3.12 AIR QUALITY AND NOISE

3.12.1 Introduction

This section discusses air quality and noise resources in the proposed Project area and describes applicable federal and state air quality and noise regulations. The description of air quality and noise resources is based on information provided in the 2011 Final Environmental Impact Statement (Final EIS) as well as new circumstances or information relevant to environmental concerns that have become available since the publication of the Final EIS, including the proposed reroute in Nebraska. The information that is provided here builds on the information provided in the Final EIS as well as the 2013 Draft Supplemental EIS and, in many instances, replicates that information with relatively minor changes and updates; other information is entirely new or substantially altered.

Specifically, the following information, data, methods, and/or analyses have been substantially updated from the 2011 document:

- Historic regional climate data were revised to reflect changes in the proposed Project route in Nebraska (i.e., historic climate data from weather stations in close proximity to the reroute in Nebraska were used).
- The Ambient Air Quality Standards (AAQS) have been updated to include Montana AAQS.
- The regional background air quality concentrations have been updated (previously 2008 data) to include more recent data (i.e., December 2011data).
- Information on background noise levels using population density of each county crossed by the proposed pipeline is presented to supplement previous information and allow for more representative baseline noise levels.

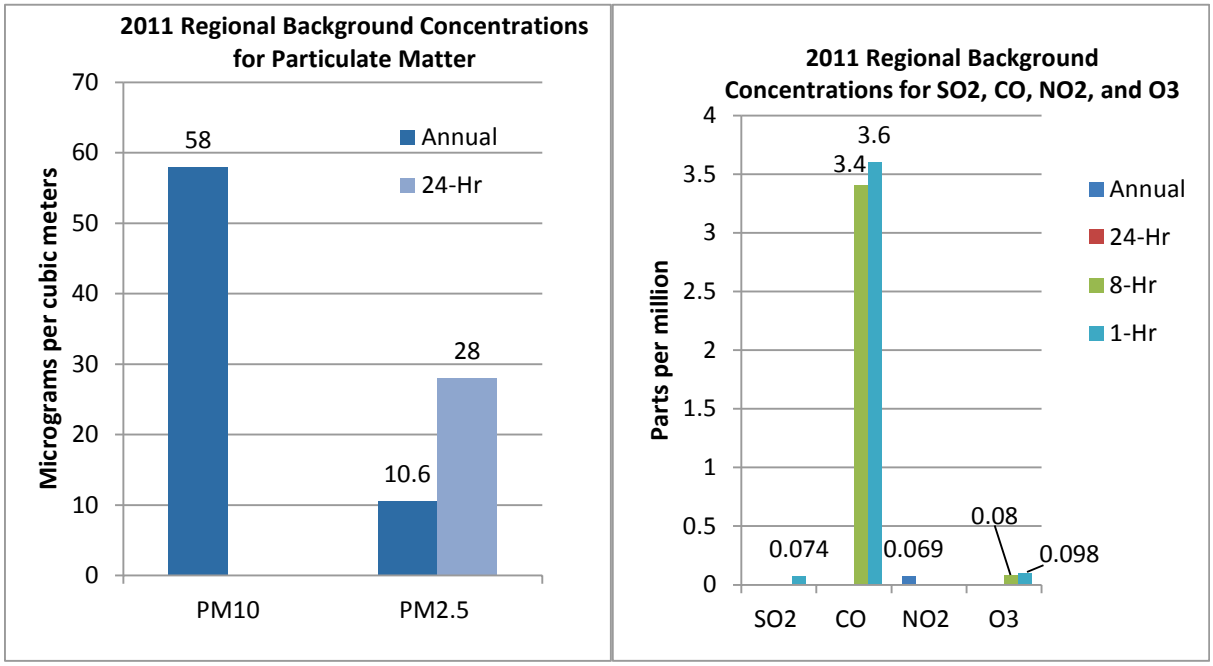
The following information, data, methods, and/or analysis have been substantially updated from the 2013 Draft Supplemental EIS:

- A table showing estimated criteria pollutant emissions from backup emergency generators associated with normal routine maintenance and upset conditions has been added.
- Distances from the proposed pipeline right-of-way (ROW) and pump stations to the closest designated points on National Historic Trails (NHTs) (actual routes), National Scenic Rivers, Wild and Scenic Rivers (WSRs), and National Recreational Rivers (NRR) have been revised.
- The noise regulatory requirements for the proposed Project have been updated to include additional noise criteria applicable during proposed Project construction (including blasting if necessary) and operations phases.
- In response to public and agency comments, text has been revised throughout the section where necessary.

Summary

The proposed Project would be located in regions of the United States designated as in attainment for all criteria pollutants (i.e., good air quality areas). As currently configured, the construction and operation of the proposed Project components are either exempt from or below

the emission thresholds of applicable federal and state air quality regulations. For the majority of its proposed route, the proposed Project would be constructed in rural agricultural areas away from residences and businesses; however, a few residences are located within 25 to 500 feet of the pipeline ROW and within 0.5 to 1 mile of the pump stations. The 2011 regional background air quality concentrations for the proposed Project are shown on Figure 3.12.1-1.



Notes: The legend indicates the average time frames required by NAAQS.

Figure 3.12.1-1 2011 Regional Background Air Quality Concentrations for the Proposed Project[1]

The proposed Project would include installation of the pipeline as well as construction and operation of 18 pump stations in Montana, South Dakota, and Nebraska and two pump stations in Kansas, making a total of 20 pump stations. Additionally, the proposed Project would include the construction and operation of approximately 55 mainline valve (MLV) sites along the proposed pipeline route and approximately eight construction camps:[2] four in Montana, three in South Dakota, and one in Nebraska. All construction camps, pump stations, and MLV stations along the proposed pipeline route would be operated with electricity provided by local utilities.

[1] The U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), lead (Pb), and particulate matter (PM). PM includes inhalable coarse particles with aerodynamic diameter of 10 microns and less (PM_{10}) and fine particles with an aerodynamic diameter of 2.5 microns and less ($PM_{2.5}$). Regional background concentrations were not available for Pb; therefore, Figure 3.12-1 does not include background concentrations for this criteria pollutant.

[2] A construction camp is a temporary work camp that would be constructed to meet the housing needs of the construction workforce in remote locations (see Figure 2.1.5-1).

Each camp, pump station, and MLV site would contain one backup emergency diesel generator, which would only be operated during times of power interruption and normal routine maintenance operations (approximately 500 hours per year).

The backup emergency diesel generators at the pump stations and MLV sites would have integrated[3] fuel tanks with capacities of approximately 693 and 132 gallons, respectively (exp Energy Services Inc. 2012). The diesel fuel tank at each construction camp would have a capacity of approximately 10,000 gallons, which would be used for operating the camp backup emergency generator and fueling the camp contractor's vehicles. Depending on daily fuel requirements at construction sites, approximately three 10,000 gallon skid mounted tanks (diesel) and one 9,500 gallon fuel trailer/tank (gasoline) would be established at approved contractor yards and pipe yards in Montana, North Dakota[4], South Dakota, and Nebraska. Section 3.13, Potential Releases, discusses the tank containment system employed at each site.

The composition of the commodities (synthetic crude oil, diluted bitumen [dilbit], and Bakken shale oil) transported by the proposed Project are discussed in Section 3.13, Potential Releases. In general, bitumen is composed of a low proportion of volatile hydrocarbon molecules with high boiling points (over 662 degrees Fahrenheit [˚F] and over 70 carbon atoms in the molecule[5]). Diluents (e.g., natural gas liquids, fuel gas) that would be mixed with the bitumen to reduce its viscosity and make it transportable via pipelines are typically composed of higher proportion of volatile hydrocarbon molecules with very low boiling points (-256 to 68 ˚F) and four carbon atoms or less (e.g., butanes, propane, ethane, and methane). The lower the number of carbon atoms and boiling point of a hydrocarbon molecule, the higher its volatility. This means that dilbit, which is a blend of bitumen and diluent, would have a slightly higher potential to emit fugitive volatile organic compounds (VOCs) and methane than the bitumen only.

3.12.2 Air Quality

3.12.2.1 Environmental Setting

Regional Climate

The proposed Project would be constructed within a zone characterized by a humid continental climate that occurs where polar and tropical air masses collide. The humid continental climate zone is noted for its variable weather patterns and large temperature ranges, with summer high temperatures averaging over 89 ˚F, and winter low temperatures averaging between 12 to 20˚F. Representative climate data for Circle, Montana; Bowman Court House, North Dakota; Philip, South Dakota; Lincoln, Nebraska; and Marion Lake, Kansas, are presented in Table 3.12-1. These stations were chosen because they were the closest monitoring stations to the proposed pipeline route as well as the pipe yard and rail siding in North Dakota.

[3] The tanks are embedded within the backup emergency generators. There are no stand-alone fuel tanks built specifically for these generators.
[4] The proposed pipeline would not cross North Dakota; however, a pipe yard and rail siding would be located in North Dakota.
[5] http://www.docbrown.info/page04/OilProducts02.htm

Table 3.12-1 Representative Climate Data in the Vicinity of the Proposed Pipeline

Location/Measurement (Average)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Circle, Montana[a]													
Maximum temperature (ºF)	26.2	32.7	43.6	57.8	68.5	78.0	86.9	85.8	73.6	59.7	42.3	29.7	57.1
Minimum temperature (ºF)	4.1	10.3	19.6	31.0	41.2	50.1	55.8	53.9	42.9	31.9	19.1	7.9	30.7
Total precipitation (inches)	0.45	0.32	0.56	1.27	2.15	2.55	1.97	1.34	1.26	0.85	0.36	0.49	13.56
Total snowfall (inches)	5.4	3.2	3.3	2.0	0.3	0.0	0.0	0.0	0.1	0.9	2.4	5.0	22.8
Bowman Court House, North Dakota[b]													
Maximum temperature (ºF)	25.5	30.2	39.8	54.5	66.0	75.2	84.2	83.2	71.8	58.5	41.2	30.0	55.0
Minimum temperature (ºF)	4.1	8.5	17.5	29.7	40.7	50.1	56.1	53.7	43.0	31.9	19.0	8.9	30.3
Total precipitation (inches)	0.47	0.40	0.67	1.37	2.39	3.44	2.08	1.45	1.26	1.07	0.47	0.36	15.43
Total snowfall (inches)	6.8	5.6	7.0	4.0	1.0	0.1	0.0	0.0	0.3	2.4	5.4	5.1	37.5
Philip, South Dakota[c]													
Maximum temperature (ºF)	31.5	37.2	45.3	60.3	70.5	80.1	89.7	89.2	77.9	65.0	47.5	36.3	60.9
Minimum temperature (ºF)	6.4	11.7	20.1	32.3	43.3	53.2	59.1	57.5	46.0	34.1	21.0	11.2	33.0
Total precipitation (inches)	0.30	0.40	0.89	1.63	2.96	3.41	2.00	1.63	1.17	1.04	0.43	0.33	16.19
Total snowfall (inches)	4.4	6.2	6.5	3.2	0.4	0.0	0.0	0.0	0.0	0.4	3.1	4.3	28.7
Lincoln, Nebraska[d]													
Maximum temperature (ºF)	33.8	39.7	51.3	63.9	73.9	84.5	89.2	86.8	78.5	66.4	50.0	37.2	62.9
Minimum temperature (ºF)	12.2	17.6	27.8	38.9	50.2	60.8	66.1	63.7	53.0	40.4	27.5	16.2	39.5
Total precipitation (inches)	0.70	0.87	1.96	2.91	4.25	3.93	3.32	3.46	2.92	1.99	1.47	0.88	28.67
Total snowfall (inches)	6.5	5.6	4.6	1.3	0.0	0.0	0.0	0.0	0.0	0.5	2.3	5.8	26.6
Marion Lake, Kansas[e]													
Maximum temperature (ºF)	38.1	43.8	55.3	66.2	75.1	85.1	91.5	90.1	81.0	69.1	54.0	41.5	65.9
Minimum temperature (ºF)	17.1	21.3	31.9	42.6	52.8	62.8	67.8	65.7	56.0	43.8	31.9	21.5	42.9
Total precipitation (inches)	0.69	0.99	2.31	3.14	4.66	4.97	3.82	3.72	3.42	2.77	1.67	1.17	33.33
Total snowfall (inches)	1.3	1.1	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.4	4.8

