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**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Air Quality Study
Study Plan Section 15.9**

Final Study Plan

Alaska Energy Authority



July 2013

15.9. Air Quality Study

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP), which included 58 individual study plans (AEA 2012). Section 15.9 of the RSP described the Air Quality Study. This study focuses on assessing the current conditions of the study area against applicable state and national air quality standards and evaluating the Project's air quality impact against these standards. RSP 15.9 provided goals, objectives, and proposed methods for data collection regarding air quality.

On February 1, 2013, FERC staff issued its study plan determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 15.9 was one of the 31 studies approved with no modifications. As such, in finalizing and issuing Final Study Plan Section 15.9, AEA has made no modifications to this study from its Revised Study Plan.

15.9.1. General Description of the Proposed Study

The Air Quality Study will assess the current conditions of the study area against applicable state and national air quality standards and evaluate the Project's air quality impact against these standards. The analysis will evaluate both short-term (construction) and long-term (operational) impacts from the Project and how Project emissions compare to the Without-Project alternative. The analysis will also include an assessment of the indirect impact of the Project on existing fossil-fuel electricity generators in the area, which could result in improvements to regional air quality to the extent that Project generation replaces fossil fuel generation.

In addition to identifying potential emission sources and levels to assess the potential impacts of the Project on air quality, the results of the study will help, if necessary, in identifying potential options to reduce emissions during construction and operations to meet regulatory requirements and maintain public health and safety.

Study Goals and Objectives

The primary goal and objective of the air quality analysis is to ensure that the proposed Project does not violate National Ambient Air Quality Standards (NAAQS) per 40 CFR Part 50 and state air quality standards in Alaska Administrative Code (AAC) 18 AAC 50 (under the authority of Alaska Statutes (AS) 46.03 and 46.14). The national and state air quality regulations are designed to maintain and/or improve air quality by controlling or reducing emissions of air pollutants. The air quality impact analysis is subject to the state and national ambient air quality standards and state and national attainment designations (i.e., attainment, non-attainment, maintenance).

The following are the primary objectives of the Air Quality Study:

- Assess the current conditions of the area against applicable state and national air quality standards.
- Review and summarize existing air monitoring data in the area.
- Determine attainment status of the study area (i.e., unclassifiable/attainment, non-attainment, maintenance).
- Quantify short-term (construction) and long-term (operational) emissions.

- If applicable, analyze ground level impacts using air dispersion models.
- If applicable, evaluate indirect mobile source emissions from additional traffic generated.
- Compare Project emissions to the Without-Project alternative.
- Evaluate potential emission reductions from Railbelt fossil-fuel utility plants if the Project is operating.
- Develop information to be used in the identification of potential mitigation measures, if necessary, to reduce emissions during construction.

15.9.2. Existing Information and Need for Additional Information

There is little existing ambient monitoring data available in the vicinity of the Project site. The nearest state monitoring sites are located in the MSB urban core. The primary air quality concern in the area is particulate matter (PM₁₀ and PM_{2.5}) from fugitive dust, volcanic ash, wildfire smoke, and wood heating or other wood burning devices. There have been supplemental monitoring projects conducted by ADEC within the MSB over the past several years along with ambient data collected by the National Park Service (NPS) that will also be reviewed. These supplemental studies mainly pertain to particulate matter. There are some limited data available from two sites in Denali National Park. AEA will investigate whether the state or NPS has any other relevant data that may be available and will summarize any available data to support the existing conditions section.

Existing data will be compared to applicable standards for criteria pollutants in a table. The study assumes ambient air monitoring will not be required, since the Project is not expected to be a significant source of emissions and there are no existing major sources of air emissions in the area. The area is designated unclassifiable/attainment under 18 AAC 50.015 for all criteria pollutants. EPA maintains a list of non-attainment areas for all six criteria pollutants on their Green Book website: (<http://www.epa.gov/oar/oaqps/greenbk/index.html>) and ADEC lists state attainment designations under 18 AAC 50.015.

