



Mackenzie Valley Land and Water Board
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Staff Report

Applicant: Avalon Rare Metals (Avalon)	
Location: Thor Lake, NT	Application: MV2014D0001 & MV2014L1-0001
Date Prepared: June 30, 2014	Meeting Date: July 17, 2014
Subject: Updated Waste Management 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 Waste Management 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 – Waste Management 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 24 of the LUP:

The Permittee shall submit a revised Waste Management Plan for Early Works Activities, to the Board for approval, in accordance with the MVWLB's 2011 "Guidelines for Developing a Waste Management Plan, within 30 days of the issuance date of this Permit.

Part G, Item 3 of the WL:

The Licensee shall submit a revised Waste Management Plan to the Board for approval, in accordance with the Mackenzie Valley Land and Water Board's March 2011, or subsequent editions, Guidelines for the Development of a Waste Management Plan, 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 relating to the deposit of waste as identified in the Waste Management Plan. Avalon was in agreement that the Waste Management Plan should be updated.

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 eight 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 the 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: Waste Management Plan

	Topic	Recommendation	Item to be addressed
1	Section 1.4.1: Federal Legislation	For clarity, reference should be made to the new Act "Waters Act S.N.W.T. 2014"	The new "Waters Act S.N.W.T 2014" will be appropriately referenced in the next version of the Waste Management Plan for the Site Preparation and Construction Program.
2	Waste Management Plan Topic 1: Domestic) 1) ENR recommends that all waste streams must be properly	Avalon is committed to ensuring that all waste streams are properly characterized and

	sewage and Waste water Appropriate Categories Required	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.	managed as discussed in the current version of the Waste Management Plan for the Site Preparation and Initial Construction Program. 2) MVLWB Water Licence MV2014 L2-0001 specifies the waste water streams to be monitored, specific locations to be sampled, and water quality criteria to be achieved. Additional discussions with the MVLWB are planned to further clarify the main project licence requirements prior to entering the next phase of these licenses. 3) The main contingency will be that non-compliant wastewater will not be permitted to be discharged until specified water quality criteria are met. Given the small volume of water (26m ³ /day) non-compliant waste water may be retained in either an onsite water collection basin or storage tank, as determined in detailed engineering.
3	Topic 2: Waste Details (Quantity, Quality, Treatment and Disposal) Missing from Water Licence Application and Waste Management Plan	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	Tables 1, 2 and 3 in the current version of the Waste Management Plan identify the treatment and disposal options associated with each of the anticipated combustible non-hazardous wastes, recyclable wastes and hazardous wastes. Waste

		<p>the WMP. Furthermore, the storage locations for each waste should also be provided along with respective GPS coordinates.</p>	<p>quantity estimates will be incorporated into in the next version of the Waste Management Plan for the Site Preparation and Construction Program. Proposed Waste storage locations are shown in Figures 2 and 3 of the current plan.</p>
4	<p>Topic 3: Membrane Bio-reactor Sewage Treatment Plant and Other Treatment/Reducing Systems</p>	<p>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.</p>	<p>1) Avalon has confirmed that the design water consumption/treatment volumes to be treated by the MBR sewage treatment system are as reported in Section 3.6.2 of the Waste Management Plan. 2) Avalon is committed to periodically characterizing the sewage sludge (filter cake) to confirm that it will be suitable for future reclamation purposes.</p>
5	<p>Topic 5: Waste Management Plan- Industrial Waste Discharges in the NWT</p>	<p>1) ENR recommends that the Proponent remove reference to ENR Guideline for Industrial Waste Discharges in the NWT from its Waste Management Plan.</p>	<p>As recommended, the current reference to ENR's Guideline for Industrial Waste Discharges in the NWT will be removed from the next version of Avalon's Waste Management Plan.</p>
6	<p>Topic 6: Waste Management Plan- Waste Oil Burner Registration</p>	<p>1) The proponent must not use waste fuel as an energy source until it has demonstrated that the fuel meets ENR's regulations and the device is registered. ENR recommends that the proponent</p>	<p>As indicated in a previous response, during the initial Site Preparation and Construction Phase, combustible non-hazardous materials will be incinerated in the existing installed exploration camp dual chamber INCINER8</p>