[a] Source: Western Regional Climate Center (WRCC 2012), Circle, Montana, Station 241758, average data from September 1, 1963 to August 26, 2012
[b] Source: High Plains Regional Climate Center (HPRCC 2012a), Bowman Court House, North Dakota, Station 320995, average data from January 2, 1915 to April 30, 2012
[c] Source: High Plains Regional Climate Center (HPRCC 2012b), Philip, South Dakota, Station 396552, average data from November 1, 1907 to April 30, 2012
[d] Source: High Plains Regional Climate Center (HPRCC 2012c), Lincoln WSO Airport, Nebraska, Station 254795, average data from June 1, 1948 to April 30, 2012
[e] Source: High Plains Regional Climate Center (HPRCC 2012d), Marion Lake, Kansas, Station 145039, average data from January 1, 1966 to April 30, 2012

Ambient Air Quality

Federal, state, and local agencies regulate AAQS. The U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), lead (Pb), and particulate matter (PM). PM includes inhalable coarse particles with aerodynamic diameter of 10 microns and less (PM_{10}) and fine particles with an aerodynamic diameter of 2.5 microns and less ($PM_{2.5}$). The NAAQS were developed to protect human health (primary standards) and human welfare (secondary standards). State air quality standards cannot be less stringent than the NAAQS. North Dakota[6], South Dakota, Nebraska[7], and Kansas have adopted AAQS equivalent to the NAAQS for all six criteria pollutants. Montana has its own AAQS for criteria pollutants as described above as well as non-criteria pollutants such as fluoride in forage, hydrogen sulfide, settleable particulate, and visibility. Table 3.12-2 lists the federal (NAAQS) and Montana AAQS.

USEPA defines the relative air quality within specified zones in the United States as either in attainment, nonattainment, maintenance, or unclassifiable. Areas meeting the NAAQS are termed in *attainment areas* (i.e., areas with good air quality); areas not meeting the NAAQS are termed *nonattainment areas* (i.e., areas with poor air quality). *Maintenance areas* are areas previously designated as nonattainment areas that have recently demonstrated compliance with the NAAQS. These former nonattainment areas are treated as attainment areas for the purposes of permitting stationary sources (individual states may have specific provisions to ensure that the area would continue to comply with the NAAQS). Areas that have insufficient data to make a determination of attainment or nonattainment are unclassified or are not designated, but are treated as being in attainment for permitting purposes. The proposed Project is located in an area designated as in attainment for all criteria pollutants.[8] The attainment status of the proposed Project is also discussed in Section 3.12.2.2, Regulatory Requirements.

Table 3.12-2 Federal and Montana Ambient Air Quality Standards

Pollutant	Time Frame	Federal (NAAQS)		Montana (AAQS)
		Primary	Secondary	
Particulate matter less than 10 microns in diameter	Annual[a]	Revoked[a]	Revoked[a]	50 µg/m^3
	24-hour[b]	150 µg/m^{3q}	150 µg/m^3	150 µg/m^3
Particulate matter less than 2.5 microns in diameter	Annual[c]	12 µg/m^3	15 µg/m^3	NA
	24-hour[d]	35 µg/m^3	NA	NA
Sulfur dioxide	Annual[e]	Revoked[e]	Revoked[e]	0.02 ppm
	24-hour[e]	Revoked[e]	Revoked[e]	0.10 ppm
	3-hour[b]	NA[r]	0.5 ppm	NA
	1-hour[f]	0.075 ppm[s]	NA	0.50 ppm
Carbon monoxide	8-hour[g]	9 ppm	NA	9 ppm
	1-hour[g]	35 ppm	NA	23 ppm

[6] In addition to the NAAQS, the State of North Dakota has AAQS for hydrogen sulfide (10 parts per million [ppm] maximum instantaneous concentration, 0.2 ppm 1-hour average concentration, 0.1 ppm maximum 24-hour concentration, and 0.02 maximum arithmetic mean concentration). Unlike the NAAQS, North Dakota has no AAQS for $PM_{2.5}$ (annual and 24-hour standards); therefore, the national standards apply.
[7] In addition to the NAAQS, the State of Nebraska has AAQS for Total Reduced Sulfur (10 ppm for maximum 1-hour concentration and 0.10 ppm for maximum 30 minute rolling average).
[8] http://www.epa.gov/airquality/greenbk/

Pollutant	Time Frame	Federal (NAAQS) Primary	Federal (NAAQS) Secondary	Montana (AAQS)
Nitrogen dioxide	Annual[h]	0.053 ppm	0.053 ppm	0.05 ppm
	1-hour[i]	0.100 ppm	NA	0.30 ppm
Ozone	8-hour[j]	0.075 ppm	0.075 ppm	NA
	1-hour[k]	Revoked[k]	Revoked[k]	0.10 ppm
Lead	3-month rolling[l]	0.15 µg/m^3	0.15 µg/m^3	NA
	Quarterly[m]	1.5 µg/m^3	1.5 µg/m^3	1.5 µg/m^3
Fluoride in Forage	Monthly[n]	NA	NA	50 µg/g[t]
	Grazing season[n]	NA	NA	35 µg/g
Hydrogen Sulfide	1-hour[o]	NA	NA	0.05 ppm
Settleable Particulate	30-day[n]	NA	NA	10 g/m^2 [u]
Visibility	Annual[p]	NA	NA	3 x 10^{-5}/m[v]

Source: USEPA 2012a (http://www.epa.gov/air/criteria.html/) and Administrative Rules of the State of Montana, Rule Chapter 17.8.210 to 17.8.230—Air Quality Standards

[a] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the USEPA revoked the annual PM_{10} standard of 50 µg/m^3 in 2006 (effective December 17, 2006). For the Montana AAQS, the 3-year average of the arithmetic means over a calendar year, averaged over 3-years must not be exceeded.
[b] Federal and state standards not to be exceeded more than once per year.
[c] To attain this federal standard, the 3-year average of the weighted annual mean particulate matter less than 2.5 microns in diameter concentrations from single- or multiple community-oriented monitors must not exceed 12 and 15.0 µg/m^3 for primary and secondary standards, respectively (effective December 14, 2012).
[d] To attain this federal standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).
[e] As of June 2, 2010, USEPA revoked the 1971 annual and 24-hour SO_2 standards in all areas. For the Montana AAQS, the arithmetic average for annual SO_2 over any four consecutive quarters must not exceed the standard. The 24-hour SO_2 concentrations in Montana must not be exceeded more than once over any 12 consecutive months.
[f] To attain this federal standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.075 ppm (effective June 2, 2010). For the Montana AAQS, the 1-hour SO_2 standard must not be exceeded more than 18 times in any 12 consecutive months.
[g] Federal standard not to be exceeded more than once per year. For Montana AAQS, the 1-hour and 8-hour CO concentrations must not be exceeded more than once over any 12 consecutive months.
[h] Federal standard must not exceed the annual arithmetic mean concentration for a calendar year. For Montana AAQS, the arithmetic average over any four consecutive quarters must not be exceeded.
[i] To attain this federal standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.1 ppm (effective January 22, 2010). For Montana AAQS, the 1-hour NO_2 concentrations must not be exceeded more than once over any 12 consecutive months.
[j] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations, measured at each monitor within an area over each year, must not exceed 0.075 ppm (effective May 27, 2008).
[k] As of June 15, 2005, USEPA revoked the 1-hour ozone federal standard in all areas, except the fourteen 8-hour ozone nonattainment Early Action Compact Areas. For Montana AAQS, the 1-hour ozone concentrations must not be exceeded more than once over any 12 consecutive months.
[l] Federal standard not to be exceeded for the averaging time period. Final rule signed October 15, 2008.
[m] Federal or Montana AAQS not to be exceeded for the averaging time period.
[n] Montana AAQS not to be exceeded for the averaging time period.
[o] Montana AAQS not to be exceeded more than once every 12 consecutive months.
[p] For Montana AAQS, the arithmetic average over any four consecutive quarters must not be exceeded.
[q] microgram(s) per cubic meter (µg/m^3)
[r] not applicable (NA)
[s] part(s) per million (ppm)
[t] microgram(s) per grams (µg/g)
[u] gram(s) per square meter (g/m^2)
[v] per meter (/m)

The USEPA as well as state and local agencies have established a network of ambient air quality monitoring stations to measure and track the background concentrations of criteria pollutants across the United States. The major sources of criteria pollutant emissions within the proposed Project area include motor vehicles, industrial facilities, agricultural activities, electric utilities, and fuel storage facilities. A summary of the available regional background air quality concentrations within the proposed Project vicinity for 2011 is presented in Table 3.12-3. These stations were chosen because they represented the closest monitoring stations to the proposed pipeline route as well as the pipe yard and rail siding in North Dakota. Annual NO_2 and 3-hour SO_2 data were not available at any of the affected states.

