Wyoming Wind & Power

Wyoming Industrial Development Information and Siting Act

Section 109 Permit Application

Wyoming Wind Farm

Prepared for

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Executive Summary

Executive Summary

Wyoming Wind and Power, LLC (WW&P) is submitting this Section 109 Permit Application pursuant to Wyoming Statute (W.S.) § 35-12-109 of the Industrial Development Information and Siting Act (ISA). The permit is for the construction and operation of the Wyoming Wind Farm (Project), to be constructed in a single phase near Wheatland and Chugwater, Wyoming.

The Project involves private land in Platte and Goshen Counties. The Project will use up to 300 wind turbine generators for a total nameplate capacity of approximately 900 Megawatts.

The Project will include engineering, purchase, and construction of all equipment and facilities necessary for a fully operational wind energy electrical generation project.

The application includes all the information required by W.S. § 35-12-109, including all applicable ISA implementing rules and regulations. The data and analyses are included here in Sections 1 through 7 and corresponding appendices. In addition, the transmittal letter was submitted under separate cover to the Wyoming Department of Environmental Quality (WDEQ) Industrial Siting Division (ISD). WW&P requests issuance of a Section 109 Permit pursuant to W.S. § 35-12-109 that covers the construction and operation of the Project.

ISA Statute and Cost

A meeting was held with the WDEQ-ISD on May 14, 2013. The proposed costs of the Project were reviewed by the ISD and determined to exceed the statutory threshold construction cost amount of $190.8 million. Additionally, the Project proposes to install more than 30 wind turbines, and therefore is subject to review pursuant to the ISA.

Location

The Project site is located in Platte and Goshen Counties, Wyoming. There are two parcels comprising the Project area, the Antelope Gap parcel east of Wheatland and the Chugwater parcel east of Chugwater (**Appendix A**). The Project site was selected for the following reasons: 1) large contiguous area; 2) proven wind resource; 3) private landowners willing to lease; 4) few environmental concerns; 5) compatible land uses (ranching, grazing, etc.); 6) transportation access for wind turbine component delivery; and 7) proximity to proposed transmission infrastructure.

Land Use

The Project site is located within unincorporated Platte County and Goshen County. The Project area is composed entirely of private-fee lands, which are currently dedicated to livestock grazing, agricultural cultivation, and rural residence land uses. The Project site lies within areas designated as Agricultural under the Platte and Goshen County zoning codes.

Components

The primary components of the Project will include wind turbine generators mounted on tubular towers, transformers, electrical collector lines, turbine access roads, meteorological towers, a supervisory control and data acquisition (SCADA) system, and substations. Additional infrastructure will include operations and maintenance (O&M) buildings, temporary concrete batch plants that will be used on site during the construction period, and two new groundwater wells to serve the O&M buildings.

WW&P will have general oversight of the wind turbine generator supply and delivery, balance of plant engineering, procurement, planning, scheduling, cost control, evaluation of proposals and equipment, permitting, construction, commissioning, testing, and operation of the facility. The selection of the Engineering Consultant and Construction Contractor will be done through a competitive bid process among previously approved alliance partners.

Construction Schedule

Pending receipt of required permits, the 74-month construction period will begin with road building in November 2013. With the exception of annual winter weather shut-downs from December to March, construction is expected to be continuous through complete build out in the end of 2019. The first stage of the Project is expected to come online in late 2016 with subsequent stages coming online in late 2017, 2018, and 2019.

Construction and Operation Workforce

Access roads will be constructed beginning in November 2013, and appurtenant infrastructure will be developed when all permits are obtained. The workforce will vary from a low of 15 in the fourth quarter of 2013 during road construction and Project startup, to a high of 363 construction trades people during the peak of construction activities in the third quarter of 2016. Over the 74-month construction period, there would be a quarterly average of 138 full-time equivalent workers onsite. During the operations phase, an estimated full-time permanent workforce of 31 persons will be employed by the Project.

Transportation

The Antelope Gap parcel near Wheatland is adjacent to WY 316 (Antelope Gap Road) and the Chugwater Parcel is adjacent to WY 313 (Lone Tree Road), the primary routes to the two parcels. Access routes for turbine and tower deliveries requiring wider trucks and higher clearance will be coordinated with Wyoming Department of Transportation (WYDOT) to avoid disruption and ensure safe travel conditions.

The WTGs, steel tubular towers, and electrical collector line will be trucked directly to the Project site using semi-tractor trailers. Depending on the turbine supplier, rail delivery could be used. Transportation routes associated with over-sized loads will be finalized with WYDOT. Based on input from the Platte County Commissioners, use of County roads by construction trucks will require road use agreements.

Public Involvement

Through numerous informational meetings and presentations, WW&P representatives actively sought out potentially affected municipalities, counties, state agencies, and other stakeholders to discuss potential environmental, social, and economic issues and to identify mitigation recommendations and solutions that could be incorporated into the planning and design of the Project. The Project area of study, as identified by ISD staff during the Jurisdictional Meeting, determined the local governments notified of the Project by WW&P, and included a seven-county area of southeastern Wyoming.

WW&P has met with elected local government officials representing Platte and Goshen Counties, Chugwater, and numerous police, fire, and rescue units as part of the pre-application filing process to inform them of the Project, receive comments and input, and address concerns.

A public open house meeting was held on May 28, 2013 to inform the public and local governments of the Project, and to gather feedback. The meeting was held in Wheatland, and was attended by over 40 people.

WW&P has notified all appropriate local governments of the Project and invited their input and involvement. Over 150 agencies, governments, school districts, and joint powers boards were notified by certified mail. Additionally, 191 owners of mineral rights within the Project area were notified by mail as well as public notice published twice in the local newspaper.

Socioeconomic Impacts

The socioeconomic impact analysis evaluated the benefits and impacts to the social and economic resources in the area of study and primary area of site influence. To measure potential impacts, the socioeconomic analysis compared the expected future conditions in the area of study with and without the Project. The recommended area of study was defined as Platte and Goshen Counties, and the areas surrounding Douglas, Cheyenne, and Laramie. The counties included in the area of study were determined through objective analysis and in consultation with ISD staff.

Both local communities and the state overall will realize benefits from the Project. Wyoming will gain economic benefits, including permanent job creation, tax revenues, and expansion of clean and renewable energy generation within the region. Locally, the Project will result in potential allocation and distribution of Impact Assistance Fund payments, local spending on goods and services, additional local economic activity, increased land lease revenues to landowners, and tax revenues.

The Project will place minimal demands on water, sewer, roads, electrical lines, or other local infrastructure. Therefore, construction and operation of the Project will not significantly affect the various public and non-public facilities and municipal services as a result of in-migration of workers for non-basic employment opportunities.

Environmental Impacts

WW&P has reviewed existing data and conducted cultural resource records searches, threatened and endangered species habitat evaluations, sharp-tailed grouse lek surveys, avian-use fixed-point surveys, bat detection surveys, raptor nest surveys, and noise and visual resource analyses to document and characterize baseline conditions of the Project area. The Project is located outside the Greater Sage-grouse Core Area identified in the Governor’s Executive Order 2008-2. All baseline resource information has been used to site Project components to avoid or minimize the potential for environmental and natural resource impacts. Avoidance and minimization activities included relocating WTGs from the preliminary Project layout. Potential visual and noise impacts were reduced substantially and are considered well within acceptable levels. Additional studies are ongoing and will be incorporated into micrositing activities where appropriate.

Air quality impacts will be limited to temporary fugitive dust during construction. Measures such as road watering are expected to control those impacts. Impacts to recreation, either within or surrounding the Project area, are expected to be minimal. Land use is primarily agricultural, and those uses are expected to continue into the operational phase of the Project

WW&P has sited Project infrastructure to eliminate or minimize the risk of discharges of dredged or fill materials into wetlands or potentially jurisdictional waters of the U.S. Final micrositing of appurtenant linear features during the final design phase will further reduce the potential for impacts to surface waters to the extent practicable. WW&P will minimize the number of stream crossings and, where complete avoidance is not practical, will limit impacts to ephemeral and intermittent waterbodies to the maximum extent practical. Construction practices and micrositing

of facilities are designed to minimize risk of erosion or discharge into the ephemeral/intermittent waterbodies; therefore, no direct or significant indirect impact to aquatic or fishery resources would occur during Project construction or operation.

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AC	alternating current
ac-ft	acre-feet
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
AFB	Air Force Base
AOI	area of influence
APLIC	Avian Power Line Interaction Committee
AQD	Air Quality Division
asl	above sea level
AWEA	American Wind Energy Association
B&B	bed and breakfast
BEA	U.S. Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BMP	best management practice
BNSF	Burlington Northern Santa Fe
BOP	balance of plant
CCSM	Chokecherry and Sierra Madre
CEQ	Council on Environmental Quality
CFD	Cheyenne Frontier Days™
CFR	Code of Federal Regulations
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWIP	Construction Work in Progress
CY	cubic yard
dB	decibel
dBA	decibel (A-weighted scale)

DC	direct current
DNL	Day-Night Level or Ldn
DNV	Det Norske Veritas
DOI	U.S. Department of the Interior
E.O.	Executive Order
ECPG	Eagle Conservation Plan Guidance
EDNA	environmental designation for noise abatement
EHS	Environmental, Health, and Safety
EIS	environmental impact statement
EMF	electromagnetic field
EMS	emergency medical services
EMT	emergency medical technician
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FEPCA	Federal Environmental Pesticide Control Act of 1972
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act of 1947
FMV	fair market value
ft^2	square feet
FTE	full-time equivalent
FY	fiscal year
GCSD1	Goshen School District #1
GL	Germanischer Lloyd
hp	horsepower
I-25	Interstate 25
IBC	International Building Code
IEC	International Electrotechnical Commission
IMPLAN	Impact Analysis for Planning

I-O	input-output
ISA	Industrial Development Information and Siting Act
ISC	Industrial Siting Council
ISD	Industrial Siting Division
kV	kilovolts
LOS	level of service
LQD	Land Quality Division
LRS	Laramie River Station
MBTA	Migratory Bird Treaty Act
MG	million gallons
MIG, Inc.	Minnesota IMPLAN Group
MMboe	million of barrels of oil equivalent
MOE	Ontario Ministry of the Environment
MSW	municipal solid waste
MVT	motor vehicle theft
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
NEPDG	National Energy Policy Development Group
NFIRS	National Fire Incident Reporting System
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Lab Laboratory
NRHP	National Register of Historic Places
NSS	Native Species Status
NTIA	National Telecommunication Information Agency
NWI	National Wetland Inventory
O&M	operation and maintenance

OAR	Oregon Administrative Rule
OES	Occupational Employment Statistics
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
PCB	polychlorinated biphenyl
PCE	personal consumption expenditure
PCSD1	Platte County School District #1
PCSD2	Platte County School District #2
PHRC	public health response coordinators
Project	Wyoming Wind Farm Project
PTC	Production Tax Credit
REA	Rural Electric Association
REIS	Regional Economic Information System
REMI	Regional Economic Models, Inc.
RERT	Regional Emergency Response Team
RES	Renewable Energy Systems
RIMS	Regional Industrial Multiplier System II
ROW	right-of-way
RPS	renewable portfolio standard
RV	recreational vehicle
SAM	social accounting matrix
SCADA	supervisory control and data acquisition
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SPCC	Spill Prevention Control and Countermeasure
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
UI	unemployment insurance
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFS	U.S. Forest Service

USFWS	U.S. Fish and Wildlife Service
W.S.	Wyoming Statute
WCDA	Wyoming Community Development Authority
WCI	Wyoming-Colorado Intertie
WDEQ	Wyoming Department of Environmental Quality
WDH	Wyoming Department of Health
WDOR	Wyoming Department of Revenue
WECS	Wind Energy Conversion System
WEG	Wind Energy Guidelines
WGFD	Wyoming Game & Fish Department
WHMA	Wildlife Habitat Management Area
WIA	Wyoming Infrastructure Authority
WISDOM	Wyoming Interagency Spatial Database & Online Management
WQD	Water Quality Division
WSEO	Wyoming State Engineers Office
WTG	wind turbine generator
WW&P	Wyoming Wind & Power, LLC
WWAP	Wyoming Wind and Power Project
WY EAD	Wyoming Economic Analysis Division
WYCRO	Wyoming Cultural Records Office
WYDEQ	Wyoming Department of Environmental Quality
WYDOT	Wyoming Department of Transportation
WYO 313	Wyoming Highway 313
WYO 316	Wyoming Highway 316
WYPDES	Wyoming Pollutant Discharge Elimination System
yd^3	cubic yards
ZVI	zone of visual influence

Section 1
Purpose and Benefit

1.0 Purpose and Benefits

1.1 Purpose

Recent national and regional forecasts project an increase in consumption of electrical energy continuing into the future. This increased consumption requires development of new generation facilities to satisfy demand, as substantiated by the following:

- The Energy Policy Act of 2005 (Public Law [P.L.] 109-58), Section 211, states "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity." The Act encourages the development of renewable energy resources, including wind energy, as part of an overall strategy to develop a diverse portfolio of domestic energy supplies for the future. Though the proposed Wyoming Wind Farm Project (Project) is on private lands, the Act shows the nation's desire to develop renewable energy sources.

- Presidential Executive Order (E.O.) 13212 (Bush, 2001): "Actions to Expedite Energy-Related Projects," established a policy that federal agencies should take appropriate actions, to the extent consistent with applicable law, to expedite projects to increase the production, transmission, or conservation of energy.

- The National Energy Policy Development Group (NEPDG) (2001) recommended to the president, as part of the National Energy Policy, that the departments of the Interior, Energy, Agriculture, and Defense work together to increase renewable energy production.

- To address increased interest in wind energy development and to implement the National Energy Policy recommendation to increase renewable energy production, the Bureau of Land Management (BLM) established a wind energy development program. This program, which included the amendment of multiple land use plans, supported the congressional directive provided in the Energy Policy Act of 2005 regarding renewable energy development on public lands, the directives of E.O. 13212, and the recommendations of the NEPDG.

- On March 11, 2009, Secretary of the Interior Ken Salazar signed Order No. 3285 – Renewable Energy Development by the U.S. Department of the Interior (DOI) (U.S. Secretary of the Interior, 2009), which establishes the development of renewable energy as a priority for the DOI. Encouraging the production, development, and delivery of renewable energy is now one of the DOI's highest priorities. Although the Project will not involve any DOI lands, Order No. 3285 presents one facet of the federal government's energy policy and demonstrates the administration's desire to support renewable energy projects such as wind facilities.

- In 2004, the Western Governors' Association set a goal of developing 30,000 megawatts (MW) of clean energy by 2015 from traditional and renewable energy sources (Policy Resolution 04-13, June 2004). This goal was reaffirmed in 2006 by Policy Resolution 06-10 (Western Governors' Association, 2006) and again in 2010 by Policy Resolution 10-14 (Western Governors' Association, 2010). This demonstrates a clear support for renewable energy as an increasing component to the overall energy mix in the west.

- On January 1, 2013, Congress passed the American Taxpayer Relief Act of 2012. The Act renewed the Federal Production Tax Credit (PTC) for renewable energy generation for the year 2013, ensuring access to affordable, green power for energy consumers across the country. The PTC extension allows developers to qualify their renewable facility for the $0.23 per kilowatt credit if construction on that facility commences prior to January 1, 2014. Historically, a facility could only qualify for the PTC if it were actually operational by the end of a given year. This change in guidance has driven increased demand for renewable energy generation that is able to qualify for the PTC, fueled by the belief that after 2013, the PTC will no longer exist and wholesale renewable energy prices will increase. Locking in the low renewable energy prices that result from PTC qualification will help utilities provide affordable power to their customers while complying with state-level renewable portfolio standard (RPS) programs.

The Project will support the fulfillment of these objectives by installing approximately 900 MW of wind energy generation, providing a clean solution for increasing power demands. The Project justifies the development of new, interstate transmission infrastructure, which will primarily be used for the delivery of renewable energy, but may also be used to carry energy generated by traditional fuel sources, such as natural gas and coal. Finally, by commencing construction in 2013, the Project's 900-MW output will qualify for the PTC. If the PTC is not extended beyond 2013, Wyoming Wind & Power, LLC's (WW&P) qualification for the credit will help the company realize a power marketing advantage over regional competitors that are no longer able to factor PTC savings into their power bids.

1.2 Benefits

1.2.1 Regional Benefits

A typical concern with the location of new industries is that demand for services such as schools, roads, water supply, and waste disposal will realize a greater increase as a result of the population influx than the tax base that the new industry brings. While providing positive benefits to the local economy, the Project will have minimal impacts on communities and their infrastructure. Local communities will be able to plan for and accommodate the incremental changes resulting from the in-migration of the temporary construction workforce. Development of the Project carries significant economic benefits, including creation of new jobs, increased *ad valorem* taxes, and new dollars supporting the local economy.

Though the construction schedule spans several years, there is no extreme peak in workforce numbers that would put a strain on local resources. Likewise, the operations workforce will add more than 30 permanent jobs to the community. This is certainly a benefit to the community, but one that will not place unreasonable demands on water, sewer, roads, electrical lines, or other local infrastructure. In addition, there would be little measurable increase in non-basic employment, as these jobs are generated from ongoing employment of the existing base of construction workers and would be maintained through the continued employment of both local and non-local construction and operation workers. Therefore, construction and operation of the Project is not expected to significantly affect the various public and non-public facilities and services.

The Project will generate distinct and positive economic impacts during both construction and operation phases. Specifically, development and construction will result in a short-term surge in economic spending activity, while operation will produce long-term economic benefits to local communities. Both sources of regional economic stimuli will result in increased economic output, income, and employment, primarily in Platte County.

Implementation of the Project is expected to have beneficial effects on employment, earnings, and tax revenues. A major facet of the socioeconomic impact of large capital infrastructure projects is the total economic impact on specific local economic sectors and various positive effects on the local economy. The increases in employment or economic output often occur locally as a result of new business locations and community events, and such changes have positive implications for other parts of the local economy.

The Project's economic benefits to both local communities and the state of Wyoming include the following:

- Additional *ad valorem* taxes
- Increased need for and expenditures on local goods and services
- Potential allocation and distribution of Impact Assistance Fund payments over the construction period
- Land lease revenues for local landowners
- Increased use of the local service industry
- Creation of jobs and stable employment
  - Peak quarterly average of 363 temporary construction jobs in the third quarter of 2016
  - Addition of 31 permanent full-time jobs.
- Increased sales and use tax revenues from temporary and permanent employees purchasing goods and services during construction and operation of the Project
- Additional property taxes paid by new employees moving into the area
- State sales tax revenues from the wind energy production equipment
- State wind energy generation tax revenues

1.2.2 Regional Economy

The primary local economic impacts associated with the introduction of new business activity are increased employee compensation (wages and salaries exclusive of withholdings), purchases made by the new business, and taxes paid to local governments. The more local businesses are able to supply the needs of the employees and the new business, the greater the local economic impact of the new business.

Economic multipliers are often used to estimate the total economic impacts of a project or new business activity. The concept is that employee wages and business purchases have a "ripple effect" in an economy. The new business will purchase some of its required materials, supplies, and services in the local economy, and those local businesses in turn will hire some new employees, creating indirect effects. Employees at the new business or project will likewise spend a portion of their wages at local stores and businesses, creating induced effects. In this way, the economic impact of the new business or project spreads in the local economy. In order to estimate the total economic impacts, economic multipliers are used in conjunction with the direct employment, wages, business purchases, and taxes paid. The direct impacts are multiplied by the economic multiplier to yield an estimate of the overall economic impact of the new business or project. Multipliers are generated by economic input-output (I-O) models that account for linkages between sectors in an economy.

In addition to providing a stimulus to the local economy in the form of expenditures on materials and supplies (referred to as procurements), the Project would employ construction workers who are expected to spend a portion of their income (referred to as personal consumption expenditure

[PCE]) in the study area, thus stimulating additional output in the various sectors that provide consumer goods and services. As a result of both Project procurements and PCE by both local and non-local construction workers, the Project is expected to result in a temporary increase in employment and income within the study area during the construction period.

1.2.3 Direct and Secondary (Indirect and Induced) Effects

Based on knowledge of the local economy and local sources, it is possible to identify the elements that have a direct effect on the local economy:

- A direct effect arises from the first round of buying and selling. In general, this is the purchase of some inputs, such as fuel; the spending of income earned by workers; annual landowner revenues; and the income effects of tax changes. These direct effects can be used to identify additional rounds of buying and selling for other sectors and to identify the effect on rounds of spending by local households.
- An indirect effect is the increase in sales of other industry sectors in the county, which includes further round-by-round sales.
- An induced effect is the increased household income expenditures generated by the direct and indirect output effects.

The total economic effect is the sum of the direct, indirect, and induced effects.

During the construction phase of the Project, it is anticipated that 15 percent of the onsite workforce would be composed of persons already residing in the local area. During the construction period of 6 years, the Project would employ as many as 61 local workers. The average monthly local employment (not including winter shutdowns) would number 22 jobs. The Project would generate 31 permanent full-time jobs.

During construction, it is estimated that expenditures in the local economy for equipment, materials, and services would total $112 million.

1.2.4 Secondary Benefits

Construction of the Project would result in secondary economic impacts (indirect and induced impacts) within the study area. These benefits would be temporary. Indirect and induced employment effects include the purchase of goods and services by firms involved with construction. Induced employment effects include construction workers spending their income within the study area. In addition to these secondary employment impacts, there are indirect and induced income effects arising from construction.

Over the construction period and on an average annual basis, the Project would contribute about 89 direct jobs to the region. The additional secondary jobs result from Project-related procurements in the study area, as well as local and non-local construction worker PCE. PCE would consist mostly of accommodations, food services, recreation, entertainment, and transportation. **Table 1-1** provides a summary of employment effects as a result of the Project.

Table 1-1

Direct and Secondary Employment in the Local Economy

Year	Direct Jobs Created	Secondary Job Creation	Total Jobs Created
2013	6	3	9
2014	33	15	48
2015	86	38	124
2016	244	96	340
2017	91	35	126
2018	90	35	125
2019	71	32	103

Source: Developed by CH2M HILL (2013).

Following completion of the Project, it is anticipated that operation and maintenance (O&M) and operation of the newly installed equipment would require 31 new permanent, full-time positions. Some of these positions would potentially be filled by local workers.

1.3 Local Benefits

The primary local benefits attributable to the Project as described below include the following:

- Potential distribution of Impact Assistance Fund payments
- Increased local spending
- Increased local professional job opportunities
- Land lease revenue payments
- Tax effects

1.3.1 Distribution of Impact Assistance Funds

The proposed costs of the Project were reviewed by the Industrial Siting Division (ISD) and determined to exceed the 2013 statutory threshold construction cost amount of $190.8 million. Additional, the Project proposes to install more than 30 wind turbines. Therefore, the Project is subject to Industrial Development Information and Siting Act (ISA) review, whereby local governments are eligible to receive Impact Assistance Fund payments.

Impact Assistance Fund Calculations

The amount of Impact Assistance Fund payments is based on the growth of sales and use taxes during the previous 12-month period. The calculation uses an average of all the sales and use taxes in the Project county (in this case, Platte and Goshen counties) for the preceding 12-month period and is based on the growth of sales and use taxes after construction is initiated. The Wyoming Department of Revenue (WDOR) is responsible for calculating the prior 12 months of sales and use taxes to establish a baseline total. The corresponding construction month's sales and use tax is then compared to the monthly baseline total to determine that month's Impact Assistance Fund payment. The difference, the growth in sales and use taxes during the construction month, is the amount to be distributed in the Impact Assistance Fund payment. It is important to note that only sales and use taxes are used for the calculation. Lastly, the actual Impact Assistance Fund payments are issued by the WDOR and come from Wyoming's General Fund, rather than from the Project proponent.

Appendix C provides an estimate of the amount of Impact Assistance Fund payments that could be expected as a result of the Project expenditures and increased sale and use taxes. A review of Appendix C shows that the monthly average of Impact Assistance Fund payments is estimated to be $3,577.

1.3.2 Increased Local Spending

Spending on construction and operation of the Project will positively affect the local economy directly, through the purchase of local goods and services, and indirectly as those purchases generate purchases of intermediate goods and services from other related sectors of the economy. In addition, direct and indirect increases in employment and income will enhance overall local purchasing power, thereby inducing further spending on goods and services. This cycle is expected to continue until the dollars spent eventually leak out of the local economy as a result of taxes, savings, or purchases of non-locally produced goods and services.

1.3.3 Increased Local Economic Activity

The Project will be a moderate source of new local professional job opportunities in the region. Specifically, permanent O&M positions will provide new local wage jobs (i.e., jobs above entry level and providing industry-scale income), most requiring specialized backgrounds as wind turbine technicians. These positions may also add to the local economy through the employee purchase of residential homes, thereby increasing the local tax base.

1.3.4 Land Lease Revenue Payments

Most landowners' facilities, often ranches and farms, benefit from increased income in communities where wind development occurs. Generally, landowners receive substantial land rent during the development of a wind facility, as well as royalties from the revenue generated by the Project during operations. This income is expected to flow into the local economy, generating indirect and induced benefits. In the case of WW&P, the local benefit is truly realized because most of the participating landowners live in the local area. After the Project is operational, land within the Project site will continue to be used for conventional livestock grazing and ranching activities.

1.3.5 Tax Effects

Tax effects are an important consideration and a significant benefit of the Project. The biggest tax benefit and source of new tax revenue would be associated with the *ad valorem* taxes collected over life of the Project. In conjunction with associated ancillary activities, state and local tax revenues also would be generated during the construction and life of operation of the proposed facility. Although some of these tax revenues will be distributed on a local level, the state controls such distribution.

***Ad Valorem* Taxes**

As shown in **Table 1-2,** for the period 2014 through 2019, the estimated total *ad valorem* tax revenue generated in the first 6 years would be approximately $17 million.

TABLE 1-2
Estimate of *Ad Valorem* Taxes Paid Per Year

2014	2015	2016	2017	2018	2019	6-Year Total
$23,000	$134,000	$493,000	$4,309,000	$5,409,000	$6,652,000	$17,020,000

Source: WW&P, 2013.

Sales, Use, and Lodging Taxes

Local tax revenues would also accrue from the sale of goods and services. These purchases would be mostly for meals, recreation, entertainment, gasoline and automotive service, and lodging. It is estimated that local tax revenues totaling $989,880 would accrue within the five-county region (Albany, Laramie, Goshen, Platte and Converse) with most going to Platte.

Lodging tax revenues could accrue to the counties in which Project-related construction workers temporarily reside, and estimates are included in the local tax revenues reported above. However, it should be noted that: 1) the actual distribution of construction workers is not known at this time; and 2) the durations of their stays are not known and lodging taxes are levied only on sleeping accommodations for guests staying less than 30 days.

1.3.6 Environmental Benefits

Wind power is a renewable and non-polluting source of electricity. It is clean energy that produces no emissions, which means it does not contribute to acid rain and snow, global climate change, smog, mercury contamination, water withdrawal, or particulate-related health effects. The Project will contribute to the power purchaser's overall renewable electrical generation, yet will not create direct pollutant emissions during operation. In addition, unlike most other electrical generation sources, wind turbines do not consume water or require additional fuel sources. Lastly, construction and operation of the Project is a non-extractive source of electrical generation, typically resulting in direct disturbance of 2 to 4 percent of the land within the defined Project area, leaving the majority of the surrounding land available for multiple uses.

Section 2
Applicant and Facility Description

2.0 Applicant and Facility Description

The following sections provide information relevant to Wyoming Statute (W.S.) 35-12-109 and detailed Project-specific information relating to the intention of Wyoming Wind & Power, LLC (WW&P) to construct and operate the Wyoming Wind Farm Project (Project).

2.1 Applicant Information

Wyoming Wind & Power, LLC
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007
(307) 399-1393
www.wyomingwind.com

The following manager has been designated by WW&P to be responsible for permitting the Project:

Ryan Fitzpatrick
Vice President, Business Development
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007
Phone: (307) 996-4977
Cell: (307) 399-1393
Email: ryan@wyomingwind.com

The following manager has been designated by WW&P to be responsible for constructing the Project:

Tom Duckett
Director Construction Development
RES Americas, Inc.
11101 West 120th Avenue
Broomfield, CO 80021
Phone: (303) 439-4200
Cell: (720) 346-0645
Email: tom.duckett@res-americas.com

Founded in 2008 by Jackson, Wyoming, entrepreneur Scott Blum, Wyoming Wind & Power, LLC is a Wyoming limited liability company headquartered in Cheyenne and wholly owned by ThinkTank Holdings, LLC. WW&P was founded in the vision of responsibly harvesting Wyoming's vast wind resources to provide benefits to the state and its citizens.

For additional information, please visit www.wyomingwind.com and www.thinktank.com.

2.2 Financial Capability

WW&P is a wholly owned subsidiary of ThinkTank Holdings LLC, (hereafter "ThinkTank"), a Wyoming limited liability company headquartered in Jackson, Wyoming. ThinkTank is wholly owned by WW&P CEO Scott Blum. WW&P is one of eight businesses currently owned by ThinkTank. Since its founding in 1999, ThinkTank has sold seven companies, most recently including the 2010 sale of Buy.com in a cash deal valued at over $250 million.

Founded in 2008, WW&P has been in the process of developing this Project for five years. Since 2009, WW&P has executed 78 private lease agreements and has made annual cash payments to the lessors. All WW&P expenses have been underwritten by ThinkTank. WW&P has met all of its obligations as they fell due, and the company currently has no debt.

WW&P will provide a bond, certificate of deposit, or other acceptable financial instrument, that will guarantee the decommissioning and reclamation costs for the 900 MW project, estimated at approximately $78 million. The bond will be funded by WW&P's parent company, ThinkTank. Assets exist to fund this without the participation of other investors or lenders.

WW&P does not have its permanent financing for $1.2 billion in place today to build out the entire Project. It is anticipated that the 900 MW Project, built over a 7-year period, will satisfy multiple power purchase agreements. WW&P will arrange for sufficient financing to meet the power delivery obligations for each power purchase agreement as it is executed. Approximately 10 percent of the project is expected to be cash financed by ThinkTank. Additional financing will be secured through both debt and equity deals with large, institutional lenders that have been updated quarterly on the progress of the Project since 2010. Each has indicated an interest in participating, but each requires the execution of a power purchase agreement and issuance of necessary permits, such as this one.