		<p>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.</p>	<p>incinerator, as recommended, installed and operated per recommendation by the ENR land use inspector. The current mode of operation of the camp incinerator is as follows: . No oily rags, etc are burnt in the incinerator in camp. When there is maintenance work done on vehicles at the project, materials such as this are double bagged in plastic bags and shipped to KBL in Yellowknife for proper disposal. . No hydrocarbons are burnt in the incinerator. All waste hydrocarbons are shipped out, also to KBL, for appropriate disposal. . Only "domestic waste" is burnt in the incinerator such as kitchen materials, waste paper, cardboard or paper packaging, etc. The incinerator will be operated by the camp manager, or individuals who have been trained by the camp manager.</p>
7	Topic 8: Waste Management Plan- Incineration	<p>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</p>	<p>As indicated in the current version of the Waste Management Plan, during the initial Site Preparation and Construction Phase, combustible non-hazardous materials will be incinerated in the existing small volume exploration camp dual chamber INCINER8</p>

		<p>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.</p> <p>b) The proponent demonstrate that incineration of waste be conducted in accordance with Environment Canada Technical</p>	<p>incinerator, as recommended, installed and operated per recommendation by the ENR land use inspector. The incinerator will be operated by the camp manager, or individuals who have been trained by the camp manager. Avalon is committed to ensuring that effective waste segregation is implemented to ensure that only wastes which will not generate dioxins and furans will be directed to the current on site incinerator for incineration. Avalon has indicated that for the longer term operations phase and potentially in later phases of the construction program, Avalon intends to install a considerably larger and permanent Environment Canada approved incinerator to handle the wastes to be directed to this facility in the future. Avalon has committed to periodically monitor this facility for Dioxin and Furans and mercury emissions. Avalon will be requiring the supplier of the main project incinerator to provide an incinerator Management Plan that will address the various recommendations identified by both ENR and EC in their comments on the Site</p>
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		<p>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 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.</p>	<p>Preparation and initial Construction Phase Waste Management Plan.</p>
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8	Topic 9: Waste Management Plan General Comments and Recommendations	<p>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.</p> <p>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.</p> <p>3) Table 1: Combustible Non-</p>	<p>1) The proposed organic soils stockpile will consist primarily of the overburden soils and associated vegetation debris removed from areas of the project footprint where that will be necessary. In addition, for the short term, it has been proposed that, subject to testing to confirm acceptability, the limited amount of treated sewage sludge filter cake (approx. 7.5 kg/day) will also be buried within the organics stockpile on a regular basis. This will serve to minimize attraction of wildlife to the organics stockpile, thus Avalon is of the view that an electric fence is not warranted.</p> <p>2) Avalon accepts ENR's recommendation regarding the burning of wood and will incorporate this information into the next version of the Waste Management Plan for the Site Preparation and Construction Program.</p> <p>3) Avalon accepts ENR's recommendation regarding the disposal of damaged Super Sacks and will incorporate this information into the next version of the Waste Management Plan for the Site Preparation and Construction Program.</p> <p>4) Avalon accepts ENR's recommendation</p>
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		<p>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</p>	<p>regarding the types of bins to be employed for the temporary storage of wastes. 5) Avalon accepts ENR's recommendation regarding regulator participation in the annual review of the Waste Management Plan. 6) Avalon accepts ENR's recommendation regarding the incorporation of Post devolution changes to Territorial Legislation into the next version of the Waste Management Plan for the Site Preparation and Construction Program.</p>
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		<p>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.</p>	
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8. Recommendation

