

APPENDIX F

Comparison of Impact for all Alternatives

**Table 1
Comparison of Impacts for all Alternatives**

Resource	No Action 2011	Proposed Action 2011	Alternative C 2011	Proposed Action 2023	Alternative C 2023
Environmental Justice					
Susceptible Populations	No impact to minority populations, low income populations, or Indian Tribes	No impact - similar to No Action 2011	No impact - similar to No Action	No impact - similar to No Action	No impact - similar to No Action
Socioeconomic Resources					
Workforce	Locally hired workers are 40% of drilling crew, 100% of production crew. Drilling crew averages 4,317 local workers from 2007-2011. All local production crew averages 1,333 workers from 2007-2011	Impact similar to No Action but local drilling workers averaging 5,507 from 2007-2011. All local production crew averages 1,640 workers from 2007-2011	Impact similar to the Proposed Action 2011	Impact similar to Proposed Action 2011 with local drilling workers averaging 4,388 from 2007-2025. All-local production crew averages 1,038 workers from 2007-2025	Impact similar to Proposed Action 2023.
Housing	Locally hired drilling and production workers exert pressure on a tight temporary and permanent housing market	Impact similar to No Action	Impact similar to No Action	Over the medium-term time horizon 2007-2025, it is likely that the market would accommodate ongoing demand pressure for temporary housing	Impact similar to Proposed Action 2023.
Population	Population estimate for Lincoln, Sublette, and Sweetwater County in 2011 is 63,728	No impact - similar to No Action	No impact - similar to No Action	Population estimate for Lincoln, Sublette, and Sweetwater County in 2020 is 68,413	No impact - similar to Proposed Action 2023
Local Demands	Local infrastructure, services, and facilities demand being met	Impact similar to No Action	Impact similar to No Action	Impact similar to No Action	Impact similar to No Action
Economic Benefit	Direct, indirect, and induced economic benefits from drilling total \$5,535,861 per well	Impact similar to No Action	Impact similar to No Action	Impact similar to No Action	Impact similar to No Action
	The net present value of earnings from drilling, 2007-2011, is \$2,275,127,060	The net present value of earnings from drilling, 2007-2011, is \$2,890,368,935	Impact similar to Proposed Action 2011	The net present value of earnings from drilling, 2007-2025, is \$6,393,270,699	Impact similar to Proposed Action 2023
	Direct, indirect, and induced economic benefits from production total \$651,327.50 per well	Impact similar to No Action 2011	Impact similar to No Action	Impact similar to No Action	Impact similar to No Action
Mineral Royalties	The net present value of the federal mineral royalties from the PAPA, 2007-2011, is \$1,217,144,300	The net present value of the federal mineral royalties from the PAPA, 2007-2011, is \$1,483,924,440	Impact similar to Proposed Action 2011	The net present value of federal mineral royalties from the PAPA, 2007-2025, is \$4,115,473,668	Impact similar to Proposed Action 2023
Ad Valorem Tax	The net present value of the distribution of Ad Valorem Tax to Sublette County, 2007-2011, is \$778,972,352	The net present value of the distribution of Ad Valorem Tax to Sublette County, 2007-2011, is \$949,711,642	Impact similar to Proposed Action 2011	The net present value of the distribution of Ad Valorem Tax to Sublette County, 2007-2025, is \$2,633,903,147	Impact similar to Proposed Action 2023
Transportation					
Road Construction	More vehicles on the PAPA due to increased construction of ≈108 miles of new road	Impact similar to No Action 2011 but fewer new roads constructed (≈89 miles)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but more new roads constructed (≈121 miles).	Impact similar to Proposed Action 2023
Summer Traffic	Increased wellfield traffic during summer	Impact similar to No Action 2011	Impact similar to Proposed Action 2011	Impact similar to No Action 2011	Impact similar to Proposed Action 2023
Winter Traffic	Increased wellfield traffic during winter with limited installation of liquid gathering system	Production related winter traffic less than the No Action (because of liquid gathering system) but drilling-related traffic more than the No Action in CDAs 1, 2 and 3	Impact similar to Proposed Action 2011 but drilling related traffic more than No Action in DAs 1, 2 and 4	Production related winter traffic less than the No Action (because of liquids gathering system) but drilling related traffic may or may not be more than the No Action in CDAs 1, 2 and 3	Impact similar to Proposed Action 2023 but drilling related traffic may or may not be more than the No Action in DAs 1, 3 and 4
Road Maintenance	Increased arterial road maintenance cost to WDOT due to increased traffic volumes	Impact similar to No Action 2011	Impact similar to Proposed Action 2011	Impact similar to No Action 2011	Impact similar to Proposed Action 2023