Table 3.12-3 2011 Regional Background Air Quality Concentrations for the Proposed Project[a]

Location	PM_{10} ($\mu g/m^3$) 24-Hr[b]	$PM_{2.5}$ ($\mu g/m^3$) Annual	$PM_{2.5}$ ($\mu g/m^3$) 24-Hr[c]	SO_2 (ppm) 1-Hr[d]	SO_2 (ppm) 3-Hr[b]	CO (ppm) 8-Hr[b]	CO (ppm) 1-Hr[b]	NO_2 (ppm) Annual	NO_2 (ppm) 1-Hr[e]	O_3 (ppm) 8-Hr[f]	O_3 (ppm) 1-Hr[b]
Montana											
Flathead County	34	7.2	19	ND	ND	ND	NA	ND	ND	0.055	0.06
Rosebud County	ND[g]	ND	ND	0.012	ND	ND	NA	ND	0.065	0.052	0.061
Yellowstone County	ND	ND	ND	0.074	ND	1.3	2.5	ND	ND	ND	ND
North Dakota											
Billings County	ND	4.1	10	0.005	ND	ND	ND	ND	NA	0.057	0.063
Dunn County	ND	ND	ND	0.010	ND	ND	ND	ND	0.008	0.054	0.06
Mercer County	ND	5.1	11	0.038	ND	ND	ND	ND	0.022	0.059	0.064
South Dakota											
Jackson County	ND	ND	ND	0.006	ND	ND	ND	ND	0.004	0.052	0.061
Meade County	41	ND	ND	ND	ND	ND	ND	ND	NA	0.057	0.068
Pennington County	58	5.4	12	0.008	ND	ND	ND	ND	0.047	NA	NA
Nebraska											
Douglas County	58	10.6	21	0.066	ND	1.6	2.4	ND	ND	0.066	0.081
Hall County	ND	7	18	ND	ND	ND	ND	ND	ND	ND	ND
Lancaster County	ND	8.5	22	ND	ND	1.5	2.9	ND	ND	0.053	0.089
Kansas											
Sedgwick County	56	9.6	28	ND	ND	3.4	3.6	ND	0.069	0.08	0.098
Shawnee County	35	9.9	21	ND	ND	ND	ND	ND	ND	0.076	0.094
Sumner County	ND	9.1	26	0.008	ND	ND	ND	ND	0.029	0.078	0.091

Source: USEPA 2012b (http://www.epa.gov/airdata/)

[a] The values shown are the highest reported during the year by all monitoring sites in a county. None of the representative air quality monitoring station had background data for lead (Pb).
[b] Data represent the second-highest daily maximum concentrations per USEPA requirement.
[c] Data represent the 98th percentile of 24-hour average $PM_{2.5}$ concentrations per USEPA requirement.
[d] Data represent the 99th percentile of 1-hour daily SO_2 concentrations, averaged over 3 years per USEPA requirement.
[e] Data represent the 98th percentile of 1-hour average NO_2 concentrations averaged over 3 years per USEPA requirement.
[f] Data represent the fourth-highest daily maximum 8-hour average ozone concentrations per USEPA requirement.
[g] No data (ND)

3.12.2.2 Regulatory Requirements

The Clean Air Act (CAA) and its implementing regulations (42 United States Code 7401 et seq., as amended in 1977 and 1990) are the basic federal statutes and regulations governing air pollution in the United States. Additionally, the following requirements have been reviewed for applicability to the proposed Project:

- New Source Review (NSR)/Prevention of Significant Deterioration (PSD);
- Air Quality Control Regions;
- New Source Performance Standards (NSPS);
- National Emissions Standards for Hazardous Air Pollutants (NESHAPs)/Maximum Achievable Control Technology;
- Chemical Accident Prevention Provisions;
- Title V Operating Permits/State Operating Permits;
- Other Applicable State Permits;
- Federal Minor New Source Review Program in Indian Country; and
- General Conformity Rule.

Greenhouse gas regulatory requirements and standards (including the low carbon fuel standards and federal initiatives) are discussed in Section 4.14, Greenhouse Gases and Climate Change.

Emission estimates presented in this section do not include emissions associated with the extraction of heavy crude in the Western Canadian Sedimentary Basin, the transport of crude via pipeline in Canada (and associated pump stations and other aboveground facilities in Canada), or the processing and refining of crude transported by the proposed Project. Information and analysis related to these activities are discussed in Section 4.15.3, Cumulative Impacts by Resource (see subsection 4.15.3.12, Air Quality and Noise).

New Source Review/Prevention of Significant Deterioration

The NSR permitting program was established as part of the 1977 Clean Air Act Amendments (CAAA). NSR is a preconstruction permitting program that is designed to ensure that air quality is not significantly degraded by the addition of new or modified major emissions sources.[9] In poor air quality areas, NSR requires that new emissions do not inhibit progress toward cleaner air. In addition, the NSR program requires that any large new or modified industrial source be as clean as possible, and that the best available pollution control is utilized. The NSR permit establishes allowable construction procedures, emission source operations, and applicable emission limits relevant to the permitted action. If construction or modification of a major stationary source would result in emissions greater than the established significance threshold for a pollutant within an attainment area, the proposed Project must be reviewed in accordance with PSD regulations under Title 40 of the Code of Federal Regulations (CFR) 51.166 (Prevention of

[9] A major stationary pollutant source in a nonattainment area has the potential to emit more than 100 tons per year (tpy) of any criteria pollutant. In PSD areas, the threshold level may be either 100 or 250 tpy, depending on whether the source is classified as one of the 28 named source categories listed in Section 168 of the CAAA.

Significant Deterioration of Air Quality). Construction or modification of a major or, in some jurisdictions, non-major stationary source in a designated nonattainment or designated maintenance area (Section 175A) requires that the proposed Project be reviewed in accordance with nonattainment NSR regulations. During construction, local utilities would provide commercial electrical power at the construction camps; however, backup emergency diesel-fired generator engines would be used at the camps during upset conditions when commercial electrical power is interrupted and during normal routine maintenance operations (Table 3.12-4). According to Keystone, approximately 500 operating hours per year are expected to be sufficient to cover both normal weekly maintenance test operations and anticipated power upset conditions (recognizing that upset conditions cannot be definitively known in advance) during commercial power failures for the backup emergency diesel generators at each camp location. These camps would be located within designated attainment areas as follows: four in Montana (one in McCone County, two in Valley County, and one in Fallon County), three in South Dakota (one in Tripp County, one in Harding County, and one in Meade County), and one in Nebraska (Holt County). The backup emergency diesel-fired generator engines would be considered non-road engines under 40 CFR 89.2 (Control of Emissions from New and In-use Non-road Compression Ignition Engines—Definitions) if they meet the definitions of portable or transportable and are on location for less than 12 consecutive months. The determination of *potential to emit* would exclude non-road engine emissions for applicability purposes in accordance with the CAA. Current plans are for each construction camp to be used for less than 12 months so that the backup emergency diesel generators would be onsite for less than 12 months. Therefore, the camp generator engines would qualify as non-road engines per 40 CFR 89.2, and determination of *potential to emit*[10] would not apply. Even if the backup emergency diesel generators lost their status of non-road by operating for over a year, their emissions would still be below the 250 tons per year (tpy) threshold that would trigger a PSD or NSR (Table 3.12-4).

[10] *Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source (40 CFR. Sections 52.21(b)(4)).

Table 3.12-4 Estimated Criteria Pollutant Emissions per Backup Emergency Generator at Construction Camps

Pollutant	Maximum Output per Camp (hp[a])[b]	Annual Hours of Operation per Camp (hr/yr[c])[d]	Maximum Heat Input per Camp, HHV[e] (MMBtu/hr[f])	Emission Factors[g, h, i, j] (lb/MMBtu[k])	Emission Factors[g, h, i, j] (g/hp-hr[l])	Emissions Rates per Camp (tpy)	Emission Rates for all Eight Camps[m] (tpy)
Nitrogen Oxides	536.4	500	3.75	0.864	2.74	0.81	6.49
Carbon monoxide	536.4	500	3.75	0.822	2.61	0.77	6.17
Nonmethane hydrocarbon	536.4	500	3.75	0.075	0.24	0.071	0.56
Particulate Matter	536.4	500	3.75	0.047	0.15	0.044	0.35
Sulfur Oxides	536.4	500	3.75	0.0016	0.0049	0.0015	0.012
Lead	536.4	500	3.75	0.0000090	NA[n]	0.0000084	0.000068

[a] Horsepower (hp)
[b] Maximum output was based on one 400-kilowatt (kW) backup emergency generator engine operating at each construction camp during upset conditions when commercial power is interrupted (assumed Tier 3 engines).
[c] Hours per year (hr/yr)
[d] The backup emergency generators at each camp were assumed to operate for 500 hours per year.
[e] High Heating Value (HHV)
[f] Million British Thermal Units per hour (MMBtu/Hr)
[g] Maximum heat input was estimated based on the maximum hp at each construction camp and a brake-specific fuel consumption of 7,000 Btu/hp-hr.
[h] Emission factors (g/hp-hr) for all criteria pollutants except sulfur oxides and lead were based on NSPS Subpart IIII emission standards (40 CFR 89); converted from g/kwh to g/hp-hr. NOx emission factor (g/hp-hr) assumed equal to 92% of Subpart IIII NMHC + NO_x emission standard. Emission factor (g/hp-hr) for NMHC or VOCs assumed equal to 8% of Subpart III NMHC + NOx emission standard. The percent values were based on the ratio of NOx to VOC rates obtained from the USEPA AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, October 1996 (USEPA 1996b).
[i] Sulfur oxides (SO_x) emission factors were calculated based on a sulfur content of 0.0015% (ultra-low-sulfur diesel), heat content of 19,300 Btu/lb and maximum heat input in MMBtu/hr, and a brake-specific fuel consumption of 7,000 Btu/hp-hr (assume $SO_x = SO_2$).
[j] Lead (Pb) emission factors (lb/MMBtu) taken from USEPA AP-42, Section 1.3, Fuel Oil Combustion, October 1996 (USEPA 1996a). Pb emission factors for diesel industrial engines were not available.
[k] pounds per million British Thermal Units (lb/MMBtu)
[m] Based on four construction camps in Montana, three in South Dakota, and one in Nebraska
[l] grams per horsepower-hour (g/hp-hr)
[n] Not applicable (NA)

During operation, the proposed Project would use skid-mounted backup emergency diesel generators[11] with integrated fuel tanks at pump stations and MLV sites during upset conditions when commercial power supply is interrupted due to weather or other cause. Specifically, each pump station would have one 113-kilowatt (kW) backup emergency diesel generator with an integrated 693-gallon tank, and each MLV site would have one 38-kW backup emergency diesel

[11] In the event a pump station experiences a utility power outage, the backup emergency generator for that pump station is automatically started. When a utility power outage occurs at a pump station, the mainline pump motors are shut down and are not restarted until utility power is restored. The pipeline is designed to continue operating safely at a reduced throughput when any one pump station is out of service. The proposed pipeline is also designed to operate safely with two adjacent or non-adjacent stations without power. However, depending on the location of the outages and the product batches in the line at the time of the outage, two stations without power may cause the line flow rate to fall below the rate required to maintain product batch interface quality or meet minimum pump flow rate requirements. In this case, the pipeline would be shut down by the Oil Control Center.

generator with an integrated 132-gallon tank. The backup emergency diesel generators, whether they are situated at pump stations or intermediate MLV sites, would automatically start and operate for a brief period of time each month to ensure the equipment is available to operate reliably. The test run time is adjustable and is expected to be set for approximately 2 hours. Keystone estimates this would result in 24 hours of operation annually. While the duration of any power upset conditions is not known, Keystone assumes a total of 30 hours per year is a reasonable estimate for routine maintenance test operations and operation under upset conditions combined. In contrast to construction camp operations, the operating strategy for pump stations and MLV sites does not rely on the use of the backup emergency generator to supplement the utility power supply during peak-load periods. Based on the assumed total annual hours of operation (30 hours per year, or 0.3 percent of the year), the backup emergency diesel generators at the 20 pump stations and 55 MLV sites are estimated to emit a total of 0.57, 0.61, 0.05, 0.05, 0.001, and 0.0000055 tpy of NOx, CO, VOCs, PM, SO_2, and Pb, respectively (see Table 3.12-5). These emissions would be less than the 250 tpy significance threshold level, and PSD and NSR would not be triggered.