An emissions inventory of Railbelt fossil-fuel utility plants will be generated and categorized by fuel source to evaluate the potential emissions reductions from such facilities if the Project is implemented. This inventory will be based on existing information in the RIRP or other updated information, if available.

Detailed information on Project construction and operations will be needed to estimate and evaluate the Project emissions for criteria pollutants for comparison to national and state standards. This includes levels of traffic by various modes and timeframes, construction equipment and activities, and operations equipment and schedules. A table comparing projected With-Project emissions with projected Without-Project emissions will be generated.

15.9.3. Study Area

The study area for the Air Quality Study will mainly comprise the immediate vicinity of the Project Study Area (Figure 1.2-1) and the greater Railbelt region.

While preparing the air quality analysis, particular attention will be made to the following:

- Environmentally sensitive areas
- Nearby dense population areas
- Issues raised by ADEC and other agencies such as the NPS or other licensing participants

15.9.4. Study Methods

EPA and ADEC have air quality standards that must be met for new sources of emissions of criteria pollutants. AEA will estimate emissions generated by the Project, including construction and operation emissions. The emissions, along with the type and size of equipment, will be compared to appropriate ADEC permit thresholds as outlined in 18 AAC 50 to determine the type of permit and air dispersion modeling required, if any. Denali National Park is designated as a Class I area under the federal Prevention of Deterioration (PSD) program. Emission estimates from the Project are expected to be below major source thresholds; therefore, a PSD and Title V permit are not anticipated for the Project.

The air quality study will assess the existing conditions of the area against applicable state and national air quality standards and evaluate the Project's air quality impacts against these standards. The analysis will include evaluation of both short-term and long-term impacts from the Project and a comparison of Project emissions to the no-action alternative. An emissions inventory of Railbelt fossil fuel utility plants will be generated and categorized by fuel source to evaluate the potential emissions reduction from these facilities if the Project is constructed and in operation.

15.9.4.1. Document Existing Conditions

Air monitoring reports prepared by ADEC will be reviewed to assess the existing conditions of the area. There is little existing ambient monitoring data available for the vicinity of the Project site. The team will investigate whether the state and/or NPS has other project-specific monitoring data that may be available to help characterize the air quality within the study area. AEA will coordinate with ADEC and NPS and use the most relevant data available to support the existing conditions section. The monitoring data will be compiled and compared to applicable standards for criteria pollutants in a table. Criteria pollutants as defined by EPA are nitrogen dioxide (NO₂), sulfur dioxides (SO₂), carbon monoxide (CO), PM₁₀/PM_{2.5}, lead (Pb) and ozone (O₃).

The study area is currently unclassifiable/attainment under 18 AAC 50.015 and the EPA Green Book with respect to all criteria pollutants.

15.9.4.2. Estimate Project Emissions

Emissions from construction equipment and related activities will be estimated for comparison to appropriate state permitting criteria. Construction equipment emission factors will be obtained from the EPA's NONROAD model or similar model. Fugitive particulate matter emissions from the handling and storage of raw materials and wind erosion during construction will be quantified according to methodologies specified in EPA's Compilation of Air Pollutant Emission Factors (AP-42) or similar source of emission factors. Typical construction activities could include, but are not limited to, construction equipment, earth moving activities, construction worker commutes, material deliveries, earth hauling, and operation and maintenance activities. Detailed information on Project construction and operations will be needed to estimate and evaluate the Project emissions. This will include levels of traffic by various modes and timeframes, construction equipment and activities, and operations equipment and schedules.

