

<b>Resource</b>	<b>Measure</b>	<b>Section</b>	<b>Comment</b>	<b>Authority<sup>a</sup> / Likelihood of Implementation</b>
Subsistence	The Subsistence Committee should re-examine its procedures on minimizing the mine's effect on subsistence resources.	3.12.3.1	Applies to all alternatives.	None / Likelihood of implementation unknown. Function and responsibilities of the Subsistence Committee are established in an agreement between Teck and NANA.
	Have an "independent observer" party (not truck drivers) be responsible for determining when traffic should stop because of the proximity of caribou to the DMTS road.	3.12.3.1	Applies to alternatives A, B, and D.	None / Unlikely to be implemented as Teck has indicated it will not undertake the use of independent observers. Teck will develop additional documentation of caribou-related road closures in the future.
	Communicate how subsistence is addressed in existing company leave policy.	3.12.2.7	Applies to all alternatives.	None / Likely to be implemented as Teck has committed to reviewing its existing policy including how it is communicated to its workers within the region.
Socioeconomics	Initiate a regional long-term economic planning process to promote economic stability in the region beyond the closure of the Red Dog Mine.	3.17.4.1	Applies to all alternatives and should involve community input.	None / The NWAB has an Economic Development Commission that includes Teck as a formal member. This commission may meet the long-term planning needs identified in the socioeconomics section.

<sup>a</sup> "None" means that EPA and the cooperating agencies have not identified a regulatory authority or permit under their jurisdiction that can be utilized to require the monitoring.

**Table 4 Selected Monitoring by Resource**

<b>Resource</b>	<b>Measure</b>	<b>Section</b>	<b>Comment</b>	<b>Authority<sup>a</sup> / Likelihood of Implementation<sup>b</sup></b>
Air	Implement operational monitoring program to evaluate effectiveness of dust control measures.	3.2.3.1	Applicable to all alternatives.	ADEC-Teck MOU / A specific Dust Emissions Reduction Plan is to be incorporated into the fugitive dust risk management plan to address operational monitoring.
Geochemistry	Monitor changes in mobility and migration of metals from oxidation or other changes in forms of minerals.	3.3.2.4	Applicable to all alternatives.	ADEC-Teck MOU / Based on comments from Teck, the Terrestrial Monitoring Plan to be incorporated into the fugitive dust risk management plan will include monitoring of vegetation tissue (see below under Vegetation).
Surface Water	Monitor water quality in streams at DMTS crossings to determine if DMTS is impacting water quality.	3.5.2.2	Applicable to Alternatives A, B, and D.	ADEC-Teck MOU / Per Teck, monitoring for metals in DMTS streams will be part of the Operational Monitoring Plan to be developed under the fugitive dust risk management plan.
	Monitor Red Dog Creek and Ikalukrok Creek for changes in water quality from relocation of Outfall 001 from Red Dog Creek to the Chukchi Sea.	3.5.3.3	Applicable to Alternatives C and D.	ADEC Waste Management Permit / Monitoring to be conducted under ADEC's Waste Management Permit.
Groundwater	Assess capability of existing meteorological, groundwater and permafrost monitoring system to detect changes due to climate change. Modify the plan, if needed, so that changes in the relationship between permafrost and groundwater behavior can be detected.	3.6.3.1 and 3.6.3.2	Applicable to all alternatives.	ADEC Waste Management Permit / The existing plan will be reviewed and modified periodically under the ADEC's Waste Management Permit.