WW&P is committed to commencing construction on project access roads in 2013 –action that does not require the issuance of an ISA permit – to ensure qualification for federal wind energy production tax credits that will help the Project's competitiveness in the power market. Tax credit qualification requires continuous, physical work of a significant nature that commences prior to January 1, 2014.

All construction activity prior to execution of power purchase agreements will be financed by ThinkTank, who has provided, and is committed to providing, all financial resources necessary for the project prior to obtaining the infusion of the institutional funds. WW&P understands that certain construction activities will trigger financial guarantees for decommissioning and reclamation of the facility. In addition to the financial guarantee requirements defined by State statute, WW&P has agreed, through its private leases, to decommissioning standards and financial guarantees that have different triggers and are, in some cases, more stringent than the requirements of the State. WW&P is committed to adhering to both its statutory and private obligations relating to providing timely and appropriate financial guarantees for the decommissioning and reclamation of the Project.

The applicant realizes that a great deal of the financial assurance to complete this project rests upon the financial strength and record of performance of ThinkTank and its companies. The identities of WW&P's potential financial partners cannot be revealed in a public document, as to avoid impact to stakeholders well before a deal is completed. Each interested institution is well known, publicly traded, and has a business relationship and history of successful and significant financial transactions with ThinkTank and its companies.

ThinkTank and Mr. Blum are reluctant, for reasons of privacy, to provide more financial documentation than is absolutely necessary, especially when it is anticipated that the permit will be issued subject to a "financing condition" and the ISD and the ISC are unable to provide assurances of confidentiality of the information produced. Mr. Blum will appear and testify at the hearing concerning his experience, ThinkTank's commitment to the project, and the company's financial strength.

2.3 Point of Delivery – Goods and Services

The construction and operation of the Project will result in the purchase of goods and services, both for the Project itself and for the needs of the associated construction and operations workforce. Goods and services procured for construction activities will be obtained from various local, regional, and national vendors. WW&P anticipates that the majority of the Project's components will be trucked to the Project site, the primary point of receipt for materials. Temporary storage and/or laydown areas will be established within the Project boundaries as necessary.

Platte County will be the primary point of delivery for components associated with the Project. Rail may be used to deliver wind turbine components, and will be determined based on the timing of delivery and vendor requirements.

2.4 Site Selection

The Project site, shown in Figure 2-1, was selected for the following reasons: 1) Large contiguous area; 2) proven wind resource; 3) private landowners willing to lease; 4) few environmental concerns; 5) compatible land uses (ranching, grazing, etc.); 6) transportation access for wind turbine component delivery; and 7) proximity to proposed transmission infrastructure.

The ability to lease large, contiguous areas with a proven wind resource was aided in part by the formation of landowner groups called "wind energy associations." These groups organized landowners to form large and marketable blocks of property and provided a single point of contact for wind developers to negotiate lease agreements for a large number of landowners. A substantial number of WW&P's Project landowners are part of a wind energy association.

The associations marketed their property, its location in an area of minimal environmental concern, their interest to lease, and wind resource using publicly available data. A wind speed map released by the National Renewable Energy Laboratory (NREL) illustrated the quality wind resource. The Governor's Wind Conflict Map, released by the Wyoming Game & Fish Department, identifies WW&P's Project location as an area of "Minimal Environmental Concern." The Project property consists of farmland, ranchland, or lands enrolled in the Conservation Reserve Program (CRP), all of which are compatible with wind energy development.

The development areas are located near Interstate 25 (I-25), as well as several state highways and the Burlington Northern-Santa Fe railroad, which allows for efficient access to the site for component deliveries and operation and maintenance (O&M) activities. Finally, the site is near the proposed origination point for the Wyoming-Colorado Intertie (WCI) transmission project, for which WW&P has subscribed to 100 percent of the capacity through a transmission service agreement approved by the Federal Energy Regulatory Commission (FERC).

Per W.S. 35-12-109, an ISA application for a wind energy facility must contain a list of all affected landowners for the purpose of notifications required by the ISA. **Table 2-1** presents the landowners of parcels affected by the Project. To protect the privacy of participating landowners, complete mailing address of these landowners have been supplied to the ISD with this application under separate cover.

Table 2-1
Affected Landowners

J. Kenneth Kennedy Living Trust	James R. Blevins
Karen S. Hosic	James Blevins
William James Moxley	Roger Blevins
Arthur John Eastwood Trust	Dale Bomgardner
John F. Kennedy	Paul D. Bratt, Jr.
Robert T. Moxley	Peter & Kitrina Campbell
Ainsworth, Inc.	Arland Childers
The Enix Family Living Trust	Troy & Toni Cochran
Avian Acres LLC	Pat & Sherri Cullen
John Voight	John & Kathryn Watson
S.T.S.T., Inc.	Florian Investments, LLC
Daniel & Dixie Kennedy	Mary A. Fowler
Donald C. & Karen L. Guidice	Jeffery & Phyllis Gapter
Robert & Diane Hellbaum	Lazy V Six, Inc.
Tri-County Grain Company	James & Tammy Goetzel
Robert and Peggy Mullock Revocable Trust	James & Koni Hawley
Vaughn, LLC	Jack E. Johnson Enterprises, LLC
Owen W. Goertz	Lelia Alice Johnson
B&B Farm Partnership	Joanette Johnson
N M Ranch Co.	Lee Johnson
Harold & Charlette Denney	Mildred Johnson
William Gene Teter Living Trust	Richard & Darla Knowlton
Eunice A. Glaede Revocable Trust	Anthony & Glendowyn Laffitte
Frank & Wanda Burhans	Jack & Catherine McQuisten
Harding & Kirkbride Livestock Co.	Carol A. Snyder
Triple Heartland, LLC	Daniel & Linda Szymanski
Hal Larry Ashenhurst	John & Phyllis Thalken
Craig E. Baker	Weber Inc.
Helen & Robert Bauer	David & Rose Weber
Douglas A. & Darlene G. Blaney	Willard J. Weber
Wilson Family Heirs, Inc.	

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2.5 Nature and Location of the Facility

The Project site is located in Platte and Goshen counties, Wyoming (**Figure 2-1** and **Appendix A**). The Project sites will be accessed using state highways (e.g., Wyoming Highway 313 [WYO 313] and WYO 316) from I-25. The dominant drainage features in the vicinity are Chugwater Creek, Laramie River, and North Platte River. Local topography is varied with elevation throughout the Project site ranging

from 5,100 feet above sea level (asl) at the Antelope Gap parcel to 5,650 feet asl at the Chugwater parcel.

2.6 Preliminary Site Plan

WW&P has completed a preliminary site plan layout for the Project that minimizes environmental impacts and addresses community concerns to the most extent practical. See **Appendix A** for the preliminary site plan.

2.7 Land Ownership

The Project is located entirely on private lands leased by WW&P. The legal description of each parcel is included in **Appendix A**.

2.8 Project Phase Descriptions and Future Modifications

The Project will be constructed in a single phase during an anticipated 6-year construction period. No future phases or modifications to the Project are planned.

2.9 Facility Components

The Project will use up to 300 wind turbine generators (WTGs). Facilities and related infrastructure will include WTGs mounted on tubular towers, transformers, and electric and fiber optic communications cable. Some electrical collector cables may be installed above ground where doing so would minimize environmental impact or be necessary because of terrain and infrastructure crossings (e.g., roads, railroad). Access roads, meteorological towers, a supervisory control and data acquisition (SCADA) system, and an O&M building also will be constructed. One substation will be constructed to serve the Antelope Gap Parcel, and two will be constructed to serve the Chugwater parcel. The preliminary site plan is included in **Appendix A**.

2.9.1 Wind Turbine Generators

Selection of the specific wind turbine model(s) will be tailored to meet the needs of the power purchasers. Meteorological data and modeling indicate that several turbine models would be good candidates for the Project. Although no model has been selected, Project design exercises have determined that the optimal layout of turbines would result in 300 turbines distributed throughout the turbine array corridors shown in **Appendix A**. Precise locations of each turbine will be determined through individual geotechnical testing, setback requirements, and resource considerations. However, it is expected that whichever model(s) is selected, the turbines will be confined to the array corridors shown.

All models contain the same basic components, and vary primarily, from an external standpoint, in height and rotor diameter. To evaluate the potential impacts of the Project, and specifically the turbines, the largest model in consideration was used. The largest turbine is a three-blade, active yaw-and-pitch regulated machine with power and torque control capabilities. The rotor diameter is 383 feet, and the height at the hub is expected to be up to 300 feet (see **Figure 2-1**). At these maximum dimensions, the blade tips would reach a height of 490 feet.

The WTGs will be mounted on a poured concrete pad and spaced at distances equal to approximately three to four rotor diameters between turbines and 12 to 15 rotor diameters between turbine rows, depending on the specific turbine site characteristics.

WTGs consist of three main structures: steel tubular tower, nacelle, and rotor blades. The WTGs will be grouped in strings, interconnected with an underground power collection system at a centrally located substation for delivery to the electrical grid.

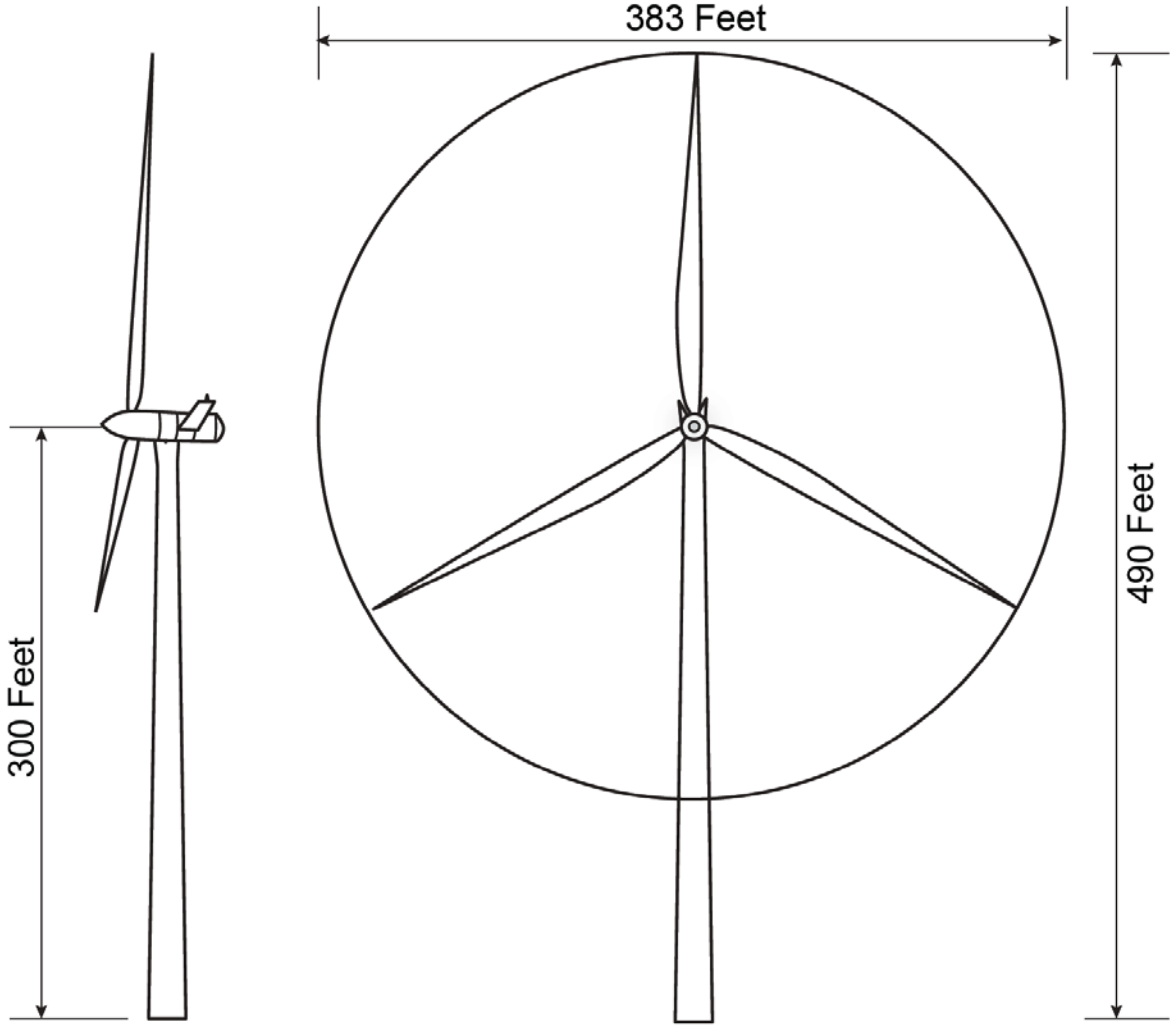

FIGURE 2-1
Dimensions of Largest Turbine in Consideration

2.9.2 Rotor Blades

The WTGs are powered by three fiberglass epoxy or polyester resin blades connected to a central rotor hub. Wind creates lift on the blades, causing the rotor hub to spin. This rotation is transferred to a gearbox where the speed of rotation is increased to the speed required for the attached electric generator that is housed in the nacelle. The rotor blades turn slowly during normal operations and have multiple systems to control speed and to prevent rotation in excessive winds. Although the blades are non-metallic, they are equipped with a sophisticated lightning protection system.

2.9.3 Nacelle

The gearbox, generator, and various pieces of control equipment are enclosed within the nacelle that houses the unit that protects the turbine mechanics and electronics from environmental

exposure. A yaw system is mounted between the nacelle and the top of the tower on which the nacelle resides.

The yaw system is composed of a bearing surface for directional rotation of the turbine and a drive system consisting of a drive motor(s) to keep the turbine pointed into the wind to maximize energy capture. A wind vane and anemometer are mounted at the rear of the nacelle to signal the controller with wind speed and direction information.

2.9.4 Tower Structures

The towers supporting the WTGs will be a tapered monopole, up to 300 feet in height. The tower is supported by a reinforced-concrete foundation. The towers will be uniformly painted a neutral color that complies with Federal Aviation Administration (FAA) requirements for daylight marking. The towers feature a locked entry door at ground level and an internal access ladder with safety platforms for access to the nacelle. A controller cabinet will be located inside each tower at its base. Towers are pre-fabricated in three sections and delivered and assembled on site.

2.9.5 Transformer

Depending on the turbine model selected, a step-up transformer may be installed at the base of each WTG to increase the output voltage to the level of the power collection system (34.5 kilovolts [kV]). A small concrete slab or fiberglass foundation, a concrete vault, or other suitable base will be used to support the step-up transformers. In the case of other turbine models, the transformer will be located in the nacelle of the WTG and a switchgear is located in the tower.

2.9.6 Foundations

The tower for the WTG will be set on a poured-in-place concrete foundation. The actual foundation design for each WTG turbine will be determined based on site-specific geotechnical information and structural loading requirements of each turbine model.

2.9.7 345-kV Interconnection Transmission Line

WW&P plans to interconnect to the WCI transmission project and deliver energy to Colorado. The WCI is a proposed 345-kV transmission project connecting southeast Wyoming to northeast Colorado in which WW&P has secured up to 900 MW of long-term firm point-to-point transmission service through a FERC-approved agreement. The WCI is a third-party project that is not a component of the Wyoming Wind Farm. WCI has communicated the relationship between the two projects to the Industrial Siting Division (ISD), and the jurisdictional status of the WCI is being evaluated.

2.10 Additional Project Features

2.10.1 Access Roads

New gravel access roads will be constructed to access WTG and substation locations and along the length of turbine strings. Access roads will be designed under the direction of a professionally licensed engineer and constructed to meet turbine and transformer equipment load requirements specified by the vendor. Unimproved two-track ranch roads are present throughout the Project and will be used where possible to minimize new disturbance. All roads will be sited to minimize impact on sensitive resources (e.g., raptor nests, leks, wetlands, and water bodies). To allow safe passage of the large transport equipment used in construction, normal-weather gravel roads will be built with adequate drainage and compaction to handle expected loads. Road widths will be approximately 40 feet. The Project is anticipated to improve or construct a total of approximately 110 miles of access roads within the Chugwater parcel, and 32 miles of roads at Antelope Gap roads.

2.10.2 Power Collection System

The Project electrical system will consist of two key elements:

1. A collector system that collects energy generated at low to medium voltage from each WTG, transforms it to 34.5 kV through a pad-mounted transformer, and delivers the power through a network of electrical conductors.

2. Three Project substations that transform energy delivered by the collector systems from 34.5 kV to 345 kV.

The majority of the collector system will be buried directly in the soil 3 to 4 feet below ground surface (bgs). However, where site-specific considerations require, the collector system may be above ground. Using aboveground structures allows the collector cables to cross other facilities and span drainages and highways, thereby reducing environmental impacts. Overhead pole structures, if used, will generally be 35 to 80 feet tall, depending on terrain, and will be designed and constructed in accordance with the recommendations of the Avian Power Line Interaction Committee (APLIC).

Examples of site-specific conditions that will make it environmentally or economically advantageous to run portions of the collection system above ground are as follows:

- Steep terrain where the use of backhoes and trenching machines is not feasible or safe.
- Stream and wetland crossings where an aboveground line avoids or minimizes environmental impacts.
- Soil with low thermal conductivity, preventing adequate heat dissipation from the conductor.
- Rocky conditions that significantly increase trenching costs.
- An economic advantage for overhead construction on circuits into the substation.

Because detailed geotechnical studies have not yet been completed for the Project, it is not possible to determine whether aboveground collector cables will be advantageous; however, the design anticipates the use of some overhead lines.

2.10.3 SCADA System

A SCADA system will be installed to collect operating and performance data from each WTG and provide remote monitoring and operation of the WTGs when appropriate. The WTGs will be linked to one or more central computers via a fiber optic network. Fiber optic cables for the SCADA system will be installed in the collector cable trenches. The SCADA cables will be installed at least 3 to 4 feet bgs. The host computer(s) is expected to be located in the substation building control room at the Project site. SCADA software will consist of applications developed by the turbine vendor and/or a third-party SCADA vendor.

2.10.4 Substations

Output from the Project site will be delivered to three 34.5/345-kV collector substations. The collector cable system will link each WTG to the next in an electrical grid pattern and to a collector substation. Substation sites will consist of a graveled and fenced area with transformer and switching equipment, and a vehicle parking area. The transformers will be oil cooled and insulated. Substation equipment may include circuit breakers, power transformer(s), bus and insulators, disconnect switches, relaying equipment, battery and charger, surge arrestors, alternating current and direct current (AC/DC) supplies, control building, metering equipment, SCADA provision, grounding, and associated control wiring. The substation facilities will conform to all applicable Wyoming regulations and standards.

2.10.5 Meteorological Towers

Approximately six permanent meteorological towers will exist within the footprint of the Project site for the purpose of collecting meteorological data, WTG power curve testing, and forecasting conditions. Some existing meteorological towers within the Project site will become permanent to the extent applicable, and some new tower construction will be necessary. Depending on the height, the permanent meteorological towers either will be guyed, metal tube structures or self-supported. Some towers may match the hub height of the surrounding wind turbines, in which case they will be marked per Federal Aviation Administration (FAA) regulations. Towers with heights lower than FAA jurisdiction will have painted tops and display marker balls on the guy wires.

2.10.6 Operation and Maintenance Buildings

Two O&M buildings, a primary and a secondary, will be constructed within the Project boundary. The primary will be located within the Chugwater parcel, and the secondary within the Antelope Gap parcel. The O&M buildings will be approximately 10,000 and 3,000 square feet ($ft^{2)}$, respectively. The primary O&M building will include space for offices, bathroom and kitchen facilities, a break room, a storage area, and a garage for vehicle, turbine, and equipment maintenance. There will also be a fenced, graveled area for parking and storage. The secondary O&M building will primarily be used for storage of materials to be used at the Antelope Gap parcel. The O&M buildings will use a new groundwater well to supply water for domestic use and discharge to an onsite septic system. Power for the O&M buildings is expected to be provided by the Wheatland Rural Electric Association.

2.10.7 Lighting Specifications

The WTGs will be grouped in strings, and some of the WTGs will include installed aviation warning lights, as required by the FAA. The number of WTGs with lights and the lighting pattern of the WTGs will be determined in consultation with the FAA.

2.10.8 Temporary Concrete Batch Plants

Portable temporary concrete batch plants will be used within the Project boundary during construction to provide onsite concrete mixing for the WTG foundations. The batch plants will be operated by a local subcontractor. Aggregate and water used for concrete mixing is expected to be provided by the subcontractor and it is expected both will be obtained from local sources.

Section 3
Construction, Operations, and Decommissioning

3.0 Construction, Operations, and Decommissioning

This section provides information on the construction, operations, and decommissioning of the Wyoming Wind Farm Project (Project). In addition to presenting general construction and operations procedures, schedules, and workforce estimates, this section also provides details on the required permits, relevant regulations, health and safety issues, and site decommissioning.

3.1 Commencement and Duration of Construction

Contingent upon obtaining approval from the Industrial Siting Council (ISC) and securing all other required permits, formal commencement of Project construction Project is planned for November 2013, (i.e., the fourth quarter of 2013). With the exception of annual winter weather shutdowns from December to March, construction is expected to be continuous through complete build-out in the end of 2019. Therefore, the construction schedule will last approximately 74 months.

3.2 Construction Schedule

An overview of the construction processes associated with the Project is provided below. Section 3.8 provides a detailed description of the planned construction procedures.

Engineering and Final Design – Perform site geotechnical investigations, civil engineering (roads and stormwater), electrical engineering design (collection system, interconnecting transmission line and substation), site surveying, and complete final structural engineering (foundations).

Site Civil Construction – Establish site access and guard station; contractor mobilization onsite; perform site grading; build site access roads; remove and grub vegetation from construction and laydown areas; construct stormwater control structures, operation and maintenance (O&M) building, and a weatherproof equipment and parts storage area (which may be either separate or combined with the O&M building).

Wind Turbine Generator (WTG) Foundations – Place and cure concrete mud mat, install rebar for concrete tower foundations, and place and cure concrete foundation.

Electrical Collection System – Build electrical collection system and substation with power-conducting cables and signal cables; interconnect circuits to substation; and perform shake-down tests.

Substation – Construct substation, install foundations, install transformer and other substation equipment, and energize collection system.

WTGs – Deliver WTG and components to each turbine pad, erect towers, install nacelles and rotors, install transformers, install permanent met towers (as necessary), and perform final commissioning of each WTG.

Site Cleanup and Restoration – Perform site restoration, cleanup, and contractor demobilization.

Additional temporary activities will include installation of onsite temporary offices and sanitary facilities, and setup and removal of portable concrete batching plants.

The construction schedule for the Project is summarized in **Figure 3-1**.

3.3 Construction Completion Schedule

As detailed in **Figure 3-1**, completion of construction is anticipated to occur in December 2019. Therefore, the Project is anticipated to be 90-percent complete in the third quarter of 2019.

Figure 3-1

Preliminary Schedule

ID	Task Name	Start	Finish
1	**Section 1 : 500MW Online December 31, 2016**	**Fri 11/15/13**	**Fri 12/30/16**
2	Area 1: Antelope Gap - 68 Turbines	Fri 11/15/13	Fri 12/30/16
3	Area 2: Chugwater - 99 Turbines	Fri 11/28/14	Fri 12/30/16
4	**Section 2 : 400MW Online December 31, 2019**	**Fri 9/2/16**	**Tue 12/31/19**
5	Area 3: Chugwater - 45 Turbines	Fri 9/2/16	Fri 12/29/17
6	Area 4: Chugwater - 44 Turbines	Fri 9/1/17	Mon 12/31/18
7	Area 5: Chugwater - 44 Turbines	Tue 9/4/18	Tue 12/31/19

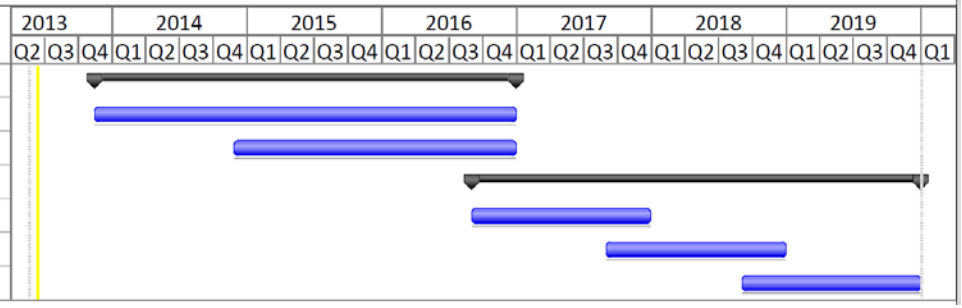

FIGURE 3-1
Preliminary Construction Schedule

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3.4 Construction Workforce Estimate

The estimated average number of construction workers by calendar quarter is shown in **Figure 3-2** and in **Table 3-1**. Wyoming Wind & Power, LLC (WW&P) anticipates that the onsite construction workforce will vary from a low of 15 in the fourth quarter of 2013 during road construction and Project startup, to a high of 363 construction trades people during the peak of construction activities in the third quarter of 2016. Over the 74-month construction period, there would be a quarterly average of 138 full-time equivalent workers onsite. Note winter shutdowns from December to March each year result in a construction work force of zero for the first quarter of each year. Quarterly averages exclude these shutdowns. **Table 3-1** presents the workforce personnel breakdown and **Figure 3-2** is a graphical presentation of the same data.

3.4.1 Local In-State Contractor Hiring

WW&P will solicit local contractors for screening and sourcing by the general contractor, and require its general contractor to use local workers to the extent practicable. At the time equipment/construction packages are issued for bids, the Applicant will make every effort to engage local suppliers and contractors to supply quotes if they are deemed qualified and financially and technically competitive. WW&P will advise all contractors, during pre-bid meetings, that there are local suppliers, representatives, vendors as well as labor in the local community. Additionally, employment opportunities for local workforce during both construction and operations will be posted in the local Wyoming Department of Workforce Services, Employment Services offices in Wheatland, Douglas, Torrington, and Cheyenne. Though there may be economic advantages to using local workers, the technical proficiency required to install and commission wind turbines is the prime factor in selecting a contractor.

3.4.2 Local Workforce

Based on past project experience, it is assumed that the proportion of local workers filling job openings will vary by trade and skill level. WW&P estimates that overall, local workers will comprise 15 percent of the total construction workforce. **Table 3-1** shows the local workers estimated for each construction quarter. **Figure 3-3** and **Figure 3-4** are graphical presentations of the local and non-local workforce breakdown, respectively.

Based on these workforce assumptions, during the construction period of 74 months, the Project could employ as many as 54 local workers, and the average quarterly local employment could amount to 21 jobs. **Figure 3-3** presents an estimate of local construction workforce that may be potentially employed at the Project.

3.4.3 Non-Local Workforce

Based on the type of labor required to construct the facility, the majority of the needed construction workers will be non-local and enter the region. **Figure 3-4** provides an estimate of the peak non-local construction workforce.

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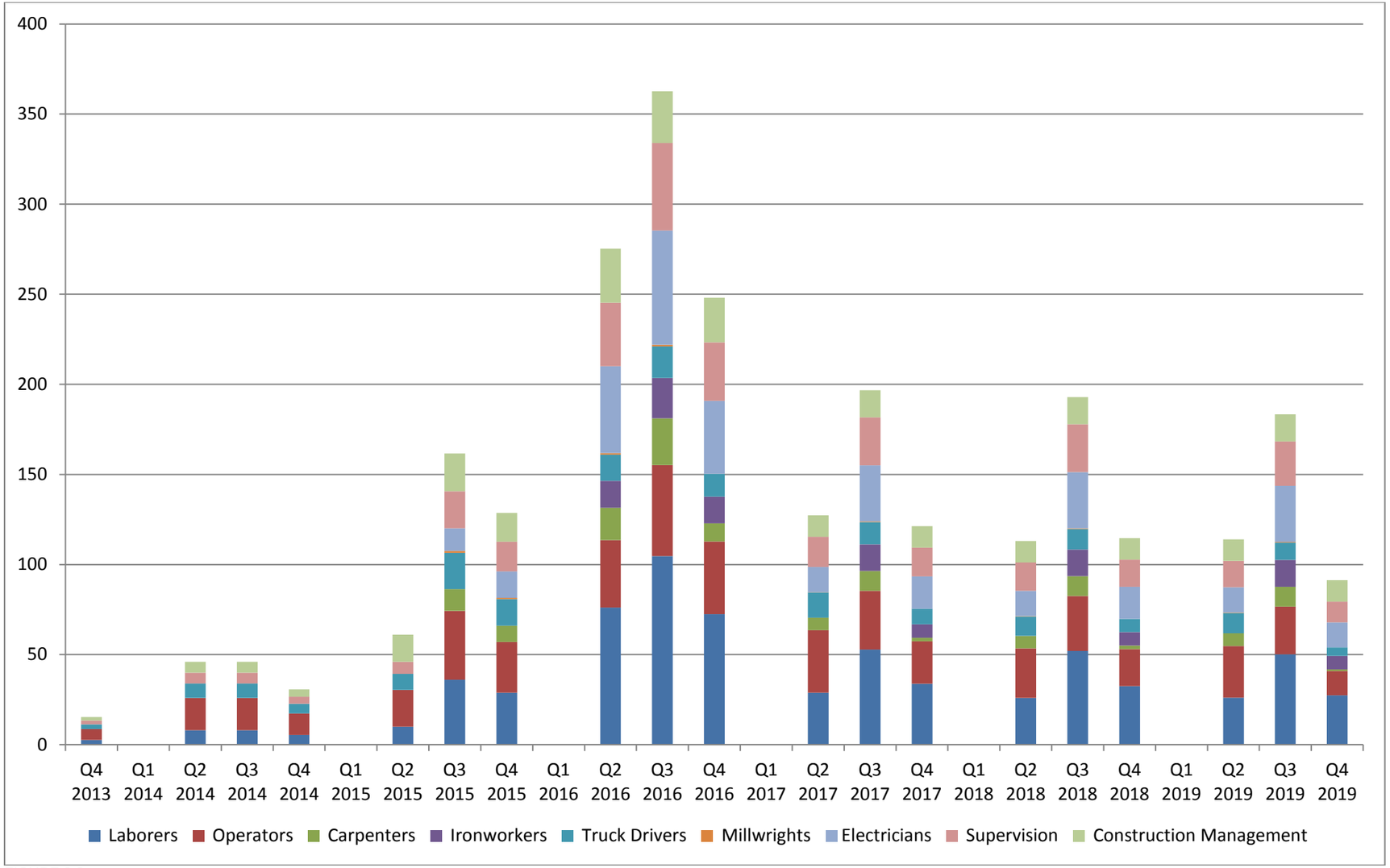

FIGURE 3-2
Construction Workforce by Quarter and Trade Type

TABLE 3-1
Construction Workforce by Quarter and Trade Type

	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Laborers	3	0	8	8	5	0	10	36	29	0	76	105	73	0	29	53	34	0	26	52	33	0	26	50	27
Operators	6	0	18	18	12	0	20	38	28	0	37	51	40	0	35	33	24	0	27	30	21	0	29	27	14
Carpenters	0	0	0	0	0	0	0	12	9	0	18	26	10	0	7	11	2	0	7	11	2	0	7	11	1
Ironworkers	0	0	0	0	0	0	0	0	0	0	15	22	15	0	0	15	7	0	0	15	7	0	0	15	7
Truck Drivers	3	0	8	8	5	0	9	20	15	0	15	18	13	0	14	12	9	0	11	11	7	0	11	10	5
Millwrights	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricians	0	0	0	0	0	0	0	13	15	0	48	63	40	0	14	31	18	0	14	31	18	0	14	31	14
Supervision	2	0	6	6	4	0	7	21	17	0	35	49	33	0	17	27	16	0	16	27	15	0	15	25	12
Construction Management	2	0	6	6	4	0	15	21	16	0	30	29	25	0	12	15	12	0	12	15	12	0	12	15	12
Total Non-Local workforce	13	0	39	39	26	0	52	137	109	0	234	308	211	0	108	167	103	0	96	164	97	0	97	156	78
Total Local Workforce	2	0	7	7	5	0	9	24	19	0	41	54	37	0	19	30	18	0	17	29	17	0	17	28	14
Total Workforce	15	0	46	46	31	0	61	162	129	0	275	363	248	0	127	197	121	0	113	193	115	0	114	183	91

Note: Values are rounded, columns may not total correctly.