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

9. Attachments

- [Updated Waste Management 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) - Waste Management Plan - MV2014D0001 & MV2014L2-0001			
File(s):				
Proponent:	Avalon Rare Metals			
Document(s):	Avalon Rare Metals - Waste Management Plan - MV2014D001 & MV2014L2-001 (2 MB)			
Item For Review Distributed On:	May 27 at 14:12 Distribution List			
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; hrc@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:	<p>Good afternoon,</p> <p>You will find attached the Waste Management Plan as submitted by Avalon Rare Metals in accordance with their LUP and WL. Comments are due June 19, 2014. If you have any questions please feel free to contact me.</p> <p>Regards,</p> <p>Tyree</p>			
Contact Information:	<p>Jen Potten 867-766-7468 Tyree Mullaney 867-766-7464</p>			

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 All mitigation measures identified by the Proponent, and the additional measures suggested herein, should be strictly adhered to. This will require awareness on the part of the Proponents' representatives (including contractors) conducting operations in the field. Recommendation EC recommends that all field operations staff be made aware of the Proponent commitments to these mitigation measures and provided with appropriate advice / training on how to implement these measures.	June 26: Avalon concurs with this recommendation and will ensure that all field operations staff are informed of the company's commitments, including those related to the Waste Management Plan	Response is satisfactory
3	Section 1.4.1: Federal Legislation	Comment The NWT Waters Act was repealed on April 1st, and replaced by the territorial Waters Act (and its federal provisions rolled into the Mackenzie Valley Resource Management Act.) Recommendation For clarity, reference should be made to the new Act "Waters Act S.N.W.T. 2014"	June 26: The new "Waters Act S.N.W.T 2014" will be appropriately referenced in the next version of the Waste Management Plan for the Site Preparation and Construction Program.	Item to be incorporated into the Plan and resubmitted to the Board.
4	Preliminary Site Preparation and Construction Phase Waste Management Plan	Comment Condition G3 of the water licence (MV2014L2-0001) states the following: "The Licensee shall submit a revised Waste Management Plan to the Board for approval, in accordance with the Mackenzie Valley Land and Water Board's March 2011, or subsequent editions, Guidelines for the Development of a Waste Management Plan, within 30 days of the issuance of this Licence." Appendix A of the MVLWB Guidelines for Developing a Waste Management Plan states that "proponents shall ensure that any on site incinerator meets the requirements of the Canada-wide Standards for Dioxins and Furans and the Canada-wide Standards for Mercury Emissions". The waste management plan submitted by the proponent does not discuss how it will ensure that it is meeting the requirements of the Canada-wide Standards for Dioxins and Furans and the Canada-wide Standards for Mercury Emissions. How does the proponent plan to demonstrate that it is meeting the Canada-wide Standards? Recommendation EC recommends that the proponent revise its waste management plan to discuss how it will demonstrate that it is meeting the requirements of the Canada-wide Standards for Dioxins and Furans and the Canada-wide Standards for Mercury Emissions.	June 26: As indicated in the current version of the Waste Management Plan, during the initial Site Preparation and Construction Phase, combustible non-hazardous materials will be incinerated in the existing installed small volume exploration camp dual chamber INCINER8 incinerator, as recommended, installed and operated per recommendation by the ENR land use inspector. The incinerator will be operated by the camp manager, or individuals who have been trained by the camp manager. Avalon is committed to ensuring that effective waste segregation is implemented to ensure that only wastes which will not generate dioxins and furans will be directed to the current on site incinerator for incineration. Following detailed engineering when the permanent larger, full scale incinerator is designed, selected and installed, this plan will be updated and as committed by Avalon, a monitoring program will be established in consultation with ENR.	Response is satisfactory