Vehicular Accidents	Increased vehicular accident rates due to increased traffic volumes	Impact similar to No Action 2011	Impact similar to Proposed Action 2011	Impact similar to No Action 2011	Impact similar to Proposed Action 2023
Land Use and Residential Areas					
Existing Land Use Categories	Change of existing land use categories to a predominant industrial landscape by ≈4,500 acres of additional surface disturbance	Impact similar to No Action but increased to ≈6,850 acres of new surface disturbance	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased to ≈12,270 acres of new surface disturbance	Impact similar to Proposed Action 2023
Sublette County Resource Conservation Zoning District	New surface disturbance of ≈3,550 acres in conflict with Sublette County Resource Conservation Zoning District	Impact similar to No Action but increased to 5,540 to 5,700 acres of new surface disturbance in County Resource Conservation Zoning District.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased to 9,800 to 10,000 acres of new surface disturbance in County Resource Conservation Zoning District.	Impact similar to Proposed Action 2023
Residential SRMZ	No new wellfield development conflicting with any Sublette County residential zoning districts but ≈50 acres disturbed within 0.25-mile residential buffer and ≈100 acres disturbed within the Residential SRMZ	No new wellfield development conflicting with any Sublette County residential zoning districts but 100 to 180 acres disturbed within 0.25-mile residential buffer and 150 to 230 acres disturbed within the Residential SRMZ	Impact similar to Proposed Action 2011	No new wellfield development conflicting with any Sublette County residential zoning districts but 200 to 250 acres disturbed within 0.25-mile residential buffer and 250 to 300 acres disturbed within the Residential SRMZ	Impact similar to Proposed Action 2023

Resource	No Action 2011	Proposed Action 2011	Alternative C 2011	Proposed Action 2023	Alternative C 2023
Recreation Resources					
Dispersed Recreation	Decreased recreational use of three OHV areas in PAPA by ≈3,800 acres of additional surface disturbance	Impact similar to No Action but increased by 5,900 to 6,100 acres of new surface disturbance in OHV areas in PAPA	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by 10,500 to 10,800 acres of new surface disturbance in ORV areas on PAPA.	Impact similar to Proposed Action 2023
	Decreased hunting opportunities in PAPA with decreased abundance of big game and upland game birds from increased density of wellfield development and ≈4,500 acres of new surface disturbance	Impact similar to No Action but increased by ≈6,850 acres of new surface disturbance.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by ≈12,270 acres of new surface disturbance	Impact similar to Proposed Action 2023
Visual Resources					
Visual Resource Management Classes	Wellfield development becomes a locally dominant feature in VRM II class with ≈260 acres of new surface disturbance	Impact similar to No Action but increased by 285 to 340 acres of new surface disturbance in VRM II class.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by 740 to 860 acres of new surface disturbance in VRM Class II.	Impact similar to Proposed Action 2023
	Wellfield development becomes a locally dominant feature in VRM III class with ≈960 acres of new surface disturbance.	Impact similar to No Action but increased by 1,075 to 1,250 acres of new surface disturbance in VRM III class.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by 1,960 to 2,200 acres of new surface disturbance in VRM Class III.	Impact similar to Proposed Action 2023
Sensitive Viewshed SRMZ	Local industrialized appearance in the Sensitive Viewshed SRMZ with ≈300 acres of new surface disturbance	Impact similar to No Action but increased by 200 to 250 acres of new surface disturbance in the Sensitive Viewshed SRMZ.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by ≈ 900 to 1,000 acres of new surface disturbance in the Sensitive Viewshed SRMZ.	Impact similar to Proposed Action 2023
Cultural Resources					
Unexpected Discoveries	Destruction and/or unexpected discoveries of archaeological resources by 4,485 acres of new surface disturbance in the PAPA	Impact similar to No Action by ≈6,850 acres of new surface disturbance	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased by ≈12,300 acres of new surface disturbance	Impact similar to Proposed Action 2023
	Increased disturbance to areas with high potential for major finds (sandy bluffs north of New Fork River, not in Mesa Breaks)	Increased disturbance to areas with high potential for major finds (sandy bluffs north of New Fork River and Mesa Breaks)	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011	Impact similar to Proposed Action 2023