Source: RES, 2013.

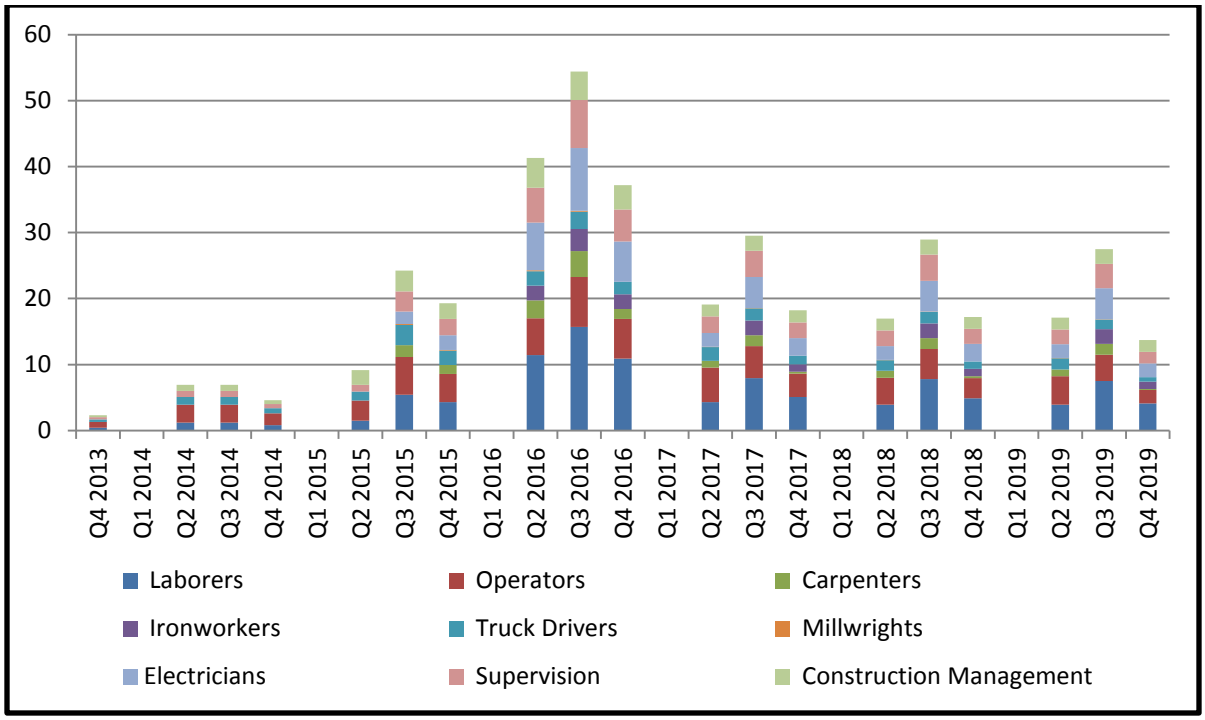

FIGURE 3-3
Local Construction Workforce (by Month and Trade Type)

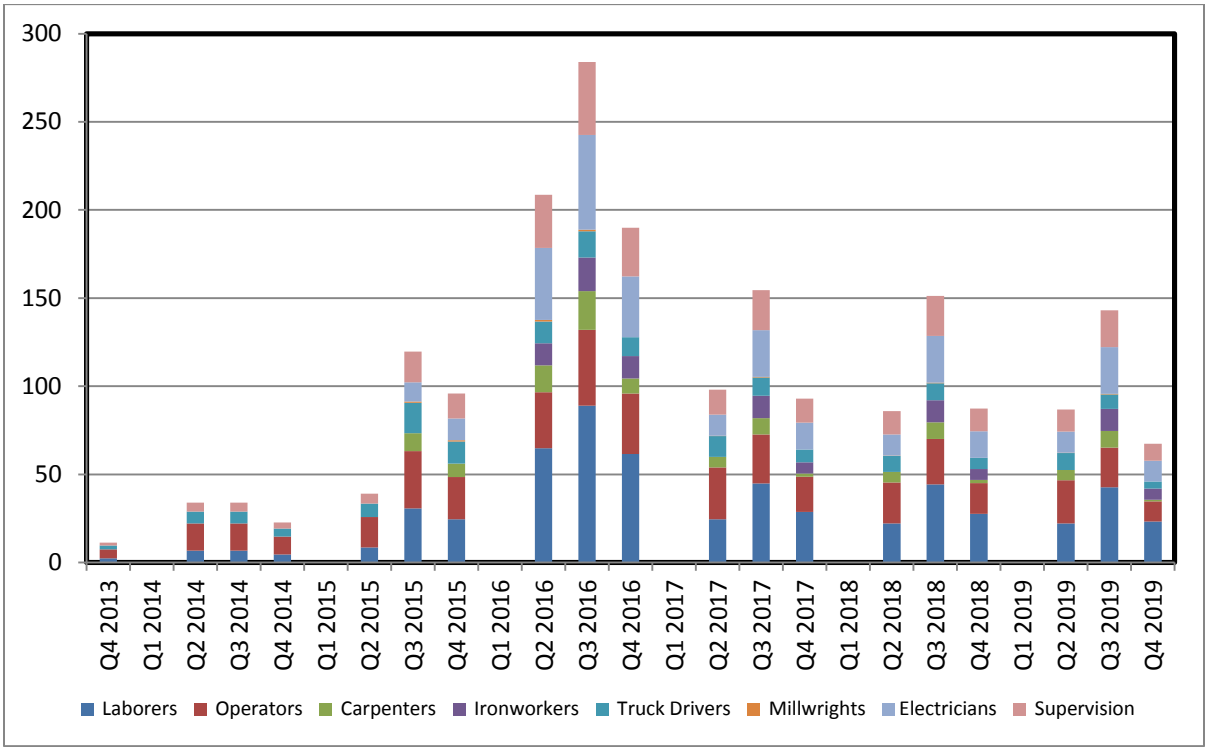

FIGURE 3-4
Non-Local Construction Workforce (by Month and Trade Type)

3.5 Operations Workforce Employment

A long-term benefit of the Project comes from the permanent employees who will operate and maintain the wind energy facility. Operation of the Project will require 31 full-time employees. The full-time job classifications and estimated number of personnel are displayed in **Table 3-2**.

It is anticipated that the Project will have an initial operations workforce in place in late 2017. Employees will be full-time over the calendar year and the anticipated life of the Project.

TABLE 3-2
Estimated Operations Workforce Summary by Job Classification

Job Classification	Number of Personnel
WTG Maintenance Technicians	27
Site Manager	1
Inventory Coordinator	1
Site Planner	1
Health & Safety Coordinator	1

Source: WW&P.,2013.

3.6 Permits Required for Construction

All permits required for construction will be obtained prior to the initiation of construction activities, excluding road and transmission line construction. The anticipated permits required for construction are listed by regulatory agency in **Table 3-3**.

TABLE 3-3
List of Permits for Construction and Operation

Agency	Permit/Decision	Status	Anticipated Permit Date
Federal			
Federal Aviation Administration (FAA)	Notice of Proposed Construction or Alteration (7460-1 form)	Pending final design and file prior to construction	July 2015 or earlier
U.S. Environmental Protection Agency (EPA)[1]	Spill Prevention Control and Countermeasure (SPCC) Plan – for construction	Will be prepared and implemented onsite prior to bringing on construction-related fuel tanks and other applicable oil sources	December 2013
U.S. Environmental Protection Agency (EPA)	Spill Prevention Control and Countermeasure (SPCC) Plan – for operations	Will be prepared and implemented onsite prior to commercial operation	December 2016
U.S. Army Corps of Engineers (USACE)	Clean Water Act- Section 404 Nationwide or Individual Permit	Submittal pending final design, if necessary	December 2013
Department of Commerce – National Telecommunication Information Agency (NTIA)	Impacts to Telecommunication Systems and RADARs	Pending final design and file prior to construction	December 2013
Federal Communications Commission (FCC)	Licensed Microwave Study	Pending final design and file prior to turbine construction	July 2015 or earlier
State of Wyoming			
Wyoming Department of Environmental Quality (WDEQ)	Wyoming Industrial Development Information and Siting Act / Industrial Siting Commission Order	Submit application July 8, 2013	November 2013
	Wyoming Pollutant Discharge Elimination System (WYPDES)—Large Construction General Permit (WYR10-0000)	Submit application plus Stormwater Pollution Prevention Plan (SWPPP) 30 days prior to construction	November 2013
	General Permit for Temporary Discharges	Construction dewatering may not be necessary, but if required it will short term (< 2 months); coverage would be requested under the General Permit for Temporary Discharges	July 2015, if applicable
	Temporary/Portable Source Air Permit	Provided by batch plant operator	July 2015
	Permit to Construct Small Wastewater Facilities (Septic Tanks and Leachfields)	For O&M building wells, timed for when well is needed to come online	December 2016
Wyoming State Engineers Office (WSEO)	Permits to appropriate groundwater (use, storage, wells, dewatering) or water stored in impoundments or reservoirs	For O&M building wells, timed for when well is needed to come online	December 2016,
Wyoming Department of Transportation (WYDOT)	Port of Entry	Prior to construction	December 2013
	Permit for Oversized / Overweight Loads	For turbine deliveries	Q2 2016
	Highway Utility Line Crossing Permit	Prior to construction	December 2013
	Highway Access Permit	Prior to construction	December 2013

[1] The Wyoming DEQ administers SPCC regulations set by the EPA. The EPA retains review authority of the final plans.

3.7 Laws and Regulations

WW&P will fulfill informational requirements of the regulations and the Industrial Development Information and Siting Act (Industrial Siting Act, or ISA) by also obtaining required permits under the jurisdiction of other local, state, and federal regulatory agencies. The primary laws, rules, and regulations that govern construction of this Project are summarized in this section.

3.7.1 Federal

Clean Water Act, 33 United States Code (USC) § 1344, Section 404; 40 Code of Federal Regulations (CFR) 231 (authority), 233 (state); 33 CFR 320-330)—establishes the requirements for Nationwide Permits administered by the U.S. Army Corps of Engineers (USACE).

Clean Water Act, 40 CFR 122-124, Subchapter D—establishes the requirements of the National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from municipalities, industries, and construction operations. The Wyoming Department of Environmental Quality, Water Quality Division administers this program in the State of Wyoming.

Clean Water Act, Oil Pollution Act Spill Prevention Control and Countermeasures Regulations, 33 USC 1314; 33 CFR 320, 323; 40 CFR 230, 33 USC 1341(a), 40 CFR Part 112—establishes procedures and requirements addressing when a Spill Prevention, Control and Countermeasures (SPCC) Plan is required and what it entails.

Notice of Proposed Construction or Alteration, 14 CFR 77—establishes the requirements for notification to the Federal Aviation Administration (FAA) for any structures over 200 feet tall that may affect the National Airspace System under provisions of 14 CFR 77.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1947, as amended by the Federal Environmental Pesticide Control Act (FEPCA) of 1972, 7 USC s/s 136 et seq. (1972); 40 CFR Parts 150-189—establishes methods and standards of control of herbicides and pesticides, including personnel certified to apply herbicides.

3.7.2 State of Wyoming

Wyoming Air Quality Rules and Regulations, Chapters 1-14, in accordance with the Wyoming Environmental Quality Act, W.S. § 35-11-101 et seq.—establishes air quality standards in the State of Wyoming.

Hazardous Waste Management Rules and Regulations, Chapters 1-14, in accordance with the Wyoming Environmental Quality Act, W.S. § 35-11-101 et seq.—a joint rule of the Solid Waste Management Program, the Water Quality Division, and the Air Quality Division, which establishes hazardous waste management standards in the State of Wyoming.

Industrial Siting Council Rules and Regulations, Chapters 1-2, in accordance with the Environmental Quality Act, W.S. § 35-12-101-119—establishes industrial siting regulations in the State of Wyoming.

Solid Waste Management Rules and Regulations, Chapters 1-4, 6-10, and 15, in accordance with the Wyoming Environmental Quality Act, W.S. § 35-11-101 et seq.—establishes solid waste management standards in the State of Wyoming. Specific sections of the act that provide authority for this regulation include W.S. § 35-11-102, W.S. § 35-11-109 and Article 5, Solid Waste Management, W.S. § 35-11-501 et seq.

Surface Water Quality Standards Rules and Regulations, Chapters 1-12, promulgated pursuant to W.S. § 35-11-101 through 1507, specifically 302 (a)(i) and 302 (b)(i) and (ii)—establishes surface water quality standards.

Department of Transportation Rules and Regulations, Chapters 1-15, in accordance with practices and procedures, which are promulgated by authority of W.S. § 31-18-104(vi) and W.S. § 31-18-303—establishes transportation requirements for issues such as oversize/overweight vehicles in the State of Wyoming.

Wyoming Weed and Pest Control Act of 1973, W.S. § 11-5-101 through 11-5-119—establishes means for controlling designated weeds and pests.

3.7.3 County

Platte County adopted official Wind Energy Siting Regulations in 2007. These regulations were modified in 2012 and address preliminary plan review, siting approval, design and installation, operation, federal, state, and local requirements, insurance, decommissioning, and remedies. Additionally, Platte County requires a special use permit and a building permit, which call for site plans that comply with the Platte County Wind Energy Siting Regulations. Goshen County does not have specific wind energy siting regulations; however, the county has adopted Platte County's special use permit process for wind energy development.

Discussions with both counties are ongoing regarding the timing and process for special use permitting. An initial special use permit has been filed with each county. This initial permit presents an overview of the Project and the lands that would involved. The application will be noticed publically and reviewed by Planning and Zoning and Commissioners of each county in their respective regular meetings in August and September 2013. It is anticipated initial special use permits will be issued mid-September. Once final details of the Project are developed (e.g., specific numbers and location of turbines), full special use permit applications will be submitted in accordance with the Wind Energy Siting Regulations for each county. Both Platte and Goshen Counties are supportive of the Project and this local permitting process.

3.8 Construction Procedures

The general construction contractor and subcontractors will prepare the construction site and complete site civil work. Table 3-4 describes the equipment that is likely to be used for the Project.

3.8.1 Site Civil Work/Preparation

Prior to breaking ground, the construction work area will be surveyed and clearly demarcated with stakes and flagging. Locations will be grubbed, cleared, and prepared for site activities. Roads are expected to be constructed in advance of other Project features. Grading will be minimized and all topsoil will be preserved, to the extent practicable. Excavated topsoil will be stockpiled alongside the excavated area for replacement after construction, or as agreed with the landowner.

TABLE 3-4
List of General Construction Equipment

Equipment	Construction Use
Bulldozers	Road and Pad Construction
Motor Graders	Road and Pad Construction
Gravel Truck Haulers / Bottom Dump	Hauling and Placement of Road Aggregate
Water Trucks	Compaction, Erosion, and Dust Control

TABLE 3-4
List of General Construction Equipment

Equipment	Construction Use
Roller/Compactors	Road and Pad Compaction
Backhoe/Trenching Machines	Excavating Foundations; Trenches for Underground Utilities
18-Wheel Semi-Tractors	Component Delivery
Truck-Mounted Drill Rigs	Drilling Soil Test Bore Holes
Concrete Trucks and Pumps	Pouring Foundations
Conventional and Small Cranes	Off-Loading Equipment Onsite
Heavy and Intermediate Cranes	Off-Loading Equipment Onsite
Cement Trucks	Hauling Cement
Pickup Trucks	General Use by Construction Personnel
Small Hydraulic Cranes/Forklifts	Loading and Unloading Minor Project Equipment
All-Terrain Vehicles	Site Access
Rough-terrain Forklift	Lifting Equipment
Concrete Batch plant	Onsite Concrete Mixing for Turbine Foundations

3.8.2 Access Roads and Crane Pads

To the extent practicable, access roads will be located to minimize disturbances, maximize transportation efficiency, and avoid sensitive resources and unsuitable topography. Existing roads will be used where practicable and will be reconstructed, as necessary, to Project road design specifications (e.g., some areas may need to be widened to accommodate delivery of WTG equipment or movement of construction equipment). New roads will be constructed according to a licensed engineer's design specifications. Raw materials used for access road and crane pad preparation will consist primarily of aggregate, such as gravel or crushed rock, and water for dust control and road compaction. In conjunction with the access road construction, crane pads will be established at each WTG location. The crane pads will provide enough space and support for placement of a large crane to install the tower sections, nacelle, and rotor. The crane pads also provide access to the area for maintenance if necessary. When construction is complete, an area around the turbine will be graveled and maintained for O&M access purposes.

3.8.3 Tower Foundations

After road and pad construction is complete, crews will begin installation of the tower foundations immediately adjacent to the crane pads. Tower foundations will be constructed according to a licensed engineer's design specifications; the design engineer will also prepare a special inspection report for each foundation excavation and pour. The concrete foundations will be excavated, a mud mat poured and cured, forms set, rebar installed, and the concrete placed and cured to create the foundation. Blasting is not anticipated; however, if unrippable substrate conditions are encountered that require blasting, it will be performed by state-licensed explosives experts in accordance with a Blasting Plan. Construction dewatering is also not anticipated as groundwater depths in the Project area exceed the anticipated depths of excavation; however, if necessary, WW&P will obtain a Temporary Discharge Permit from the Wyoming Department of Environmental Quality (WYDEQ).

The tower foundations for the WTGs will require approximately 400 to 600 cubic yards (yd^3) of concrete depending upon the WTG selected for the Project. Based on the current construction

schedule, the Project will use one or two onsite portable concrete batch plants, which may be relocated to different areas on the Project during the construction period to reduce the transport time and impact to local roads. The aggregate and water for the concrete will be sourced locally. The aggregate source will be based upon suppliers' ability to provide the engineer's specified aggregate and obtained through a competitive bid process with local companies with nearby quarries. Water for concrete foundations will be provided by the batch plant operator using existing water rights or permits.

3.8.4 Tower Assembly

After the concrete foundations are in place and cured, the WTG towers, nacelles, and blades will be delivered to each WTG location in the order of assembly. Large cranes will be brought onsite to lift the multiple tower sections, nacelle, and three-bladed rotor into place. The first step will be to lift and secure the down tower electrical assembly to the foundation. Next, the first tubular tower base section will be lifted over the down tower assembly and secured to the foundation. Subsequent tower sections will be connected to the base tower section. The nacelle, rotor, and other WTG equipment will then be delivered to the turbine pad location. Depending on the turbine selected for the project, there are two potential ways the rotors may be assembled. They may be assembled on the ground by connecting the three blades to the rotor hub, and installing the entire rotor to the nacelle as one piece. The other option, required by some turbine manufacturers, is to assemble the rotor in the air by installing each blade separately to the rotor hub after it and the nacelle have been installed on the tower.

3.8.5 Electric Collection Lines and Communication Cable

Underground (or overhead, if necessary) electric collection lines and communication cables will be installed adjacent to and connecting with WTG arrays. Cables will be direct buried 3 to 4 feet below ground surface (bgs) and the trenches will be backfilled and compacted per the design specifications. In certain environmental situations (e.g., challenging topography, soils, or across roads), these cables may be installed above ground. Where possible, lines will be installed adjacent to Project roads. Disturbed areas will be contoured and reseeded with a designated reclamation seed mixture, in consultation with the reclamation contractor and in accordance with any landowner requirements, as described in Section 7.

3.8.6 Substation

The area for each Project collector substation will be cleared and graded. Each substation will occupy an area of approximately 2 acres. After site preparation, transformer pads, oil spill containment structure, and other foundations will be excavated, forms set, rebar installed, and the concrete poured and cured to create the foundation. Electrical and other equipment will be transported to the site by truck and installed with appropriate construction equipment. Following construction, the substation will be surrounded by a security fence pursuant to prudent and adopted utility practices.

3.8.7 Transformers

Depending on the model of turbine, pad-mounted transformers could be located at the base of each turbine tower. The approximately 20-square-foot (ft^2) steel-transformer box housing the transformer circuitry will be mounted on an approximately 30-ft^2 pad or vault made of fiberglass or concrete. If not located at the base, turbine transformers and switchgears would be located within the turbine. Transformers will contain non-polychlorinated biphenyl (PCB) mineral oil and will be sealed.

3.8.8 Testing

After all WTGs are erected and electrical collection systems are interconnected, all systems, controls, and safety equipment will be calibrated and tested before being placed into service. Qualified technicians, turbine experts, and electricians will test and inspect all WTG components, transformers, communications systems, substation and switchyard, and transmission systems to ensure that they comply with required design specifications and are working properly. Each WTG and associated piece of equipment will be tested and inspected upon individual completion. All tests will be conducted and problems corrected prior to final interconnection commissioning.

3.8.9 Cleanup and Reclamation

After construction, temporarily disturbed areas (e.g., crane pads, laydown areas, and collector lines) will be restored similar to pre-construction conditions. Disturbed areas will be contoured and reseeded with a designated reclamation seed mixture, in consultation with the reclamation contractor and in accordance with any landowner agreement requirements.

3.9 Operation and Maintenance Procedures

WTGs are used to generate electricity from the kinetic power of the wind. No additional raw materials or energy requirements are required to operate the WTGs. Minimal energy will be required to operate the Project. Electricity will be required for the O&M building, facility lighting, and the station service needs for the Project, and is expected to be supplied by the Wheatland Rural Electric Association.

3.9.1 Anticipated Operation Life

The economic life of the Project is anticipated to be 30 years, but may be extended depending on market conditions and overall condition of infrastructure. The 345-kilovolt (kV) interconnecting transmission line planned for construction will transmit the electrical output of the WTGs to the grid. The economic life of the transmission line is anticipated to be approximately 30 years as well, but will likely extend beyond that time.

3.9.2 Facility Operations

After construction is complete, onsite personnel will operate and maintain all components of the Project.

3.9.2.1 Wind Turbine Generators

Routine maintenance of the WTGs will be necessary to maximize performance and detect potential malfunctions. O&M procedures will be established that define specific routine WTG maintenance and inspection activities in accordance with the WTG manufacturer’s recommendations. Scheduled maintenance will be performed approximately every 6 months on each WTG. On average, each WTG should require 30 hours of scheduled mechanical and electrical maintenance per year. O&M personnel will perform routine maintenance, including periodically replacing lubricating fluids, checking parts for wear, and recording operating parameters. All roads, pads, and trenched areas will be inspected regularly and maintained to minimize erosion. The O&M staff will perform most repairs with the assistance of contracted personnel, as needed.

Each WTG will be monitored continuously by a supervisory control and data acquisition (SCADA) system that communicates aspects of operation through to an offsite facility manned 24/7. Alarm systems will be triggered if operational characteristics fall outside set limits. Each WTG has an automatic braking system to stop the blades in the event of malfunction or excessive wind speed,

including a battery backup in case a WTG is disconnected from the grid. Any problems will be reported promptly to onsite O&M personnel for correction.

3.9.2.2 Operations and Maintenance Buildings

A main O&M building will be constructed. The O&M building will be approximately 10,000 ft^2 and will include office space for several contractors; bathroom and kitchen facilities; break room; storage area; garage for vehicle, turbine, and equipment maintenance; and the SCADA equipment. A fenced, graveled area for parking and storage also will be provided. The O&M building will use a newly installed groundwater well to supply water for domestic use and will discharge to an onsite septic system.

A smaller O&M shop building will also be constructed to support the northern project area. The O&M shop building will be approximately 3,000 ft^2 and will include bathroom facilities; break room; storage area; garage for vehicle and parts storage; and SCADA equipment. A fenced, graveled area for parking and storage will also be provided. A new groundwater well and an onsite septic system will be installed to support this building.

3.9.2.3 Transformers and Substations

Substations and large step-up transformers will be maintained as part of normal O&M activities and will be accessed from the private Project roads. In the event of transformer or other device failure, replacement of this equipment will be accomplished from the access roads.

Periodic maintenance of collection lines and communication cable will be required during the life of the Project. Maintenance activities will be conducted pursuant to prudent utility practices. The disturbance associated with all maintaining buried lines should typically be limited to 25- to 50-foot-wide construction corridors. All electrical terminations will occur above ground in appropriate weather-tight electrical enclosures to facilitate ease of maintenance. Underground collection lines are relatively maintenance free, but maintenance will be performed as needed.

3.10 Worker, Environmental, and Facility Protection

Pursuant to Industrial Siting Division (ISD) requirements, WW&P will develop a Written Compliance Plan to meet the Section 109 Permit Conditions to ensure compliance with voluntary commitments made by WW&P in the permit application, during testimony, and via agreements with local governments. The plan will support the construction and operation of a safe and environmentally compliant Project that is constructed and operated in conformity with federal, state, and local regulations and in accordance with the ISA permit conditions. This plan will provide a comprehensive framework for site-specific environmental procedures and requirements. Throughout the duration of the Project construction and operation, this plan will be reviewed and revised for implementation, effectiveness, and applicability.

3.10.1 Environmental, Health, and Safety

WW&P has adopted an Environmental, Health, and Safety (EHS) Plan from its parent company, ThinkTank Holdings, which outlines overall expectations for EHS performance within the company and on the Project site for all employees, contractors, and subcontractors. While this plan is not currently specific to wind energy development, construction, operation, and decommissioning, WW&P is currently drafting additions to the EHS Plan that reflect industry best practices for health and safety.

The current EHS Plan outlines an Injury and Illness Prevention program, as well as an Unlawful Harassment and Equal Employment Opportunity program and a Vehicle Policy. The plan defines

responsibility for enforcement by naming a program administrator and outlines protocols relating to compliance, communication, hazard assessment and correction, accident investigations, training, and recordkeeping.

3.10.1.1 Construction

The EHS Plan will require that the general contractor prepare specific plans and procedures to be approved by WW&P and put in place prior to commencement of construction. The EHS Plan will cover all work to be performed by the general contractor, turbine suppliers, and all site subcontractors during construction, operation, and decommissioning of the Project. In addition, all site personnel will comply with all safety requirements of the Occupational Safety and Health Administration (OSHA), State of Wyoming, and local ordinances, as applicable.

The general contractor will be required to maintain adequate first-aid facilities throughout the construction period. Specifically, prior to construction, the general contractor and turbine supplier will provide and maintain for the protection of their employees such safety equipment, guarding, and personal protective apparel as is prescribed for safety practices or as required by any law, ordinance, rule, or the exercise of ordinary prudence for the type of work being performed. The construction management representative will oversee the construction phase to monitor the health and safety performance of the general contractor.

3.10.1.2 Operations

Upon reaching commercial operation, the Project will be subject to WW&P's EHS Plan. These policies will be published, distributed, and implemented to ensure that EHS Plan expectations, roles, and responsibilities are well documented and understood by site employees, contractors, and visitors. Components of the EHS Plan include emergency response, training, environmental requirements, contractor management, and comprehensive safety programs, including wind-specific risks such as tower climbing and rescue, severe weather, confined space entry, lockout-tagout procedures, electrical safety, and other site- and equipment-specific requirements. A WW&P delegate will provide comprehensive support for the site, including oversight of any post-construction avian and other biological monitoring programs.

The WW&P EHS Plan will cover all work to be performed by all site contractors and WW&P employees during operation of the Project. A WW&P Site Manager will oversee the operations phase to monitor the health and safety performance of subcontractors and WW&P employees.

3.10.2 Non-Hazardous Waste

3.10.2.1 Construction

A variety of non-hazardous, inert construction wastes are typically generated during construction. The major solid waste types are concrete waste from turbine foundation construction and wood waste from forms used for concrete construction. Concrete accumulating in the concrete washout area associated with batch plant operation, or any other materials not suitable to be left in place, will be removed and properly disposed. Additional wastes will include packaging materials for turbine parts and electrical equipment, and erosion control materials, such as straw bales and silt fencing. The waste is typically accumulated onsite in dumpsters and/or drop boxes until hauled away to a licensed landfill. Construction materials appropriate for recycling (e.g., metals, wood, etc.) will be stored in appropriate bins and recycled. WW&P has received confirmation from Gary Olson, president of TDS Trash Services, that its regional landfill in Torrington can easily accommodate the volume of waste expected to be generated during construction and operations. TDS serves both Platte and Goshen counties, and it recently opened a new landfill cell, expanding its waste capacity.