In addition to construction activities, a Portland cement plant may be required on-site in order to construct the dam, however, it has not been determined at this time if such a source will be required along with any specifications on the size and operations of such a plant. If such a facility is proposed, the emissions will be compared to applicable federal PSD and Title V thresholds 40 CFR § 51.21(b)(1)(i)(a), 40 CFR § 51.21(b)(1)(i)(c)(iii)(c) and 40 CFR § 71.2, along with state minor source permitting thresholds as outlined in Article 5 of 18 AAC 50. Air quality dispersion modeling would also be conducted to demonstrate compliance with the NAAQS. If a state permit is required, air quality dispersion modeling may also be required and will be performed consistent with 18 AAC 50.215 dispersion modeling guidelines.

The Project is not located in an EPA or ADEC designated non-attainment area; therefore, General Conformity and Transportation Conformity will not apply. If the Project generates average daily traffic volumes that exceed a state or federal mobile source threshold for CO, PM₁₀/PM_{2.5}, or mobile source air toxics (MSATs) analyses, then a mobile source evaluation may be required. This will be determined after consultation with appropriate state and federal personnel and a review of the transportation study.

15.9.4.3. Summarize Baseline Fossil Fuel Generation Emissions

The study will also include a summary of the baseline fossil fuel generation emissions in the area. The team will use the source data and references identified by HDR in the Section 7.3.1.2 of the Data Gap Analysis along with other applicable source data for generating the emissions inventory. It is assumed that no additional monitoring or data collection will be required at existing power generation sites.

15.9.4.4. Analyze and Compare With-Project Emissions to Without-Project Emissions

The study will include a comparison of future estimated With-Project emissions to emissions estimated for future Without-Project emissions. The estimate of Without-Project emissions will include the potential emissions from other Railbelt fossil fueled facilities to provide the equivalent annual generation power as the Project if the Project is not implemented, or the installation of new generation facilities for the future using a similar fuel mix to the current Railbelt facilities.

15.9.4.5. Identify Best Management Practices

Best management practices to reduce air emissions related to construction and operation of the Project will be identified, including evaluating dust mitigation measures based on studies conducted by ADEC and the Alaska University Transportation Center.

15.9.5. Consistency with Generally Accepted Scientific Practice

Air quality study estimates and forecasts will be developed using EPA's NONROAD model or EPA's Compilation of Air Pollutant Emission Factors (AP-42) for construction equipment and other non-automotive sources. If needed, EPA-approved methods would be used to estimate mobile source emissions.

15.9.6. Schedule

The schedule for the air quality analysis will be six to seven months as shown in the table below. The Initial Study Report will be issued in Q1 2014, and the Updated Study Report will be issued in Q1 2015.

In 2014 and 2015, licensing participants will have opportunities to review and comment on the study reports (Initial Study Report in early 2014 and Updated Study Report in early 2015). Updates on the study progress will be provided during Technical Workgroup meetings which will be held quarterly in 2013 and 2014.

15.9.7. Relationship with Other Studies

The Air Quality Study will require input from the Transportation Study (Section 15.7) and the Engineering Studies as shown below. Traffic levels and their effect on existing air quality will be documented. Information from the Project Engineering Studies will be used to estimate construction and operations emissions. Information on air emissions will be used to evaluate potential health effects in the Health Impact Assessment Study (Section 15.8) and could be used in the Aesthetics Study (Section 12.6) (See Figure 15.9-1).

15.9.8. Level of Effort and Cost

Details regarding equipment to be used for construction and operations and operational information should be sufficient to perform an analysis of Project emissions. Information on emissions from other Railbelt power sources that may be offset by this Project would be needed to allow for a full analysis of potential costs and benefits.

Completion of the work described above would require seven to ten months of effort over the two year study period at an estimated cost of \$100,000.

15.9.9. Literature Cited

18 AAC 50, Alaska Administrative Code, Air Quality Control.

AS 46.03, Alaska Statutes, Title 46, Water, Air, Energy, and Environmental Conservation, Chapter 46.03 Environmental Conservation.

AS 46.14, Alaska Statutes, Title 46, Water, Air, Energy, and Environmental Conservation, Chapter 46.14 Air Quality Control.

