may be necessary. Please do not hesitate to contact me at (867) 669-4724 or sarah-lacey.mcmillan@ec.gc.ca.

Sincerely,

Sarah-Lacey McMillan
Senior Environmental Assessment Coordinator
Environmental Protection Operations
Prairie and Northern Region
Environment Canada

cc: Carey Ogilvie Head Environmental Assessment North (NT & NU), EPO
EC Review Team

Northwest Territories Environment and Natural Resources

June 19, 2014

Tyree Mullaney
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Dear Ms. Mullaney,

Re: **Avalon Rare Metals Inc.**
Land Use Permit Application – MV2014D0001
Water Licence Application – MV2014L2-0001
Spill Contingency Plan
Waste Management Plan
Wildlife and Wildlife Habitat Protection Plan
Erosion and Sediment Protection Plan
Request for Review and Comments

The Department of Environment and Natural Resources (ENR) has reviewed the plans at reference based on its mandated responsibilities under the *Environmental Protection Act,* the *Forest Management Act*, the *Forest Protection Act, Waters Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Erosion and Sediment Control Plan

Topic 1: Erosion and Sediment Control Plan – EQC for Suspended Solids

Comment(s):

Section 5.1.2, first bullet indicates that discharges from a construction site containing natural levels of sediment should be conveyed to existing, undisturbed watercourses.

Recommendation(s):

1) The Inspector recommends that all discharges from construction sites must meet licence EQC for Total Suspended Solids (25mg/L).

Spill Contingency Plan

Topic 1: Spill Contingency Plan

Comment(s):

ENR notes that the proponents SCP has been developed based upon preliminary information prior to the completion of the mine design. The SCP will require updating prior to the construction of the Site once the mine design is finalized.

ENR notes that SCP requires the following:

a) The proponent has only provided a preliminary site map indicating the location of all spill containment equipment and fuel storage. ENR notes that the figure provided is sufficient, however once all structures are completed all figures should be updated and included in future iterations of the SCP.

b) The proponent as per its Water Licence should include all as-built drawings to the MVLWB and the inspector. Additionally, ENR notes that the proponent has not provided preliminary designs for its infrastructure. For all hazardous waste storage there should be 110% capacity of the largest storage tank included in the design (double walled tanks, bermed areas, etc.)

c) ENR notes that the training program identified in the SCP is insufficient. Further details are required as described in the note below.

d) Section 11.1 Disposal Methods- the proponent states that it may potentially incinerate liquid products. ENR notes that approval for incineration must be provided by a regulator (i.e. Inspector).

e) The proponent has not included SOPs or described how fuel will be transferred on-site other than a brief description. A detailed SOP is required for review of this procedure.

Recommendation(s):

1) As this is an updated the spill contingency plan, ENR requests that the proponent re-submit the SCP to follow the format and details required in the AANDC *Guidelines for Spill Contingency Planning* (INAC 2007) as noted above, and ensure that all designs are finalized and provided to the board for approval prior to construction of the Site.

   To Note for the Proponent: In addition to recommendation 1, the proponents training program should satisfy the requirements of Section 2.5 of the AANDC *Guidelines for Spill Contingency Planning.* Detailed information including the following should be included with the plan:

a) *"An outline of the company's training program, including a **description** of training materials and simulation exercises. The training program should ensure that employees understand the procedures in the action plan, the hazards of the materials stored on-site, where to find response equipment and how to operate it, and how to obtain off-site resources. Copies of training materials are not required in the plan but should be referenced*

b) *A **training schedule**, indicating when training has occurred and future training dates*

c) *A commitment to notify Inspectors and other relevant regulators of planned upcoming mock spill exercises so that regulators have the option of observing the on-site exercise*

d) *A description of the record keeping procedures that will document which employees have received training and when*

e) *Records of recent employee training (e.g. personnel sign-off sheets)"*

Topic 2: Establishment of Petroleum Fuel Storage Facilities

Comment(s):

Ensure provisions are in place for appropriate storage of fuel and disposal fuel contaminated materials. Ensure mitigation measures are in place in the event of spills of any hazardous materials and reduce the release of contaminated materials. ENR has reviewed the May 2014 Spill Contingency Plan prepared for the project and has the following recommendations.