No significant impacts to local solid waste disposal sites or services are expected from the amount of wastes generated by the Project given its proposed size.

3.10.2.2 Operations

Solid waste generation during Project operations will be minimal, on the order of one dumpster per week; therefore, no significant impacts to local solid waste facilities are expected. The only other source of solid waste will be incidental waste from repair, maintenance, and replacement of equipment, as necessary. The O&M buildings will have separate underground septic systems and drain fields. Disposal of materials onsite will be in accordance with all applicable regulations.

3.10.3 Hazardous Wastes and Materials

Hazardous substances and wastes are subject to strict handling, storage, disposal, and transportation laws at the federal, state, and local levels. It is the intention of WW&P to properly manage all hazardous materials and waste streams associated with the Project in accordance with those laws and other WW&P waste management and hazardous material requirements. The sections below describe hazardous materials and wastes anticipated at the site and best practices for properly managing those materials.

Construction, operation, and maintenance of the Project will result in the temporary use and storage of small amounts of hazardous materials including fuels, lubricants, and hydraulic fluids associated with construction equipment, as well as cleaning and maintenance compounds.

3.10.3.1 Construction

It is expected that small amounts of hazardous waste may be generated during Project construction, resulting in a conditionally exempt small quantity generator status for the Project. Potential hazardous waste streams will be limited to those associated with spent aerosol cans and other construction-related solvent use. It is estimated that this waste generation will be minimal. The Project is subject to NPDES requirements for the protection of surface water quality. Conditions of approval for the Project will require the implementation of NPDES best management practices (BMPs) during construction, including provisions that construction equipment be properly maintained to minimize leaks of motor oils, hydraulic fluids, and fuels.

3.10.3.2 Operation

Operation of the Project will result in the generation of regulated quantities of hazardous wastes. The turbines use lubricating oil, hydraulic oil, and antifreeze, all of which are changed periodically. The primary type of waste generated by operation of the Project will be municipal solid waste generated at the O&M facility, consisting of typical office wastes (e.g., paper, cardboard, food waste, etc.). This waste will be stored in a dumpster until it is hauled to the appropriate disposal facility. In addition, small amounts of waste associated with site maintenance will be generated, including wood pallets, oily debris, etc. These wastes will be managed according to regulatory requirements.

Periodic changing of lubricating oils and hydraulic fluids used in the individual WTGs will produce small quantities of non-hazardous waste fluids. Because they need to be changed only infrequently, and on an individual WTG basis rather than simultaneously, these waste fluids will be generated in small quantities. The waste fluids will be stored for short periods of time in appropriate containers at the O&M facility for collection by a licensed service for recycling or disposal.

The replacement fluids will be stored on a concrete surface inside the O&M facility and will be surrounded by a catch-basin, berm, or trough to trap any leaks or spills. Specific details of the volumes of the containment structure(s) will be addressed in the operations SPCC Plan.

The WTGs use oils and greases that do not contain any compounds listed as hazardous by the U.S. Environmental Protection Agency (EPA). These oils and greases are used in moderate quantities of approximately 600 liters of antifreeze per turbine every 5 years, 5 kilograms of grease annually, 1,100 liters of lubricating oil per turbine every 10 years (or sooner if needed), and 96 liters of hydraulic oil per turbine every 10 years (or sooner if needed). The oils and greases are contained entirely within the spill trap, nacelle, and tower to protect accidental leakage. Lubricating oil levels are continuously monitored by a computer data collection system, manually inspected quarterly, filled as needed, and changed as needed. Spent fluids will be recycled using a certified waste contractor. The oil change will be performed up-tower, where any accidental spills will be contained by the nacelle.

There are no suspected or known hazardous waste contamination sites within or adjacent to the proposed Project area. Given the history and current characteristics of the Project site, it is unlikely that any contamination will be encountered. Therefore, no significant impact from former activities at the property should occur.

3.10.4 Spill Prevention, Control, and Countermeasure Plans

The Applicant is required to establish and maintain a SPCC Plan for construction and operations under the recently revised regulations pertaining to 40 CFR 112. Under this plan, a procedure and the required equipment will be provided and maintained by the owner or contractor to respond in the event of a spill. All use of hazardous materials, including storage and disposal, will be in compliance with site procedures. Therefore, impacts relative to the release of hazardous substances as a result of Project construction and operations should be insignificant.

Several petroleum products will be used in the construction and operation of the facility. During transport, handling, and use, there is a possibility of a spill. Potential sources for a spill are the fuel and lubricating oils from construction vehicles and equipment. The construction contractor will be responsible for training its personnel in spill prevention and control and, if an incident occurs, will be responsible for containment and cleanup.

The types of products to be used, as well as the SPCC Plan that will be implemented, are described below.

3.10.4.1 Construction

Fuel – During construction, fuel trucks will be used for refueling of vehicles, fuel storage tanks, and equipment onsite. The fuel trucks will be properly licensed and will incorporate features in equipment and operation, such as automatic shut-off devices, to prevent accidental spills. Fueling of large, heavy construction equipment such as cranes and earth-moving equipment will occur onsite where the equipment is located. The fuel truck will drive to the equipment. Some construction vehicles, such as pickup trucks, will be fueled in town at gas stations. Any spills will be addressed in accordance with the SPCC Plan that will be developed for the construction phase of the Project**.**

The risks associated with driving fuel trucks along gravel roads at the Project site are low. Potential risks will be additionally reduced by using dedicated fuel-delivery trucks driven by professional, appropriately licensed drivers and by ensuring adherence to the Project site speed limits. A fuel tanker accident would trigger activation of the SPCC Plan. This Plan will include a description of procedures that will be followed in the event of a fuel tanker spill and will contain a list of equipment that will be maintained onsite for spill response emergencies.

Lubricating Oils – Lubricating oils used during construction will mostly be contained in the vehicles and equipment for which they are used. Small quantities of lubricating oils may also be stored in

appropriate containers at the construction staging area located at the site of the O&M facility. The details of storage and containment of lubricating oils and other materials at the construction staging area will be addressed in the SPCC Plan. Appropriate measures will be taken to ensure these materials are not spilled. If a spill does occur, it will be promptly cleaned up and reported as required to the proper agencies.

Wind Turbine Fluids – Each turbine model has different specifications for lubricating oil and hydraulic fluid quantities. There are two main types of fluid in a WTG: lubricating oil for the gearbox (typically a synthetic lubricating oil) and hydraulic oil for operating the blade pitch system, yaw mechanism, and brakes.

WTGs are equipped with sensors to automatically detect loss in fluid pressure and/or increases in temperature, which enable them to be shut down in case of a fluid leak, as well as fluid catch basin and containment systems to prevent any accidental releases from leaving the nacelle. Based on the limited quantities of fluids contained in the WTGs and the leak detection and containment systems engineered into their design, the potential for an accidental spill from WTG malfunction is extremely limited. Furthermore, any accidental gear oil or other fluid leaks from the turbines will be contained inside the turbine towers, which are sealed around the base. Both the nacelles and the towers incorporate adequate containment to capture any fluids in the event of a leak or spill. Specific details of the volumes of the containment structure(s) will be addressed in the SPCC Plan.

Transformer Mineral Oil – The Project's substations will contain main power transformers. Each transformer is delivered empty and will be filled with mineral oil onsite. Each substation transformer will contain mineral oil for cooling. The main transformers will be filled and tested as part of the commissioning process. The transformer tanker truck will be properly licensed and will incorporate several special features in equipment and operation, such as automatic shut-off devices, to prevent accidental spills. In addition, the filling of the transformers will be completed in accordance with site construction SPCC requirements. The transformers are designed to meet stringent electrical industry standards, including containment tank weldment and corrosion protection specifications.

The substation transformers will be equipped with an oil-level sensor that detects any sudden drop in the oil levels and sends an alarm message to the central SCADA system. Finally, the substation transformers are surrounded by a concrete berm or trough to ensure that any accidental fluid leak does not result in any discharge to the environment.

Depending on the WTG model ultimately selected, there may be a pad-mounted transformer located near the WTG base. These transformers are filled at the factory with mineral oil that acts as a coolant No onsite oil filling is required. The transformer is designed to meet stringent electrical industry standards, including containment tank weldment and corrosion protection specifications. Pad-mounted transformers do not typically incorporate a containment structure because the volume of mineral oil contained in them is much smaller than in the substation transformers and the risk of a spill is minimal. The SPCC Plan will address prevention and cleanup of any potential spills of mineral oil during filling, transport, installation, or operation of transformers.

3.10.4.2 Operation

Other than the materials described in the preceding section, operation will not require the use of substantial quantities of fuel or other materials that could cause a spill or other accidental release. Project operations will not require the use of a permanent fuel storage tank because fuel use during operations is limited to maintenance vehicle fueling that will be performed at existing licensed gas stations offsite.

The potential for accidental spills of oils or lubricants during Project operations is minimal because the only materials used during Project operations that present any potential for accidental spills are mineral oils, lubricating oils, and hydraulic fluids used in the WTGs and transformers. The nacelle and tower will contain any loss of oil or hydraulic fluids in the WTGs and there is minimal risk of such fluids contacting the soil.

Turbine Fluid Replacement – Turbine fluids levels are checked periodically and must be replenished or replaced on an infrequent basis (generally less than once per year and sometimes only once every 5 years). When replacing these fluids, O&M staff will climb to the nacelle and remove the fluids in small containers and lower them to the ground using a small maintenance crane built into the nacelle itself. The containers then will be transferred to a pickup truck for transport to the O&M facility for temporary storage (typically less than 1 month) before being picked up by a licensed transporter for recycling. Replacement fluids are added in the same method, but in reverse. Small quantities of replacement fluids, typically no more than 10 55-gallon drums of lubricating oil and hydraulic oil, are stored at the O&M facility for replenishing and replacing spent fluids. These fluids will be stored indoors in appropriate containers. All operations staff will be trained in appropriate handling and spill-prevention techniques to avoid any accidental spills. Because only small quantities of fluids are transported, added, or removed at any one time and are stored for short periods, the potential for a large accidental spill during routine maintenance is extremely limited.

The substation transformers have a specifically designed containment system, including a full perimeter containment trough large enough to hold all of the oil from the transformer in the event of a transformer reservoir breach.

3.10.5 Stormwater Pollution Prevention

3.10.5.1 Construction

There will be a certain amount of disturbance of surface soils and minor excavation into weak bedrock associated with construction of the facilities. A Stormwater Pollution Prevention Plan (SWPPP) will be developed with the Notice of Intent (NOI) for the required Wyoming Pollution Discharge Elimination System (WYPDES) General Stormwater Construction Permit and implemented to minimize soil erosion during construction of the Project. Therefore, BMPs will be implemented by the contractor during construction of the Project to ensure that erosion will be minimized and other adverse impacts on area soils will not occur. Other BMPs are discussed in more detail in Section 7. Lastly, the Project will be designed with proper erosion protection and culverts in order to minimize or eliminate the potential for downstream sedimentation that could affect aquatic resources in adjacent waterways or damage Project facilities.

3.10.5.2 Operation

The Project will be designed with proper erosion protection and culverts in order to minimize or eliminate the potential for damage to Project facilities during operation, and to minimize or eliminate downstream sedimentation that could affect aquatic resources. Culverts and roads will be designed and constructed in accordance with or above industry standards for their intended uses and to ensure regulatory compliance. During operation of the Project, regular compliance monitoring and maintenance activities will be implemented by a designated and qualified member of the operations staff. Inspections and maintenance activities during operations will ensure that erosion, stream sedimentation, or impacts to or from soil resources or geologic hazards are prevented or addressed immediately if they occur.

3.10.6 Security

3.10.6.1 Construction

Security is primarily a function of controlled access to the Project area and lock-out provisions to major equipment and controls. Site access will be controlled, and all onsite construction staff and visitors will be required to carry an identification pass.

WW&P or their selected contractor will work with a security contractor to develop a plan to effectively monitor the overall site during construction, including an access gate, drive-around security, and specific check points. Local emergency response organizations will be informed of security procedures to ensure that appropriate access is available.

3.10.6.2 Operation

The Project area is not expected to require security during the operations phase. Locked gates will control access to O&M and other equipment storage areas. Each turbine and junction box is also locked to prevent unauthorized access. Site visitors, including vendor equipment personnel, maintenance contractors, material suppliers, and all other third parties, will be allowed access only as authorized by Project staff. The Plant Operations Manager, or designee, will grant access to any critical areas of the site on an as-needed basis. Site access will be controlled and all visitors or contractors on the site will be required to carry an identification pass.

3.10.7 Emergency and Law Enforcement Services

Access to the Project will occur directly from Wheatland via Wyoming Highway 316 (WYO 316) (Antelope Gap Road) and from Chugwater via Wyoming Highway 313 (WYO 313 (Lone Tree Road) for the construction period and operational life of the Project. Response times are expected to be minimal for fire and ambulance crews departing from Chugwater, Wheatland, Guernsey, Fort Laramie, Cheyenne, and Hawk Springs.

WW&P has initiated discussions and participated in eight meetings or conversations with various stakeholders in both Platte and Goshen counties. It is the intent of WW&P to understand the capabilities of both counties to provide such services to the Project. WW&P would consider bringing private emergency medical services (EMS) onsite if further investigation determines it may be appropriate to meet the requirements of the internal EHS Plan. Additionally, per suggestions from local emergency responders, WW&P or its contractors will provide weekly email reports during the construction period to local dispatch, law enforcement, and emergency response detailing the upcoming week's workforce estimates and general location for work being performed. WW&P will also provide authorities final addresses and coordinates for all wind farm buildings, roads, and structures to facilitate future responses.

Chugwater Fire Chief Tim Ash indicated in a May 29, 2013, meeting that Chugwater Fire & Rescue is well trained and equipped for wind farm emergencies. The Chugwater Fire Crew prepared for wind farm emergencies in anticipation of the Chugwater Flats Wind Energy Project, a project proposed in 2010. Additionally, the Chugwater Fire Crew has a member who teaches wind turbine maintenance courses at Laramie County Community College, and has trained the crew in fire and rescue situations at wind farms. Chief Ash also stated that 911 calls would be taken and dispatched through Wheatland. Ambulance crews from Chugwater, Wheatland, and Hawk Springs would respond to emergencies at the Project site near Chugwater.

During a separate meeting on May 29, 2013, Platte County Sheriff Steve Keigley mentioned that he has no major concerns with the proposed Project. He did note that the Sheriff's Department does not have a full-time deputy stationed in Chugwater, which will likely need to change during the

Project's construction period. He requested that WW&P provide coordinates and street addresses for each wind turbine, Project road, and other Project feature to improve emergency response time. WW&P also agreed to provide the sheriff, his dispatcher (which is shared with every town law enforcement and emergency response in Platte County), and all fire and EMS services with a weekly update that details the work being performed, location of work planned for the week, and workforce estimates for the week.

Wheatland Police Chief Randy Chesser stated during a May 31, 2013, meeting with WW&P that he does not have any particular concerns regarding the population influx during construction. He estimates that the annual Laramie River Station outage maintenance crew has a peak workforce of nearly 500 workers, greater than WW&P's peak quarter workforce in the third quarter of 2016. Chief Chesser does not believe that the Project's workforce influx will strain the Police Department staff. The weekly construction and workforce reports were a welcomed suggestion, and Chief Chesser believes the reports should help the department adequately prepare for emergency services on a weekly basis.

WW&P also spoke by phone with Hawk Springs Fire Chief and EMS Administrator Lou Hubbs on June 3, 2013. Chief Hubbs cited no specific concerns with the Project. He stated that his EMS crew is well trained in all types of emergency response with the exception of high-angle rescue. His crew has worked frequently with the helicopter rescue team from Scottsbluff, Nebraska. Chief Hubbs would like his crew to be included in any training and emergency response drills that WW&P may conduct.

On June 4, 2013, WW&P spoke by phone with Guernsey Volunteer Fire Department Training Officer Sheena Thomas. She indicated that the fire department has the equipment and training for high-angle and confined space rescue. Guernsey has 24/7 ambulance service, and although its territory does not cover any proposed turbine locations, the department will serve as a backup for the Wheatland Fire Department. Officer Thomas requested a tour of the facility upon completion, and asked to be included in any onsite training and drills that may be performed for local emergency responders.

In addition, WW&P conducted a June 4, 2013, telephone conversation with Fort Laramie Fire Chief Pete Howes. Similar to the Guernsey plan, he noted that his crew would serve as backup to Wheatland Fire on emergencies in the Antelope Gap portion of the Project. Fort Laramie has EMT service, but it is not full-time. Chief Howes also indicated that his crew has a level of high-angle rescue training, but not to the same level as Wheatland or Guernsey. He would also like to be included on any tours, trainings, or drills WW&P may hold for local emergency responders.

Chief Scott Scheller from the Wheatland Fire Department spoke with WW&P on June 4 as well. He mentioned that he does not have any immediate concerns, but would like to be included on any weekly reports, trainings, drills, or tours that WW&P may provide to local responders. He also mentioned that he believes that Wheatland and Guernsey are the only fire crews in the area with the structure trucks necessary for wind turbine rescue.

Lastly, WW&P spoke with rural volunteer fire crewmembers John Watson and David Weber on May 21, 2013. They both indicated concern regarding the volunteer fire department's ability to provide wind turbine rescue, and would like to be included in any local trainings. Mr. Watson and Mr. Weber also indicated they are currently constructing a new fire hall within the Antelope Gap portion of the Project near the corner of Antelope Gap Road and Deer Creek Road. Rural fire trucks are currently stationed within the Project boundary.

3.10.7.1 Medical Emergencies

Medical emergencies generally will be handled by calling 911 and alerting the EMS system. Calls to 911 from the Project area will go to Wheatland, where the appropriate fire/ambulance crews are paged for dispatch. Chugwater has ambulance service, although it does not run 24 hours a day, 7 days a week (24/7). When the Chugwater ambulance is unavailable for emergencies near Chugwater, EMT response will come from Wheatland and Hawk Springs, both of which have 24/7 EMT service. For emergencies near Antelope Gap, EMT service will be provided by Wheatland, Guernsey, and Fort Laramie. Due to the location of the Project and potentially slow overland response time by ambulance to distant portions of the Project area, it is likely that serious 911 emergency medical incidents would be handled via helicopter service provided by AIRLIFE Denver, an air ambulance service with a helicopter stationed in Cheyenne. This service would transport patients to the appropriate medical center. WW&P will proactively coordinate with AIRLIFE Denver to ensure that landing zone requirements are met at all times during construction and operation of the Project for both daytime and nighttime response calls, and that appropriate WW&P and contractor crews are adequately trained in rescue techniques used while working in turbine towers and nacelles.

The Platte County Memorial Hospital is a 25-bed critical access facility located in Wheatland, approximately 10 miles from the Antelope Gap parcel area and 30 miles from the Chugwater Project area. It is the anticipated provider of any emergency hospital services needed by the workforce.

3.10.7.2 Fire Emergencies

Fire emergencies will be handled by calling 911 and alerting the Platte County Sheriff and Police office dispatch center in Wheatland, where the appropriate fire crews are paged for dispatch. The Chugwater, Wheatland, and Hawk Springs Fire Departments will respond to fire emergencies. The departments consist of seven fire halls within 21 miles of the Project area, including one within the Antelope Gap portion of the Wyoming Wind Farm, one each in Wheatland, Chugwater, Hawk Springs, and Guernsey, and two in Fort Laramie. All fire halls are staffed by volunteers, with an average of approximately one authorized crewmember for every 94 citizens. All stations are equipped with rapid-response grass fire trucks, multiple water tenders, aerial units, and pumpers. The Wheatland and Guernsey stations are equipped with structure trucks capable of high-angle rescue. The Guernsey, Hawk Springs, Chugwater, and Fort Laramie fire halls house a rescue unit, with additional ambulance service available in Wheatland. All nearby Fire Chiefs anticipate serving the fire prevention and response needs of the Project in either a primary or backup role, as well as coordinating with WW&P to ensure proper training is received for addressing fire response issues unique to the Project. WW&P will proactively coordinate with fire departments from both counties to minimize fire safety hazards, coordinate response efforts, and effectively train WW&P and subcontracting personnel in fire safety issues.

3.10.8 Aviation Lighting

The FAA requires aircraft warning markings on all structures taller than 200 feet. Therefore, the WTG towers would trigger review by the FAA. Once the Project layout is finalized, a Project Lighting Plan would be developed using guidance from *FAA Technical Note: Developing Obstruction Lighting Standards for Wind Turbine Farms* (Patterson, 2005). Aviation warnings for a wind energy project include medium-intensity red strobe warning lights placed on the nacelles of the turbines on each end of a turbine string, as well as on every third or fourth turbine. Once the exact marking plan is developed, it will be submitted to the FAA for review.

3.10.9 Lightning

Storms that produce lightning occur within the Project area. Lightning is considered in the design of the facility and its structures. Because the wind turbines will be the highest structures in the surrounding area, the probability of lightning strike may be higher. Measures are designed to minimize this risk significantly.

Both the WTGs and the substation are equipped with specially engineered lightning protection systems. Any electrical energy built up in the wind turbine by lightning or equipment malfunction is discharged through grounding equipment in the turbine foundation. Grounding equipment typically consists of a copper cable grounding mat cast in place with the tower foundation, or some other grounding system specified by the turbine manufacturer. The substation will also have grounding equipment, which will consist of a grounding grid laid below grade in trenches around the substation site, or other grounding methods to further protect equipment and personnel.

Other project features equipped with grounding apparatus include transmission poles and meteorological towers. In general, the grounding crew follows behind the pole assembly and erection crew, installs the proper number of ground rods, and measures the ground resistance. If the proper ground resistance has not been achieved, additional ground rods are installed until acceptable ground resistance is obtained. On rocky sites with little to no soil mantle, adequate electrical grounding may be problematic and may require the installation of a grounding well reaching to the uppermost saturated zone below the ground surface. Each turbine tower will have similar lightning grounding needs. Either ground rods, grounding grids, or, if necessary, grounding wells will need to be installed for each tower.

3.11 Site Decommissioning

Decommissioning is a step-by-step, methodical deconstruction process that involves removing and disposing of the infrastructure and appurtenant facilities associated with the Project. With some exceptions, site decommissioning would involve the reverse of site development.

Megawatt-scale WTGs available on the market today have a commercial viability of greater than 25 years. The tubular steel towers supporting the generators are of simple design and with basic routine maintenance will serve well beyond that of the generators. It is worth noting that the trend in the industry has been to repower existing projects with more efficient and cost-effective generators, as opposed to completely decommissioning them.

Generally, wind farm projects that are decommissioned contain a high “scrap value” due to the materials and equipment contained in the infrastructure (i.e., steel infrastructure, electric generators, and copper).

The following events may trigger the decommissioning process:

- Termination or expiration of a wind energy lease
- Technological obsolescence or the end of the useful economic life of WTGs
- Inability to replace or repower aging turbines

WW&P has agreed to a decommissioning plan with each of the Project's participating landowners that meets or exceeds the decommissioning standards outlined in the ISA Wind Regulations. While WW&P considers the details of its landowner leases confidential, at a minimum WW&P will adhere to the following general decommissioning procedure:

- All turbines and their towers would be dismantled and either recycled at other wind energy projects, sold for scrap, or disposed of offsite as solid waste.
- Turbine towers constructed partially of concrete would be broken up.
- Foundations would be removed to a depth of up to 4 feet bgs. Highway departments or county road departments could potentially recycle the concrete for road base or bank stabilization.
- Electronic equipment would be recycled or disposed of (in some cases as hazardous waste because of the heavy metals present) in landfills or properly licensed hazardous waste facilities.
- Transformers and electrical control devices would be reused in other applications or sold as scrap after fluid removal.
- Subsurface turbine foundations below a depth of 4 feet may be left in place.
- The access road and onsite string roads may be removed, or left at the specific request of the landowner.
- Roads, rock, or gravel in the electrical substations, transformer pads, and building foundations would be removed and recycled if no longer needed, or left at the specific request of the landowner.
- If the buried and overhead power lines could not be used, all structures, conductors, and cables would be removed, unless otherwise requested by the landowner.

Decommissioning will begin within 12 months of the end of the useful life of the wind turbine or facility, or when no electricity is generated from the facility or wind turbine for a continuous period of 12 months, unless the time period is extended by the ISC for good cause.

Dismantlement of electrical substations and storage buildings would be accompanied by inspection for the presence of industrial contamination from minor spills or leaks, and decontamination as necessary. Lastly, demolition or removal of equipment and facilities will meet applicable environmental and health regulations, and every attempt will be made to salvage economically recoverable materials.

The potential fire risks during Project decommissioning and construction are similar in nature, but lower than those described during construction and operation. Fire prevention measures during decommissioning would be substantially similar to those described for Project construction.

3.12 Site Decommissioning and Reclamation Plan

WW&P is contractually obligated to adhere to the decommissioning provisions set forth in each specific land lease covering the Project site. The lands included in the Project site are privately owned. Additionally, WW&P must adhere to a decommissioning standard required by the Industrial Siting Act (Rules Section 10):

> *(a) Facility Decommissioning. The applicant shall provide a facility decommissioning plan.*
>
> > *(i) The facility decommissioning plan shall include provisions regarding the removal and proper disposal of all wind turbines, towers, substations, buildings, cabling,*

electrical components, foundations to a depth of forty-eight (48) inches, and any other associated or ancillary equipment or structures within the facility boundary above and below ground.
(ii) The facility may request that a building be left on site if approval is obtained from the surface landowner and upon written notification to the administrator.
(iii) Facility or individual wind turbine decommissioning shall begin:
(A) Within twelve (12) months after the end of the useful life of the facility or individual wind turbine, or
(B) When no electricity is generated for a continuous period of twelve (12) months of the facility or individual wind turbine.
(C) The Council may extend the time period of Section (9)(a)(iii)(B) if the facility demonstrates good cause prior to the end of the continuous period of (12) months of the facility or wind energy generating towers not generating electricity.
(iv) The facility decommissioning plan shall be updated and submitted to the administrator every five years.

While the leases between WW&P and the private landowners are subject to confidentiality provisions such that their terms cannot be publically disclosed, generally, the decommissioning requirements set forth in each lease agreement meet or exceed these requirements.

WW&P's landowner leases also contain specific language on reclamation standards that meet and exceed the standard set forth in the ISA Wind Regulations. Specific reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time the area is to be reclaimed and may include regrading, adding topsoil, and revegetation of all disturbed areas. All disturbed areas would be reclaimed and restored so that prior agricultural land uses could be resumed, as well as to match the preexisting grade and contour of the effected property unless doing so creates an erosion problem or hazard.

Disturbed land areas covered in rock or gravel or building/tower footprints would be restored to approximate original grade (which would include adjusting soil compaction that might have resulted from previous uses) and reseeded or replanted with native vegetation. All revegetation activities will be documented to include detail on seedbed preparation, seed mixture, and post-seeding maintenance, as well as potential mulching and use of fertilizers.

Interim reclamation, if necessary, will comply with the applicable permitting requirements of the Wyoming Department of Environmental Quality, Water Quality Division stormwater program and landowner agreements. A Final Reclamation Plan will be submitted to the ISD for review prior to construction. The plan will include a detailed description of site conditions, including topography, vegetative cover, climate, and land uses. Additionally, it will address re-grading and re-vegetation procedures to restore the land to its previous condition and use capability. The Final Reclamation Plan will be updated and submitted to the ISD administrator every five years.

3.12.1 Decommissioning Procedure

Decommissioning and reclamation activities will adhere to the requirements and standards of the ISA Regulations, and will be completed in accordance with applicable federal, state, and local permits. The decommissioning and reclamation process will include:

- Removal of above-ground structures
- Removal of below-ground structures to a depth of at least 48 inches
- Removal of underground cabling

- Grading, to the extent necessary
- Reclamation of topsoil and seeding

The table below provides a list of equipment that is likely to be used to complete the decommissioning:

TABLE 3-5
Proposed Decommissioning Equipment

Equipment	Decommissioning Use
Bulldozers	Road and Pad Construction
Motor Graders	Road and Pad Construction
Gravel Truck Haulers / Bottom Dump	Hauling Road and Pad Material Offsite
Water Trucks	Compaction, Erosion, and Dust Control
Excavators/Trenching Machines	Excavating Foundations; Trenches for Underground Utilities
18-Wheel Semi-Tractors	Component Removal
Conventional and Small Cranes	Loading Equipment For Removal
Heavy and Intermediate Cranes	Loading Equipment For Removal
Pickup Trucks	General Use by Construction Personnel
Small Hydraulic Cranes/Forklifts	Loading and Unloading Minor Project Equipment
All-Terrain Vehicles	Site Access
Rough-terrain Forklift	Lifting Equipment

Turbines

The wind turbines will be removed using appropriately-sized cranes and equipment. To complete this work, the access roads to the turbine sites may need to be temporarily widened to accommodate movement of cranes, trucks, and other equipment required for the disassembly and removal of the turbines. Control cabinets, electronic components, and internal cables will be removed. The rotor, nacelle, and tower sections will be lowered to the ground.

If the wind turbines are not sold for reuse, they will be disassembled and sold for scrap. This would require the same cranes that were used for assembly. The hub, blades, and nacelle would be removed and lowered to ground level. Tower cabling would be removed and scrapped to recover the high-value copper conductor materials. Tower sections would be removed and cut into transportable sections for delivery to a scrap metal purchaser. Control cabinets in the base would be stripped of high value components and the balance turned over to a scrap company for haul and disposal. The area would then be cleaned and all debris removed.

Foundations

Topsoil will be removed from the area surrounding the foundation and stored for reclamation. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete to a depth of at least 48 inches below grade. The remaining excavation will be filled with clean sub-grade material of quality comparable to the immediate surrounding area. The sub-grade material will be compacted to match the surrounding subgrade material. Any

unexcavated areas compacted by equipment used during the decommissioning process shall be decompacted to match the contour of the surrounding area, and reseeded as required.

Roads and Crane Pads

Unless otherwise required, all permanent access roads constructed for the Project will remain in place. If this is not allowed in some areas, the base material or gravel will be removed, the road and pad areas decompacted, and the area will be reseeded as required.