	No new surface disturbance in frozen soils and with limited or no destruction of archaeological resources	Potential destruction of archaeological resources from new surface disturbance in frozen soils	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased by more surface disturbance	Impact similar to Proposed Action 2023
Lander Trail	Potential surface disturbances (≈23 acres) in the 0.25-mile buffer of the Lander Trail	Impact similar to No Action but increased by potential surface disturbances (≈65 to 75 acres) in the 0.25-mile buffer of the Lander Trail	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased by potential surface disturbance (≈120 to 215 acres) in the 0.25-mile buffer of the Lander Trail	Impact similar to Proposed Action 2023
	Decreased visual integrity within the Lander Trail SRMZ by 520 acres of surface disturbance	Impact similar to No Action but increased by potential surface disturbance (700 to 800 acres) within the Lander Trail SRMZ	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased by potential surface disturbance (1,580 to 1,670 acres) within the Lander Trail SRMZ	Impact similar to Proposed Action 2023
Air Quality see Table 2					
Noise					
Noise-Sensitive Sites	Drilling and completion at some of the 1,139 new wells would increase noise above 10 dBA at noise-sensitive sites (residences, greater sage-grouse leks). up to 2,800 feet away	Impact similar to No Action by some of the 1,453 new wells drilled and completed	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 by some of the 4,399 new wells drilled and completed	Impact similar to Proposed Action 2023
Geology and Geologic Hazards					
High Erosion Potential	Increased erosion and slope instability by disturbance to soils on slopes ≥ 15% with high erosion potential ≈180 acres and disturbance of ≈540 to soils with high erosion potential	Impact similar to No Action with increased surface disturbance in 400 to 450 acres on slopes ≥ 15% and increased surface disturbance in 730 to 980 acres of soils with high erosion potential	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance in 700 to 750 acres on slopes ≥ 15% and increased surface disturbance in 1,400 to 1,500 acres of soils with high erosion potential	Impact similar to Proposed Action 2023
Mineral Depletion	Depletion of the natural gas resource by drilling 1,139 new wells	Impact similar to No Action with 1,453 new wells drilled	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with 4,399 new wells drilled	Impact similar to Proposed Action 2023
Paleontological Resources					
Blue Rim Area	Loss, damage, or destruction of fossils in the Blue Rim Area by additional surface disturbance of ≈540 acres	Impact similar to No Action with additional surface disturbance in the Blue Rim Area of 730 to 980 acres	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with additional surface disturbances in the Blue Rim Area of 1,400 to 1,500 acres	Impact similar to Proposed Action 2023

Resource	No Action 2011	Proposed Action 2011	Alternative C 2011	Proposed Action 2023	Alternative C 2023
Groundwater Resources					
Aquifer Depletion	Removal of 2,280 acre-feet of water to drill 1,139 wells could lead to temporary depletion of the Wasatch aquifer.	Impact similar to No Action 2011 with 2,900 acre-feet of water required to drill 1,453 wells.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with 8,800 acre-feet of water required to drill 4,399 wells.	Impact similar to Proposed Action 2023
Surface Water					
Sediment Yield	The amount of surface disturbance in six hydrologic basins will at least double with increased annual sediment yields by 10 percent above current conditions	Impact similar to No Action with increased surface disturbances in basins with increased annual sediment yields by 8 percent above current conditions	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance with increased annual sediment yields by 20 percent above current conditions	Impact similar to Proposed Action 2023
Soil Resources					
High Erosion Potential	Disturbance to sensitive soils with high erosion potential and low revegetation capabilities of ≈540 acres	Impact similar to No Action with increased surface disturbance in 730 to 980 acres of sensitive soils	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance in 1,400 to 1,500 acres of sensitive soils	Impact similar to Proposed Action 2023
Steep Slopes	Disturbances to soils on slopes ≥ 15% with high erosion potential ≈180 acres	Impact similar to No Action 2011 with increased surface disturbance in 400 to 450 acres on slopes ≥ 15%	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance in 700 to 750 acres on slopes ≥ 15%	Impact similar to Proposed Action 2023