EPA 40 CFR Part 50, National Ambient Air Quality Standards.

EPA Green Book Non-Attainment Areas for Criteria Pollutants.

HDR 2011. Susitna-Watana Hydroelectric Project, Socioeconomic, Recreation, Air Quality, and Transportation Data Gap Analysis. Unpublished, by the Alaska Energy Authority.

42 U.S.C. 7401, The Clean Air Act.

15.9.10. Tables

Table 15.9-1. Schedule for implementation of Air Quality Study.

Activity	2012				2013				2014				2015
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q
Review Existing Information/Identify Needs					—								
Document Existing Conditions						—							
Summarize Baseline Fossil Fuel Emissions							—						
Initial Air Quality Study Report									—	Δ			
Estimate Future Emissions with/without Project									—	—			
Updated Study Report												—	▲

Legend:

— Planned Activity - - - - Follow up activity (as needed) Δ Initial Study Report ▲ Updated Study Report

15.9.11. Figures

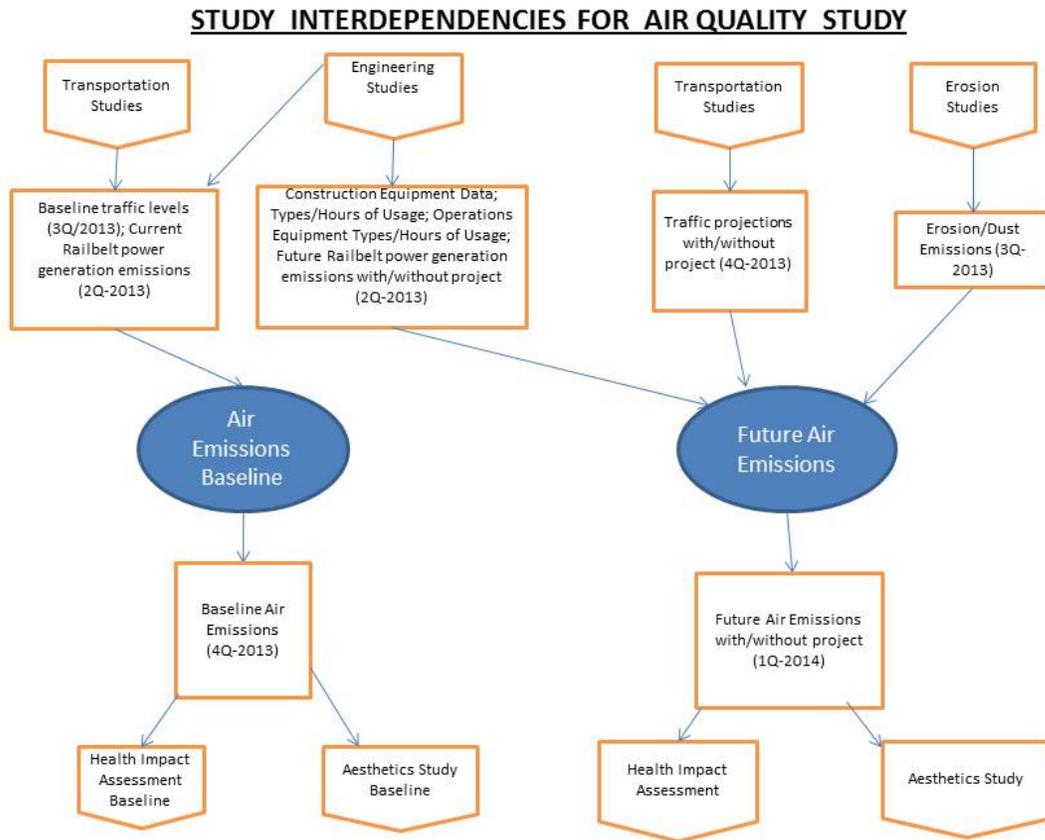


Figure 15.9-1. Air Quality Study Interdependencies with Other Studies.