The determination of *potential to emit* only applies to stationary sources (40 CFR 51.166), so mobile source emissions from construction equipment such as excavators, bulldozers, graders, and dump trucks would not trigger PSD or NSR. Emissions from mobile construction equipment are provided in Table 4.12-2.

Air Quality Control Region

Air Quality Control Regions are categorized as Class I, II, or III. Classification is important because it determines the maximum allowable increase in emissions and concentrations of criteria pollutants; the lower the classification, the lower the amount of permissible emissions and concentrations of those emissions. This is primarily due to the type of land use and degree of disturbance in the proposed project area. Class I areas are typically pristine areas and include the following:

- International parks;
- National wilderness areas that exceed 5,000 acres in size;
- National memorial parks that exceed 5,000 acres in size; and
- All other areas classified as Class I before August 7, 1977 (the effective date of the 1977 Amendments).[12]

[12] CAA § 162, 42 U.S.C. § 7472; CAA § 164, 42 U.S.C. § 7474

Table 3.12-5 Estimated Criteria Pollutant Emissions for all Emergency Generators at Pump Stations and MLV Sites during Normal Maintenance Operations and Upset Conditions

Pollutant	Maximum Output per Pump Station (hp)[a]	Maximum Output per MLV Site (hp)[a]	Annual Hours of Operation per Pump Station and MLV Site (hr/yr)[b]	Maximum Heat Input per Pump Station, HHV (MMBtu/hr)[c]	Maximum Heat Input per MLV Station, HHV (MMBtu/hr)[c]	Emission Factors for 113-kW Generators at Pump Stations[d,e,f]		Emission Factors for 38-kW Generators at MLV Sites[d,e,f]		Emission Rates for all 20 Pump Stations and 55 MLV Sites[g] (tons/year)
						lb/MMBtu	g/hp-hr	lb/MMBtu	g/hp-hr	
Nitrogen Oxides	152	51.0	30	1.06	0.36	0.86	2.74	1.02	3.22	0.57
Carbon monoxide	152	51.0	30	1.06	0.36	0.82	2.61	1.17	3.73	0.61
Nonmethane hydrocarbon	152	51.0	30	1.06	0.36	0.075	0.24	0.088	0.28	0.050
Particulate Matter	152	51.0	30	1.06	0.36	0.070	0.22	0.094	0.30	0.050
Sulfur Oxides	152	51.0	30	1.06	0.36	0.0016	0.0049	0.0016	0.0049	0.0010
Lead	152	51.0	30	1.06	0.36	0.0000090	NA[h]	0.0000090	NA	0.0000055

[a] Maximum output was based on one 113 KW operating at each pump station and 38 kW operating at each MLV site during upset conditions when commercial power is interrupted (assumed Tier 3 engines).
[b] The backup emergency generators were assumed to operate for 30 hours per year (accounts for both normal weekly maintenance operations and unplanned events/upset conditions).
[c] Maximum heat input were estimated based on the maximum horsepower (hp) at each pump station and MLV site, as well as a brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.
[d] Emission factors (g/hp-hr) for all criteria pollutants except SO_2 were based on NSPS Subpart IIII emission standards (40 CFR 89), converted from g/kwh to g/hp-hr. The NOx emission factor (g/hp-hr) was assumed equal to 92% of Subpart IIII NMHC + NOx emission standard. The emission factor (g/hp-hr) for nonmethane hydrocarbon (NMHC) or volatile organic compounds (VOC) was assumed equal to 8% of Subpart III NMHC + NOx emission standard. Percentage values were based on the ratio of NOx to VOC rates obtained from the USEPA AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, October 1996.
[e] SO_2 emission factors were calculated based on a sulfur content of 0.0015% (ultra low sulfur diesel), heat content of 19,300 Btu/lb, maximum heat input in MMBtu/hr, and a brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.
[f] Lead (Pb) emission factors (lb/MMBtu) were taken from USEPA AP-42, Section 1.3, Fuel Oil Combustion. Pb emission factors for diesel industrial engines were not available.
[g] Based on a total of 20 pump stations and 55 MLV sites along the pipeline route.
[h] Not applicable (NA)

If a new source (or a major modification to an existing source) is subject to the PSD program requirements and is within 62 miles (100 kilometers) of a Class I area, the proposed facility must notify the appropriate federal officials and assess the impacts of the proposed Project on the Class I area. The following Class I areas are within 62 miles (100 kilometers) of the proposed Project ROW: Fort Peck Indian Reservation in Montana; Theodore Roosevelt National Park in North Dakota; and Badlands/Sage Creek Wilderness and Badlands National Park in South Dakota. There are no federal Class I areas in Nebraska and Kansas. The proposed Project does not include construction or operation of significant stationary sources of air pollutants subject to the PSD program requirements. Therefore, the proposed Project would not trigger a federal Class I area impact assessment.

Class II areas include all attainment and not-classifiable areas not designated as Class I areas (unless subsequently re-designated). Class II areas are also areas that are in attainment for criteria pollutants but are not considered pristine. The Niobrara National Scenic River, located approximately 9 miles west of the proposed pipeline route in Nebraska, is designated as a Class II area.[13] As only Class I areas require special impact assessments, the Niobrara National Scenic River would not trigger this requirement.

Class III areas are not defined in the statute, are intended for heavily industrialized zones, and must meet all requirements outlined in 40 CFR 51.166 for maximum allowable increases in emissions.

New Source Performance Standards

NSPS, codified at 40 CFR Part 60, establishes requirements for new, modified, or reconstructed units in specific source categories. NSPS requirements include emission limits, monitoring, reporting, and record keeping.

During construction, temporary fuel storage systems would be located at contractor yards, pipe yards, and construction camps. Each system would consist of temporary, aboveground on-road and off-road, diesel, skid-mounted tanks (approximately three 10,000 gallon tanks) and/or 9,500-gallon gasoline fuel trailers. Normally, a 2- to 3-day supply of fuel would be maintained in storage, resulting in approximately 30,000 gallons in storage volume at each fuel storage location, divided between the various tanks. The regulations in 40 CFR 60 subpart Kb apply only to tanks that are greater than 19,500 gallons (or 75 m^3); because each of the tanks anticipated to be used during construction are less than 19,500 gallons, the regulations specified in 40 CFR 60 subpart Kb would not apply. Additionally, the regulatory requirements associated with 40 CFR 60 Subpart XX (Standards of Performance for Bulk Gasoline Terminals) would also not apply as this pertains to transfer facilities that have gasoline throughputs in excess of 19,998 gallons (75,700 liters) per day, more than is likely to be required for the construction equipment on a daily basis.

[13] The proposed pipeline crosses the Niobrara River in Nebraska; however, the portion of the river that is scenic (Niobrara National Scenic River) ends at U.S. Route 137, which is approximately 9 miles west of the proposed pipeline route (distance measured as *the crow flies* to the closest designated point on the river). The closest pump station (Pump Station 21) in Tripp County, South Dakota, is located approximately 19 miles north of the closest designated point on the Niobrara National Scenic River (upstream of the pipeline crossing). The next closest pump station (Pump Station 22) in Holt County, Nebraska, is approximately 24 miles southwest of the closest designated point on the Niobrara WSR/NRR (downstream of the pipeline crossing).

In addition to the storage tanks required for fueling the construction equipment, backup emergency generators would also be located at each of the construction camps. These backup emergency generators are expected to be stationary and on-site for less than 12 months. As none of the camps are anticipated to be occupied for more than a year and the generators would qualify as non-road engines (per 40 CFR 89.2) the generators would not be subject to 40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines).

During operation, backup emergency generators at pump stations and MLV stations would be located on-site for longer than 12 months and, as such, would qualify as stationary units subject to 40 CFR 60 Subpart IIII, which applies to stationary compression ignition internal combustion engines (i.e., diesel internal combustion engines) manufactured after April 1, 2006, or modified or reconstructed after July 11, 2005. Subpart IIII requires that these engines be certified to meet the emission standards in 40 CFR 60.4201 for nitrous oxides (NOx), PM, CO, and non-methane hydrocarbons. Owners and operators of the engines must use ultra-low-sulfur diesel fuel. Additionally, the regulation has specific provisions for backup emergency engines, which would apply to the proposed Project's backup emergency engines (40 CFR 60.4202).

No other subparts of 40 CFR 60 would apply because the proposed Project does not include construction or operation of any other specific source category of air pollutants.

National Emission Standards for Hazardous Air Pollutants/Maximum Achievable Control Technology

NESHAPS, codified in 40 CFR Parts 61, regulate hazardous air pollutant (HAP) emissions. Part 61 was promulgated prior to the 1990 CAAA and regulates only eight types of hazardous substances (i.e., asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride). The proposed Project would not include facilities that fall under any of the source categories regulated by Part 61; therefore, the requirements of Part 61 are not applicable.

The 1990 CAAA established a list of 189 additional HAPs, resulting in the promulgation of Part 63. Also known as the Maximum Achievable Control Technology standards, Part 63 regulates HAP emissions from major sources, area sources, and specific source categories. Part 63 considers any source with the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate as a major source of HAPs. Area sources are defined by USEPA as sources that emit less than 10 tons of a single HAP or less than 25 tons of a combination of HAPs annually. During operations, the proposed pump stations and MLV sites along the pipeline corridor would be electrically driven and, therefore, would not emit any HAPs. However, the proposed Project would require the use of backup emergency generators at the pump stations and MLV sites during upset conditions/unplanned events and for normal routine maintenance operations. HAP emissions are expected to be negligible since the units would be expected to only operate on average for approximately 30 hours per year (or 0.3 percent of the year) during normal routine maintenance operations and upset conditions/unplanned events at each pump station and MLV site). Consequently, none of the proposed Project facilities would have the potential to emit HAP emissions greater than 10 tpy for a single HAP, nor would they have the potential to emit multiple HAPs at a quantity equal to or greater than 25 tpy (see Table 3.12-6). The proposed Project facilities therefore would not be considered a major source of HAP emissions.