Sedimentation	Increased soil erosion and sedimentation in aquatic habitats (up to 10 percent over current conditions)	Impact similar to No Action 2011 with erosion and sedimentation up to 10 percent over current conditions	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with erosion and sedimentation up to 20 percent over current conditions	Impact similar to Proposed Action 2023
Vegetation Resources					
Native Vegetation	Removal of existing native vegetation ≈ 4,100 acres of surface disturbance in native vegetation	Impact similar to No Action with increased surface disturbance of 6,240 to 6,370 acres in native vegetation	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance of 11,450 to 11,600 acres in native vegetation	Impact similar to the Proposed Action 2023
Shrub and Tree Dominated Vegetation	Surface disturbance in native vegetation dominated by shrubs and trees would be converted to herbaceous vegetation (≈3,300 acres of sagebrush steppe, 84 acres of greasewood, 260 acres of desert shrub, 75 acres of riparian forest and shrub).	Impact similar to No Action with increased surface disturbance in vegetation dominated by shrubs and trees (4,870 to 5,000 acres of sagebrush steppe, 70 to 80 acres of greasewood, 450 to 600 acres of desert shrub, 60 to 85 acres of riparian forest and shrub)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance in vegetation dominated by shrubs and trees (≈9,000 acres of sagebrush steppe, 230 acres of greasewood, 930 to 980 acres of desert shrub, 270 to 280 acres of riparian forest and shrub)	Impact similar to the Proposed Action 2023
Nonnative Invasive Species	Unsuccessful revegetation with increased presence of noxious weeds (Canada thistle, perennial pepperweed) on un-reclaimed bare ground (≈4,500 acres)	Impact similar to No Action with increased surface disturbance and potentially more un-reclaimed bare ground (6,840 to 6,860 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance and potentially more un-reclaimed bare ground (12,270 to 12,280 acres)	Impact similar to the Proposed Action 2023
Grazing Resources					
Grazing Capacity	Loss of livestock grazing capacity (AUMs) by removal of existing native vegetation ≈ 4,100 acres (≈390 AUMs) in the PAPA	Impact similar to No Action with increased surface disturbance in 6,240 to 6,370 acres of native vegetation, loss of 590 to 605 AUMs in the PAPA.	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance in 11,450 to 11,600 acres of native vegetation, loss of 1,090 to 1,100 AUMs in the PAPA.	Impact similar to the Proposed Action 2023
Nonnative Invasive Species	Decreased grazing capacity with increased presence of noxious weeds (Canada thistle, perennial pepperweed) on un-reclaimed bare ground (≈4,500 acres)	Impact similar to No Action with increased surface disturbance and potentially more un-reclaimed bare ground (6,840 to 6,860 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased surface disturbance and potentially more un-reclaimed bare ground (12,270 to 12,280 acres)	Impact similar to the Proposed Action 2023
Wetlands, Riparian Resources and Flood Plains					
Wetlands	Loss of wetlands and/or wetland function due to surface disturbance in wetlands (≈ 168 acres) and surface disturbance in the Wetland SRMZ (≈ 228 acres)	Impact similar to No Action but increased surface disturbance of 180 to 223 acres in wetlands and 355 to 380 acres in the Wetland SRMZ	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 with increased surface disturbance of 430 to 470 acres in wetlands and 690 to 740 acres in the Wetland SRMZ	Impact similar to the Proposed Action 2023
Riparian Resources	Increased sedimentation in aquatic habitats with loss of ≈75 acres of forest-dominated riparian and shrub vegetation	Impact similar to No Action but increased surface disturbance of ≈ 60 to 85 acres in forest-dominated riparian and shrub vegetation	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 with loss of ≈ 270 to 280 acres of forest-dominated riparian and shrub vegetation	Impact similar to the Proposed Action 2023
Flood Plains	Surface disturbance within 100-year flood plain ≈ 198 acres with potential loss of flood plain function	Impact similar to No Action but increased surface disturbance of ≈ 245 to 300 acres in 100-year flood plain	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance of ≈ 600 acres in 100-year flood plain	Impact similar to the Proposed Action 2023
Threatened, Endangered Species and Special Status Species					
Bald Eagle Nesting Habitat within 1 mile of Nest Sites	Surface disturbance and potential associated human presence to nesting eagles - additional surface disturbance less than 5 acres	Impact similar to No Action – additional surface disturbance less than 5 acres	Impact similar to No Action – additional surface disturbance less than 5 acres	Impacts similar to No Action but increased – additional surface disturbance 10 to 40 acres	Impact similar to No Action but increased – additional surface disturbance 10 to 40 acres