Transmission Lines

The conductors, insulators, and other pole-top material will be removed and hauled offsite. The poles and anchors will be removed and the holes filled in with compatible sub-grade material.

Underground Collection Cables

The topsoil covering the cables will be removed from the trench area and stored along the trench for reclamation. The trench will be excavated and the cables removed and transported offsite. The open trench will be filled with the removed material and compacted to match the surrounding subgrade material. Any unexcavated areas compacted by equipment used during the decommissioning process shall be decompacted to match the surrounding material and reseeded as required.

Substation and Interconnection Facilities

Components including steel, conductors, switches, transformers, fencing, and control houses will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately. Foundations and underground components will be removed and the excavations filled, impacted area contoured, and reseeded.

3.13 Estimated Decommissioning Cost

The total estimated cost of the decommissioning and reclamation commitment described in Section 3.12 is $78,374,000, as shown in **Table 3-6**. The estimate was prepared by a team of licensed professional engineers, including the Chief Estimator, from WW&P's general contractor, RES Americas. The costs included in the estimate consist of labor, equipment, and disposal cost projections based on industry standards and the engineers' past reclamation project experiences. The estimate includes recent pricing from subcontractors for most, if not all, the activities required for decommissioning. For activities unique to wind projects in Wyoming, such as underground cable removal (underground cabling is typically left in place to minimize disturbance), the reclamation estimate was based on cable installation, as the work will be very similar. Prior to commencement of construction, WW&P will provide the ISC financial assurances sufficient to complete decommissioning and site reclamation. The assurance will be in the form of surety bond, certificate of deposit, or similar financial assurance.

TABLE 3-6
Estimated Decommissioning and Reclamation Cost

Process	Cost
Disconnect electrical within turbine and ready for disassembly	$ 300,000
Dismantle and load turbines and towers for removal from site	$ 36,000,000
Haul turbines from site to scrap/salvage yard location within 100-mile radius	$ 24,000,000
Excavate and demolish turbine foundation down to 48 inches below grade and regrade site for restoration	$ 3,600,000
Remove UG collection system; restore trench	$ 6,084,000
Access road removal, site decompaction, and grade restoration	$ 2,520,000
Site revegitation grass seeding	$ 825,000
Remove junction boxes	$ 70,000
Remove met towers and met tower infrastructure	$ 375,000
Remove 138-kV overhead transmission line, cable, and poles.	$ 800,000
Remove substation and main power transformer; restore site	$ 3,000,000
Remove interconnection facility; restore site	$ 500,000
Remove O&M building; restore site	$ 300,000
Total cost (credit for material salvage value not included)	**$ 78,374,000**

Section 4
Public Involvement

4.0 Public Involvement

An area or local government primarily affected by the Wyoming Wind Farm Project (Project) includes any defined geographical area, unit of local government, or special district formed under the Wyoming Joint Powers Act, whose environment, population, economic wellbeing, level of social services, health, safety, or welfare may be affected by the Project. These entities should be notified regarding the construction and operation of the Project to assess the potential impacts of the Project. Areas of site influence are defined as the areas that may be affected environmentally, socially, or economically, in any significant degree, by the location of the Project at the proposed site.

Based on the statutory definition of the area of site influence presented above, local governments that would primarily be affected by the proposed industrial facility include:

- Platte County and its communities, specifically the towns of Chugwater, Glendo, Guernsey, and Wheatland
- City of Laramie in Albany County
- City of Douglas in Converse County
- City of Cheyenne in Laramie County
- The towns of Fort Laramie, Lingle, Hawk Springs, and Torrington in Goshen County.

It should be noted that the initial outreach to local governments encompassed a larger area that included all local governments within Natrona and Converse counties as well.

Portions of Albany, Laramie, and Converse counties are outside the region of the recommended area of influence due to excessive commuting distance and lack of appropriate accommodations. Therefore, it seems that a number of communities located within the recommended area of site influence will not experience Project-related impacts. Other urban areas that contain industries potentially affected by the proposed Project are relatively distant. The closest large Wyoming city is Cheyenne, approximately 45 miles to the south.

Wyoming Wind & Power, LLC (WW&P) intends to maximize the benefits of the Project to the local communities in the area of site influence, while minimizing adverse impacts as much as possible. Therefore, WW&P conducted a series of meetings with state agencies and local officials. These activities are presented below, and additional details are provided in **Appendix D**.

4.1 Meeting Activities

Formal meetings were scheduled by WW&P to present the Project and receive comments from state agencies and local government officials, and to provide the opportunity for involvement by local community members. **Table 4-1** lists these public and agency involvement activities by organization and date.

TABLE 4-1
Local Government, State Agency, and Community Meetings

Organization/Individual	Date	Topic of Discussion
WGFD	March 4, 2011	Presentation of Year-1 baseline study approach for the Antelope Gap parcel of the Wyoming Wind Farm.
WGFD	July 18, 2012	Discussion of Year-1 results and modifications to Year-2 study protocol for Antelope Gap parcel. Also provided a preliminary update on studies of the Chugwater parcel set to begin later in 2012.
WGFD	December 4, 2012	Provided Year-1 study protocol for Chugwater parcel electronically and solicited comment. WW&P received a letter from the Director on January 11, 2013, approving the proposed study protocol for the Chugwater parcel.
WGFD	May 28, 2013	Meeting to discuss preliminary results of Year-2 studies at the Antelope Gap parcel. Also discussed ongoing studies at the Chugwater parcel, as well as ISA permit preparation.
WDEQ-ISD	March 22, 2013	Meeting to introduce Wyoming Wind Farm Project, timelines, and intentions. Discussed approaches to application preparation.
WDEQ-ISD	May 8, 2013	Meeting to provide update on progress of permit application preparation, as well as to discuss upcoming Jurisdictional Meeting and intention to submit application by July 1, 2013.
WDEQ-ISD	May 14, 2013	Jurisdictional Meeting – Provided overview of the Project and ISA process, Project workforce and operation requirements, construction schedule and costs, local agency consultation, and public involvement.
WDEQ-ISD	June 20, 2013	Pre-application meeting – Discussed the status of the application and the details of several components and how the application will address them
Mayor of Chugwater	May 9, 2013	Discussed the Wyoming Wind Farm Project and its impact to Chugwater. Toured property owned by the town, which the mayor hopes will be used as part of the development. Received strong support from the mayor for the Project.
Public Open House Informational Meeting	May 28, 2013	Held an Open House Informational Meeting at the First State Bank Conference Center in Wheatland. Presented Project details, along with an informational video. WW&P representatives were on hand to answer questions from the public and the press.
Natrona County Commissioner	May 23, 2013	Commissioner Forrest Chadwick called WW&P to inquire why Natrona County is being considered for Project impacts.
Chugwater Town Council	May 29, 2013	Discussed leasing property and rail spur access in town for turbine delivery and loading. Also discussed the use of local contractors, workforce estimates, and job creation.
Chugwater Fire & Rescue	May 29, 2013	Met with Fire Chief Tim Ash. Discussed fire and rescue procedures and concerns as a result of the Wyoming Wind Farm Project. No concerns were noted. Crew is trained and prepared for wind farm fire and rescue.
Platte County Sheriff	May 29, 2013	Met with Sheriff Steve Keigley. Discussed procedures for emergency response. Sheriff Keigley mentioned that no deputies are currently stationed in Chugwater, and suggested that WW&P provide weekly updates to him and his dispatcher on upcoming construction activities. The sheriff also requested a final site layout with facility addresses and coordinates.

TABLE 4-1
Local Government, State Agency, and Community Meetings

Organization/Individual	Date	Topic of Discussion
Wheatland Police	May 31, 2013	Met with Chief Randy Chesser, who stated no concerns about Project workforce and impact. Indicated that annual LRS outage crews often exceed WW&P's projected peak workforce. Chief Chesser also requested weekly construction updates and final site plans.
Hawk Springs Fire & Rescue	June 3, 2013	Spoke with Chief Lou Hubbs, who relayed no concerns. Indicated that his crew provides 24/7 EMT service and is well trained, but not in high-angle rescue. Requested to be included in training and drills for local emergency responders.
Wheatland Fire & Rescue	May 21, 2013	Spoke with crew volunteers John Watson and David Weber. Both Mr. Watson and Mr. Weber indicated that they are not trained in wind turbine rescue and emergency response. They indicated that fire trucks are stationed onsite, and that they are currently constructing a new fire hall within the Antelope Gap parcel of the Project.
Guernsey Fire & Rescue	June 4, 2013	Spoke with Training Officer Sheena Thomas, who indicated that Guernsey would serve as a backup for Wheatland Fire & Rescue for emergencies at the Antelope Gap parcel. Guernsey has full-time EMS response, are trained in high-angle and confined space rescue, and would like to be included in any additional trainings, tours, or drills that WW&P may hold for local emergency responders.
Fort Laramie Fire & Rescue	June 4, 2013	Spoke with Chief Pete Howes. Indicated that Fort Laramie would be the third backup for Antelope Gap emergencies. Crews are trained in high-angle and confined space rescue, but not to the extent of crews in Wheatland or Guernsey. Would like to be included in trainings, tours, and drills.
Wheatland Fire & Rescue	June 4, 2013	Spoke with Chief Scott Scheller, who stated no Project concerns. Believes that Wheatland and Guernsey are the only crews with structure trucks capable of wind turbine rescue. Would like to be included in additional trainings, drills, or tours.
Platte County Commissioner	June 3, 2013	Spoke with Commissioner Tim Millikin about the county permitting process. WW&P requested a meeting with the three Platte County Commissioners, but the meeting has yet to be scheduled.
Platte County Commissioners	July 2, 2013	Formally met with Platte County Board of Commissioners to discuss the Project and any concerns. The need for a road maintenance agreement was discussed.

Source: CH2M HILL and WW&P, 2013.

4.1.1 Meeting Notices and Public Notification

An introductory letter was mailed to 10 local governments on May 3, 2013. This resulted in several of the meetings and discussions shown in **Table 4-1**. This introductory letter and distribution list is included in **Appendix D**. The state agencies specified by statute in the Industrial Development Information and Siting Act (ISA) permit regulations were notified of the Project by certified return receipt mail. The complete list of local governments receiving this notice, as well as those that were returned, is included in **Appendix D**.

Newspaper advertisements announcing the open house were placed in the *Torrington Telegram* on May 17, 2013, the *Guernsey Gazette* on May 21, 2013, and the *Platte County Record Times* on May

22, 2013. These are the primary local news sources serving residents of surrounding communities. The advertisements invited the public to attend the public meeting to learn more about the Project and ask questions of WW&P representatives. **Appendix D** contains a copy of the advertisement, list of attendees at the open house, and the poster displays and handouts.

Notification letters were sent to local agencies and mineral rights owners within the Project area informing them of the Project and providing them with information on the open house. Mineral rights owners were also informed by a notice in the *Torrington Telegram* on May 29, 2013, and June 5, 2013, as well as a notice printed in the *Platte County Record Times* on the same dates. The notice, the letter, list of mineral owners receiving notice, as well as those that were returned, is included in **Appendix D**.

In addition to notifications initiated by the Project, several articles were published in local and state-wide newspapers. A newspaper article about the Project was published in the *Casper Star Tribune* on May 29, 2013, entitled, "Wyoming Company Plans 300-Turbine Wind Farm Near Wheatland, Chugwater." An article entitled, "Company Plans Large Wind Farm Near Wheatland," was run by the *Wyoming Tribune Eagle* on May 31, 2013. Another article by the *Platte County Record Times* was published on June 5, 2013, entitled, "Wyoming Wind and Power Plans Local Wind Farm*."* Copies of these articles may be found in **Appendix D**.

4.1.2 Meeting Format and Information Provided

The format and information consisted of the following:

- Large display boards were prepared for the community open house informational meeting held in Wheatland on May 28, 2013. Displays included:
  - About Wyoming Wind & Power
  - About the Project
  - Project Timeline
  - Project Site
  - Project Benefits to the Community
  - Wind Turbine Details
  - Construction and Operation Workforce
- A two-page factsheet describing the Project was provided to attendees at the open house.
- Comment forms were provided to solicit feedback from attendees. The form contained contact information and a mailing address for WW&P for any additional questions or comments.
- A kiosk that looped a short informational video about the Project. The video is available for viewing at www.wyomingwind.com.
- WW&P representatives were present to answer any questions asked at the community open house.

4.2 Community Response

Overall, the Project has been well received, and numerous letters have been submitted in support of the Project. The letters of support from the following individuals and groups are presented in **Appendix E**:

- Bob and Helen Bauer, Landowners
- Arland Childers, Landowner

- Chugwater Wind Energy Association, LLC
- Don and Karen Guidice, Landowners
- Representative Dan Kirkbride, Wyoming House District 4
- Southeast Wyoming Economic Development District
- Platte County Economic Development

With all the outreach presented here, WW&P believes the local, and even statewide, communities have had opportunity to discuss the Project. A number of comment forms were distributed at the open house, although none have been returned to WW&P.

Section 5
Socioeconomic Baseline and Impacts

5 Socioeconomic Baseline and Impacts

5.1 Introduction

Section 5 is organized into six major subsections that address the following topics:

- Regulatory jurisdiction, which describes the statutory background germane to treatment of socioeconomic resources
- Methodology, which addresses the following topics:
  - Recommended area of site influence, study area, and local governments primarily affected by the proposed industrial facility
  - Construction and operations workforce estimates
  - Impact analysis methodology
- Inventory and evaluation of social and economic conditions and impact assessment, which address existing conditions and Wyoming Wind Farm (Project)-induced impacts occurring during both the construction and operations phases. This subsection is further divided on a resource-specific basis as follows:
  - Population
  - Economic and fiscal conditions
  - Housing
  - Public education
  - Public safety
    - Fire protection services
    - Law enforcement services
    - Crime
  - Health care
  - Municipal services
    - Wastewater treatment facilities
    - Water distribution and treatment facilities
    - Non-hazardous waste collection and disposal
    - Electricity service
    - Natural gas service
- Cumulative impacts
- Tradeoff analysis
- Mitigation measures

5.2 Regulatory Jurisdiction

Wyoming Statute §§ 35-12-101 *et. seq*, the Industrial Development Information and Siting Act, provides guidance on the socioeconomic topics of concern that will be addressed during the permit application process. The socioeconomic environment could experience benefits or adverse impacts associated with construction and operation of the proposed facility, and these aspects are addressed in this report and include economic base, housing, transportation, sewer and water

facilities, solid waste facilities, police and fire facilities, educational facilities, and health and hospital facilities.

> *According to the statute, the Wyoming Industrial Siting Council (ISC) will grant a permit, either as proposed or as modified by the Council, if it finds and determines, among other things, that the facility will not pose a threat of serious injury to the environment, the social and economic condition, or inhabitants or expected inhabitants in the affected areas and will not substantially impair the health, safety, or welfare of the inhabitants. For the purposes of the permit application, the definitions of "health," "safety," and "welfare" provided in the statutes are as follows:*
>
> - *Health means the state of being sound in body or mind and includes psychological as well as physical well-being.*
> - *Safety is freedom from fear of injury or threat of injury. Such injury or threat of injury may be premised on crime rates, traffic accident rates, dangers of industrial accidents or mishaps, or other similar considerations.*
> - *Welfare is considerations of public convenience, public well-being, and general prosperity. The term also properly covers those subjects encompassed under health and safety.*

Guidance is provided in the Wyoming statutes and ISC Rules regarding information that should be included in the permit application. The ISC Rules require that the applicant identify what it deems to be the "area of site influence" and identify the local governments primarily affected by the Facility.[1] The immediately adjoining areas and local governments must also be identified with a statement of reasons they were excluded from the list of areas or local governments primarily affected by the proposed industrial facility.[2] Next, the Applicant must perform an evaluation of the social and economic conditions for the area of site influence.[3] The ISC Rules define the "area of site influence" as the "areas which may be affected environmentally, socially, or economically, in any significant degree, by the location of the Facility at the proposed site."[4] However, under the ISC Rules, a separate "area of influence" may be considered for each of the resources identified in Section 9(i) of the ISC Rules. Therefore, an overall area of site influence for the Project is recommended; however, where appropriate for a specific resource, a separate "area of influence" is defined.[5]

5.2.1 Definitions

The following terms, established by statute and defined by either the ISD or RES, are used for the ISA socioeconomic analysis:

[1] ISC Rules, Ch. 1, Sect. 9(g).

[2] ISC Rules, Ch. 1, Sect. 9(g).

[3] ISC Rules, Ch. 1, Sect. 9(i).

[4] ISC Rules, Ch. 1, Sect. 2(c).

[5] ISC Rules, Ch. 1, Sect. 2(c).

- **Study Area** - The study area is the "geographic and political boundary, as designated by the administrator for the required governmental, social, and economic studies required for applications."[6]
- ***Areas of Site Influence*** *- The areas of site influence "means the areas which may be affected environmentally, socially, or economically, in any significant degree, by the location of the industrial facility at the proposed site." A separate "area of influence" may be considered for each resource identified in Section 9(i) of these rules.*[7]
- ***Area or Local Government Primarily Affected*** *- The area or local government primarily affected by the proposed facility means:*
  - Any defined geographical area in which the construction or operation of the industrial facility may significantly affect the environment, population, level of economic well-being, level of social services, or may threaten the health, safety, or welfare of present or expected inhabitants.
  - Any such county, incorporated municipality, school district, or combination thereof under the Wyoming Joint Powers Act within the defined geographical area above.[8]
- ***Area substantially affected*** *– Those local governments in the Area Primarily Affected who did not become parties to the ISC proceeding, but are entitled by statute within 10 days from the date of ISC's decision to receive a copy of the findings and its decision.*[9]

5.3 Methodology and Analysis

The following analysis identifies the area of site influence from within the study area described below for the proposed Project sites (tracts) located in east central Platte County and a small portion of western Goshen County. This screening is informed by looking at the current commuting patterns to and from Platte County, and by the distances and drive times from the site entrances to the communities in the seven-county study area. Population and temporary housing supplies are then examined to further narrow this broader study area to the overall area of site influence for the Project.

5.3.1 Study Area

The study area provides a well-defined geographic boundary within which socioeconomic impacts across all resources areas might occur. However, depending on the specific socioeconomic resource under consideration, actual impacts are expected to occur within a much smaller sub-region of the broader study area. With the exception of significant tax revenues to be received by the county and the State of Wyoming, socioeconomic impacts outside the study area will be dispersed and insignificant. For instance, both the local workforce and temporary housing for nonlocal workers are expected to come from the study area. As a result, any stress on existing community services that may be caused by an influx of temporary workers or on local infrastructure to accommodate constructing and operating the WW&P Project will also occur within the study area.

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[6] ISC Rules, Ch. 1, Sect. 2(af).

[7] ISC Rules, Ch. 1, Sect. 2(c).

[8] ISC Rules, Ch. 1, Sect. 2(b)(i)(ii).

[9] W.S. 35-12-113(f).

The socioeconomic impact analysis methodology involves a description of existing (i.e., baseline) conditions for a geographical area that is expected to be broader than the area ultimately recommended for the area of site influence. This conservatively large area is referred to as the study area. The data gathered on existing conditions for the study area are intended to support a determination of which areas and governments within the broader area to include or omit from the area of site influence. The counties comprising the study area were identified early in the analysis and in consultation with the ISD at the Jurisdictional Meeting held May 14, 2013. They include the county where the proposed Project will be located − Platte County and a small portion of Goshen County − and its neighboring counties of Albany to the west, Converse to the northwest, Laramie to the south, and Niobrara County to the northeast – as well as Natrona County, which includes the housing resources of the City of Casper. It is anticipated that most of the direct and secondary economic impacts associated with the construction and operation of the Project will occur within the study area, and that any remaining economic impacts will be dispersed and not significant.

5.3.2 Commuting Patterns to and from Platte County

Commuting patterns were considered since the large majority of persons working in any county typically reside in the same county. Commuter flows also relate directly to the number of job opportunities at specific destinations and the driving time required getting to those destinations from a place of residence. **Table 5-1** summarizes the distribution of incoming (inflow) and departing (outflow) commuters by Wyoming County, as well as the State of Colorado, for Platte County for the third quarter of 2011. Of the 967 commuters entering Platte County, 39 percent were from an unknown origin, 20 percent traveled from Laramie County, and between 5 and 10 percent were from Albany, Campbell, or Goshen counties. Overall, 44 percent of the inflow to Platte County came from one of the six other counties in the Project study area. Of those Platte County residents leaving the county for work, nearly 60 percent were destined for one of the study area counties, with a third, 33 percent, commuting to Laramie County.

TABLE 5-1
Inter-County Commuter Flows for Platte County (3rd Quarter 2011)

County of Origin or Destination	Share of Inflow to Platte County	Share of Outflow from Platte County
Albany	6.6%	8.9%
Big Horn	0.1%	0.1%
Campbell	10.5%	9.1%
Carbon	1.4%	0.7%
Converse	4.3%	10.6%
Crook	1.0%	0.6%
Fremont	0.9%	1.6%
Goshen	8.7%	7.3%
Hot Springs	0.0%	0.6%
Johnson	0.6%	0.4%
Laramie	20.2%	32.8%
Lincoln	0.0%	0.2%

TABLE 5-1
Inter-County Commuter Flows for Platte County (3rd Quarter 2011)

County of Origin or Destination	Share of Inflow to Platte County	Share of Outflow from Platte County
Natrona	3.1%	11.6%
Niobrara	0.7%	0.3%
Park	0.7%	0.6%
Platte	—	—
Sheridan	0.4%	1.7%
Sublette	0.1%	0.6%
Sweetwater	0.1%	3.2%
Teton	0.1%	1.8%
Uinta	0.2%	0.6%
Washakie	0.6%	0.5%
Weston	0.2%	0.2%
Unknown	39.2%	6.2
Total Commuters	**967**	**1,020**
To / From Other 6 Study Area Counties	**43.6%**	**71.5%**

Source: Wyoming DOE, 2011.

Information published by the U.S. Census Bureau regarding commuting patterns for residents of Platte County and persons who worked in Platte County in 2011 is displayed in **Table 5-2**. Approximately 63 percent of the people who worked in Platte County also resided in the county. There is little evidence of a strong linkage to any other county with the possible exception of the City of Cheyenne in Laramie County and the City of Casper in Natrona County, where about 3 percent of Platte County residents work. Approximately 63 percent of Platte County residents remained in the county for their employment, while 6 percent of Platte County workers resided in Laramie County. These commuting patterns show that few residents of counties outside the recommended area of site influence choose to commute to Platte County.

TABLE 5-2
Work Places of Platte County Residents and Places of Residence of Persons Working in Platte County, 2011

	Places of Work of Persons Residing in Platte County		Places of Residence of Persons Working in Platte County	
	Count	**Share**	**Count**	**Share**
Total Primary Jobs	**3451**	**100%**	**3,408**	**100%**
Platte County	**2,159**	**62.6%**	**2,159**	**63.4%**
Town of Wheatland	1,432	41.5%	1,095	32.1%

TABLE 5-2
Work Places of Platte County Residents and Places of Residence of Persons Working in Platte County, 2011

	Places of Work of Persons Residing in Platte County		Places of Residence of Persons Working in Platte County	
	Count	**Share**	**Count**	**Share**
Town of Guernsey	73	2.1%	99	2.9%
Town of Glendo	35	1.0%	18	0.5%
Town of Chugwater	22	0.6%	80	2.3%
Chugcreek Community	ND	ND	44	1.3%
Whiting Community	13	0.4%	31	0.9%
Y-O Ranch Community	11	0.3%	67	2.0%
Slater Community	7	0.2%	25	0.7%
Albany County	**93**	**2.7%**	**50**	**1.5%**
City of Laramie	60	1.7%	36	1.1%
Converse County	**100**	**2.9%**	**78**	**2.3%**
City of Douglas	59	1.7%	38	1.1%
Laramie County	**121**	**3.5%**	**209**	**6.1%**
City of Cheyenne	91	2.6%	126	3.7%
Fox Farm – College Community	6	0.2%	18	0.5%
Warren AFB	ND	ND	3	0.1%
Ranchettes Community	4	0.1%	17	0.5%
Natrona County	**152**	**4.4%**	**88**	**2.6%**
City of Casper	104	3.0%	65	1.9%
Vista West Community	9	0.3%	ND	ND
Town of Mills	8	0.2%	6	0.2%
Niobrara County	**27**	**0.8%**	**99**	**2.9%**
Goshen County	**153**	**4.4**	**330**	**9.7%**
Town of Fort Laramie	ND	ND	14	0.5%
City of Torrington	137	4.0%	69	2.0%
Town of Lingle	6	0.2%	40	1.2%
Other Wyoming Communities	**234**	**6.8%**	**248**	**7.4**
Other States	**1,120**	**32.3%**	**1,272**	**37.3%**

Notes:
ND = No data
Source: U.S. Census Bureau, 2011.

5.3.3 Area of Site Influence

As noted earlier, an area of site influence contains locations that may be affected environmentally, socially, or economically, in any significant degree, by the proposed location of the industrial facility. A local government primarily affected by the proposed industrial facility is any defined geographical area or unit of local government, or special district in which the construction and operation of the industrial facility may significantly affect the environment, population, level of economic wellbeing, or level of social services, or may threaten the health, safety, or welfare of present or expected inhabitants. Any such local government body or special district is within the area of site influence. Pursuant to statute, WW&P evaluated the potential area of site influence and local governments primarily affected by the proposed Project. Primary criteria that factored into the area of site influence recommendation are:

1. Within a commuting distance of approximately 60 miles or less from the work site;
2. Within a daily one-way commute time of approximately 1 hour or less from the work site;
3. Supply of temporary housing units; and
4. Size of population (i.e., as an indicator for labor supply and urban amenities).

These four criteria were used in identifying communities likely to capture 1 percent or more of allocated workers.

1. Commuting Distance of 60 Miles or Less from the Project

Commuting distance can come into play in defining the area of site influence in two ways. First, members of the local workforce residing in communities within commuting distance may choose to commute to the Project site to take advantage of the employment opportunity offered by the Project. Second, non-local workers may decide to relocate to communities within driving distance of the Project. The Project consists of two separate parcels, Antelope Gap and Chugwater, located east and southeast, respectively, of the Town of Wheatland (see **Figure 5-1**). Primary access to both parcels will be via I-25, with the Antelope Gap parcel being accessed by State Route 316 east (Antelope Gap Road) and the Chugwater Parcel by State Route 313 east (Lone Tree Road). The driving distances were computed from the origins to the approximate site entrances illustrated on **Table 5-3**.

FIGURE 5-1
Project Parcel Locations and Approximate Access Points (green squares)

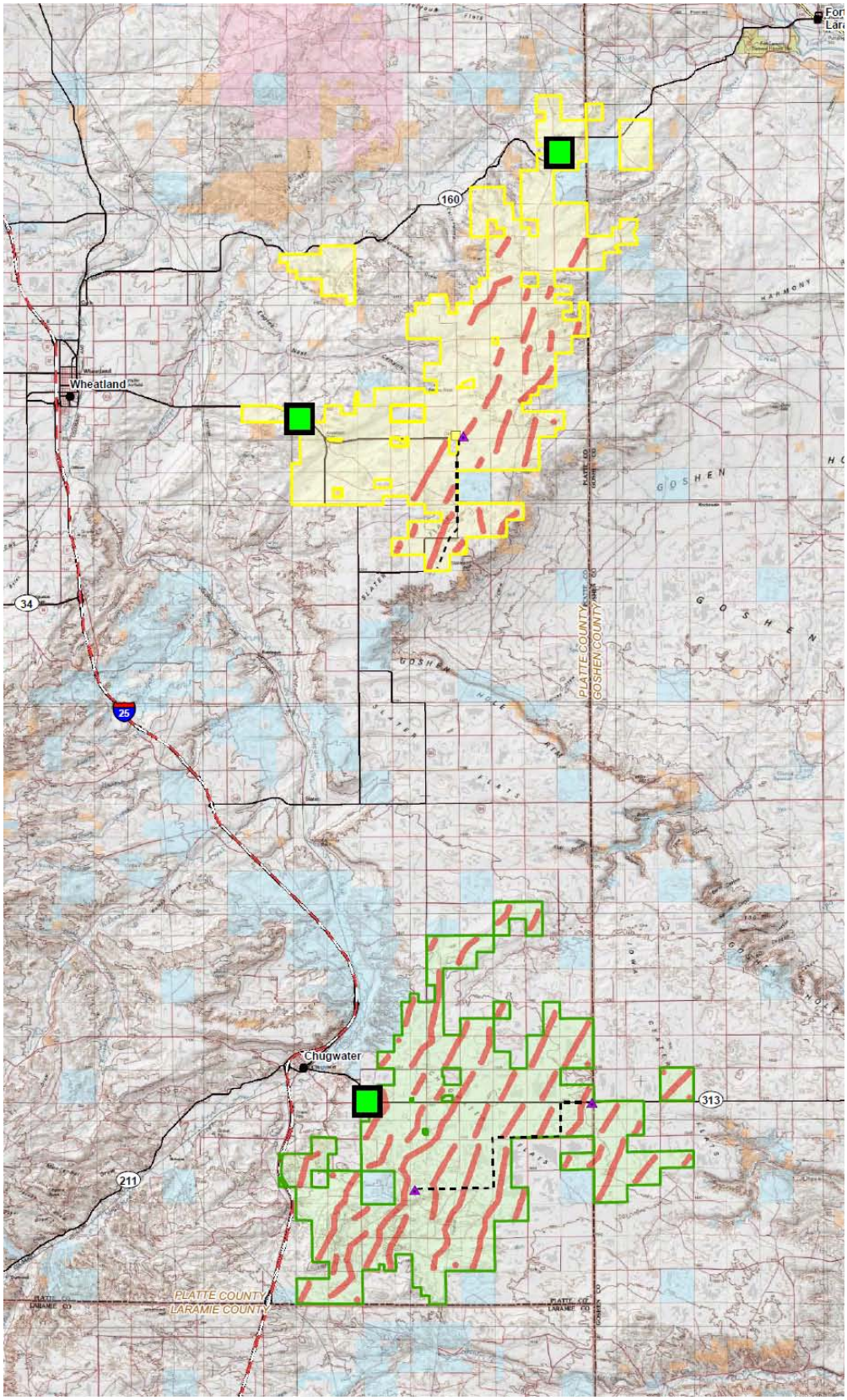


Table 5-3 illustrates the distance in miles (Columns C and E) separating the Project site from a number of communities in counties adjacent to Platte County (Columns A and B). There are no communities in Albany, Natrona, or Niobrara counties that meet the commuting distance criterion; however, the City of Laramie in Albany County has not been completely excluded because the temporary housing resources it offers workers. The following communities meet the commuting distance criterion of 60 miles or less from the Project:

- All the communities in Goshen and Platte counties;
- Cheyenne, Fox-Farm-College, Ranchettes, South Greeley, and Warren Air Force Base (AFB) in Laramie County; and
- Douglas and Orin in Converse County.