Table 3.12-6 Estimated HAP Emissions per Backup Emergency Diesel Generator at Pumps Stations and MLV Sites

Hazardous Air Pollutant (HAP)	Maximum Output per Pump Station (hp)[a]	Maximum Output per MLV Site (hp)[a]	Annual Hours of Operation per Pump Station and MLV Site (hr/yr)[b]	Maximum Heat Input per Pump Station, HHV (MMBtu/hr)[c]	Maximum Heat Input per MLV Site, HHV (MMBtu/hr)[c]	Emission Factors for 113 kW Generators at Pump Stations (lb/MMBtu)[d]	Emission Factors for 38 kW Generators at MLV Sites (lb/MMBtu)[d]	Emission Rates for all 20 Pump Stations and 55 MLV Sites (tons/year)[e]
Benzene	151.5	51.0	30.0	1.06	0.36	0.00093	0.00093	0.00057
Toluene	151.5	51.0	30.0	1.06	0.36	0.00041	0.00041	0.00025
Xylenes	151.5	51.0	30.0	1.06	0.36	0.00029	0.00029	0.00017
Acrolein	151.5	51.0	30.0	1.06	0.36	0.000093	0.000093	0.000057
PAHs[f]	151.5	51.0	30.0	1.06	0.36	0.00017	0.00017	0.00010
1,3-Butadiene	151.5	51.0	30.0	1.06	0.36	0.000039	0.000039	0.000024
Formaldehyde	151.5	51.0	30.0	1.06	0.36	0.0012	0.0012	0.00072
Acetaldehyde	151.5	51.0	30.0	1.06	0.36	0.00077	0.00077	0.00047
Total HAPs								**0.0024**

[a] Maximum outputs were based on one 113-KW generator operating at each pump station and one 38-kW generator operating at each MLV site during upset conditions when commercial power is interrupted (assumed Tier 3 engines).
[b] The emergency generators were assumed to operate for 30 hours per year (accounts for both normal routine operations and upset conditions/unplanned events).
[c] Maximum heat input were estimated based on the maximum horsepower (hp) at each pump station and MLV site, as well as a brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.
[d] Emission factors (g/hp-hr) for all HAPS were taken from USEPA AP-42, Section 3.3, Table 3.3-2.
[e] Based on a total of 20 pump stations and 55 MLV sites along the pipeline route
[f] polycyclic aromatic hydrocarbons (PAHs)

During construction, all construction camps along the proposed pipeline route would be operated with electricity provided by local utilities. Each camp would contain one backup emergency diesel generator, which would only be operated during times of power interruption and normal routine maintenance operations (total of 500 annual hours of operation, or 6 percent of the year, for the backup emergency generator at each construction camp). Those backup emergency diesel engines would be subject to area source provisions in 40 CFR 63 Subpart ZZZZ for stationary reciprocating internal combustion engines.[14] Backup emergency generator engines that are located onsite for less than 12 months are considered non-road engines per 40 CFR 89.2. Such engines are not considered stationary units and are not subject to 40 CFR 63 Subpart ZZZZ. Current plans are for each camp to be used for less than 12 months so that the backup emergency diesel generators would be onsite for less than 12 months. Therefore, these camp backup emergency generator engines would not be subject to 40 CFR 63 Subpart ZZZZ. Even if the backup emergency diesel generators lost their status of non-road by operating for over a year, their HAP emissions would still be below the thresholds (i.e., 10 tpy for a single HAP and the 25 tpy for total HAPs) that would trigger a major HAP source under 63 Subpart ZZZZ (see Table 3.12-7). As indicated before, these backup emergency generator engines would only operate during times of commercial power interruption and normal weekly maintenance operations and, as such, would have emissions less than 10 tpy for any single HAP or 25 tpy total for all HAPs (see Table 3.12-7).

Chemical Accident Prevention Provisions

The chemical accident prevention provisions, codified in 40 CFR 68, are federal regulations designed to prevent the release of hazardous materials in the event of an accident and to minimize potential impacts if a release did occur. The regulations contain a list of substances and threshold quantities for determining applicability to stationary sources (40 CFR 68.130, List of Regulated Toxic Substances and Threshold Quantities for Accidental Release Prevention). If a stationary source stores, handles, or processes one or more substance on this list in a quantity equal to or greater than specified in the regulation, the facility must prepare and submit a Risk Management Plan. If a facility does not have a listed substance onsite, or if the quantity of a listed substance is below the applicability threshold, the facility does not need to prepare a Risk Management Plan.

No known hazardous materials subject to 40 CFR 68 would be stored at the proposed Project aboveground facilities. The materials that would be stored at the contractor yards include gasoline, diesel fuel, lubricating oil, greases, hydraulic fluid, engine oil, and other substances common to maintaining construction equipment. The thresholds in 40 CFR 68.130 are 1,000 pounds or gallons and above (exempting gasoline and diesel fuel). None of the contractors would have containers or quantities approaching these volumes. Emissions associated with an accidental release of crude/dilbit from the proposed pipeline are qualitatively assessed in Section 3.13, Potential Releases.

[14] Stationary reciprocating internal combustion engines are stationary relatives of motor vehicle engines and include spark ignition, compression ignition, rich-burn, and lean-burn engine types. In a reciprocating engine, combustion of a compressed fuel-air mixture is used to drive pistons in one or more cylinders, with the linear piston motion converted to rotary motion with a crankshaft. In general industry, these engines provide shaft power to drive process equipment, compressors, pumps, standby generator sets, and other machinery.

Table 3.12-7 Estimated HAP Emissions per Backup Emergency Diesel Generator at Construction Camps

Hazardous Air Pollutants	Maximum Output per Camp (hp)[a]	Annual Hours of Operation per Camp (hr/yr)[b]	Maximum Heat Input per Camp, HHV (MMBtu/hr)[c]	Emission Factors[d] (lb/MMBtu)	Emissions Rates per Camp (tpy)	Emission Rates for all Eight Camps[e] (tpy)
Benzene	536.4	500	3.75	0.00093	0.00088	0.007
Toluene	536.4	500	3.75	0.00041	0.00038	0.003
Xylenes	536.4	500	3.75	0.00029	0.00027	0.002
Acrolein	536.4	500	3.75	0.000093	0.000087	0.001
PAHs[f]	536.4	500	3.75	0.00017	0.00016	0.001
1,3-Butadiene	536.4	500	3.75	0.000039	0.000037	0.0003
Formaldehyde	536.4	500	3.75	0.0012	0.0011	0.009
Acetaldehyde	536.4	500	3.75	0.00077	0.00072	0.006
Total HAPs					**0.0036**	**0.03**
Maximum Individual HAP—Formaldehyde					**0.0011**	**0.009**

[a] Maximum output was based on one 400-kW backup emergency generator operating at each construction camp during upset conditions when commercial power is interrupted and normal weekly maintenance operations (assumed Tier 3 engines).
[b] The backup emergency generators at each camp were assumed to operate for 500 hours per year (includes hours for normal weekly maintenance operations and upset conditions/unplanned events).
[c] Maximum heat input was estimated based on the maximum hp per construction camp and a brake-specific fuel consumption of 7,000 Btu/hp-hr.
[d] HAP emission factors (lb/MMBtu) were taken from EPA AP-42, Section 3.3, Table 3.3-2 (USEPA 1996b).
[e] Based on four construction camps in Montana, three in South Dakota, and one in northern Nebraska.
[f] polycyclic aromatic hydrocarbons (PAHs)

Title V Operating Permits/State Operating Permits

Title V of the federal CAA requires individual states to establish an air operating permit program. The requirements of Title V are outlined in 40 CFR 70 (State Operating Permit Programs) and 40 CFR 71 (Federal Operating Permit Program), and the permits required by these regulations are often referred to as Part 70 or 71 permits. The federal and state Title V operating permits for air emissions comprise air pollution requirements that apply to an emissions source, including emissions limits and monitoring, record keeping, and reporting requirements. It also requires that the emissions source report its permit compliance status to the permitting authority. The Title V operating permits are required for all major stationary sources. What constitutes a major source varies according to what pollutant(s) are being emitted and the attainment designation of the area where the source is located. In general, a source is considered to be a major source under Title V if it emits or has the potential to emit:

- One hundred tpy or more of any criteria air pollutant in an attainment area;[15]
- Ten tpy or more of a single HAP; or
- Twenty-five tpy of cumulative HAPs.

During construction, temporary diesel-fired generator engines could be used at any of eight temporary construction camps if commercial electrical power is unavailable. If commercial electrical power is acquired from local utilities, these locations might still use backup emergency, temporary, diesel-fired generator engines. In Montana, the State of Montana Department of Environmental Quality (MDEQ) has authority to implement the Title V program, but does not have the authority to implement operating permit programs for minor sources not subject to Title V. Regulations are contained in the Administrative Rules of Montana, Title 17, Chapter 8, Subchapter 12. The backup emergency generators at each camp in Montana would not have emissions that exceed the Title V threshold of 100 tpy (see Tables 3.12-4). Consequently, proposed temporary construction camps in Montana (four camps) would not trigger Title V permitting in that state. During operations, the backup emergency generators used at the pump stations and MLV sites due to commercial power loss in Montana would also not exceed the Title V permitting thresholds because of the minimal annual hours of operation (approximately 30 hours per year, or 0.3 percent of the year) (see Table 3.12-5).

In South Dakota, the State of South Dakota Department of Environment and Natural Resources (SDDENR) has authority to implement the Title V program and the operating permit program for minor sources not subject to Title V. Regulations are contained in the Administrative Rules of South Dakota, Chapters74:36:04-05. The SDDENR exempts sources from the requirements for a minor operating permit as described in Chapter 74:36:04:03 (i.e., Emission Unit Exemptions), including facilities that have the potential to emit 25 tpy or less of any criteria pollutant. Potential emissions from the backup emergency generators at each camp in South Dakota would not exceed the Title V threshold of 100 tpy (see Tables 3.12-4). Similarly, the generator engines at the camps, pump stations, and MLV sites would have potential emissions less than the minor operating permit threshold. Consequently, proposed Project camp generators in South Dakota would not trigger Title V or minor source permitting. During operations, the backup emergency

[15] Lower thresholds apply in nonattainment areas (but only for the pollutant that is in nonattainment). All the counties within the proposed pipeline corridor in Montana, South Dakota, and Nebraska are in attainment areas for all criteria pollutants.

generators used at the pump stations and MLV sites due to commercial power loss in South Dakota would also not exceed the Title V and minor source permitting thresholds because of the negligible emissions associated with the minimal annual hours of operation (approximately 30 hours per year).