Resource	No Action 2011	Proposed Action 2011	Alternative C 2011	Proposed Action 2023	Alternative C 2023
Bald Eagle Wintering-Feeding-Sheltering Habitat	Surface disturbance and associated human presence within 1 mile of the New Fork Riparian zone (740 to 1,000 acres) and potential effects to forested-dominated riparian habitat (75 to 85 acres)	Impact similar to No Action	Impact similar to No Action 2011	Impacts similar to No Action but increased – 1,850 to 2,100 additional acres within 1 mile of the New Fork Riparian zone and 270 to 280 acres within forested-dominated riparian habitat	Impact similar to Proposed Action 2023
Endangered Colorado River Fish	Groundwater withdrawals for drilling and produced water discharge, possible average annual depletion of 458.4 acre-feet and possible contribution of 705.7 acre-feet from Colorado River System	Impact similar to No Action but increased average annual depletion of 586.1 acre-feet from Colorado River System	Impact similar to Proposed Action 2011	Impact similar to No Action but decreased average annual depletion of 519.4 acre-feet from Colorado River System	Impact similar to Proposed Action 2023
Special Status Wildlife Species	Direct effects to species depending on upland habitats (sagebrush steppe, mixed grass prairie, greasewood and desert shrub) (4,100 acres) as well as forest-dominated riparian habitats (potentially 75 acres) and wetland habitats (228 acres)	Impact similar to No Action but increased – disturbance to upland habitat of 6,100 to 6,300 acres, forest-dominated riparian habitats of 60 to 85 acres and wetland habitat of 350 to 380 acres	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased - disturbance to upland habitat of 11,050 to 11,175 acres, forest-dominated habitats of 260 to 280 acres and wetland habitats (690 to 740 acres)	Impact similar to Proposed Action 2023
Special Status Fish Species	Increased sedimentation in aquatic habitats (up to 10 percent over current conditions)	Impact similar to No Action - up to 10 percent increase in sedimentation in aquatic habitats	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 – but increased - up to 20 percent increase in sedimentation to aquatic habitats	Impact similar to Proposed Action 2023
Special Status Plants	Direct effects to existing populations by surface disturbance in Blue Rim Area – surface disturbance of 540 acres	Impact similar to No Action but increased – surface disturbance of 730 to 980 acres	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased – 1,415 to 1,490 acres	Impact similar to Proposed Action 2023
Wildlife and Aquatic Resources					
All terrestrial wildlife species	Creation of barriers to movement, edges, and patches within former contiguous habitats. The total pad perimeter ≈ 104 miles due to 245 new pads, and associated linear facilities (roads and pipelines) with perimeter ≈ 258 miles	Impact similar to No Action but increased - pad perimeter of 111 miles due to 179 new well pads, linear facility (roads and pipelines) perimeter of 473 miles	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 - but increased , well pad perimeter of 222 miles due to 250 new pads, linear facility (roads and pipelines) perimeter of 594 miles	Impact similar to Proposed Action 2023
	Direct effects to species depending on upland habitats (sagebrush steppe, mixed grass prairie, greasewood and desert shrub of ≈ 4,100 acres) as well as forest-dominated riparian habitats (potentially 75 acres) and wetland habitats (228 acres)	Impact similar to No Action but increased – disturbance to upland habitats of 6,100 to 6,300 acres, forest-dominated riparian habitats of 60 to 85 acres and wetland habitat of 350 to 380 acres	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased - disturbance to upland habitat of 11,050 to 11,175 acres, forest-dominated habitats of 260 to 280 acres and wetland habitats (690 to 740 acres)	Impact similar to Proposed Action 2023
Pronghorn	Direct loss of crucial winter range by surface disturbance (1,500 acres)	Impact similar to No Action but increased surface disturbance (2,400 to 2,600 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (4,000 to 4,400 acres)	Impact similar to Proposed Action 2023
	Direct loss of spring/summer/fall range by surface disturbance (2,950 acres)	Impact similar to No Action but increased surface disturbance (4,200 to 4,400 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (7,900 to 8,100 acres)	Impact similar to Proposed Action 2023
	Decreased habitat function near roads and well pads due to human presence – 245 well pads and 108 miles of road	Impact similar to No Action but decreased – 179 well pads and 89 miles of road	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased – 250 well pads and 121 miles of road	Impact similar to Proposed Action 2023