2. Daily One-Way Commute of Approximately 1 Hour or Less

It is reasonable to assume that non-local workers will not spend any more of their workday commuting than is necessary, especially when suitable accommodations can be found relatively close to the Project site. Columns D and F show the one-way commuting times for the communities in the study area. The list of communities with a daily one-way commute of approximately 60 minutes or less is identical to the list of communities within a 60-mile driving distance with the addition of the Town of Lost Springs in Converse County and the Town of Fort Laramie in Goshen County.

3. Supply of Temporary Housing Units

The supply of temporary housing units is one of the primary factors that can constrain worker location choices. It is reasonable to assume that any workers who temporarily relocate in order to work on the Project will prefer suitable accommodations that are close to the Project site and urban amenities. This will minimize their daily commute and provide access to shopping, restaurants, leisure activities, and other entertainment.

There are approximately 378 hotel and motel rooms in Platte County (including bed and breakfast accommodations) as well as 169 recreational vehicle (RV) sites. Assuming standard availability based on 6 years of vacancy rates, these two sources combined have the capacity to meet the average need for temporary housing approximately 60 percent of the time. For 21 of the 54 months that workers are onsite, or 40 percent of the time, there will not be adequate temporary housing units in Platte County and workers will instead have to commute 45 minutes to an hour to the Project site from either Cheyenne in Laramie County, Torrington in Goshen County, or Douglas in Converse County. While close to a 90-minute commute, the City of Laramie in Albany County also provides an alternative for peak periods such as in mid- to late July during the popular Frontier Days™, when it is notoriously difficult to book lodging in Cheyenne. Lack of temporary housing eliminates the following communities from likely use by nonlocal workers:

- Buford, Rock River, Tie Siding, and Woods Landing-Jelm in Albany County;
- Lost Springs, Rolling Hills, Orin, and Esterbrook in Converse County;
- La Grange, Yoder, Hawk Springs, Huntley, and Veteran in Goshen County;
- Albin, Burns, Carpenter, Fox Farm-College, Hillsdale, Ranchettes, South Greeley, and Warren AFB in Laramie County;
- Brookhurst and Meadow Acres in Natrona County;

- Manville, Van Tassell, and Lance Creek in Niobrara County; and
- Hartville, Lakeview North, Slater, Westview Circle, Whiting, and Y-O Ranch in Platte County.

4. Size of Population

The size of the resident population of each of the communities (Column G) is also shown. Approximately 8,756 persons live in Platte County overall with the largest populations concentrated in the towns of Wheatland and Guernsey. Cheyenne is the largest population center in the study area with 60,096 people estimated to reside there in 2011 by the U.S. Census Bureau. Additionally, more than 31,312 people reside in Laramie and 55,316 in Casper. This suggests that Laramie and especially Cheyenne have a relatively sizeable permanent workforce to contribute to the Project. Cheyenne, Casper, and Laramie also have urban amenities that could be attractive to the non-local workforce. Cheyenne is likely to have local support services and materials to meet the unspecialized needs of the Project as well as transportation facilities to accept shipments from outside the region. In contrast, Albin in Laramie County and Chugwater in Platte County are both within commuting distance of the Project, but due to their very small population sizes, neither community is likely to supply a sizeable number of workers or be a provider of temporary housing.

5. Recommended Area of Site Influence and Area Primarily Affected

The data presented in **Table 5-3** suggest recommending the area of primary influence to include select communities in Albany, Converse, Goshen, Laramie, and Platte counties. All of these Wyoming communities are either within commuting distance, have a sufficient population size to contribute at least 1 percent toward the supply of the construction workforce, and/or supply temporary housing to accommodate at least 1 percent of the construction workforce. Commuter behavior takes place under time and distance constraints, and applying the criteria previously outlined would exclude many of the listed communities.

Factoring in all four criteria, it is estimated that the temporary residence choices made by the Project's non-local workforce will be as follows:

- Platte County and its communities, specifically the towns of Chugwater, Glendo, Guernsey, and Wheatland;
- City of Laramie in Albany County;
- City of Douglas in Converse County;
- City of Cheyenne in Laramie County; and
- The towns of Fort Laramie, Lingle, and Torrington in Goshen County.

The area of site influence, as recommended by the applicant, is illustrated in **Figure 5-2**.

Given the availability of housing alternatives, permanent workforce, and urban amenities relatively close to the Project site, all the counties and the communities beyond an hour's drive, with the exception of the City of Laramie in Albany County during peak periods, have been eliminated from the list of likely residence communities. The more distant and smaller communities have also been eliminated from the list of likely residence communities.

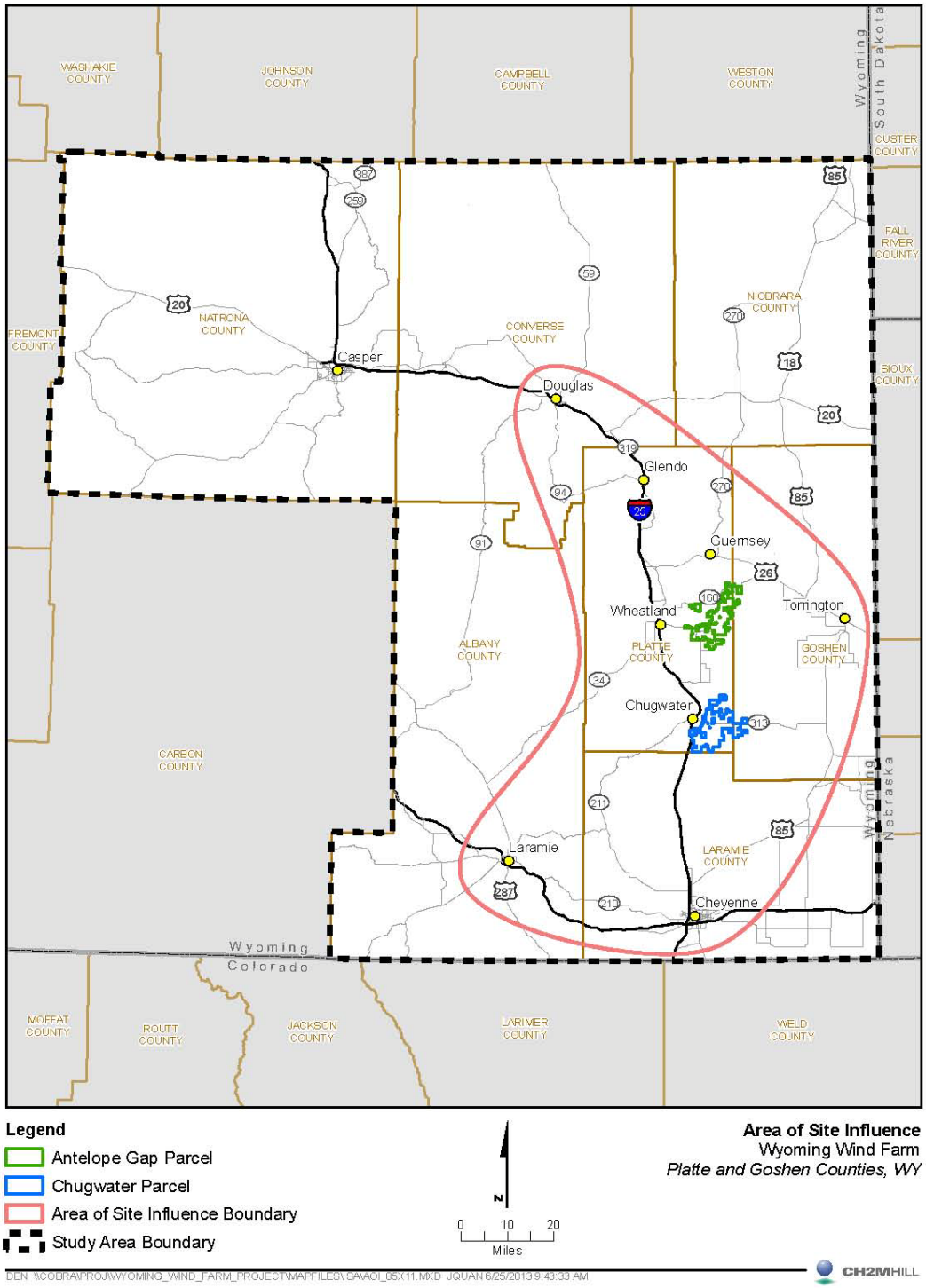


FIGURE 5-2
Area of Site Influence

TABLE 5-3
Communities Identified as within Recommended Area of Site Influence and Relevant Housing Statistics

County	Community	Distance (miles) from Chugwater	Distance (minutes) from Chugwater	Distance (miles) from Wheatland	Distance (minutes) from Wheatland	Population (2010 Census or 2011 Estimates)	Number of Rooms	Number of RV Sites	% of Non-Local Workers
A	B	C	D	E	F	G	H	I	
Albany County						36,889			
Albany	Albany CDP	128	125	111	124	55	35	0	
Albany	Buford (Community)	71	65	96	86	1	4	0	
Albany	Centennial CDP	123	116	106	115	270	94	19	
Albany	Laramie, City of	93	87	77	84	31,312	1,597	178	5%
Albany	Rock River, Town of	91	91	80	83	249	7	0	
Albany	Tie Siding (Community)	109	101	94	101	0	12	0	
Albany	Woods Landing - Jelm CDP	118	110	102	110	97	11	10	
Converse County						14,008			
Converse	Douglas, City of	84	73	60	55	6,084	509	142	5%
Converse	Glenrock, Town of	110	93	86	75	2,562	40	50	
Converse	Lost Springs, Town of	88	76	64	58	4	0	0	
Converse	Rolling Hills, Town of	115	102	91	83	434	0	0	
Converse	Orin CDP	72	62	48	44	46	0	0	
Converse	Esterbrook CDP	113	131	89	113	52	0	0	
Goshen County						13,636			
Goshen	Fort Laramie, Town of	65	60	39	40	233	16	22	
Goshen	La Grange, Town of	41	60	68	88	452	3	0	
Goshen	Lingle, Town of	75	70	49	51	474	0	65	
Goshen	Torrington, Town of	54	72	59	63	6,690	254	60	4%
Goshen	Yoder, Town of	44	62	72	78	153	0	0	
Goshen	Hawk Springs CDP	33	52	60	80	45	0	0	
Goshen	Huntley CDP	50	70	69	78	16	0	0	

TABLE 5-3
Communities Identified as within Recommended Area of Site Influence and Relevant Housing Statistics

County	Community	Distance (miles) from Chugwater	Distance (minutes) from Chugwater	Distance (miles) from Wheatland	Distance (minutes) from Wheatland	Population (2010 Census or 2011 Estimates)	Number of Rooms	Number of RV Sites	% of Non-Local Workers
A	B	C	D	E	F	G	H	I	
Goshen	Veteran CDP	52	71	63	80	23	0	0	
Laramie County						94,483			
Laramie	Albin, Town of	82	81	107	103	183	0	0	
Laramie	Burns, Town of	77	73	102	95	304	0	0	
Laramie	Cheyenne, City of	45	45	70	66	60,096	2,674	780	35%
Laramie	Pine Bluffs, Town of	90	82	114	103	1,140	19	100	
Laramie	Carpenter CDP	82	74	107	96	94	0	0	
Laramie	Fox Farm-College CDP	51	49	76	71	3,647	0	0	
Laramie	Hillsdale CDP	71	73	96	95	47	0	0	
Laramie	Ranchettes CDP	42	42	67	63	5,798	0	0	
Laramie	South Greeley CDP	50	49	75	71	4,217	0	0	
Laramie	Warren AFB	45	43	70	64	3,072	0	0	
Natrona County						2,456			
Natrona	Brookhurst CDP	129	114	107	97	185	0	0	
Natrona	Casper, City of	133	94	110	97	55,316	2,958	781	
Natrona	Evansville, Town of	131	114	108	97	2,544	419	31	
Natrona	Meadow Acres CDP	123	112	101	95	198	0	0	
Niobrara County						2,456			
Niobrara	Lusk, Town of	103	98	76	79	1,571	144	63	
Niobrara	Manville, Town of	93	89	67	69	95	0	0	
Niobrara	Van Tassell, Town of	123	118	96	98	15	0	0	
Niobrara	Lance Creek CDP	111	109	85	90	43	0	0	

TABLE 5-3
Communities Identified as within Recommended Area of Site Influence and Relevant Housing Statistics

County	Community	Distance (miles) from Chugwater	Distance (minutes) from Chugwater	Distance (miles) from Wheatland	Distance (minutes) from Wheatland	Population (2010 Census or 2011 Estimates)	Number of Rooms	Number of RV Sites	% of Non-Local Workers
A	B	C	D	E	F	G	H	I	
Platte County						8,756			
Platte	Chugwater, Town of			26	29	216	24	0	1%
Platte	Glendo, Town of	57	49	33	31	207	13	76	2%
Platte	Guernsey, Town of	52	47	26	28	1,165	47	16	2%
Platte	Hartville, Town of	58	55	32	36	63	0	0	
Platte	Wheatland, Town of	25	27			3,680	270	75	46%
Platte	Chugcreek CDP			26	29	216	24	2	
Platte	Lakeview North CDP	29	32	4	8	84	0	0	
Platte	Slater CDP	13	15	18	23	80	0	0	
Platte	Westview Circle CDP	30	37	6	18	52	0	0	
Platte	Whiting CDP	26	25	4	8	0	0	0	
Platte	Y-O Ranch CDP	26	29	2	6	195			
Platte County Total						**8,756**	**378**	**169**	
Study Area Total						**172,684**	**9,174**	**2,470**	

Notes:

NA – Not available
60 miles or less one-way commute distance; 1 hour or less one-way commute time.
Distances measured to the corresponding purple boxes illustrated in **Figure 5-1**.
Source: CH2M HILL, 2012.

The majority of construction and operations workers are expected to reside within this recommended area of site influence and its communities; therefore, WW&P has concentrated its efforts at securing housing commitments for non-local workers in this area.

5.3.3.1 Local Governments Primarily Affected by the Project

A local government primarily affected by the proposed industrial facility includes any defined geographical area, unit of local government, or special district in which construction and operation of the industrial facility may significantly affect the environment, population, level of economic well being, or level of social services, or may threaten the health, safety, or welfare of present or expected inhabitants. All such local government bodies or special district lie within the area of site influence. It is generally accepted that the principal concern is the drain that temporary workers can place on local public services and quality of life.

Local Governments Primarily Affected by the Proposed Industrial Facility. Based on the recommended delineation of the area of site influence presented previously, the applicant recommends that local governments primarily affected by a temporary workforce associated with the proposed industrial facility will include the following:

- Albany County and the City of Laramie;
- Converse County and the City of Douglas;
- Goshen County and the Town of Torrington;
- Laramie County and the City of Cheyenne; and
- Platte County and the towns of Wheatland, Guernsey, Glendo, and Chugwater.

Local Governments Primarily Unaffected by the Proposed Industrial Facility. From **Table 5-3**, it is recommended that Natrona and Niobrara counties (and the communities contained within them) be excluded from the area of site influence due to their relatively lengthy commuting times. None of the communities in either county is within a 60-mile or 60-minute drive of the Project, and the City of Casper in Natrona County is more than a 90-minute drive from either Project parcel. Appropriate accommodations and urban amenities are readily available in both Wheatland and Cheyenne.

5.3.4 Construction and Operations Workforce Estimates

It is required that the applicant, its contractors, and its subcontractors provide estimates of the number of employees needed to complete construction and operation of the facility. These estimates must include job classifications by calendar quarter; seasonal fluctuations and peak employment during both construction and operation; annual payroll; and expected benefits, if any, including housing allowance, transportation allowances, and per diem allowances.

5.3.4.1 Construction Workforce Estimate

Potential impacts to socioeconomic resources are directly and indirectly attributable to 1) the influx of non-local workers, and 2) expenditures made in the local economy for equipment, materials, and services required for constructing and operating the Project.

The estimated number of onsite construction workers is illustrated in **Figure 5-3**, and more complete data showing the number of workers by month and craft are shown in **Table 5-4**. WW&P anticipates the onsite construction workforce (both local and non-local) will ramp up slowly beginning in the fourth quarter of 2013, with the first year devoted to site preparation and road construction. Project construction will shut down each year for the duration of the winter due to the area's unfavorable weather conditions. Beginning in the second quarter of 2015, construction will ramp up from an average workforce of 61 to a total of 162 employees in the third quarter, before falling slightly to

129 workers by the fourth quarter. The average quarterly construction workforce will peak at 363 onsite employees in third quarter 2016, and will level off and remain steady for the final 3 years of construction. During that period, peak employment will also occur during the third quarter of each year, with 197 workers in 2017 and 2018, while falling slightly to 183 employees in 2019.

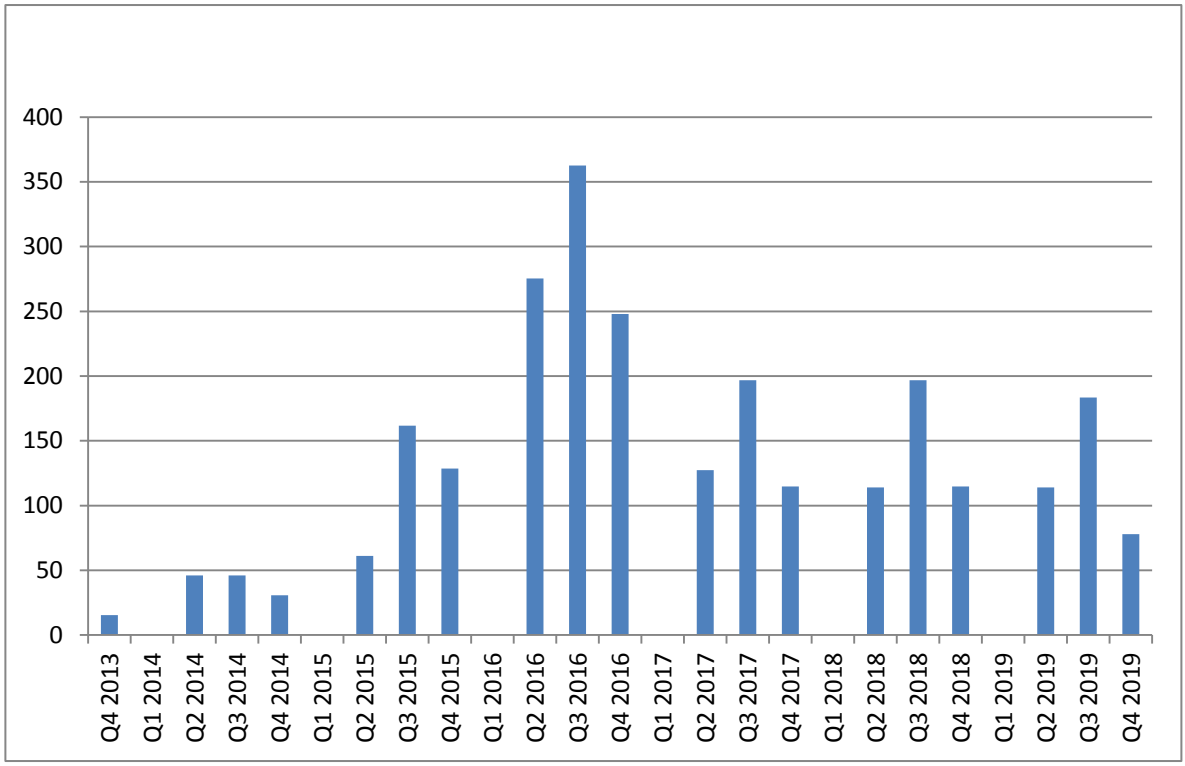


FIGURE 5-3
Estimated Number of Construction Workers by Quarter

Additional details on the composition of the construction workforce are shown in **Table 5-4**. Except during the winter shutdown periods, the construction workforce remains level at 46 employees from November 2013 until April 2015, when employment rises from 52 to 205 workers by November. Monthly employment is higher in 2016, beginning with 212 workers in April and rising to 409 employees in September, before falling to 52 workers by December. The patterns of employment in 2017 and 2018 are similar but lower than in 2016, with the peak of 223 workers occurring in August rather than October. By 2019, August employment continues to peak at 223 workers, but overall, employment falls during 2017 and 2018, as the Project construction comes to completion.

Table 5-4 also shows the workforce breakdown by occupation. Construction laborers comprise the largest share of the workforce followed by operators, electricians, and supervisors. Truck drivers, ironworkers, and carpenters all contribute substantially to the effort, whereas millwrights are in lesser demand. Finally, construction management occupations round out the workforce composition.

TABLE 5-4
Wyoming Wind and Power Construction Workforce

	Occupation/Occupational Code											
	Laborers/ 47-2060	Operators/ 47-2070	Carpenters/ 47-2031	Ironworkers/ 47-217	Truck Drivers/ 53-3032	Millwrights/ 49-9044	Electricians/ 47-2111	Supervisors/ 47-1011	Construction Management/ 11-9020	Total Workforce	Non-Local Workforce	Local Workforce
2013												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0	0	0
November	8	18	0	0	8	0	0	6	6	46	39	7
December	0	0	0	0	0	0	0	0	0	0	0	0
2014												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	8	18	0	0	8	0	0	6	6	46	39	7
May	8	18	0	0	8	0	0	6	6	46	39	7
June	8	18	0	0	8	0	0	6	6	46	39	7
July	8	18	0	0	8	0	0	6	6	46	39	7
August	8	18	0	0	8	0	0	6	6	46	39	7
September	8	18	0	0	8	0	0	6	6	46	39	7
October	8	18	0	0	8	0	0	6	6	46	39	7
November	8	18	0	0	8	0	0	6	6	46	39	7
December	0	0	0	0	0	0	0	0	0	0	0	0
2015												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	8	18	0	0	8	0	0	6	12	52	44	8
May	8	18	0	0	8	0	0	6	12	52	44	8
June	14	25	0	0	11	0	0	8	21	79	67	12
July	29	33	12	0	16	1	6	17	21	135	115	20
August	39	41	12	0	22	1	16	23	21	175	149	26
September	39	41	12	0	22	1	16	23	21	175	149	26
October	39	41	12	0	22	1	16	23	21	175	149	26
November	47	44	15	0	22	1	28	27	21	205	174	31
December	0	0	0	0	0	0	0	0	6	6	5	1
2016												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	53	30	18	0	15	1	40	26	30	212	180	32
May	80	41	18	22	15	1	48	38	30	292	248	44

June	96	41	18	22	15	1	57	42	30	322	274	48
July	100	43	24	22	15	1	62	45	30	342	291	51
August	100	43	24	22	15	1	62	45	25	337	286	51
September	114	65	30	22	24	1	67	55	31	409	348	61
October	102	66	18	22	22	0	61	50	31	371	315	56
November	94	56	12	22	16	0	49	42	31	321	273	48
December	22	0	0	0	0	0	12	6	12	52	44	8
2017												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	24	30	3	0	12	0	12	14	6	100	85	15
May	26	38	3	0	15	0	12	16	15	124	105	19
June	37	37	15	0	15	1	18	21	15	158	134	24
July	39	27	15	0	13	1	28	21	15	158	134	24
August	63	31	15	22	10	1	36	31	15	223	190	33
September	56	41	3	22	14	0	30	29	15	209	178	31
October	56	41	3	22	14	0	30	29	15	209	178	31
November	35	30	3	0	12	0	18	17	15	129	110	19
December	11	0	0	0	0	0	6	3	6	26	22	4
2018												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	24	30	3	0	12	0	12	14	6	100	85	15
May	20	22	3	0	8	0	12	13	15	93	79	14
June	35	30	15	0	12	1	18	21	15	147	125	22
July	37	20	15	0	10	1	28	21	15	147	125	22
August	63	31	15	22	10	1	36	31	15	223	190	33
September	56	41	3	22	14	0	30	29	15	209	178	31
October	56	41	3	22	14	0	30	29	15	209	178	31
November	31	21	3	0	8	0	18	14	15	109	93	16
December	11	0	0	0	0	0	6	3	6	26	22	4
2019												
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	20	21	3	0	8	0	12	11	6	80	68	12
May	22	29	3	0	11	0	12	13	15	104	88	16
June	37	37	15	0	15	1	18	21	15	158	134	24
July	39	27	15	0	13	1	28	21	15	158	134	24
August	63	31	15	22	10	1	36	31	15	223	190	33
September	48	23	3	22	6	0	30	23	15	169	144	25
October	48	23	3	22	6	0	30	23	15	169	144	25
November	19	9	0	0	4	0	6	6	15	59	50	9
December	15	9	0	0	4	0	6	6	6	46	39	7

Source: Renewable Energy Systems, 2013.

WW&P estimates that the Project will be constructed over a 74-month period with 54 months of active onsite construction. Over the active period, construction will peak at 409 workers only a single time (September 2016), will exceed 300 workers for 6 months (June-November 2016), and will average 146 workers. These summary statistics are presented below in **Table 5-5**.

TABLE 5-5
Summary WW&P Construction Workforce Statistics

Peak Workforce	409
Average Workforce	146
Construction (Active Months)	54
Construction Duration (Months)	74

Source: WW&P, 2013.

Single Worker. Based on the type of labor required to complete construction, the limited duration of peak construction, and the annual winter shutdown period, the majority of the workforce is expected to be single or will likely be unaccompanied by their spouses and children during the period of construction. WW&P has sought to ensure the availability of accommodations, including hotel and motel rooms as well as RV sites and other forms of temporary lodging.

Local to Non-Local Workforce Ratio. WW&P conservatively estimates that approximately 15 percent of the construction workforce will be comprised of local workers, with non-local workers making up the remaining 85 percent. This estimated distribution of non-local workers is shown in **Table 5-4** and follows the same pattern as the overall construction workforce. The local construction workforce payroll is approximately $40 million, including pre-construction site preparation activities.

5.3.4.2 Operations Workforce Estimate

The total annual workforce associated with the Project during the operations phase would be 31 workers. As shown in **Table 5-6**, the operations workforce would be composed of a plant site manager, health and safety coordinator, inventory coordinator, site planner, and 27 technicians, with an estimated total annual payroll of about $2.159 million. These workers would likely originate as non-local personnel and permanently relocate to the local area.

TABLE 5-6
WW&P Operations Workforce and Payroll

	Base Salary	Salary and Fringe per Employee	Total
Plant Site Manager (1)/ 11-3051	$108,500	$135,625.00	$135,625
Health and Safety Coordinator (1)/ 17-211	$67,500	$84,375.00	$84,375
Inventory Coordinator (1)/ 51-8012 $83,700	$83,700	$104,625.00	$104,625
Site Planner (1)/ 51-8013	$63,500	$79,375.00	$79,375
	Hourly	**Hourly Wage and Fringe**	
O&M Wind Turbine Technicians (27)/ 49-9081	$25.00	$31.25	$1,755,000
Total Operations Payroll			$2,159,000

Sources: Renewable Energy Systems, 2013, and Occupational and Employment Wages, September 2012. Wyoming Statewide downloaded on June 3, 2013, from http://doe.state.wy.us/LMI/EDS2012SeptECI/TOC030.htm.

5.3.5 Impact Analysis Methodology

Potential impacts associated with the proposed facility are driven by a number of factors, including direct construction and operations workers currently residing in the area; direct workers newly entering the region for a limited time; additional service workers required to support these direct workers; and the local purchase of equipment, supplies, materials, and services necessary for construction and operation of the facility.

Where appropriate, level of service (LOS) ratios are calculated for resources, and comparisons are made with statewide, national, and local ratios to provide a perspective for impact assessment. LOS ratios express the quantity of a service (e.g., the number of firefighters or law enforcement officers in a service area) in relation to the population in the respective service area (e.g., per 10,000 residents). These ratios provide a means of comparing service levels across service areas and over time or against target or standard levels. LOS ratios are used to estimate the number of additional service personnel required to meet the demands of new residents while maintaining existing service levels. If it appears that the resources are unlikely to be able to accommodate the new demands of the Project, then mitigation measures are proposed.

5.3.5.1 Regional Economic Analysis

The economic impacts occurring in a local economy associated with the introduction of new business activity are based primarily on employee compensation, purchases made by the new business, and taxes paid to local governments. Thus, the positive economic impact on local businesses is expected to be consistent with the degree to which local businesses are able to supply the needs of new businesses and their employees. Conversely, if local businesses cannot meet the needs of new businesses or their employees, or cannot do so in a cost-competitive manner, then purchases may occur outside of the local economy. Purchases made outside of the local area represent leakages of money out of the local economy. Profits of the new business also leak out of the local economy if the owners or stockholders reside outside the local area. To measure local economic impacts, this report focuses on projected wages and salaries, business purchases, and taxes collected by local municipal and county governments.

To estimate the total economic impacts of a project or new business activity, the analysis takes into account the concept that employee wages and business purchases have a “ripple effect” in an economy. The new business will purchase some of its required materials, supplies, and services in the local economy, and local businesses will hire some new employees and purchase materials and services from other businesses to meet demand, creating what are known as indirect effects. Likewise, employees at the new business or project will spend a portion of their wages at local stores and businesses, creating “induced effects.” In this way, the economic impact of the new business or project spreads in the local economy. The portions of employee wages and business purchases that are made outside of the local economy result in leakages out of the local economy. Collectively, indirect and induced effects are referred to as “secondary impacts.” In their entirety, all of the previously discussed changes (direct and secondary) are referred to as “total economic impacts.” By their nature, total impacts are greater than initial changes because of secondary effects. The magnitude of the increase is what is popularly termed a “multiplier effect.” To estimate the total economic impacts due to this ripple effect, economic multipliers are used in conjunction with the direct employment, wages, business purchases, and taxes paid. The direct impacts are multiplied by the economic multiplier to yield an estimate of the overall economic impact of the new business or project. Multipliers are generated by economic input-output (I-O) models that account for linkages between sectors in an economy.