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
10	General File	Comment (doc) ENR Comments and Recommendations Recommendation		
1	Waste Management Plan Topic 1: Domestic sewage and Waste water Appropriate Categories Required	<p>Comment 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.</p> <p>Recommendation 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.</p>	<p>June 26: 1) Avalon is committed to ensuring that all waste streams are properly characterized and managed as discussed in the current version of the Waste Management Plan for the Site Preparation and Initial Construction Program. 2) MVLWB Water Licence MV2014 L2-0001 specifies the waste water streams to be monitored, specific locations to be sampled, and water quality criteria to be achieved. Additional discussions with the MVLWB are planned to further clarify the main project licence requirements prior to entering the next phase of these licenses. 3) The main contingency will be that non-compliant wastewater will not be permitted to be discharged until specified water quality criteria are met. Given the small volume of water water (26m³/day) non-compliant waste water may be retained in either an onsite water collection basin or storage tank, as determined in detailed engineering.</p>	Item to be incorporated into the Plan and resubmitted to the Board.
2	Topic 2: Waste Details (Quantity, Quality, Treatment and Disposal) Missing from Water Licence Application and Waste Management Plan	<p>Comment 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.</p> <p>Recommendation 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.</p>	<p>June 26: Tables 1, 2 and 3 in the current version of the Waste Management Plan identify the treatment and disposal options associated with each of the anticipated combustible non-hazardous wastes, recyclable wastes and hazardous wastes. Waste quantity estimates will be incorporated into in the next version of the Waste Management Plan for the Site Preparation and Construction Program. Proposed Waste storage locations are shown in Figures 2 and 3 of the current plan.</p>	Item to be incorporated into the Plan and resubmitted to the Board.
3	Topic 3: Membrane Bio-reactor Sewage Treatment Plant and	<p>Comment Comments: Avalon is proposing to use a Membrane Bio-Reactor Treatment System to treat Sewage and Greywater (and potentially other wastewater streams) for a wastewater</p>	<p>June 26: 1) Avalon has confirmed that the design water consumption/treatment volumes to be treated by the MBR sewage treatment system are as reported in Section 3.6.2 of the Waste</p>	Item to be incorporated into the Plan and resubmitted to the Board.

	Other Treatment/Reducing Systems	<p>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.</p> <p>Recommendation 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.</p>	<p>Management Plan. 2) Avalon is committed to periodically characterizing the sewage sludge (filter cake) to confirm that it will be suitable for future reclamation purposes.</p>	
4	Topic 4: WMP Specific Information Required	<p>Comment 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.</p> <p>Recommendation 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.</p>	<p>June 26: This initial Waste Management Plan was developed in general accordance with the Guidelines for Developing a Waste Management Plan (MVLWB 2011). The current version of the plan does include waste storage and effluent discharge locations. MSDS information on all products that may be used at the Nechalacho Project site are currently provided in Avalon's Spill Contingency Plan. Future versions of the Waste Management Plan will be updated to include any additional new information as it becomes available.</p>	Response is satisfactory
5	Topic 5: Waste Management Plan- Industrial Waste Discharges in the NWT	<p>Comment 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.</p> <p>Recommendation Recommendation(s): 1) ENR recommends that</p>	<p>June 26: As recommended, the current reference to ENR's Guideline for Industrial Waste Discharges in the NWT will be removed from the next version of Avalon's Waste Management Plan.</p>	Item to be incorporated into the Plan and resubmitted to the Board.