	No drilling on crucial winter range during winter	Drilling on crucial winter ranges during winter north and south of the New Fork River in CDAs 1, 2, and 3.	Drilling on crucial winter ranges during winter north of the New Fork River in DA 2; no winter drilling in DA 3 (crucial winter range south of the New Fork) until DA 2 is complete – Federal lands/minerals only.	Drilling on crucial winter ranges during winter north and south of the New Fork River may or may not occur by 2023.	Drilling on crucial winter ranges during winter south of the New Fork River in DA 3 may or may not occur. No winter drilling in would occur in DA 2 (crucial winter range north of the New Fork) by 2023 – Federal lands/minerals only.

Resource	No Action 2011	Proposed Action 2011	Alternative C 2011	Proposed Action 2023	Alternative C 2023
Mule Deer	Direct loss of crucial winter range by surface disturbance (1,090 acres)	Impact similar to No Action but increased surface disturbance (2,000 to 2,200 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (3,400 to 3,600 acres)	Impact similar to Proposed Action 2023
	Direct loss of non-crucial winter range by surface disturbance (1,090 acres)	Impact similar to No Action but increased surface disturbance (1,600 to 1,800)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (2,300 to 2,800 acres)	Impact similar to Proposed Action 2023
	Decreased habitat function near roads and well pads due to human activity – 245 well pads and 108 miles of road	Impact similar to No Action but decreased – 179 well pads and 89 miles of road	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased – 250 well pads and 121 miles of road	Impact similar to Proposed Action 2023
	No drilling on crucial winter range during winter	Drilling on crucial winter ranges during winter in CDAs 1 and 2	Drilling on crucial winter ranges during winter in the most southern end of DA 1; no winter drilling in the central and northern portion of DA 1 (also crucial winter range) until southern end of DA 1 is complete – Federal lands/minerals only.	Drilling on crucial winter ranges during winter in CDAs 1 and 2 may or may not occur by 2023.	Drilling on crucial winter ranges during winter in the most northern end of DA 1 may or may not occur; no winter drilling in the central and southern portion of DA 1 (also crucial winter range) by 2023 – Federal lands/minerals only.
Moose	Direct loss of crucial winter/yearlong range by surface disturbance (250 acres)	Impact similar to No Action but increased surface disturbance (240 to 290 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (640 to 760 acres)	Impact similar to Proposed Action 2023
	Continued drilling on crucial winter range on non-federal lands/minerals during winter	Impact similar to No Action	Impact similar to Proposed Action	Impact similar to No Action	Impact similar to Proposed Action
Greater Sage-Grouse	Decreased habitat function at leks by surface disturbance and potential human presence within 0.25 mile of leks during breeding (26 acres)	Impact similar to No Action but increased surface disturbance (90 to 95 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (195 to 205 acres)	Impact similar to Proposed Action 2023
	Decreased habitat function at leks and within 2 miles in nesting and brood-rearing habitat by surface disturbance (3,290 acres) and human activity	Impact similar to No Action but increased surface disturbance (5,000 to 5,100 acres)	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (9,300 to 9,700 acres)	Impact similar to Proposed Action 2023
	Decreased habitat function near roads and well pads due to human activity – 245 well pads and 108 miles of road	Impact similar to No Action but decreased – 179 well pads and 89 miles of road	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased – 250 well pads and 121 miles of road	Impact similar to Proposed Action 2023
	Fragmentation and loss of contiguous sagebrush steppe habitat by surface disturbance (3,300 acres)	Impact similar to No Action but increased surface disturbance (4,800 to 5,000 acres) in sagebrush steppe	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (8,900 to 9,100 acres) in sagebrush steppe	Impact similar to Proposed Action 2023
	No drilling within 2 miles of occupied greater sage-grouse leks from March 1 through July 31 – federal lands/minerals only.	Drilling within 2 miles of occupied greater sage-grouse leks from March 1 through July 31 only within CDAs 1, 2, and 3.	Drilling within 2 miles of occupied greater sage-grouse leks from March 1 through July 31 within DAs 1, 2, and 4, not in DAs 3 and 5 - federal lands/minerals only.	Drilling within 2 miles of occupied greater sage-grouse leks may or may not occur from March 1 through July 31 only within CDAs 1, 2, and 3.	Drilling within 2 miles of occupied greater sage-grouse leks may or may not occur from March 1 through July 31 within DAs 1, 3, and 4, not in DAs 2 and 5 - federal lands/minerals only.