An I-O analysis estimates the dollar value of change in regional economic activity associated with economic linkages and leakages. The economic system, consisting of producers and consumers, is divided into various sectors that are defined in terms of the resources they require as inputs and what they produce as outputs. The quantities of inputs and outputs for a given period, usually expressed in monetary terms, are entered into an I-O matrix to enable the analysis of impacts within and across various sectors of an economy where growth and decline take place, as well as what effects various policies may have.

A number of regional economic analysis modeling systems (consisting of data and analytical software) are available for use in regional economic analysis. An I-O approach is used here for estimating the secondary effects of the Project. A number of I-O models exist, including Impact Analysis for Planning (IMPLAN); Regional Economic Models, Inc. (REMI); and Regional Industrial Multiplier System II (RIMS). These modeling systems all contain computer databases used to create I-O models for any combination of U.S. counties. For this Project, IMPLAN was used to estimate the indirect and induced impacts associated with implementation of the Project.

5.3.5.2 Impact Analysis for Planning Model

IMPLAN was originally developed by the U.S. Forest Service (USFS) in cooperation with the Federal Emergency Management Agency (FEMA) and the Bureau of Land Management (BLM) to assist in land and resource management planning. The IMPLAN package includes 1) estimates of final demands and final payments for counties developed from government data; 2) a national average matrix of technical coefficients; 3) mathematical tools that help the user build the I O model; and 4) tools that allow the user to change data, conduct impact analysis, and generate reports.

5.4 Inventory, Evaluation, and Impact Assessment by Social and Economic Resource Areas

Social and economic conditions in the geographical area likely to experience impacts associated with construction and operation of the industrial facility are inventoried and evaluated as they currently exist, projected as they would exist in the future without the proposed facility, and as they would exist with the facility. Following this evaluation, an assessment is presented of the potential Project-induced impacts during both construction and operation phases.

The resources addressed are as follow:

- **Population –** historical trends, density and distribution, age, race and ethnicity, poverty status, migration, and projections;
- **Economic and Fiscal Conditions –** employment and unemployment, employment by industrial sector, earnings and income, commuting and housing-jobs balance, construction industry, government revenues and finances (property values, sales taxes, use taxes, lodging taxes, impact assistance funds), finances (revenues and expenditures), and future conditions by sector;
- **Housing –** permanent housing (housing stock characteristics, construction activity, home values and rental housing costs, rental housing vacancies, housing needs) and temporary housing (hotel, motels, and RV spaces);
- **Public Education –** educational facilities, student enrollment, and student-teacher ratios;
- **Public Safety –** fire protection services, law enforcement services, and crime;

- **Health Care –** location and characteristics of personnel and facilities, and health needs of existing population; and
- **Municipal Services –** wastewater treatment, water treatment and distribution, non-hazardous waste collection and disposal, electricity service, and natural gas service.

5.4.1 Population

Based on the recommended area of primary influence, Albany, Converse, Goshen, Laramie, and Platte counties make up the five-county area to be analyzed in this subsection. This subsection describes past, present, and future characteristics of the population in the five-county area. These characteristics include historical trends for the total five-county area, counties, and incorporated places; age composition of the county populations; racial and ethnic composition; and migration patterns.

Population characteristics that are important in determining the location and availability of the local labor force include the location of population centers and the age distribution of the population (i.e., the identification of areas where persons of working age reside).

5.4.1.1 Existing Conditions

Historical Population Trends. Historical population data for the five-county area are summarized in **Table 5-7,** while **Table 5-8** presents the decade-to-decade population change. In contrast to the population of the individual counties and cities, which reflects the boom-and-bust cycle common in Wyoming in the 20th century, the overall population of the five-county area has seen an increase almost every decade since 1940 with the exception of the 1960s and 1980s (Wyoming Economic Analysis Division [WY EAD], 2012a; WY EAD, 2012b; WY EAD, 2012c).

TABLE 5-7
Population Trends in the Five-County Area

Area	1940	1950	1960	1970	1980	1990	2000	2010	2011 Estimate
Albany County	**13,946**	**19,055**	**21,290**	**26,431**	**29,062**	**30,797**	**32,014**	**36,299**	**36,848**
Laramie, City of	10,627	15,581	17,520	23,143	24,410	26,687	27,204	30,816	31,312
Rock River, Town of	349	424	497	344	415	190	235	245	249
Converse County	**6,631**	**5,933**	**6,366**	**5,938**	**14,069**	**11,128**	**12,052**	**13,833**	**13,738**
Douglas, City of	2,205	2,544	2,822	2,677	6,030	5,076	5,288	6,120	6,084
Glenrock, Town of	1,014	1,110	1,584	1,515	2,736	2,153	2,231	2,576	2,562
Lost Springs, Town of	38	9	5	7	9	4	1	4	4
Rolling Hills, Town of	NA	NA	NA	NA	NA	330	449	440	434
Goshen County	**12,207**	**12,634**	**11,941**	**10,885**	**12,040**	**12,373**	**12,538**	**13,249**	**13,597**
Fort Laramie, Town of	311	300	233	197	356	243	243	230	233
La Grange, Town of	211	221	176	189	232	224	332	448	452
Lingle, Town of	428	403	437	446	475	473	510	468	470

TABLE 5-7
Population Trends in the Five-County Area

Area	1940	1950	1960	1970	1980	1990	2000	2010	2011 Estimate
Torrington, Town of	2,344	3,247	4,188	4,237	5,441	5,651	5,776	6,501	6,690
Yoder, Town of	201	128	83	101	110	136	169	151	153
Laramie County	**33,651**	**47,662**	**60,149**	**56,360**	**68,649**	**73,142**	**81,607**	**91,738**	**92,487**
Albin, Town of	160	208	172	118	128	120	120	181	183
Burns, Town of	253	216	225	185	268	254	285	301	304
Cheyenne, City of	22,474	31,935	43,505	41,254	47,283	50,008	53,011	59,466	60,096
Pine Bluffs, Town of	771	846	1,121	937	1,077	1,054	1,153	1,129	1,140
Platte County	**8,013**	**7,925**	**7,195**	**6,486**	**11,975**	**8,145**	**8,807**	**8,667**	**8,716**
Chugwater, Town of	245	283	287	187	282	192	244	212	216
Glendo, Town of	162	215	292	210	367	195	229	205	207
Guernsey, Town of	603	721	800	793	1,512	1,155	1,147	1,147	1,165
Hartville, Town of	179	229	177	246	149	78	76	62	63
Wheatland, Town of	2,110	2,286	2,350	2,498	5,816	3,271	3,548	3,627	3,680
Five-County Area	**74,448**	**93,209**	**106,941**	**106,100**	**135,795**	**135,585**	**147,018**	**163,786**	**165,386**
Wyoming	**250,742**	**290,529**	**330,066**	**332,416**	**469,557**	**453,588**	**493,782**	**563,626**	**568,158**

Note: NA – Not available

Source: Wyoming Economic Analysis Division (WY EAD), 2012a.

TABLE 5-8
Decade-to-Decade Percent Population Change in the Five-County Area

Area	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010
Albany County	**37%**	**12%**	**24%**	**10%**	**6%**	**4%**	**13%**
Laramie, City of	47%	12%	32%	5%	9%	2%	13%
Rock River, Town of	21%	17%	-31%	21%	-54%	24%	4%
Converse County	**-11%**	**7%**	**-7%**	**137%**	**-21%**	**8%**	**15%**
Douglas, City of	15%	11%	-5%	125%	-16%	4%	16%
Glenrock, Town of	9%	43%	-4%	81%	-21%	4%	15%
Lost Springs, Town of	-76%	-44%	40%	29%	-56%	-75%	75%
Rolling Hills, Town of	NA	NA	NA	NA	NA	36%	-2%
Goshen County	**3%**	-5%	-9%	11%	3%	1%	6%

TABLE 5-8
Decade-to-Decade Percent Population Change in the Five-County Area

Area	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010
Fort Laramie, Town of	-4%	-22%	-15%	81%	-32%	0%	-5%
La Grange, Town of	5%	-20%	7%	23%	-3%	48%	35%
Lingle, Town of	-6%	8%	2%	7%	0%	8%	-8%
Torrington, Town of	39%	29%	1%	28%	4%	2%	13%
Yoder, Town of	-36%	-35%	22%	9%	24%	24%	-11%
Laramie County	**42%**	**26%**	**-6%**	**22%**	**7%**	**12%**	**12%**
Albin, Town of	30%	-17%	-31%	8%	-6%	0%	51%
Burns, Town of	-15%	4%	-18%	45%	-5%	12%	6%
Cheyenne, City of	42%	36%	-5%	15%	6%	6%	12%
Pine Bluffs, Town of	10%	33%	-16%	15%	-2%	9%	-2%
Platte County	-1%	-9%	-10%	85%	-32%	8%	-2%
Chugwater, Town of	16%	1%	-35%	51%	-32%	27%	-13%
Glendo, Town of	33%	36%	-28%	75%	-47%	17%	-10%
Guernsey, Town of	20%	11%	-1%	91%	-24%	-1%	0%
Hartville, Town of	28%	-23%	39%	-39%	-48%	-3%	-18%
Wheatland, Town of	8%	3%	6%	133%	-44%	8%	2%
Five-County Area	**25%**	**15%**	**-1%**	**28%**	**0%**	**8%**	**11%**
Wyoming	**16%**	14%	1%	41%	-3%	9%	14%

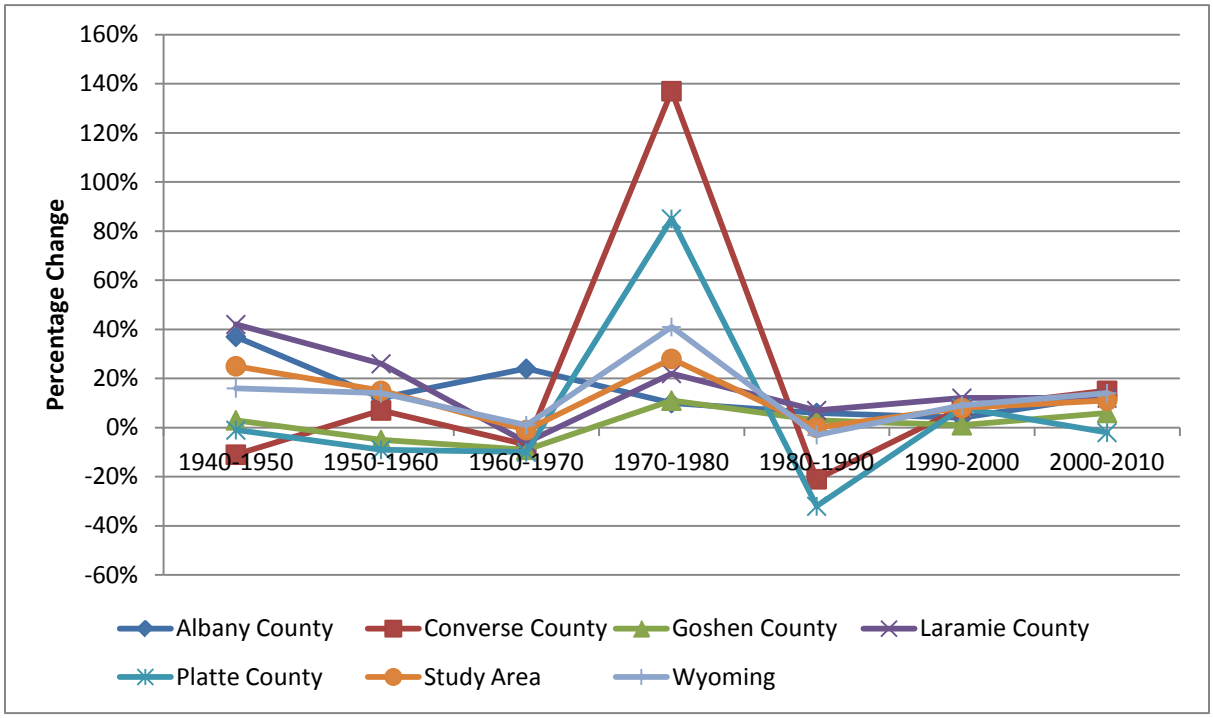
Note: NA – Not available

Source: Wyoming Economic Analysis Division (WY EAD), 2012c.

Figure 5-4, below, and **Table 5-7** illustrate the population trends of the total five-county area, the counties within that area, and in the state as a whole between 1940 and 2010. They show the overall "boom-bust" cycle experienced historically in the state, and demonstrate that Platte County, as the least populous county in the five-county area, can be particularly impacted by swings in population. Similarly, all the counties within the area, with the exception of Platte County, have grown at a relatively steady pace over the past 20 years.

Population Density and Distribution. Table 5-9 summarizes the land area, the 2010 population and population density for the five-county area, and each entity's percentage of the overall study area population. Of the 163,786 persons in the five-county area in 2010, the majority, 78 percent, were located in either Laramie County (56 percent) or Albany County (22.2 percent). Further, more than half of the population, approximately 55 percent, resides in either the City of Cheyenne in Laramie County or the City the Laramie in Albany County. The population of the five-county area represented 29 percent of Wyoming's total population in 2010.

FIGURE 5-4
Historical Population Change in the Five-County Area (1940 to 2010)



Source: Wyoming Economic Analysis Division (WY EAD), 2012c.

The majority of the population of each county, as well as the five-county area overall, resides in incorporated communities. While the land area of these communities represents less than 1 percent of the total five-county area, 70 percent of the area population resides in an incorporated town or city. As presented in **Table 5-9**, the two largest population centers in 2010 were the City of Cheyenne in Laramie County and the City of Laramie in Albany County, accounting for about 36 percent and 18.8 percent of the total five-county area population, respectively. The population density of the cities of Cheyenne and Laramie were also the highest with 2,425 and 1,737 persons per square mile, respectively. In contrast, the population density of Wyoming is six persons per square mile, while in the five-county area overall, the population density is 11 persons per square mile.

TABLE 5-9
Population Density and Distribution in the Five-County Area

Area	Area (square mile)	2010 Population	Population Density	% of Study Area Population
Albany County	**4,273.8**	**36,299**	**9**	**22.2%**
Laramie, City of	17.7	30,816	1,737	18.8%
Rock River, Town of	2.3	245	105	0.1%
Converse County	**4,255**	**13,833**	**3.3**	**8.4%**
Douglas, City of	4.6	6,120	1,330	3.7%
Glenrock, Town of	2.3	2,576	1,120	1.6%
Lost Springs, Town of	0.09	4	44.5	0%
Rolling Hills, Town of	0.66	440	667	0.3%

TABLE 5-9
Population Density and Distribution in the Five-County Area

Area	Area (square mile)	2010 Population	Population Density	% of Study Area Population
Goshen County	**2,225.4**	**13,249**	**6**	**8%**
Fort Laramie, Town of	0.3	230	852	0.1%
La Grange, Town of	0.4	448	1,093	0.3%
Lingle, Town of	0.3	468	1,510	0.3%
Torrington, Town of	4.6	6,501	1,407	4%
Yoder, Town of	0.2	151	719	0%
Laramie County	**2,685.9**	**91,738**	**34**	**56%**
Albin, Town of	0.2	181	1,207	0.1%
Burns, Town of	3.1	301	99	0.2%
Cheyenne, City of	24.5	59,466	2,425	36%
Pine Bluffs, Town of	3.2	1,129	351	0.7%
Platte County	**2,084.2**	**8,667**	**4**	**5.3%**
Chugwater, Town of	3.1	212	69	0.1%
Glendo, Town of	0.5	205	387	0.1%
Guernsey, Town of	1.0	1,147	1,125	0.7%
Hartville, Town of	0.3	62	248	0%
Wheatland, Town of	4.1	3,627	885	2.2%
Five-County Area	**15,524.3**	**163,786**	**11**	
Town or City Total Area	73.45	114,329	1,556	
Wyoming	**97,093.1**	**563,626**	**6**	

Source: *U.S. Census Bureau, 2013a.*

Age of the Population. The age distribution of the population is an important factor in assessing the size of the local labor force. **Table 5-10** compares the existing population, by age, in the five-county area and the State of Wyoming. The age cohorts from 25 to 44 and from 45 to 64 offer the greatest possible contribution of the expected labor force. These two cohorts contain 54 percent of the population of the State of Wyoming as a whole. The five-county area is similar with the exception of Albany County, where less than half (46 percent) of its population is between the ages of 25 – 64. In Albany County, where the City of Laramie is home to the University of Wyoming, nearly 30 percent of population is between the ages of 18 – 24.

TABLE 5-10
Year 2010 Population in Wyoming and Five-County Area by Age and Age Cohort Percent of the Total

Geographic Area	Age						
	Under 18	5 to 17	18 to 24	25 to 44	45 to 64	65+	Total
Wyoming							
Number	135,402	95,199	56,429	144,615	157,090	70,090	563,626
Percent	24%	17%	10%	26%	28%	12%	

TABLE 5-10
Year 2010 Population in Wyoming and Five-County Area by Age and Age Cohort Percent of the Total

Geographic Area	Age						
	Under 18	5 to 17	18 to 24	25 to 44	45 to 64	65+	Total
Albany County							
Number	6,037	3,997	10,480	9,300	7,316	3,166	36,299
Percent	17%	11%	29%	26%	20%	9%	
Converse County							
Number	3,512	2,542	1,026	3,442	4,077	1,774	13,833
Percent	25%	18%	7%	25%	29%	13%	
Goshen County							
Number	2,701	2,001	1,336	2,818	3,894	2,500	13,249
Percent	20%	15%	10%	21%	29%	19%	
Laramie County							
Number	22,401	15,674	8,916	23,746	25,170	11,505	91,738
Percent	24%	17%	10%	26%	27%	13%	
Platte County							
Number	1,765	1,338	535	1,729	2,841	1,797	8,667
Percent	20%	15%	6%	20%	33%	21%	

Source: Wyoming Economic Analysis Division (WY EAD), 2011a.

Population Migration. Population change in an area is attributable to births, deaths, and net migration. Population migration in Wyoming is tracked by the U.S. Census Bureau as well as the Wyoming Department of Transportation (WYDOT), which tracks drivers who exchange licenses from other areas when they move to Wyoming, as well as those who surrender their licenses to other states when they move from Wyoming (WCDA, 2011a). **Table 5-11** summarizes the net change between incoming and outgoing persons with licenses for each of the five counties in the area, the five-county area as a whole, and the state based on the WYDOT data. It illustrates that the net migration to the five-county area has been increasing since 2005 as well as its proportion of Wyoming's overall net migration. Approximately 9,000 new residents moved to the area between 2005 and 2012, representing 22 percent of the state's net migration during this period, an increase from a low of 13 percent in 2006. Wyoming migration showed a seasonal pattern in the first half of the last decade, with in-migration during the earlier part of the year and out-migration in the latter part of the year. Since 2005, net in-migration increased rapidly, with 2010 showing the greatest level of net in-migration for Wyoming (WCDA, 2013).

TABLE 5-11
Net Migration Trends in the Five-County Area

Area	2005	2006	2007	2008	2009	2010	2011	2012	(2005 – 2012)
Albany County	-16	69	61	261	426	450	143	-79	1,315
Converse County	89	72	171	195	96	151	45	55	874
Goshen County	37	85	55	110	152	244	104	26	813
Laramie County	429	510	606	650	1,042	1,327	529	258	5,351
Platte County	32	30	22	49	77	151	57	218	636
Five-County Area	571	766	915	1,265	1,793	2,323	878	478	8,989
Wyoming	3,387	5,810	6,002	7,112	6,431	7,495	3,136	2,250	41,623
Five-County Area as % of State	17%	13%	15%	18%	28%	31%	28%	21%	22%

Source: *Wyoming Community Development Authority (WCDA), 2013.*

Population Projections without Proposed Project. As shown in **Table 5-12**, population projections forecast that the population of the five-county area will increase by 7,784 residents by 2015 and by a total of 23,784 by 2030 (WY EAD, 2011b; WY EAD, 2011c). **Table 5-12** summarizes the forecasted population change by county in 5-year increments out to 2030.

TABLE 5-12
Population Forecasts in the Five-County Area

	2010 Census	2015 Forecast	2020 Forecast	2025 Forecast	2030 Forecast
Wyoming	**563,626**	**594,710**	**622,360**	**644,050**	**668,830**
Albany County	**36,299**	**37,850**	**38,910**	**39,630**	**40,560**
Laramie, City of	30,816	32,133	33,033	33,644	34,433
Rock River, Town of	245	255	263	267	274
Converse County	**13,833**	**15,050**	**15,950**	**16,610**	**17,270**
Douglas, City of	6,120	6,658	7,057	7,349	7,641
Glenrock, Town of	2,576	2,803	2,970	3,093	3,216
Lost Springs, Town of	4	4	5	5	5
Rolling Hills, Town of	440	479	507	528	549
Goshen County	**13,249**	**13,680**	**13,960**	**14,030**	**14,120**
Fort Laramie, Town of	230	237	242	244	245
La Grange, Town of	448	463	472	474	477
Lingle, Town of	468	483	493	496	499
Torrington, Town of	6,501	6,712	6,850	6,884	6,928

TABLE 5-12
Population Forecasts in the Five-County Area

	2010 Census	2015 Forecast	2020 Forecast	2025 Forecast	2030 Forecast
Yoder, Town of	151	156	159	160	161
Laramie County	**91,738**	**96,230**	**99,710**	**102,790**	**106,740**
Albin, Town of	181	190	197	203	211
Burns, Town of	301	316	327	337	350
Cheyenne, City of	59,466	62,378	64,634	66,630	69,191
Pine Bluffs, Town of	1,129	1,184	1,227	1,265	1,314
Platte County	**8,667**	**8,760**	**8,780**	**8,790**	**8,880**
Chugwater, Town of	212	214	215	215	217
Glendo, Town of	205	207	208	208	210
Guernsey, Town of	1,147	1,159	1,162	1,163	1,175
Hartville, Town of	62	63	63	63	64
Wheatland, Town of	3,627	3,666	3,674	3,678	3,716
Five-County Area	163,786	171,570	177,310	181,850	187,570
Percent of Wyoming	29%	29%	28%	28%	28%

Notes:
2010 state, county, and municipality population are 2010 Census data; 2011 to 2030 state and county population forecasts were developed based on trends of demographic and economic variables; municipality population forecasts were simply calculated by applying the place/county ratios to the appropriate county population forecasts.
Source: Wyoming Economic Analysis Division (WY EAD), 2011b and 2011c.

As shown in **Table 5-13**, Converse and Laramie counties are expected to experience the highest 5-year rates of growth within the five-county area, closely mirroring those of the state, while Platte County is forecast to maintain its current population with little or no growth (0 - 1 percent) prior to 2030. The five-county area is projected to grow between 3 and 5 percent, just below that of Wyoming as a whole.

TABLE 5-13
Percent Population Change Forecasted for Counties in the Five-County Area

	% Change 2010 - 2015	% Change 2015 - 2020	% Change 2020 - 2025	% Change 2025 - 2030
Albany County	4%	3%	2%	2%
Converse County	9%	6%	4%	4%
Goshen County	3%	2%	1%	1%
Laramie County	5%	4%	3%	4%
Platte County	1%	0%	0%	1%
Five-County Area	5%	3%	3%	3%
Wyoming	6%	5%	3%	4%

Source: Wyoming Economic Analysis Division (WY EAD), 2011c.

Population Race and Ethnicity. Overall, the results of the 2010 Census in Wyoming indicate that there has been significant change in the racial and ethnic composition. The white population increased at the slowest rate, 12.5 percent, over the 2000 through 2010 period, while the Asian population grew more quickly than any other race at 59.7 percent (WY EAD, 2011d). **Table 5-14** summarizes the racial and ethnic composition of each of the five counties and the five-county area overall as compared to the state based on the 2010 Census. Similar to the state, the counties in the five-county area are predominantly white, representing between 88 and 95 percent of the total population. Those identifying themselves as Hispanic or Latino ethnically ranged from 6.3 percent of the population in Converse County to 13.1 percent in Laramie County, as compared to 8.9 percent of the state overall.

TABLE 5-14
Population Composition by Race and Ethnicity (2010 Census)

Geographic Area	Percent of Population by Race							
	White	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander alone	Two or More Races	Hispanic or Latino Origin	Minority Population
Albany County	90.1%	1.2%	0.7%	2.8%	0.1%	2.7%	8.8%	9.9%
Converse County	95.1%	0.3%	0.8%	0.3%	0.1%	1.7%	6.3%	4.9%
Goshen County	94.5%	0.6%	0.8%	0.3%	0.1%	1.2%	9.7%	5.5%
Laramie County	88.5%	2.5%	1.0%	1.1%	0.2%	3.1%	13.1%	11.5%
Platte County	95.4%	0.3%	0.4%	0.4%	0.1%	1.5%	6.7%	4.6%
Wyoming	90.7%	0.8%	2.4%	0.8%	0.1%	2.2%	8.9%	9.3%

Source: U.S. Census Bureau, 2013a.

Population Poverty Status. According to U.S. Census Bureau, the American Community Survey estimated the following proportions of the population earning below the poverty level in the five-county area between 2007 and 2011: 10.1 percent for the state, 23.3 percent for Albany County, 8.5 percent for Converse County, 15.9 percent for Goshen County, 9.4 percent for Laramie County, and 11.8 percent for Platte County. Albany County typically has a higher percentage of persons earning below poverty level because the statistics include the college students attending the University of Wyoming (U.S. Census Bureau, 2013b).

5.4.1.2 Construction Impacts

Construction for the Project is expected to start November 2013 and will be suspended annually each winter from December through March. For those quarters with active construction, the average workforce is estimated at 138 for the 74-month construction duration. The peak is estimated at 363 onsite workers for the third quarter of 2016.

The number of non-local temporary workers likely to enter the area of site influence during the peak construction months could average 308 during the third quarter of 2016. It is not expected that spouses or children will accompany these temporary workers and, therefore, impacts to population

would be minor, consisting of only 0.2 percent of the existing five-county population of approximately 165,386 and 3.5 percent of Platte County's population of 8,716.

5.4.1.3 Operations Impacts

During operations, it is anticipated that 31 additional permanent workers will be hired and relocate to the local region. This is expected to have a negligible impact to the population of the local area.

5.4.2 Economic and Fiscal Conditions

This section addresses past, present, and future economic conditions (labor force, employment, and unemployment); income and earnings by industrial sector; work centers; existing labor characteristics and availability; and government revenues (property, sales, use, and lodging taxes and residential property values). As economic data are generally gathered and reported at the county level, all five counties with communities that are included in the area of site influence, namely Albany, Converse, Goshen, Laramie and Platte counties, are also included in the discussion of the existing economic and fiscal conditions.

5.4.2.1 Existing Conditions

Employment and Unemployment. Recent labor force trends are tabulated in **Table 5-15**. During the period 2000 through 2012, total employment in the five-county area increased by more than 7,000 jobs or nearly 10 percent, which parallels the statewide increase during the same period. Meanwhile, the size of the labor force in the five-county area rose by nearly 11 percent and, thus, the rate of unemployment also increased. In 2012, the unemployment rate was lowest in Converse County at 4.2 percent and highest in Laramie County at 6.1 percent. During the 2000-2012 period, unemployment rates in the five-county area reached a low of 3.2 percent in 2007 and peaked at 6.7 percent in 2010. As illustrated in **Figure 5-5**, counties within the five-county area experienced somewhat different changes in employment. Laramie County employment grew by more than 3,830 jobs (10 percent), the number of jobs in Albany County increased by 1,743 (10 percent), Converse County picked up 1,495 new workers (24 percent), Goshen County netted 239 jobs (4 percent), while Platte County alone lost 228 jobs (-5 percent).