Recommendation(s):

1) The Spill Contingency Plan may also include the following:

   a) Project Name and Location on the title page
   b) All storage and transfer areas are at a distance greater than 100 meters from any local high water marks/drainage channels and within a secondary containment (i.e. berms, impermeable liner, double walled tank, etc.)
   c) Site map(s) with fuel storage and transfer areas clearly identified and location of spill response equipment.
   d) Contact information for local contractor and clean up specialists who can be called upon to assist with spill clean-up and remediation.

Topic 3: Spill Contingency Plan

Comment(s):

North Slave Regional Inspector contact information has been omitted.

Recommendation(s):

1) GNWT ENR North Slave Regional Inspector can be contacted at 867-873-7443. This information must be included in the Spill Contingency Plan.

Topic 4: Spill Contingency Plan

Comment(s):

Section 9.0 Spill Response Action Plan does not contain information pertaining to the potential spillage of sewage.

Recommendation(s):

1) Sewage is an infectious substance and must be included in the Spill Contingency Response Action Plan.

Waste Management Plan

Topic 1: Domestic sewage and Waste water – Appropriate Categories Required

Comment(s):

The current category of "Domestic sewage and Waste water" is broad, and suggests that several types of wastes could be grouped and managed under this category, along with sewage wastes. The Waste Management Plan (WMP) should clearly separate "Sewage and Greywater" from "Wastewater" – as they can represent two very different waste streams which must be managed differently.

Other Water Licences have used the following definitions describing "Greywater" as "all liquid Wastes from showers, baths, sinks, kitchens, and domestic washing facilities but does not include Toilet Wastes" and "Sewage" as "all toilet wastes and greywater". Other waste streams which differ from "Sewage" or "Greywater" categories should be appropriately classified to ensure proper monitoring and disposal.

ENR notes that vehicle wash bay water may contain contaminants (e.g. hydrocarbon residue, metals) that would not be considered typical in greywater or sewage, and may not be appropriate for disposal through the membrane bioreactor treatment facility.

Recommendation(s)

1) ENR recommends that all waste streams must be properly characterized and managed.

2) ENR recommends that all approved SNP stations specify which wastewater stream has been approved for disposal at each specific location, with associated GPS coordinates.

3) ENR recommends that the WMP should also include a description of available contingencies to prevent discharge of non-compliant or untreated wastewater in the event of treatment plant malfunction.

Topic 2: Waste Details (Quantity, Quality, Treatment and Disposal) Missing from Water Licence Application and Waste Management Plan

Comment(s):

Section 8 of the water licence application does not include information on quantity, quality and treatment and disposal procedures for each waste type, but refers to the Waste Management Plan. ENR notes that the information of the expected quantity/volumes for each waste was not provided within the WMP.

Recommendation(s):

1) A complete list of all wastes (hazardous and non-hazardous) in a table format - with estimates respective quantities/volumes, quality, treatment and disposal procedures should be provided within the WMP. Furthermore, the storage locations for each waste should also be provided along with respective GPS coordinates.

Topic 3: Membrane Bio-reactor Sewage Treatment Plant and Other Treatment/Reducing Systems

Comment(s):

Avalon is proposing to use a Membrane Bio-Reactor Treatment System to treat Sewage and Greywater (and potentially other wastewater streams) for a wastewater volume output of 260 L /person/day (WMP section 3.6.2) translating into 26 m3/day for 100 people.

ENR understands that sludge is a product of this type of treatment system, and the sludge will be stockpiled for use in mine reclamation. Sludge quality will depend upon the characteristics of any wastewater that is treated in the plant.

Recommendation(s):

1) ENR recommends that Avalon confirm the source of the design volume and ensure it is consistent with per person volumes generated at other mine sites in the NWT.

2) ENR recommends that the sludge should be characterized to confirm that it will be suitable for use during reclamation.

Topic 4: WMP – Specific Information Required

Comment(s):

The submitted WMP is very general, and does not include required information such as waste storage locations, effluent discharge locations, MSDS information for materials, etc. The 2011 MVLWB Guidelines for Developing a Waste Management Plan provides information on the specific information that is required.

Recommendation(s):

1) ENR-Waters recommends that Avalon Waste Management Plan be updated to include all the information required per the 2011 MVLWB Guidelines for Developing a Waste Management Plan.

Topic 5: Waste Management Plan- Industrial Waste Discharges in the NWT

Comment(s):

The Waste Management Plan (WMP) Section 3.5, lists the regulations and guidelines that it states will be applied or might be referenced for the management of waste. The table includes the Department of Environment and Natural Resources (ENR) administered *Guideline for Industrial Waste Discharges in the NWT*. This is not the intent of the ENR referenced Guideline. ENR is concerned that the Proponent intends to use these guidance documents for treatment and disposal of industrial wastes from its operations.