Small Game and Fur-Bearing Mammals	Fragmentation and direct loss of native habitats by surface disturbance (4,150 acres)	Impact similar to No Action but increased surface disturbance (6,300 to 6,450 acres)	Impact similar to Proposed Action 2011	Impact similar to the Proposed Action 2011 but increased surface disturbance (11,500 to 11,700 acres)	Impact similar to Proposed Action 2023
Migratory Birds	Decreased habitat function in fragmented habitats and along edges of well pad perimeters ≈ 104 miles for 245 pads.	Impact similar to No Action but increased pad perimeter ≈ 111 to 112 miles for 179 pads	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased pad perimeter ≈ 221-223 miles for 250 pads	Impact similar to Proposed Action 2023
	Decreased habitat function near roads due to edges and human activity ≈ 108 miles of road and ≈ 150 miles of pipeline corridor	Impact similar to the No Action with decreased edge ≈ 89 miles of road but increased edge ≈ 383 to 384 miles of pipeline corridor	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased edge ≈ 121 miles of road and ≈ 473-474 miles of pipeline corridor	Impact similar to Proposed Action 2023
	Fragmentation and loss of contiguous sagebrush steppe habitat by surface disturbance (3,300 acres) in habitats used by sagebrush-obligate species	Impact similar to the No Action but increased surface disturbance (4,800 to 5,000 acres) in sagebrush steppe	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (8,900 to 9,100 acres) in sagebrush steppe	Impact similar to Proposed Action 2023
	Decreased raptor nesting habitat effectiveness with ≈ 75 acres of surface disturbance within forest-dominated riparian vegetation and ≈ 740 acres disturbed within 1 mile of New Fork riparian zone	Impact similar to the No Action but increased surface disturbance (60 to 85 acres) in forest-dominated riparian vegetation and 860 to 985 acres disturbed within 1 mile of New Fork riparian zone	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 but increased surface disturbance (270 to 280 acres) in forest-dominated riparian vegetation and 1,800 to 2,100 acres disturbed within 1 mile of New Fork riparian zone	Impact similar to Proposed Action 2023
Aquatic Resources	Decreased reproductive success in spring-spawning native salmonid species from increased sedimentation in aquatic habitats (up to 10 percent over current conditions) and loss of ≈ 75 acres of forest-dominated riparian forest and shrub vegetation	Impact similar to No Action with increased sedimentation up to 10 percent over current conditions and loss of ≈ 60 to 85 acres of riparian forest and shrub vegetation	Impact similar to Proposed Action 2011	Impact similar to Proposed Action 2011 with increased sedimentation up to 20 percent over current conditions and increased loss of ≈ 270 to 280 acres of forest-dominated riparian and shrub vegetation	Impact similar to Proposed Action 2023

**Table 2
Summary of Direct Project Air Quality Impacts by Alternative**

Potential Air Quality Impact	No Action Alternative (Alternative A)	Proposed Action Alternative (Alternative B)	Alternative C (Mitigation to Year 2005 Emissions Levels)	Alternative C (Mitigation to Year 2005 Emissions Levels and Additional 80 Percent Drill Rig Mitigation)
Increased concentrations of criteria pollutants CO, NO ₂ , SO ₂ , PM ₁₀ , and PM _{2.5} at near-field and in-field locations	Predicted concentrations are in compliance with applicable NAAQS and WAAQS; predicted concentrations are above the applicable Class II PSD 24-hour PM ₁₀ increment ¹ , and the annual NO ₂ increment; and below the PSD annual PM ₁₀ increment and increments for SO ₂ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations of NO ₂ are above the applicable Class II PSD annual NO ₂ increment ¹ , and below the PSD increments for SO ₂ and PM ₁₀ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations of NO ₂ are above the applicable Class II PSD annual NO ₂ increment ¹ , and below the PSD increments for SO ₂ and PM ₁₀ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations are below the applicable PSD increments ¹ for NO ₂ , SO ₂ and PM ₁₀ .