In Nebraska, the State of Nebraska Department of Environment Quality (NDEQ) has authority to implement the Title V program and the operating permit program for minor sources not subject to Title V. Regulations are contained in the Nebraska Administrative Code (NAC) Title 129, Chapters 5 (Operating Permits). The NDEQ exempts sources from the requirements for a minor operating permit as described in NAC 129.5.001.03B under a condition known as the *Low Emitter Rule*, including facilities that have the potential to emit 50 tpy or less of any criteria pollutant except lead; 2.5 tpy or less for lead; 5 tpy or less of any individual HAP; or 12.5 tpy or less for total HAPs. Potential emissions from the backup emergency generators at the camp in northern Nebraska would not exceed the Title V threshold of 100 tpy (see Tables 3.12-4 and 3.12-7). The proposed Project camp in Nebraska would not trigger Title V or minor source permitting. During operations, the backup emergency generators used at the pump stations and MLV sites due to commercial power loss in Nebraska would also not exceed the Title V and minor source permitting thresholds because of the negligible emissions associated with the minimal annual hours of operation (approximately 30 hours per year). In addition, under NAC 129.5.002.02D, none of the backup emergency generators at the camp, pump stations, and MLV sites would be required to obtain Nebraska air quality permits due to their intended purpose as emergency equipment used only under instances of power loss (exp Energy Services Inc. 2012).

In Kansas, the State of Kansas Department of Health and Environment has authority to implement the Title V program, but does not have the authority to implement operating permit programs for minor sources not subject to Title V. Regulations are contained in the Kansas Administrative Regulations 28-19-500 (Operating Permits). During operations, the backup emergency generators used at the two pump stations in Kansas (under instances of commercial power loss) would not exceed the Title V permitting thresholds because of the negligible emissions associated with the minimal annual hours of operation (approximately 30 hours per year). Consequently, the two proposed pump stations in Kansas would not trigger Title V permitting in that state.

The single pipe yard and contractor yard site in North Dakota (pre-existing industrial site) may have temporary fuel storage tanks (approximately three 10,000-gallon tanks for diesel and one 9,500-gallon tank for gasoline), but fugitive VOCs from such tanks are not expected to be significant.[16] Consequently, the storage tanks at the single pipeline yard in North Dakota would not trigger Title V operating permits.

[16] Fugitive VOCs were not estimated for the fuel storage tanks at the pipe yards and contractor yards. However, one of the connected actions (i.e., the Bakken Marketlink Project in Baker, Montana) would have the potential to emit 21.9 tpy VOC emissions from crude oil tanks with storage capacities of 250,000 barrels (throughput of 65,000 barrels per day). The fuel storage tanks at the pipe yards and contractor yards are much smaller than the Bakken Marketlink tanks; therefore, the fugitive VOCs would likely be much smaller too and would be below the Title V operating permit thresholds for North Dakota.

State Preconstruction Permits

In Montana, the MDEQ requires preconstruction air quality permits under the Administrative Rules of Montana, Title 17, Chapter 8, Subchapter 7. Permitting is required for sources that have potential emissions that exceed 25 tpy and are not excluded under the Administrative Rules of Montana 17.8.744 (i.e., backup emergency generators). The backup emergency generator engines at each construction camp, pump station, and MLV site in Montana would be exempt under the Administrative Rules of Montana 17.8.744. Consequently, proposed construction camps, pump stations, and MLV sites in Montana would not trigger requirements for preconstruction permitting.

In South Dakota, SDDENR does not require preconstruction air quality permits.

In Nebraska, NDEQ requires preconstruction air quality permits under the NAC, Title 129, Chapter 17, Subchapter 001. Permitting is required for sources that have potential emissions that exceed 50 tpy of CO; 40 tpy of SO_2, NO_2, or VOCs; 15 tpy of PM_{10}; 10 tpy of $PM_{2.5}$; 0.6 tpy of lead; and 0.6 tpy of any individual HAP; or 10 tpy of total HAPs. The backup emergency generator engines at the camp in Nebraska would have potential emissions that are less than the preconstruction permit thresholds described above (see Tables 3.12-4 and 3.12-7). As discussed earlier, emissions from the pump stations and MLV stations would be negligible since the units would only operate for approximately half-hour per week, or about 30 hours per year. Consequently, proposed construction camps, pump stations, and MLV sites in Nebraska would not trigger requirements for preconstruction permitting.

In Kansas, the Kansas Department of Health and Environment requires preconstruction air quality permit under the Kansas Administrative Regulation 28-19-300(a). Permitting is required for new or modified existing sources (including incinerators) that have potential emissions that exceed 25 tpy of PM; 15 tpy of PM_{10}; 40 tpy of SOx, VOC, or NOx; 100 tpy of CO; 0.6 tpy of lead; 10 tpy of any individual HAP; or 10 tpy of total HAPs. The backup emergency generator engines at both pump stations in Kansas would have potential emissions that are less than the preconstruction permit thresholds described above (see Tables 3.12-4 and 3.12-7). The backup emergency generators used at the two pump stations in Kansas under instances of commercial power loss would not exceed the preconstruction permitting thresholds because of the negligible emissions associated with the minimal annual hours of operation (approximately 30 hours per year). Consequently, proposed construction camps, pump stations, and MLV sites in Kansas would not trigger requirements for preconstruction permitting.

In North Dakota, the State of North Dakota Department of Health (Division of Air Quality) requires preconstruction air quality permit under the North Dakota Century Code 33-15-14-02. Permitting is required for new stationary sources that would cause or contribute to a violation of any applicable ambient air quality standard. A new stationary source would be considered to cause or contribute to a violation of an ambient air quality standard when such source would, at a minimum, exceed the following significance levels: 1.0 $\mu g/m^3$ of annual SO_2, annual PM_{10}, annual NO_2, and annual CO; 5 $\mu g/m^3$ of 24-hour SO_2 and 24-hour PM_{10}; 500 $\mu g/m^3$ of 8-hour CO; 25 $\mu g/m^3$ of 3-hour SO_2; 25 $\mu g/m^3$ of 1-hour SO_2 and 1-hour NO_2; and 2000 $\mu g/m^3$ of 1-hour CO.

The single pipe yard and contractor yard site in North Dakota would have temporary fuel storage tanks. While fugitive VOCs from the tanks are expected to be negligible, VOCs are not among the listed pollutants that trigger preconstruction air quality permitting in North Dakota. Further,

North Dakota Century Code 33-15-14-02-13(i)(5) exempts containers used exclusively for storage of petroleum liquids, except those containers, reservoirs, or tanks subject to the requirements of Chapter 33-15-12, Standards of Performance for New Stationary Sources. The requirements of Chapter 33-15-12 that are applicable to the temporary fuel (diesel and gasoline) storage tanks are the same as the NSPS described above in 40 CFR 60 subpart Kb and Subpart XX. As discussed in the NSPS above, each temporary storage vessel at the pipe yards and contractor yards would be smaller than 75 m^3; therefore, the requirements of 40 CFR 60 Subpart Kb would not apply to these units. Similarly, the proposed Project gasoline transfer facilities at the pipeline yards and contractor yards are expected to be less than 75,700 liters per day and as such, would be exempt from Subpart XX. Consequently, the proposed Project temporary storage tanks at the single pipeline yard and contractor yard in North Dakota would not trigger requirements for preconstruction permitting.

Federal Minor New Source Review Program in Indian Country

The engagement and consultation of Indian tribes associated with the proposed Project are described in Section 3.11.4.3, Tribal Consultation. Indian tribes have authority under the CAA to manage air quality on their reservations. The Tribal Authority Rule ensures that the USEPA "treat tribes in the same manner as states" (Tribes as States), given that they meet certain eligibility criteria, for purposes of implementing various environmental programs under the CAA, including the Federal Minor NSR Program in Indian Country. In lieu of a Tribal permitting program, USEPA would review applications and issue permits or accept registrations for true minor sources,[17] and would implement this rule.

The Federal Minor NSR Program in Indian Country does not apply to the proposed Project because the proposed Project route does not cross any federally designated *Indian Land* (see Section 3.11.2.4, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, and American Indian Religious Freedom Act). If a later investigation determines that some portion of the proposed Project crosses the Undiminished Indian Land,[18] the proposed Project still would be exempt from air permitting or registration requirements under the federal rule because:

- During construction, the emissions of air pollutants are temporary and primarily attributed to mobile construction sources. According to 40 CFR §49.153c, mobile sources are exempt from the Federal Minor NSR Program in Indian Country. This also applies to mobile sources used for maintenance during proposed Project operations.
- During construction, the only non-mobile emission sources are emergency diesel generators used at the construction camps. The emissions from these generators are below the Table 1—Minor NSR Thresholds for attainment areas in 40 CFR §49.153, Federal Minor New Source Review in Indian Country.

[17] *True minor sources* are defined as sources that operate without active control devices. Permits are required for major and synthetic minor sources, including permit requirements that specify operation of the control devices. See 40 CFR 49.151 for detailed definitions and applicability requirements.
[18] *Undiminished Indian Lands* refer to Indian country as defined in 40 CFR 49.152, and includes details of the original designation, which has not been diminished by subsequent changes.

- During operation, the primary sources of air emissions are fugitive VOC emissions from the pump stations. These emissions are also below the Table 1—Minor NSR Thresholds for attainment areas in 40 CFR §49.153. Pump stations are not among the selected group of sources[19] for which permitting applicability includes the fugitive emissions; therefore, these fugitive emissions would not trigger a requirement under this rule.

General Conformity Rule

The General Conformity Rule was designed to compel federal agencies to require that federal actions conform to the applicable State Implementation Plan. General Conformity regulations apply for pollutant emissions within federal action areas designated as nonattainment for pollutant emissions (or, for O_3, its precursors NOx and VOCs) that are not subject to NSR and where pollutant emissions are greater than the General Conformity significance thresholds or exceed 10 percent of the total emissions budget for the entire nonattainment area.

For the proposed Project, none of the counties within the proposed Project area are designated as nonattainment areas for any criteria pollutant (i.e., all the counties are in attainment areas). Therefore, the General Conformity Rule does not apply to the proposed Project.

3.12.3 Noise

3.12.3.1 Environmental Setting

The ambient sound level of a region is defined by the total noise generated within that specific environment and is usually composed of sound emanating from natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. This variation is caused in part by changing weather conditions and the effects of seasonal vegetative cover.

Two measurements used by federal agencies to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level [Leq(24)] and the day-night sound level (Ldn). The Leq(24) is the equivalent steady sound level of a noise energy averaged over a 24-hour period. The Ldn is the Leq(24) with 10 decibels on the A-weighted scale (dBA) added to nighttime sound levels between the hours of 10 p.m. and 7 a.m. to account for people's greater sensitivity to sound during nighttime hours. Averaged over 24 hours, the Ldn level is 6.4 dBA above the Leq(24) for any noise emitting steadily or continuously over 24 hours.

The proposed Project would be constructed in primarily rural agricultural areas. An area's existing noise level is generally based on its proximity to nearby major roadways or railroads or on population density (U.S. Department of Transportation [USDOT] 2006). The majority of the proposed Pipeline corridor is not close to major roadways or railways. Therefore, ambient noise levels were estimated based on the population density of each affected county using the methodology described in USDOT's Transit Noise and Vibration Impact Assessment (USDOT 2006). Existing noise levels for the proposed Project are presented in Table 3.12-8.

[19] The list of 28 sources for which fugitive emissions must be included in determining permit applicability is provided in 40 CFR 52.21(b)(1)(iii).