The Guideline for Industrial Waste Discharges in the NWT, clearly states in Section 1. Introduction, page 1: “The purpose of this guideline is to establish standards that should be followed in the discharge of waste from an industrial operation on Commissioner's Land or lands administered by Municipal Governments in the Northwest Territories (NWT).”

Hence, this Guideline is not for the purpose to facilitate the transfer of the Proponent’s mining industrial wastes to community facilities. ENR does not support the disposal outsourced waste streams to community facilities unless an assessment of the environment and economic impacts of disposal of the waste is conducted, and

it is demonstrated the facility has been designed and is operated to accommodate the waste stream in question.

Recommendation(s):

1) ENR recommends that the Proponent remove reference to ENR's *Guideline for Industrial Waste Discharges in the NWT* from its Waste Management Plan.

Topic 6: Waste Management Plan- Waste Oil Burner Registration

Comment(s):

The proponent is proposing to burn waste fuel or oil for energy recovery. ENR notes that if it intends to use waste fuel for energy recovery, the proponent must:

a) Register its waste oil burner/incinerator;

b) Meet the requirements of the GNWT *Used Oil and Waste Fuel Regulations* (GNWT 2004) including laboratory analysis of the feedstock.

Note for the proponent: The *Used Oil and Waste Fuel Management Regulations*[i] were developed to ensure that used oil and waste fuel is managed in a consistent and environmentally sound manner in the Northwest Territories (NWT). These regulations apply to the storage, handling, and disposal of these products.

Recommendation(s):

1) The proponent must not use waste fuel as an energy source until it has demonstrated that the fuel meets ENRs regulations and the device is registered. ENR recommends that the proponent register its used oil burner(s) with ENR. Please contact Gerald Enns; to obtain the registration forms at (867) 920-8044 or via email gerald_enns@gov.nt.ca.

Topic 7: Waste Management Plan- Sewage Effluent Quality

Comment(s):

ENR notes in Section 3.6.2, Table 4 that effluent quality predictions have been provided. ENR understands that Table 4 provides what is achievable from the sites sewage treatment system. The proponent has not indicated whether these proposed Effluent Quality Criteria (EQC) should be used by the MVLWB for its water licence under Part G: Conditions Applying to Waste and Water Management clause 15.

Recommendation(s):

1) ENR recommends that the proponent clarify whether the limits in Table 4 are proposed EQC's for the sewage treatment facility.

Topic 8: Waste Management Plan- Incineration

Comment(s):

ENR understands from the application that the proponent's primary method for treatment and disposal of various waste streams is by incineration. While the WMP has been updated from the previous version submitted to the MVLWB, ENR continues to have the following concerns with respect to incineration:

a) The WMP does not demonstrate that appropriate segregation methods and incinerator selection are in place. Specific Details and Standard Operating Procedures (SOPs). The WMP should act as a written guidance document that can be followed by operators to ensure correct operation and segregation of waste prior to disposal to ensure environmental protection and operator safety. The WMP should be written (specifically for incineration) so that operation of the incinerator is conducted in accordance with Environment Canada's *Technical Document for Batch Waste Incineration.*

b) The proponent has described wastes to be incinerated, however the incinerator design has not been provided in the application. It must be demonstrated that the incinerator is capable of handling of these waste streams for example waste oil/oily rags and ANFO bags with specific information on the amount acceptable to meet the batch requirements of the manufacturer. Typically, portable batch waste Incinerators are designed to incinerate Class I/II and III waste types only. Type I, II and III waste are defined as different combinations of rubbish, garbage and refuse. These classifications are devised in order to meet specific heating values to enable this unit to operate as it was intended, which will minimize harmful emissions. Waste oil and sanitary based waste streams are not Type I, II, and III Waste, and ENR does not support the use of any mobile batch waste incinerators to treat wastes they are not designed for.

c) ENR understands that the most detailed aspects that will govern daily operations are part of worker SOPs. ENR notes that the proponent has not provided SOPs for incineration, only a high level overview on general principles.

d) The proponent has not indicated whether it will perform stack testing to ensure that the operation and maintenance of the incinerator is conducted in accordance with the Land and Water. ENR commends the proponent for this commitment. ENR notes that the stack testing should be incorporated into the WMP.