		the Proponent remove reference to ENR Guideline for Industrial Waste Discharges in the NWT from its Waste Management Plan.		
6	Topic 6: Waste Management Plan- Waste Oil Burner Registration	<p>Comment 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 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.</p> <p>Recommendation 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.</p>	<p>June 26: As indicated in a previous response, during the initial Site Preparation and Construction Phase, combustible non-hazardous materials will be incinerated in the existing installed exploration camp dual chamber INCINER8 incinerator, as recommended, installed and operated per recommendation by the ENR land use inspector. The current mode of operation of the camp incinerator is as follows: . No oily rags, etc are burnt in the incinerator in camp. When there is maintenance work done on vehicles at the project, materials such as this are double bagged in plastic bags and shipped to KBL in Yellowknife for proper disposal. . No hydrocarbons are burnt in the incinerator. All waste hydrocarbons are shipped out, also to KBL, for appropriate disposal. . Only "domestic waste" is burnt in the incinerator such as kitchen materials, waste paper, cardboard or paper packaging, etc. The incinerator will be operated by the camp manager, or individuals who have been trained by the camp manager.</p>	Item to be incorporated into the Plan and resubmitted to the Board.
7	Topic 7: Waste Management Plan- Sewage Effluent Quality	<p>Comment 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.</p> <p>Recommendation Recommendations: 1) ENR recommends that the proponent clarify whether the limits in Table 4 are proposed for the sewage treatment facility.</p>	<p>June 26: Existing MVLWB Water Licence MV2014 L2-0001 specifies that effluent from the Sewage Treatment Plant shall be tested prior to be in discharged at Surveillance Network Program Station Number 1 and will meet specific effluent quality limits: Maximum Concentration of any Grab Sample CBOD5 - 25 mg/L TSS - 25 mg/L Faecal Coliforms - 20 CFU/100mL In addition, any Treated sewage waste water from the Project that enters the Receiving Environment shall have a pH between 6 and 9, and no visible sheen of oil and grease.</p>	Response is satisfactory
8	Topic 8: Waste Management Plan- Incineration	<p>Comment 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</p>	<p>June 26: As indicated in the current version of the Waste Management Plan, during the initial Site Preparation and Construction Phase, combustible non-hazardous materials will be incinerated in the existing small volume exploration camp dual chamber INCINER8 incinerator, as recommended, installed and operated per recommendation by the ENR land use inspector. The incinerator will be operated by the camp manager, or individuals who have been trained by the camp manager. Avalon is committed to ensuring that effective waste segregation is implemented to ensure that only wastes which will not generate dioxins and furans will be directed to the current on site incinerator for incineration. Avalon has indicated that for the longer term operations phase and potentially in later phases of the construction program, Avalon intends to install a considerably larger and permanent Environment Canada approved incinerator</p>	Item to be incorporated into the Plan and resubmitted to the Board.

		<p>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.</p> <p>Recommendation 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 Technical Document for Batch Waste</p>	<p>to handle the wastes to be directed to this facility in the future. Avalon has committed to periodically monitor this facility for Dioxin and Furans and mercury emissions. Avalon will be requiring the supplier of the main project incinerator to provide an incinerator Management Plan that will address the various recommendations identified by both ENR and EC in their comments on the Site Preparation and initial Construction Phase Waste Management Plan.</p>	
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		<p>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 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.</p>		
9	Topic 9: Waste Management Plan General Comments and Recommendations	<p>Comment 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.</p> <p>Recommendation 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</p>	<p>June 26: 1) The proposed organic soils stockpile will consist primarily of the overburden soils and associated vegetation debris removed from areas of the project footprint where that will be necessary. In addition, for the short term, it has been proposed that, subject to testing to confirm acceptability, the limited amount of treated sewage sludge filter cake (approx. 7.5 kg/day) will also be buried within the organics stockpile on a regular basis. This will serve to minimize attraction of wildlife to the organics stockpile, thus Avalon is of the view that an electric fence is not warranted. 2) Avalon accepts ENR's recommendation regarding the burning of wood and will incorporate this information into the next version of the Waste Management Plan for the Site Preparation and Construction Program. 3) Avalon accepts ENR's recommendation regarding the disposal of damaged Super Sacks and will incorporate this information into the next version of the Waste Management Plan for the Site Preparation and Construction Program. 4) Avalon accepts ENR's recommendation regarding the types of bins to be employed for the temporary storage of wastes. 5) Avalon accepts ENR's recommendation regarding regulator participation in the annual review of the Waste Management Plan. 6) Avalon accepts ENR's recommendation regarding the incorporation of Post devolution changes to Territorial Legislation into the next version of the Waste Management Plan for the Site Preparation and Construction Program.</p>	Item to be incorporated into the Plan and resubmitted to the Board.

		<p>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.</p>		
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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*](#)^[1] 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 ENR's 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 site's 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,



Patrick Clancy
Environmental Regulatory Analyst
Environmental Impact Assessment
Conservation, Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories

^[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



Environment Canada Environnement Canada

Environmental Protection Operations (EPO)
Prairie and Northern Region
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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) - Waste Management Plan

Environment Canada (EC) has reviewed the Waste Management 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