Resource	Measure	Section	Comment	Authority <sup>a</sup> / Likelihood of Implementation <sup>b</sup>
Vegetation	Develop and implement monitoring plan to determine whether dust deposition from the Red Dog Mine is occurring within Noatak National Preserve.	3.7.2	Applicable to all alternatives.	None / Teck does not currently plan to conduct this monitoring.
	Monitor for changes in mobility and availability for the uptake of metals in tundra and underlying soils.	3.7.2	Applicable to all alternatives.	ADEC-Teck MOU / Per Teck, monitoring will be included in the Terrestrial Monitoring Plan to be developed under the fugitive dust risk management plan and will consist of monitoring vegetation tissue concentrations and plant community parameters.
	Monitor tissue concentrations in shrubs, herbaceous plants, mosses and lichens to track rate of changes (data collected at regular intervals).	3.7.2	Applicable to all alternatives.	ADEC-Teck MOU / Per Teck, this will be included in the Terrestrial Monitoring Plan to be developed under the draft fugitive dust risk management plan.
	Monitor composition of shrub, herbaceous, moss, and lichen communities to evaluate community health and identify changes in community composition.	3.7.2	Applicable to all alternatives.	ADEC-Teck MOU / Per Teck, this will be included in the Terrestrial Monitoring Plan to be developed under the fugitive dust risk management plan.
	Monitor remediated or reclaimed areas to ensure long-term effectiveness (at rollover sites and sites covered in the DMTS risk assessment).	3.7.3.1	Applicable to all alternatives.	ADEC-Teck MOU / Per Teck, monitoring of remediated/reclaimed sites will be included in the Remediation Plan to be developed under the fugitive dust risk management plan.
Wildlife	Monitor health of local populations of voles, shrews, and ptarmigan.	3.9.2.1	Applicable to all alternatives.	ADEC-Teck MOU / ADEC has suggested this be included in the fugitive dust risk management plan to supplement vegetation tissue monitoring data identified above. Uncertain if it will be included in the final fugitive dust risk management plan.
	Develop turbine-related mortality monitoring plan for birds.	3.9.3.4	Applicable to Alternative C — applicable to the wind turbine at the port.	None / No regulatory authority to require this, but commonly undertaken to advance database on effects to bird populations.
Aquatic Resources	Monitor Red Dog Creek and Ikalukrok Creek for changes in fish habitat based on changes from relocation of Outfall 001 from Red Dog Creek to the Chukchi Sea.	3.10.3.4	Applicable to Alternatives C and D.	ADEC Waste Management Permit / Some monitoring to be conducted under ADEC's Waste Management Permit.
	Monitor health of local populations of fish at DMTS road crossings that tend to be resident in the area (e.g., slimy sculpin).	3.10.3.2	Applicable to all alternatives.	ADEC-Teck MOU / Per Teck, monitoring of DMTS creeks will be included as part of the Operational Monitoring Plan to be developed under the fugitive dust risk management plan.

Resource	Measure	Section	Comment	Authority <sup>a</sup> / Likelihood of Implementation <sup>b</sup>
Health	Characterize the current nutritional health baseline by conducting a dietary survey to quantify the contribution of subsistence resources to the diet of residents of Kivalina.	3.13.2	Applicable to all alternatives. Data could be reviewed by Stakeholder Participatory Monitoring and Review Committee (see below).	None / No regulatory authority to require this and Teck has indicated that they will not fund such a study. Therefore, implementation is unlikely.
	Monitor metals concentrations in caribou to reduce uncertainty in the DMTS risk assessment regarding safe consumption levels.  Recommend safe levels of consumption based on study results.	3.13.2	Applicable to all alternatives.	ADEC-Teck MOU / According to Teck, caribou tissue monitoring for metals will be conducted under the Monitoring Plan to be developed under the fugitive dust risk management plan.
	Form a Stakeholder Participatory Monitoring and Review Committee to coordinate and collaborate on ongoing health efforts and initiatives in the area, including those related to mining.	3.13.3	Applies to all alternatives although not driven solely by concerns related to operations at the Red Dog Mine.	None / No regulatory authority to require this and Teck has indicated they will not form the Stakeholder Committee. Teck is willing to expand the existing Ikayuqtit Team to include other groups. However, uncertain that this will address the health concerns.

<sup>a</sup> "None" means that EPA and the cooperating agencies have not identified a regulatory authority or permit under its jurisdiction that can be utilized to require the monitoring.

<sup>b</sup> – Based on comments and a letter from Teck, some of the monitoring measures will be included in implementation plans developed under the fugitive dust risk management plan (which was developed per the ADEC-Teck MOU). However, until the implementation plans are finalized and approved by ADEC, the likelihood that these measures will be implemented as described in the SEIS is uncertain.

**APPENDIX B**  
**RESPONSE TO COMMENTS ON FINAL SEIS**

## FINAL SEIS COMMENT RESPONSES

Below are responses to comments received on the Final SEIS. The comment letters follow the responses.

### **Center for Race Poverty and the Environment (CRPE)**

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November 6, 2009 letter from Brent Newell (BN), CRPE, to Patty McGrath, EPA, Cindi Godsey, EPA, and Hanh Shaw, EPA. Letter included three exhibits.

#### **Response to Comment ID: BN.01**

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Comment noted. The term “Kivalina residents” as used in the comment letter only applies to the six clients of the Center for Race Poverty and the Environment who live in Kivalina.