Table 3.12-8 shows that the existing ambient equivalent continuous sound levels (Leq) in the proposed Project area are approximately 35 and 25 dBA during daytime and nighttime periods, respectively. Existing Ldn levels in the proposed Project area are approximately 35 dBA. Ambient (background) noise levels occur from infrequent roadway traffic, farm machinery on a seasonal basis, pets, and various other household noises.

Table 3.12-8 Existing Noise Levels in the Vicinity of the Proposed Project

State	Affected County	Population Density[a] (People/ Square Mile)	Existing Noise Levels (dBA)[b] Daytime Levels Leq	Nighttime Levels, Leq	Day-Night Levels, Ldn
Montana					
	Phillips	0.8	35	25	35
	Valley	1.5	35	25	35
	McCone	0.7	35	25	35
	Dawson	3.8	35	25	35
	Prairie	0.7	35	25	35
	Fallon	1.8	35	25	35
South Dakota					
	Harding	0.5	35	25	35
	Butte	4.5	35	25	35
	Perkins	1.0	35	25	35
	Meade	7.3	35	25	35
	Pennington	36.4	35	25	35
	Haakon	1.1	35	25	35
	Jones	1.0	35	25	35
	Lyman	2.3	35	25	35
	Tripp	3.5	35	25	35
Nebraska					
	Keya Paha	1.1	35	25	35
	Boyd	3.9	35	25	35
	Holt	4.3	35	25	35
	Antelope	7.8	35	25	35
	Boone	8.0	35	25	35
	Nance	8.5	35	25	35
	Merrick	16.2	35	25	35
	Polk	12.3	35	25	35
	York	23.9	35	25	35
	Fillmore	10.2	35	25	35
	Saline	24.7	35	25	35
	Jefferson	13.2	35	25	35

[a] U.S. Census Bureau, 2010 Census Data (http://www.census.gov/prod/cen2010/index.html) (U.S. Census Bureau 2012)
[b] Existing noise levels were estimated based on population density of each county crossed by the proposed Pipeline using methodology described in USDOT's Transit Noise and Vibration Impact Assessment (USDOT 2006).

Noise Receptors Near the Proposed Pipeline ROW

Aerial photography and field survey data were used to identify potential noise receptors both within 25 feet and from 25 to 500 feet of the proposed pipeline construction ROW (see Table 3.12-9). Potential noise effects on wildlife are discussed in Section 3.6, Wildlife. There are approximately 14 structures but no residences (i.e., homes, mobile homes, cabins) that would be very close to the pipeline construction ROW (within 25 feet). There are 426 structures, including 36 residences, from 25 to 500 feet of the proposed construction ROW. The closest residences are located approximately 150 feet from the proposed ROW. The proposed Project would not affect any national parks or national forests. The proposed Project would cross five NHTs (one in Montana and four in Nebraska) (see Table 3.9-5). The proposed construction ROW is also located approximately 9 miles from the closest designated point on the Niobrara National Scenic River in Nebraska. Noise impacts on these resources are discussed in Section 4.12, Air Quality and Noise.

Table 3.12-9 Structures Near the Proposed Project Construction ROW

		Number of Structures within 25 Feet of the Pipeline Construction ROW		Number of Structures >25 Feet and ≤ 500 Feet from the Pipeline Construction ROW	
State	**County**	**Structures[a]**	**Residences[b]**	**Structures[a]**	**Residences[b]**
Montana	Phillips	1	0	3	0
	Valley	1	0	11	0
	McCone	0	0	10	0
	Dawson	0	0	15	2
	Prairie	0	0	1	0
	Fallon	0	0	8	1
South Dakota	Harding	1	0	13	0
	Butte	0	0	0	0
	Perkins	0	0	0	0
	Meade	2	0	3	2
	Pennington	0	0	0	0
	Haakon	2	0	20	0
	Jones	0	0	5	0
	Lyman	0	0	3	0
	Tripp	0	0	23	2
Nebraska	Keya Paha	0	0	4	0
	Boyd	0	0	0	0
	Holt	0	0	31	2
	Antelope	3	0	57	4
	Boone	2	0	61	7
	Nance	0	0	26	2
	Merrick	0	0	15	2
	Polk	0	0	28	1
	York	0	0	36	3
	Fillmore	1	0	16	2
	Saline	0	0	17	2
	Jefferson	1	0	20	4
Total		**14**	**0**	**426**	**36**

[a] Structure totals include residences, homes, cabins, mobile homes, bridges, barns, silos, garages, churches, etc.

Residence totals include homes, cabins, and mobile homes. Aerial photography and field survey data were used to identify potential noise receptors within 0.5 mile and 1 mile of the proposed Project pump stations (see Table 3.12-10). A larger distance is used for the pump stations relative to the proposed pipeline (0.5 to 1.0 mile versus 25 to 500 feet) because the noise impacts would occur over a long-term period (approximately 50 years). There are approximately 106 structures within 0.5 mile and 403 structures within 1 mile of proposed Project pump stations (the structures within 0.5 mile are also included in the number of structures within 1 mile). Of those totals, there are approximately 11 residences (i.e., homes, mobile homes, cabins) within 0.5 mile and 46 residences within 1 mile of the proposed Project pump stations. Noise sensitive areas such as state or national parks and National wilderness areas are not present within 1 mile of the proposed Project pump stations. Pump Station 21 in South Dakota (Tripp County) is located approximately 19 miles north of the closest designated point on the Niobrara National Scenic River (upstream of the pipeline crossing). Pump Station 22 in Nebraska (Holt County) is located approximately 24 miles southwest of the closest designated point on the Niobrara WSR/NRR (downstream of the pipeline crossing). The distance and direction of the closest residences to the pump stations in the affected states are as follows:

- Montana—0.5 miles south-southeast of Pump Station 13;
- South Dakota—0.3 miles southwest of Pump Station 21;
- Nebraska—0.25 miles north-northwest of Pump Station 25; and
- Kansas—0.3 miles southwest of Pump Station 27.

The remaining 16 pump stations in these states are farther away from residences.

Table 3.12-10 Structures within 0.5 and 1 Mile of Proposed Project Pump Stations

Pump Station No.[a]	Milepost (0 at U.S. border)	Number of Structures within 0.5 Mile		Number of Structures within 1 Mile	
		Structures[b]	Residence[c]	Structures[b]	Residence[c]
Montana					
PS-09	1	0	0	5	0
PS-10	49	0	0	0	0
PS-11	99	0	0	0	0
PS-12	152	0	0	14	1
PS-13	203	0	0	20	2
PS-14	239	0	0	8	1
South Dakota					
PS-15	288	0	0	0	0
PS-16	337	0	0	0	0
PS-17	392	0	0	9	1
PS-18	445	0	0	2	0
PS-19	501	2	0	33	2
PS-20	551	30	1	34	1
PS-21	599	8	1	13	1

Pump Station No.[a]	Milepost (0 at U.S. border)	Number of Structures within 0.5 Mile		Number of Structures within 1 Mile	
		Structures[b]	Residence[c]	Structures[b]	Residence[c]
Nebraska					
PS-22	654	9	1	15	2
PS-23	708	5	1	28	3
PS-24	765	8	1	52	7
PS-25	819	10	1	39	4
PS-26	875	4	0	56	4
Kansas					
PS-27	50	30	5	53	11
PS-29	145	0	0	22	6
Total		**106**	**11**	**403**	**46**

[a] Although the proposed Project would be located in North Dakota, no pump stations would be located in that state.
[b] Structure totals include residences, homes, cabins, mobile homes, bridges, silos, barns, garages, churches, etc.
[c] Residence totals include homes, cabins, and mobile homes.

3.12.3.2 Regulatory Requirements

In 1974, USEPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (USEPA 1974). The document provides information for state and local agencies to use in developing their ambient noise standards. USEPA identified outdoor and indoor noise levels to protect public health and welfare. An Leq(24) of 70 dBA was identified as the level of environmental noise that would prevent any measurable hearing loss over a lifetime. An Ldn of 55 dBA outdoors and an Ldn of 45 dBA indoors were identified as noise thresholds that would prevent activity interference or annoyance. These levels are not *peak* levels, but are 24-hour averages over several years. Occasional high levels of intermittent noise may be allowable under USEPA-promulgated standards as long as the overall average Ldn levels are not exceeded. An Ldn of 55 dBA is equivalent to a continuous Leq noise level of 48.6 dBA. Typical noise levels in the average residences are as follows:

- Quiet room: 28–33 dBA
- Computer: 37–45 dBA
- Refrigerator: 40–43 dBA
- Forced hot air heating system: 42–52 dBA
- Microwave: 55–59 dBA
- Clothes dryer: 56–58 dBA

With regard to increases in decibels measured on the A-weighted noise level scale, the following relationships occur:

- A change of 1 dBA cannot be perceived by humans, except in carefully controlled laboratory environments;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference by humans;

- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

Aside from the USEPA noise standards described above, Montana, South Dakota, and Nebraska have set noise limits for the operational phase of the proposed Project. According to the environmental specifications for the proposed Project in Montana, after construction is complete, average annual Ldn level for the pipeline and associated facilities (i.e., pump stations) should not exceed 60 dBA at the fenceline or property boundary, whichever is further from the pumps, unless the affected landowner waives this condition (MDEQ 2012). According to South Dakota's Public Utilities Commission (SDPUC), the noise levels associated with the proposed Project's pump stations and other noise producing facilities should not exceed a L10[20] level of 55 dBA at the nearest occupied, existing residence, office, hotel/motel or non-industrial business not owned by Keystone (SDPUC 2010). The only exception to this SDPUC noise limit is if the owner or lessee waives this condition in writing or if the baseline noise levels already exceed such standard or limit. In Nebraska, Keystone has agreed to a 55 dBA Ldn measured at the nearest noise sensitive receptor (NDEQ 2013). Kansas has no noise criteria or limits for the proposed Project. There would be no noise sources in North Dakota during the proposed Project's operational phase.