It is important to mitigate toxic emissions by using an incinerator designed for the waste stream intended for treatment, and that can meet Canada-Wide Standards (CWS) for Dioxins and Furans and Mercury emissions criteria when operated in accordance with manufacturer's specifications and Environment Canada's *Technical Document for Batch Waste Incineration.* .

Recommendation(s):

1) ENR recommends that the proponent provide additional details within its WMP that commits to and demonstrates the following:

    a) Update and provide details in the WMP on how the proponent intends to segregate waste streams prior to incineration (SOPs) including the appropriate selection of an incinerator that is designed for the waste stream. Once an incineration unit is proposed, the IMP should include the specific manufacturer recommended batching requirements to meet the CCME CWS for Dioxins and Furans and Mercury Emissions. In addition, the proponent should highlight how it will reduce metal inputs into the incineration device or provide details on the scrubbing unit to ensure that metals are not dispersed into the environment. This should include standard operating procedures and should be detailed to ensure correct operation of the unit.

    b) The proponent demonstrate that incineration of waste be conducted in accordance with Environment Canada's *Technical Document for Batch Waste Incineration*. In addition, ENR requests that the proponent provide SOPs and worksheets that demonstrate the daily activities that will be used during the incineration of waste.

    c) ENR recommends that the proponent discontinue the incineration of waste oily rags, kitchen grease and ANFO bags in its mobile batch waste incinerator. If the proponent intends to proceed with the incineration of the above, it should be demonstrated that the device is capable as per the manufacturer's specifications. Additionally the proponent must demonstrate through formal emissions testing of the device supports its use in this manner and can meet the CWS for Dioxins and Furans and Mercury emissions.

    d) ENR requests that stack testing being incorporated into the WMP.

Topic 9: Waste Management Plan – General Comments and Recommendations

Comment(s):

The application should fully address the methods that will be used for onsite storage, treatment, transfer and disposal of wastes. The following recommendations are to help ensure the protection of project staff or clients and also to protect wildlife within their natural habitat by reducing or preventing human/bear conflicts that could lead to the destruction of nuisance bears.

Recommendation(s):

1) ENR suggests that more information be provided on the monitoring and management of the *Organic Stockpile Area* (Pg.13) that will explain how Avalon will prevent wildlife from entering the area. ENR recommends additional mitigation to ensure the safety of both the wildlife and staff at the site. I.e. electric fencing.

2) *Table 1: Combustible Non-Hazardous Wastes* (Pg. 14) waste management strategy for wood waste will be to store and incinerate. ENR recommends that only clean untreated wood be incinerated and treated wood be stored and transported back to an approved facility. Any incineration that may be done via open pit will need a Permit to Burn between the months of May 1 to September 30 each year. Applications are available at the ENR regional offices.

3) *Table 1: Combustible Non-Hazardous Wastes* (Pg. 15) waste management strategies for damaged sacks (Super Sacks) are to be incinerated. ENR recommends that any sacks damaged be properly stored and transported by to an approved facility for final disposal.

4) *Section 4.2 Waste Management Facility* (Pg. 27) states that "smaller volume wastes will be stored designated, colour-coded bins prior to being transported to an appropriate recycling or disposal facility. Figures". These bins are to be sealable and made of material that allow for the containers to be cleaned on a regular basis such as plastic (not wood) to prevent wildlife attraction. Please include figures.

5) The annual review of the WMP will need to include regulator participation to assess the mitigation measures effectiveness in preventing or reducing negative impacts. To the environment.

6) Section 1.4.1 Federal Legislation references the Northwest Territories Waters Act. Post devolution, the GNWT has assumed responsibility for waters in the Northwest Territories and as such have drafted Territorial Legislation. Section 1.4.2 Territorial Legislation must reference the Waters Act and reference to the Northwest Territories Waters Act can be removed from Section 1.4.1.

Wildlife and Wildlife Habitat Protection Plan

Topic 1: Wildlife and Wildlife Habitat Protection Plan – Project Overview

Comment(s):

Section 2.0 Project Overview (Pg. 2 & 3) states:

"While originally the resulting mixed REE concentrate was planned to be barged across Great Slave Lake to Pine Point for extraction of REE from the concentrate through hydrometallurgical processing, due to the concentrate will now be barged directly to Hay river and direct shipped by rail for further treatment outside the Northwest Territories.

It is expected that the hydrometallurgical facility would be in production approximately one year after startup of the concentrator at Nechalacho. The resulting rare earth participate will then be processed in the Solvay refinery in France."