#### **Response to Comment ID: BN.02**

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EPA is responding to a specific NPDES permit application submitted by Teck for continued discharge to Red Dog Creek, including development of the Aqqaluk Deposit. For this action, EPA has the authority to either deny the application (as specified in the no action alternative) or issue a permit in response to the application. EPA has decided to reissue the permit for the Red Dog Mine since the analysis in the SEIS and draft NPDES permit Fact Sheet indicates that Teck can meet the limits and conditions in the reissued permit. It is true that EPA can include requirements in the reissued NPDES permit for the proposed discharge that would ensure compliance with the applicable provisions of the Clean Water Act (CWA). In the final permit, EPA has done so by requiring development and implementation of a TDS management plan. In addition, as certified by the State of Alaska, the permit complies with state water quality standards. It is not within EPA’s authority to require construction of a pipeline and a separate marine discharge. This would be a separate permitting action in response to an application provided by Teck.

The comment is correct that Teck agreed to build a wastewater discharge pipeline in the consent decree in *Adams v. Teck Cominco*. However, as EPA understands the consent decree schedule, Teck agreed to submit an NPDES application to change the outfall location only after the NPDES permit is reissued and effective for the current discharge location to Main Stem Red Dog Creek. EPA notes that some of the commenters identified as “Kivalina residents” in the current letter were parties to the consent decree and agreed to that specific schedule. Moreover, it is important to recognize that certain elements of the pipeline alternative are beyond EPA’s authority, e.g., subject to permitting by the Corps of Engineers under Section 404 of the CWA and authorization to construct the pipeline through National Park Service lands. See also response to comment 7.042 in Appendix H of the FSEIS.

#### **Response to Comment ID: BN.03**

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The analysis in the Final SEIS determined that the treatment proposed under the Preferred Alternative (metals precipitation and filtration, with barium hydroxide as needed) would produce an effluent that meets the limits in the reissued NPDES permit. See Section 3.5 of the Final SEIS. Therefore, there is no need to require more advanced treatment such as reverse osmosis or continuous use of barium hydroxide or aluminum hydroxide. The CWA requires that the treatment technology be able to achieve limits based on compliance with technology-based effluent limitation guidelines and state water quality standards. The technology-based effluent limitation guidelines that apply to the Red Dog Mine were described in the Fact Sheet for the draft NPDES permit. These guidelines were developed based upon treatment in a tailings pond with added

active water treatment, if necessary. The ELGs do not specify the treatment technology that is required.

The comment is correct that reverse osmosis treatment could result in meeting the TDS limits in the 1998 permit. However, the TDS limits have increased in the reissued permits (since the TDS water quality standard has changed), therefore reverse osmosis treatment is not necessary and EPA has no need to require it.

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**Response to Comment ID: BN.04**

The Final SEIS evaluates the impacts of the discharge associated with Alternative B (the Preferred Alternative) on the water quality of receiving waters and on aquatic resources and subsistence. The Final SEIS concluded that there would not be impacts to the Kivalina drinking water supply or subsistence resources as a result of the NPDES discharge. The commenter provides no information to support its assertion that the permit limits would result in these impacts.

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**Response to Comment ID: BN.05**

Standard practice under NEPA is to use information currently available. Since the same equipment is currently in use as was modeled in ADEC's air quality analysis, there is no reason to expect that under normal operating conditions, another round of modeling would result in substantive differences. See below for responses to specific comments related to the air analysis.

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**Response to Comment ID: BN.06**

Table 3.2-1 in the draft and final SEIS specifically presents the national and Alaska air quality standards (NAAQS/AAAQS), including the primary and secondary standards for PM<sub>2.5</sub> of 35 µg/m<sup>3</sup> over a 24-hour averaging period and 15 µg/m<sup>3</sup> over an annual averaging period. Table 3.2-6, summarizes air quality modeling results and includes a column identifying NAAQS/AAAQS. Table 3.2-6 contains an editorial error reporting 65 µg/m<sup>3</sup> as the PM<sub>2.5</sub> standard instead of the correct standard that was identified in Table 3.2-1. The commenter is correct that the 24-hour PM<sub>2.5</sub> is 35 µg/m<sup>3</sup>. The commenter is incorrect that this error was intentional.