High annoyance with noise is currently a reliable and widely accepted indicator of human health effects due to environmental noise (Michaud et al, 2008, ANSI 2005). The percent highly annoyed (%HA) metric, which is calculated using the adjusted Ldn (or Rating Level) pre- and post-Project, is an appropriate indicator of noise induced human health effects for project operational noise and for long-term construction noise exposure (i.e., noise exposure greater than one year) (ANSI 2005). The American National Standards Institute (ANSI) suggests that adjustments should be made to account for more annoying sound characteristics: specifically if the sound at the receiver location can be characterized as having tones, impulses, or strong low-frequency content. The U.S. Federal Transit Administration criterion for defining severe impacts for land uses where people normally sleep and/or reside is based on an increase of 6.5 percent in percent highly annoyed (%HA) (USDOT 2006).The NPS prohibits the operation of motorized equipment or machinery such as an electric generating plant, motor vehicle, or audio device in a manner that exceeds a noise level of 60 decibels at 50 feet or, if below that level, nevertheless makes noise that is unreasonable considering the nature and purpose of the actor's conduct, location, time of day or night, purpose for which the area was established, impact on park users, and other factors that would govern the conduct of a reasonably prudent person under the circumstances (36 CFR 2.12, Audio Disturbances; NPS 2012). As indicated in Section 3.12.3.1, Environmental Setting, the proposed Project would not affect any national parks or national forests. The proposed Project would cross five NHTs (one in Montana and four in Nebraska); however, the NHTs are not part of the National Park System and are not under the direct

[20] L10 is the sound level exceeded for 10 percent of the measurement period. As an example, an L10 of 50 dBA means noise levels may not exceed 50 dBA more than 6 minutes in an hour (assuming the measurement period is 1 hour).

management of the NPS. Rather, they are governed by the National Trails System Act of 1968, as amended in 2009.[21]

There are no noise sensitive areas such as state and national parks, NHTs, or national wilderness areas present within 2 miles of the proposed Project pump stations. The trail crossings in the vicinity of the Project are not identifiable as crossings of a defined *trail* that could be walked by the public. Most of the NHTs crossed by the proposed Project are either 1) actual trails on or near a river or in actively cultivated agricultural fields on private land; or 2) driving trails along two- to four-lane arterial or rural roads. The driving trails are not considered noise sensitive areas because these areas are currently (and would continue to be) exposed to vehicular traffic noise. Therefore, for the purpose of this noise analysis, only the actual trails were considered to be noise sensitive areas. Based on aerial photography, the closest pump stations to actual trail routes on LECL, MOPI, CALI, POEX, and OREG NHTs are Pump Station 11 (McCone County, Montana), Pump Station 13 (Prairie County, Montana), Pump Station 24 (Nance County, Nebraska), and Pump Station 26 (Jefferson County, Nebraska). Pump Station 11 is approximately 9 miles south of the LECL segment on the Missouri River; Pump Station 13 is approximately 5 miles southeast of the LECL segment on the Yellowstone River; Pump Station 24 is approximately 2 miles southeast of the CALI segment (following the Loup River), 3 miles south of the MOPI segment (following the Loup River), and 9 miles northwest of the CALI segment along the Platte River; and Pump Station 26 is approximately 2 miles southwest of the CALI, POEX, and OREG NHTs. In Nebraska, the proposed pipeline is also located approximately 9 miles east of the closest designated point on the Niobrara National Scenic River, 20 miles south of the closest designated point on the Niobrara WSR/NRR, and 19 miles south of the closest designated point on the Verdigre Creek WSR/NRR. These National Scenic River and WSRs/NRRs are considered places of solitude for visitors and all users. At such distances (i.e., 9 to 20 miles *as the crow flies*), proposed Project-related noise would be expected to reduce completely to the point of being imperceptible above baseline levels. The closest pump stations (Pump Station 21 in South Dakota and Pump Station 22 and 23 in Nebraska) to these National Scenic River and WSRs/NRRs are located approximately 19 to 31 miles away. At such distances, the pump station noise would be expected to be minimal and/or reduce completely to the point of being imperceptible above baseline levels.

In summary, the noise criteria that could be applied to the proposed Project during long-term operations (e.g., pump stations) are as follows:

- Proposed Project noise levels at noise sensitive receptors should not exceed the USEPA Ldn of 55 dBA (federal noise criterion). This criterion is mostly applicable to land uses where people normally sleep and/or reside (i.e., accounts for people's greater sensitivity to sound during nighttime hours [10 p.m. to 7 a.m.]). Examples of such receptors include residences, hotels/motels, hospitals/health care facilities, and recreational areas, including camp sites.
- Proposed Project noise levels at specified locations (i.e., noise sensitive receptors, property boundaries, etc.) should not exceed the following state noise criteria or limits: Ldn of 60 dBA in Montana, L10 of 55 dBA in South Dakota, and Ldn of 55 dBA in Nebraska. Kansas has no noise limits for the proposed Project. There would be no noise sources in North Dakota during the proposed Project operational phase.

[21] The National Trails System Act of October 2, 1968 (as amended on March 30, 2009) has no specific policies or standards for noise near national trails.

- Proposed Project noise levels plus baseline noise levels should not exceed a 10 dBA increase from baseline noise levels (i.e., doubling in loudness).
- Project operational noise and long-term construction noise exposure (i.e., exposure greater than 1 year) should not exceed a 6.5 percent increase in %HA. Since the proposed Project construction activities at any given location would be less than 1 year, this criterion would only apply to proposed Project operational noise (i.e., pump stations).
- Proposed Project noise levels for units of the National Park System such as the Niobrara National Scenic River, Niobrara WSR/NRR, and Verdigre Creek WSR/NRR should not exceed 60 dBA, Leq at 50 feet, or if below that level, should not make noise that is unreasonable. This NPS criterion does not apply to NHTs because NHTs are not part of the National Park System. However, trail users would be subject to the other three noise criteria described above. In addition to the NPS criterion, the Niobrara National Scenic River, Niobrara WSR/NRR, and Verdigre Creek WSR/NRR would also be subject to the other three criteria (assuming that these recreational areas have nearby camp sites where people's greater sensitivity to sound during nighttime hours can be accounted for using the Ldn metric).

No standardized criteria have been developed for assessing construction noise impact (i.e., short-term or temporary activities; usually less than one year). As indicated above, none of the states that would be traversed by the proposed Project have regulatory noise limits for construction, although some local governments have ordinances governing noise from construction or industrial activities. Generally, local noise ordinances are not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project (USDOT 2006). In the absence of standardized criteria for a detailed assessment of construction noise, the Federal Transit Administration recommends the following:

- At residential areas, construction noise levels should not exceed an 8-hour Leq of 80 dBA during daytime (7 a.m. to 10 p.m.), an 8-hour Leq of 70 dBA during nighttime (10 p.m. to 7 a.m.), and a 30-day average Ldn of 75 dBA. In urban areas with very high ambient noise levels (Ldn > 65 dBA), Ldn from construction operations should not exceed existing ambient plus 10 dBA (USDOT 2006).
- At commercial areas, construction noise levels should not exceed an 8-hour Leq of 85 dBA during daytime or nighttime, and a 24-hour Leq of 80 dBA (USDOT 2006).
- At industrial areas, construction noise levels should not exceed an 8-hour Leq of 90 dBA during daytime or nighttime, and a 24-hour Leq of 85 dBA (USDOT 2006).The ground-borne noise[22] impact criteria for infrequent events (i.e., fewer than 30 vibration events of the

[22] Ground-borne noise is the rumbling sound caused by vibration of room surfaces (USDOT 2006). The annoyance potential of ground-borne noise is usually characterized with the A-weighted sound level. Although the A-weighted level is almost the only metric used to characterize community noise, there are potential problems when characterizing low-frequency noise using A-weighting. The non-linearity of human hearing causes sounds dominated by low-frequency components to seem louder than broadband sounds that have the same A-weighted level. The result is that ground-borne noise with a level of 40 dBA sounds louder than 40 dBA broadband noise. This is accounted for by setting the limits for ground-borne noise lower than would be the case for broadband noise (USDOT 2006).

same kind per day) such as blasting are 43 and 48 dBA for residential and institutional land uses, respectively (USDOT 2006).

If these construction noise criteria are exceeded, there may be adverse community reaction (USDOT 2006). Since the proposed pipeline Project and transit-related projects described in the USDOT document are all linear-type projects, the construction noise criteria described above could be used to assess impacts during the construction phase of the proposed Project.

3.12.4 Connected Actions[23]

This section describes the baseline conditions for air quality and noise affected by actions connected to the proposed Project.

3.12.4.1 Bakken Marketlink Project

Construction and operation of the Bakken Marketlink Project would consist of a 16-inch pipeline approximately 5 miles in length, additional piping, booster pumps, meter manifolds, and two 250,000-barrel tanks that would be used to store crude from connecting third-party pipelines and terminals. The Bakken Marketlink Project facilities would be located within private land currently used as pastureland and hayfields. Due to the size and throughputs of the storage tanks, the Bakken Marketlink Project would be subject to the NSPS regulations in 40 CFR 60 subpart Kb and XX (see Section 3.12.2.2, Regulatory Requirements). Keystone would ensure that the Bakken Marketlink Project complies with all applicable NSPS requirements including emission limits, monitoring, reporting, and record keeping.

Similar to the proposed pipeline route, the Bakken Marketlink Project is located in an area (Fallon County) designated as in attainment for all criteria air pollutants (i.e., good air quality area). Further, this connected action is located mostly in a rural and agricultural area; therefore, the existing air quality and background noise is expected to be similar to that of the proposed route.

3.12.4.2 Big Bend to Witten 230-kV Transmission Line

The Big Bend to Witten 230-kV Transmission Project is located in Lyman and Tripp counties in south-central South Dakota. The project would consist of replacing the existing Big Bend-Fort Thompson No. 2 230-kV Transmission Line Turning Structure on the south side of the Big Bend Dam on Lake Sharpe; constructing a new double-circuit 230-kV transmission line for approximately 1 mile southwest of the dam; and constructing a new Lower Brule Substation south of the dam. The existing Witten Substation would be expanded immediately to the northeast to accommodate the new 230-kV connection. The transmission line would be located within or near five identified recreation areas managed by the Lower Brule Indian Reservation in the Lake Sharpe area: Good Soldier Creek Recreation Area, Trailwaters Recreation Area, Counselor Creek Recreation Area, Fort Thompson Recreation Area, and North Shore Recreation Area. These recreation areas are sensitive receptors for air quality and noise.

Similar to the proposed pipeline route, the Big Bend to Witten 230 kV Transmission Line corridors would pass through sparsely populated areas (Lyman and Tripp counties), which are

[23] Connected actions are those that 1) automatically trigger other actions which may require environmental impact statements, 2) cannot or will not proceed unless other actions are taken previously or simultaneously, 3) are interdependent parts of a larger action and depend on the larger action for their justification.

designated as in attainment for all criteria air pollutants (i.e., good air quality area). Further, this connected action is located mostly in a rural and agricultural area with some recreational activities (e.g., hiking, fishing, and hunting); therefore, the existing air quality and background noise is expected to be similar to that of the proposed route.

3.12.4.3 Electrical Distribution Lines and Substations

Multiple private power companies or cooperatives would construct distribution lines to deliver power to 20 pump stations located along the length of the pipeline in the United States. These distribution lines would range in length from approximately 0.1-mile to 62 miles, with the average being 13 miles long, and are estimated to extend about 377 miles, combined. The distribution lines would range in capacity from 69 kV to 240 kV, but the majority would have a capacity of 115 kV. The lines would be strung on a single-pole and/or on H-frame wood poles.

The electrical distribution lines would likely cross sensitive receptors such as recreation and special interest areas in Montana and South Dakota (see Table 3.9-12). No recreation or special interest areas would be crossed by these features in Nebraska. In general, the transmission lines would be constructed in the vicinity of the proposed route, which are in areas designated as *in attainment* (i.e., good air quality). The existing air quality and baseline noise is expected to be similar to that of the proposed route.

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