Recommendation(s):

1) This section is confusing to the reader therefore ENR requests that Avalon clarify where the hydrometallurgical facility is to be built.

Topic 2: Wildlife and Wildlife Habitat Protection Plan – General Comments

Comment(s):

A Wildlife and Wildlife Habitat Protection Plan **(**WWHPP) outlines the steps necessary to protect personnel, wildlife and wildlife habitat within the Project Development Area (PDA), also commonly described as a project's direct "footprint". A WWHPP is a management tool to develop and implement clear procedures for employees and contractors in the field, to promote due diligence and to ensure compliance. In general, the current draft of the WWHPP requires further details necessary to provide confidence that the outlines procedures and mitigations will occur, be effective and provide feedback into site management.

Recommendation(s):

1) Section 1.1 Effective date should refer to the WWHPP not the Erosion and Sediment Control Plan.

2) *Section 2.3 Objectives of the WWHPP* states "the WWHPP is designed to achieve the following objectives: provide information to assess predictions of effects outlined in the Project environmental assessment." ENR would like to point out that it is the Wildlife Effects Monitoring Program (WEMP) that is required for the overall mining project that is designed to test predictions including those made during the environmental assessment and looks forward to Avalon's submission of a WEMP. The subsequent four objectives listed for the WWHPP are accurate; however it is not clear whether the last and second last objectives are actually met in the rest of the document. ENR recommends further detail be provided in the document as to where local and traditional knowledge has been incorporated and how timelines for implementation of adaptive changes to mitigation and monitoring will be decided upon.

3) Section 3.2 lists a number of mitigation actions that are general in nature and require additional detail. For example, Avalon states that it will be "identifying and monitoring birds nesting on an in the vicinity of the Nechalacho Project infrastructure", however it does not state how this will occur, who will do it and what exactly it will be monitoring.

4) Section 3.2 and other sections state that speed limits will be monitoring an enforced, but little detail is given regarding what those speed limits are, how they will be enforced, how drivers will be expected to proceed when wildlife is near the road etc. Please provide details.

5) Section 3.2 states that surface blasting will be suspended if large mammals are observed in the "danger zone". Please provide further details regarding how large the danger zone is, who will make the decision to suspend and recommence, etc.

6) *Section 3.3 Mitigation Measures for Key Species* includes "avoiding all known or suspected black bear den sites" but should also include known berry patches.

7) *Table 2: Preliminary Site Preparation and Construction Phase Wildlife Monitoring Program* (Pg. 16) states that "ENR will be notified of caribou, moose, black bears, migratory birds and species at risk mortalities within 24 hours of the incident." ENR prefers to be notified of all wildlife incidents that occur onsite including encounters and deterrence of fur bearing animals including but not limited to bears, wolverines, foxes and wolves.

8) Mitigation measures for key species including black bear and species at risk generally state that known and suspected den sites and nesting sites will be avoided; however, monitoring for the presence of wildlife appears to primarily rely on the observations of workers. Dedicated surveillance monitoring by Environmental staff and those trained to identify dens, nesting sites and wildlife sign around the project site is necessary to ensure that the mitigations will be applied effectively and to proactively identify potential problems before they occur. ENR recommends that Avalon include regular dedicated surveillance monitoring by trained environmental staff for this phase and all phases of project life.

9) ENR would like to see Avalon's Standard Operating Procedures (SOP) and associated forms included as part of the WWHPP. These documents are useful management tools used in the monitoring and reporting wildlife. These could include wildlife attraction, access management (speed limits), and wildlife deterrence.

10) All confirmed caribou sightings in the LSA will need to be documented and reported to ENR as soon as possible.

11) Appendix A has a useful matrix on potential effects of project component impacts to wildlife life; however it lacks the associated mitigation measure that Avalon will use to reduce or prevent the effects related to each of these.

Comments and recommendations were provided by ENR technical experts in Environment Division, Water Resources and the North Slave Region and were coordinated and collated by the Environmental Impact Assessment Section (EIA).

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at 920-6118 or patrick_clancy@gov.nt.ca.

Sincerely,

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[i] Government of the Northwest Territories, 2004. Used Oil and Waste Fuel Management Regulations. Available online at: http://www.justice.gov.nt.ca/PDF/REGS/ENVIRONMENTAL%20PROTECTION/Used_Oil_and_Waste_Fuel_Mgmt.pdf