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**Response to Comment ID: BN.07**

The proposed 1-hour average NO<sub>2</sub> National Ambient Air Quality Standard (NAAQS) was published in the Federal Register on July 15, 2009. This is only a proposed standard and has not been finalized. As indicated by the voluminous documents cited by the commenter, the concerns driving the proposed 1-hour average NO<sub>2</sub> NAAQS revolve around highly populated urban areas and particularly areas experiencing large traffic volumes, since high concentrations of NO<sub>2</sub> are strongly associated with mobile source emissions. The Village of Kivalina is located over 15 miles from the port site and over 60 miles from the mine. Although the proposed NAAQS revision was not considered in the analysis, it is highly unlikely that the traffic volume on the 52-mile DMTS (approximately 50 vehicles per day) would contribute to significant 1-hour average NO<sub>2</sub> impacts. Other NO<sub>x</sub> sources exist, including electric power generators at the mine and port, although these are again unlikely to create significant NO<sub>2</sub> concentrations that would have deleterious effects on the ecosystem or health of residents of the Village of Kivalina due to the distance between the village and the sources. Modeling of NO<sub>x</sub> emissions sources has demonstrated that the impacts are well below the current NAAQS. See Section 3.2 of the SEIS.

**Response to Comment ID: BN.08**

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The analysis of air impacts takes the requisite hard look at the effects of emissions and does not violate NEPA. Lead emissions were calculated and its impacts were modeled. Table 3.2-6 summarizes the modeling results for lead which indicate that the maximum impact is 13 percent of the recently revised NAAQS (rolling 3-month average concentration of 0.15  $\mu\text{g}/\text{m}^3$ ). Moreover, as noted in Section 3.2.2 of the SEIS, lead concentrations have been measured recently in Noatak and Kivalina. Results from the 1-year monitoring program show that the maximum 3-month average lead concentration is only 5 percent of the NAAQS.

Toxic Release Inventory data reported to EPA and reviewed in developing the SEIS indicate that emissions of nickel and arsenic are negligible. Cadmium was considered in the analysis of fugitive dust emissions but was not discussed in detail in the SEIS because the cadmium component of fugitive dust emissions was orders of magnitude less than that of zinc or lead (TRI data from 2007 indicate 92 pounds of cadmium in fugitive dust released from the mine compared to 23,006 pounds of zinc and 9,191 pounds of lead).

Zinc is not a HAP or a specifically regulated air pollutant, so calculating its emissions provides no basis for comparison in the context of the air impacts analysis. The presence of zinc in the environment as a result of fugitive dust is addressed for other resources (surface water, aquatic resources, wildlife, health, etc.) within the SEIS.

Emissions of nitric oxide (NO) were indeed calculated (NO is a constituent of  $\text{NO}_x$ ; see  $\text{NO}_x$  emissions in Table 3.2-7).  $\text{NO}_x$  emissions were modeled and the impacts are presented as  $\text{NO}_2$  in Table 3.2-7.

See response to comment BN.10 regarding analysis of  $\text{PM}_{2.5}$  concentrations.

**Response to Comment ID: BN.09**

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The discussion of lead emissions in the SEIS is adequate for NEPA purposes. Lead emissions were calculated and its impacts were modeled. Table 3.2-6 summarizes the modeling results for lead, which indicate that the maximum impact is 13% of the recently revised NAAQS (rolling 3-month average concentration of 0.15  $\mu\text{g}/\text{m}^3$ ). Moreover, as noted in Section 3.2.2 of the SEIS, lead concentrations have been measured recently in Noatak and Kivalina. Results from the 1-year monitoring program show that the maximum 3-month average lead concentration is only 5% of the NAAQS.

**Response to Comment ID: BN.10**

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EPA recognizes the issue raised by the commenter and understands that there are differences between  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ . However, the air quality analysis in the Final SEIS was prepared with the best information available at the time for the mine.

Review of the  $\text{PM}_{10}$  dispersion modeling that has been conducted for the Red Dog Mine indicates that the maximum  $\text{PM}_{10}$  impacts occur near the southern boundary of the facility, near where the haul road exits the facility, 3 to 4 km southwest of the mill complex (Hoefler 1998). Thus, the highest predicted  $\text{PM}_{10}$  impacts are due to fugitive dust emissions generated by haul road traffic. The vast majority of fugitive dust emissions generated by truck traffic is larger than  $\text{PM}_{2.5}$ . In fact, the particle size distribution indicates that 88.4% of the particulate matter is larger than 2.5