Increased concentrations of criteria pollutants NO ₂ , SO ₂ , PM ₁₀ , and PM _{2.5} at (far-field) PSD Class I and sensitive PSD Class II area	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations are below PSD increments ¹ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations are below PSD increments ¹ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations are below PSD increments ¹ .	Predicted concentrations are in compliance with applicable NAAQS and WAAQS at all locations; predicted concentrations are below PSD increments ¹ .
Increased visibility (regional haze) impacts at (far-field) PSD Class I and sensitive PSD Class II areas	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 62 days per year at the Bridger Wilderness, 8 days at the Fitzpatrick Wilderness, 2 days at Grand Teton National Park, 6 days at the Gros Ventre Wilderness, 12 days at the Popo Agie Wilderness, 1 day at the Teton Wilderness, 2 days at the Washakie Wilderness, 9 days at the Wind River Roadless Area, and below 1.0 dv at all other sensitive areas.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 67 days per year at the Bridger Wilderness, 10 days at the Fitzpatrick Wilderness, 3 days at Grand Teton National Park, 8 days at the Gros Ventre Wilderness, 14 days at the Popo Agie Wilderness, 1 day at the Teton Wilderness, 2 days at the Washakie Wilderness, 10 days at the Wind River Roadless Area, and below 1.0 dv at all other sensitive areas.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 40 days per year at the Bridger Wilderness, 5 days at the Fitzpatrick Wilderness, 1 day at Grand Teton National Park, 2 days at the Gros Ventre Wilderness, 6 days at the Popo Agie Wilderness, 5 days at the Wind River Roadless Area, and below 1.0 dv at all other sensitive areas.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 10 days per year at the Bridger Wilderness, 1 day at the Fitzpatrick Wilderness, 1 day at the Gros Ventre Wilderness, 1 day at the Wind River Roadless Area, and below 1.0 dv at all other sensitive areas.
Increased visibility (regional haze) impacts at (mid-field) regional communities	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 126 days per year at Boulder, 89 days at Pinedale, and 58 days at Cora.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 138 days per year at Boulder, 91 days at Pinedale, and 62 days at Cora.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 107 days per year at Boulder, 70 days at Pinedale, and 47 days at Cora.	Predicted visibility impacts are greater than the 1.0 dv threshold for a maximum of 45 days per year at Boulder, 25 days at Pinedale, and 12 days at Cora.
Increased atmospheric/terrestrial deposition	Predicted impacts from sulfur and nitrogen deposition are less than the total deposition LOC at all analyzed areas.	Predicted impacts from sulfur and nitrogen deposition are less than the total deposition LOC at all analyzed areas.	Predicted impacts from sulfur and nitrogen deposition are less than the total deposition LOC at all analyzed areas.	Predicted impacts from sulfur and nitrogen deposition are less than the total deposition LOC at all analyzed areas.
Increased sensitive lake ANC	Predicted impacts resulted in less than the LAC at all acid sensitive lakes.	Predicted impacts resulted in less than the LAC at all acid sensitive lakes.	Predicted impacts resulted in less than the LAC at all acid sensitive lakes.	Predicted impacts resulted in less than the LAC at all acid sensitive lakes.

¹ All NEPA analysis comparisons to the PSD increments are intended to evaluate a threshold of concern and do not represent a regulatory PSD Increment Consumption Analysis.