TABLE 5-15
2000-2012 Wyoming Benchmark Labor Force Estimates--Annual Averages

							Wyoming						
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	266,882	269,985	269,654	271,607	273,091	278,183	285,958	290,580	296,174	300,019	302,153	303,388	306,064
Employment	256,685	259,508	258,462	259,489	262,358	267,927	276,882	282,417	286,991	281,106	280,903	284,893	289,621
Unemployment	10,197	10,477	11,192	12,118	10,733	10,256	9,076	8,163	9,183	18,913	21,250	18,495	16,443
Unempl. Rate	3.8	3.9	4.2	4.5	3.9	3.7	3.2	2.8	3.1	6.3	7	6.1	5.4
							Albany County						
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor force	18,300	18,527	18,360	18,627	19,699	19,478	18,921	18,796	19,097	19,699	19,861	20,136	20,334
Employment	17,688	17,880	17,740	17,990	19,104	18,925	18,426	18,343	18,608	18,877	18,826	19,185	19,431
Unemployment	612	647	620	637	595	553	495	453	489	822	1,035	951	903
Unempl. Rate	3.3	3.5	3.4	3.4	3	2.8	2.6	2.4	2.6	4.2	5.2	4.7	4.4
							Converse County						
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	6,582	6,532	6,274	6,476	6,499	6,714	6,920	6,988	7,416	7,631	7,747	7,808	8,160
Employment	6,324	6,277	6,006	6,174	6,235	6,459	6,683	6,790	7,209	7,195	7,299	7,427	7,819
Unemployment	258	255	268	302	264	255	237	198	207	436	448	381	341
Unempl. Rate	3.9	3.9	4.3	4.7	4.1	3.8	3.4	2.8	2.8	5.7	5.8	4.9	4.2
							Goshen County						
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	6,249	6,151	5,945	5,832	5,757	5,713	5,955	5,942	6,145	6,312	6,468	6,565	6,623
Employment	6,022	5,902	5,690	5,563	5,502	5,454	5,724	5,751	5,925	5,974	6,062	6,179	6,261
Unemployment	227	249	255	269	255	259	231	191	220	338	406	386	362
Unempl. Rate	3.6	4	4.3	4.6	4.4	4.5	3.9	3.2	3.6	5.4	6.3	5.9	5.5

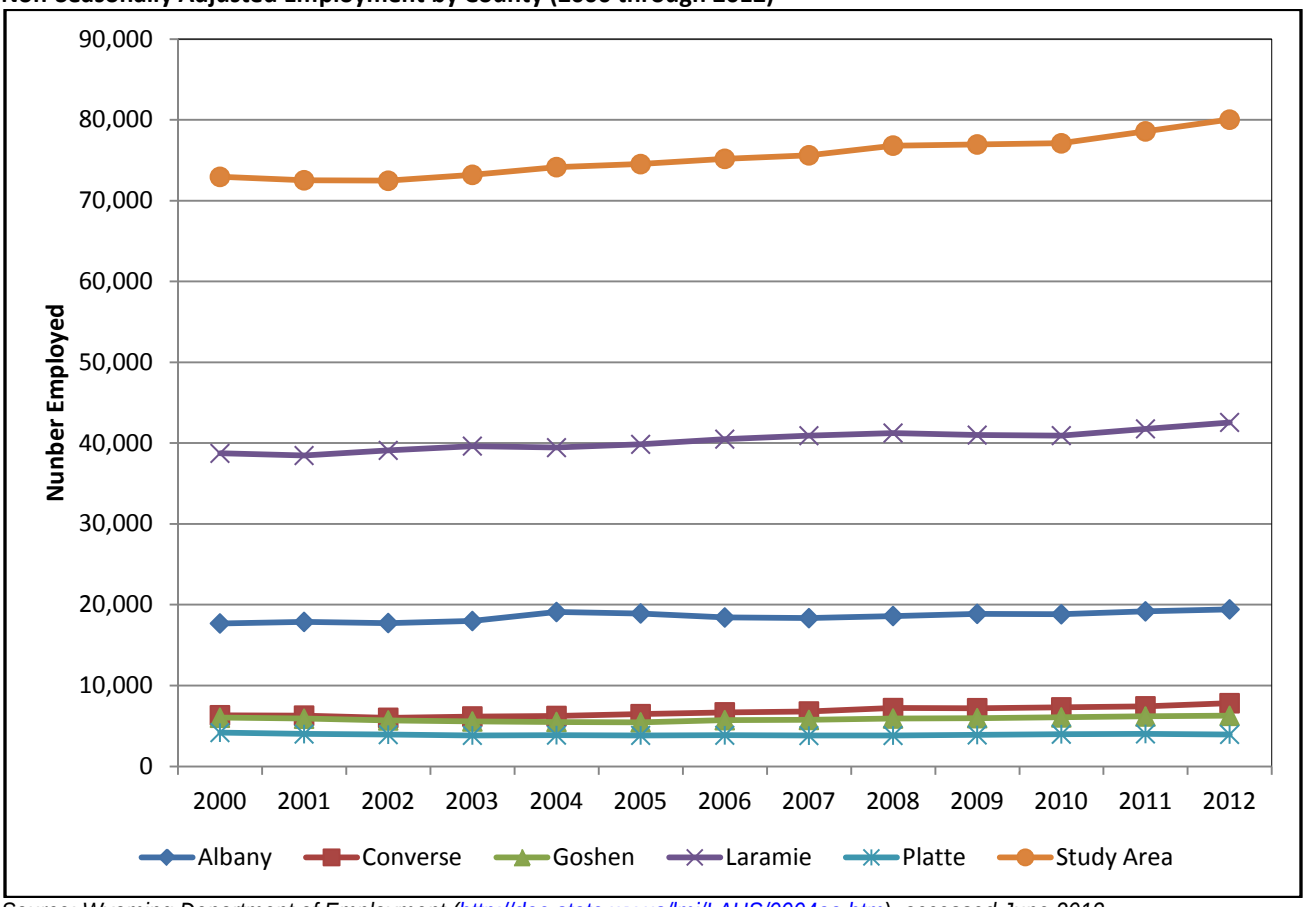
TABLE 5-15
2000-2012 Wyoming Benchmark Labor Force Estimates--Annual Averages

	Laramie County												
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	40,237	40,120	40,839	41,550	41,324	41,611	42,121	42,421	42,950	43,831	44,282	44,846	45,331
Employment	38,732	38,464	39,101	39,633	39,441	39,849	40,493	40,919	41,250	40,995	40,928	41,765	42,562
Unemployment	1,505	1,656	1,738	1,917	1,883	1,762	1,628	1,502	1,700	2,836	3,354	3,081	2,769
Unempl. Rate	3.7	4.1	4.3	4.6	4.6	4.2	3.9	3.5	4	6.5	7.6	6.9	6.1
	Platte County												
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	4,355	4,178	4,125	4,050	4,077	4,037	4,028	3,968	3,985	4,139	4,279	4,275	4,189
Employment	4,179	4,001	3,927	3,836	3,866	3,837	3,850	3,810	3,821	3,888	3,981	4,016	3,951
Unemployment	176	177	198	214	211	200	178	158	164	251	298	259	238
Unempl. Rate	4	4.2	4.8	5.3	5.2	5	4.4	4	4.1	6.1	7	6.1	5.7
	Study Area												
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Labor Force	75,723	75,508	75,543	76,535	77,356	77,553	77,945	78,115	79,593	81,612	82,637	83,630	84,637
Employment	72,945	72,524	72,464	73,196	74,148	74,524	75,176	75,613	76,813	76,955	77,096	78,572	80,024
Unemployment	2,778	2,984	3,079	3,339	3,208	3,029	2,769	2,502	2,780	4,683	5,541	5,058	4,613
Unempl. Rate	3.7	4	4.1	4.4	4.1	3.9	3.6	3.2	3.5	5.7	6.7	6	5.5

Benchmark Run Date April 2013.

Source: Wyoming Department of Employment (http://doe.state.wy.us/lmi/LAUS/0004aa.htm), accessed June 2013.

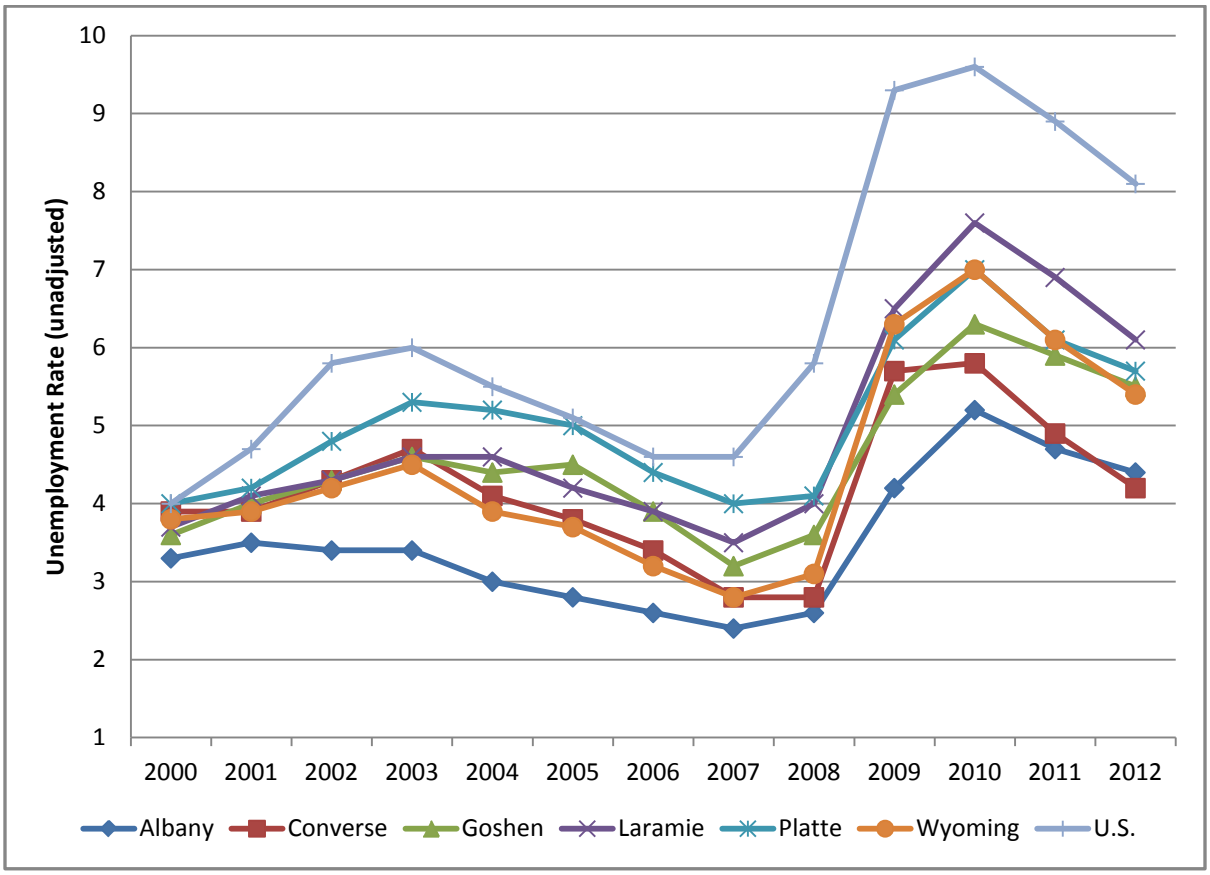
FIGURE 5-5
Non-Seasonally Adjusted Employment by County (2000 through 2012)



Source: Wyoming Department of Employment (http://doe.state.wy.us/lmi/LAUS/0004aa.htm), accessed June 2013.

Unemployment rates among the study area counties started low in 2000, trended upward for all but Albany County until 2003, decreased in all counties until 2007 before rising steeply in 2009, and escalated still higher in 2010 before beginning to fall back down again in 2011 and 2012. Throughout the entire period, unemployment rates in the study area counties were lower than those for the nation, with the exception of Platte County, which matched the U.S. unemployment rate of 5 percent in 2005. **Figure 5-6** shows the trend in unemployment rates in the study area counties, the state, and the nation during 2000 through 2012.

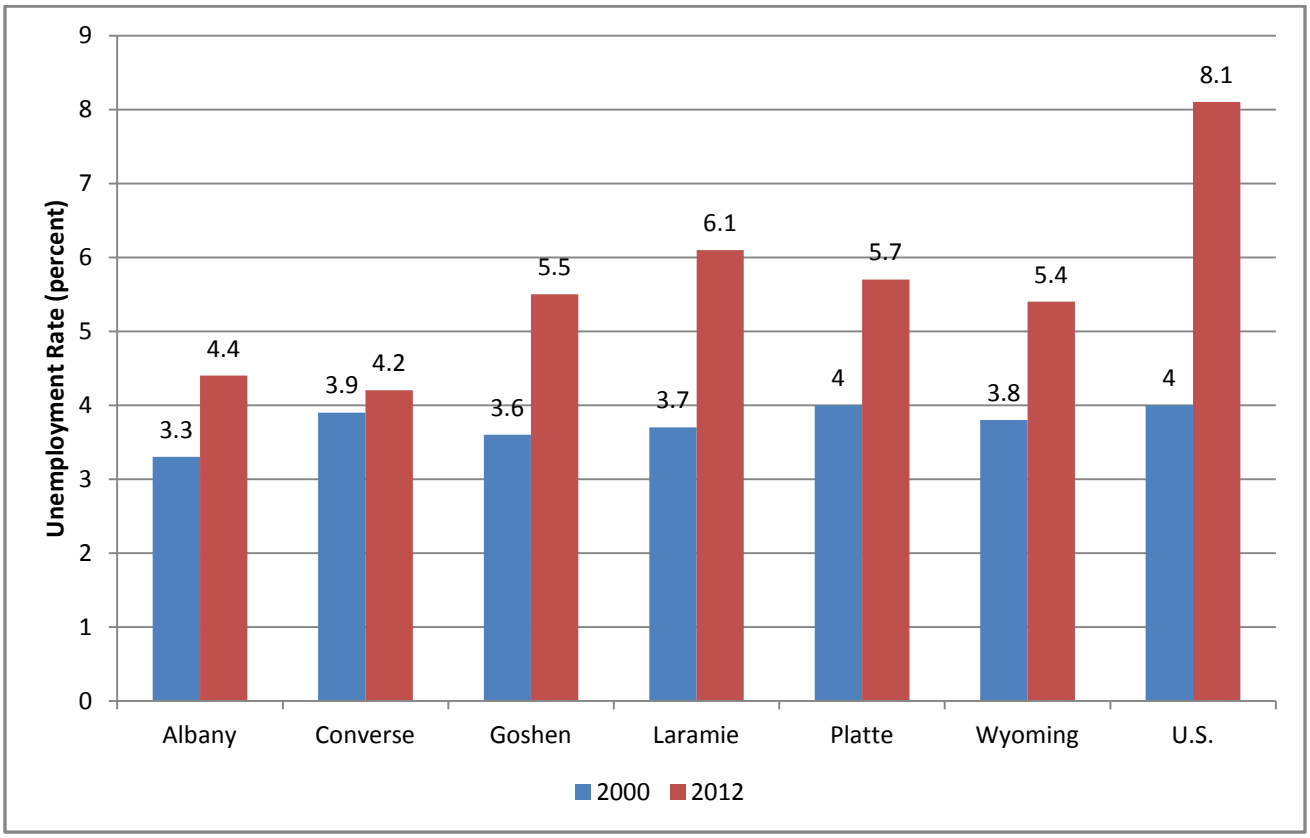
FIGURE 5-6
Non-Seasonally Adjusted Unemployment Rate for Counties, State, and Nation (2000 through 2012)



Source: Wyoming Department of Employment (http://doe.state.wy.us/lmi/LAUS/0004aa.htm), accessed June 2013.

Figure 5-7 shows a comparison of unemployment rates for the study area counties, the state, and the nation for 2000 relative to 2012. In 2000, the unemployment rates for the counties in the study area hovered at approximately 3 or 4 percent. In contrast, 2012 unemployment rates for the counties in the study area ranged from a low of 4.2 percent in Converse County to a high of 6.1 percent in Laramie County. Platte County is also at the high end of the range with a 5.7 percent unemployment rate. It is clear from **Figure 5-6** that the current unemployment rates are high by historical standards, but are significantly below the nation's 8.1 percent unemployment rate. These unemployment rates suggest that there is availability in the local and non-local labor forces to support the Project.

FIGURE 5-7
Comparison of Unemployment Rates (not Seasonally Adjusted) for the Years 2000 and 2012



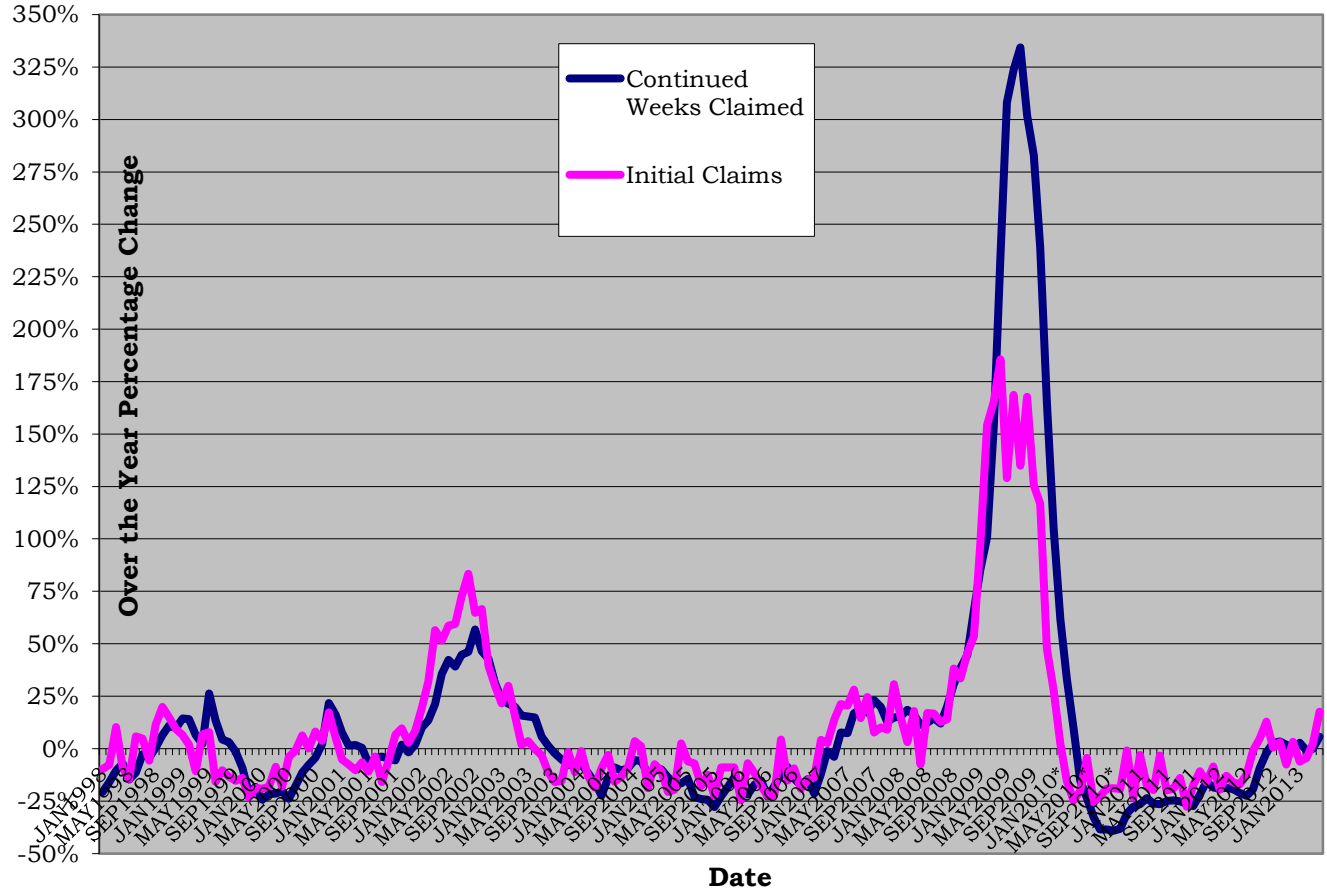
Sources: Wyoming Department of Employment (http://doe.state.wy.us/lmi/LAUS/0004aa.htm) and U.S. Department of Labor, Bureau of Labor Statistics (http://data.bls.gov/timeseries/LNU04000000?years_option=all_years&periods_option=specific_periods&periods=Annual+Data, accessed June 4, 2013.

Figure 5-8 illustrates how monthly claims for unemployment benefits compare to the same month in the preceding year over the period from January 1998 to April 2013. The period between September 2001 and May 2003 was one of increasingly deteriorating employment. Prior to this time, from mid-year 1999, was a period characterized by steady and sustained improvement in employment. Another period of stable and continued growth occurred between June 2003 and December 2007. However, 2007 saw the start of a trend of increasing claims for unemployment benefits, with the number climbing rapidly in the fourth quarter of 2008 and reaching historical highs during the first half of 2009. In March 2009, the number of claims was more than 150 percent higher than in the corresponding month in 2008. In 2011, however, the monthly claims decreased relative to the preceding year and have held stable in 2012 relative to 2011.

The information presented in **Figure 5-9** illustrates how the number of claims for unemployment benefits, at the state level, varies through the year and between years. Year 2009 began with a historical high in monthly claims relative to preceding years, and remained high for the duration of the year. Year 2010, however, showed improvement, and economic gains continued in 2011 and 2012, but had not yet returned to the pre-2009 levels. These numbers suggest the state's economy is in recovery. However, it remains to be seen whether the recovery will be dramatic enough to achieve the low levels of unemployment enjoyed in the early 2000s (see **Figure 5-9**).

FIGURE 5-8

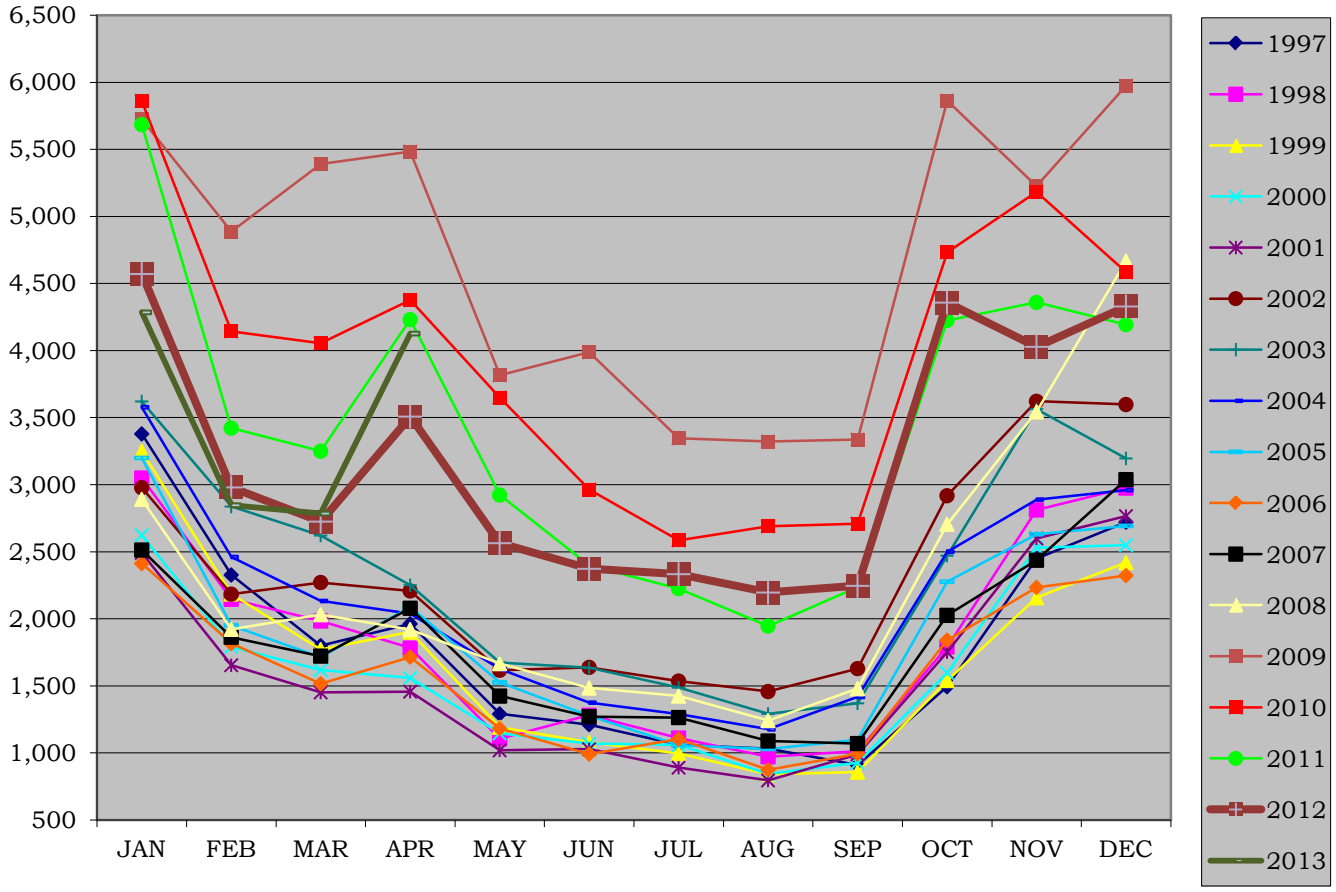
Monthly Initial Claims for Unemployment in the State, Year to Previous Year (January 1998 through April 2013)



Source: Wyoming Department of Employment, Research and Planning, 2013, Statewide Normalized Initial Claims by Industry in NAICS —Updated May 2013 (http://doe.state.wy.us/lmi/ui/NAICS_Statewide_Initial.htm).

FIGURE 5-9

Initial Claims for Unemployment by Month and Year in Wyoming (1997 through April 2013) Showing Seasonality of Workforce Requirements throughout the Year



Source: Wyoming Department of Employment, Research and Planning, 2013, UI -Tables – Initial Claims Chart — Updated May 2013 (http://doe.state.wy.us/lmi/ui/NAICS_Statewide_Initial.htm).

Employment by Industrial Sector. The most current data for employment by industry sector are compiled by the Bureau of Labor Statistics (BLS) and are available for third quarter 2012. The BLS data for the five-county area as a whole, each of the area counties, and for the state of Wyoming are shown in **Table 5-16**, providing an up-to-date snapshot of the area economy. This Quarterly Census of Employment and Wages data is based on the North American Industry Classification System (NAICS). In mid-2012, the area accounted for about 26 percent of the state's employment. The construction sector within the area employs nearly 4,600 workers, or approximately 20 percent, of the more than 23,385 construction workers employed in the state as a whole. Most of these construction jobs (3,059) are located in Laramie County. Platte County, by contrast, accounts for the smallest number of construction jobs (155). The wholesale trade sector is important for supporting new construction. Of the more than 9,200 workers employed in the wholesale trade sector statewide, approximately 1,400 are located in the area. Laramie County accounts for more than half of these jobs, while Platte County has the lowest number of workers in this sector. Another sector important to supporting the Project is the retail trade sector. With more than 30,000 employed in the state, this is one of the largest private sectors, second only to accommodations and food services. The area employs more than 8,400 retail trade workers, with Laramie County accounting for the largest number of those workers (5,400) and Platte County the fewest (approximately 400). These data at the sector level are useful for understanding how the Project may rely upon and contribute to specific sectors in the local economy and the state as a whole.

TABLE 5-16
Wyoming Statewide Employment by NAICS Sector, Third Quarter 2012

		State	Five-County Area	Albany	Converse	Goshen	Laramie	Platte
	NAICS Sectors*	12Q3 Average Monthly Employment						
Total, Statewide		**284,180**	**72,959**	**15,228**	**5,881**	**4,551**	**44,057**	**3,242**
	Percent of State Total		*26*	*5*	*2*	*2*	*16*	*1*
Private (NAICS)	**11 - 99**	**221,363**	**50,382**	**9,492**	**4,573**	**3,156**	**30,754**	**2,407**
-Agriculture, Forestry, Fishing, & Hunting	11	2,757	842	77	128	147	322	168
-Mining, Quarrying, & Oil & Gas Extraction	21	27,506	1,547	33	1,313		201	
-Utilities	22	2,473	202	33		33	136	
-Construction	23	23,385	4,560	695	425	226	3,059	155
-Manufacturing	31 - 33	9,440	2,194	346	127	320	1,340	61
-Wholesale Trade	42	9,196	1,390	155	67	194	930	44
-Retail Trade	44 - 45	30,265	8,411	1,730	440	422	5,435	384
-Transportation & Warehousing	48 - 49	9,638	2,954	163	226	43	2,431	91
-Information	51	3,939	1,421	141	64	44	1,145	27
-Finance & Insurance	52	6,669	2,429	436	103	142	1,627	121
-Real Estate & Rental & Leasing	53	4,229	899	199	76	39	569	16
-Professional & Technical Services	54	9,202	2,492	749	120	121	1,444	58
-Management of Companies & Enterprises	55	985	78				78	
-Administrative & Waste Services	56	8,543	2,241	312	62	78	1,763	26
-Educational Services	61	1,666	535	296			239	
-Health Care & Social Assistance	62	23,689	7,078	1,668	265	805	4,024	316
---Ambulatory health care services	621	9,325	3,031	678	105	219	1,940	89
---Hospitals	622	3,081	0					
---Nursing & residential care facilities	623	4,575	1,194	326			868	
---Social assistance	624	6,708	2,279	663	93	216	1,216	91
-Arts, Entertainment, & Recreation	71	3,487	541	104	87		328	22
-Accommodation & Food Services	72	35,437	7,601	1,928	665	352	4,275	381
-Other Services, Except Public Administration	81	8,858	2,242	424	194	150	1,407	67
Total Government		**62,817**	**22,579**	**5,736**	**1,308**	**1,395**	**13,304**	**836**
-Federal Government		8,124	3,029	185	73	94	2,557	120
-State Government		13,552	8,721	3,998	139	428	3,976	180
----State Government Education	61	3,809						
-Local Government		41,142	10,828	1,554	1,096	873	6,770	535
----Local Government Education	61	17,818						
----Hospitals	622	6,923						

* North American Industry Classification System.
Wyoming Department of Workforce Services Research & Planning
Source: QCEW EXPO (Second Run: April 2013)
Prepared April 22, 2013 Nancy Brennan
Preliminary: Subject to Revision.
http://doe.state.wy.us/lmi/12Q3_QCEW/12q3t8.htm.

As can be seen from the list of major employers presented in **Table 5-17**, businesses associated with education and federal and local government service providers are important employers in the five-county area. All but two of the top 10 major employers are located in Laramie County in or around Cheyenne, and the remaining two, including the University of Wyoming, the state's single largest employer, are located in Albany County.

TABLE 5-17
Top 10 Major Employers in the Five-County Area

Enterprise	Number of Employees	County
Public and Education		
University of Wyoming	5,225	Albany
F.E. Warren Air Force Base	4,410	Laramie
State of Wyoming	3,840	Laramie
Federal Government	1,747	Laramie
Laramie County School District No. 1	1,999	Laramie
Albany County Schools	896	Albany
Nongovernment		
Cheyenne Regional Medical Center	1,324	Laramie
Sierra Trading Post	691	Laramie
Union Pacific Railroad	686	Laramie
Walmart Distribution	680	Laramie

Source: http://businessclimate.com/wyoming-economic-development/wyoming-top-employers, accessed on February 10, 2012.

Although there are no Platte County employers among the top 10 employers for the five-county area, the education sector is also an important contributor to Platte County employment, as shown in **Table 5-18**.

TABLE 5-18
Top 10 Employers in Platte County

Employers	Number of Employees
Platte County School District #1	350
Laramie River Station	300
Burlington Northern Railroad	185
Platte County Memorial Hospital	180
Camp Guernsey (Army Reserve Camp-Guernsey)	85
Platte County Government	70
JO Enterprises	65
Platte County School District #2	64
Wyoming Premium Farms	60
Britz-Heidbrink	60

Platte County School District #1 with 350 workers is the largest employer in the county, followed by Laramie River Station, a consumer-operated, regional joint power supply venture, with 300 workers, and Burlington

Northern Railroad with 185 employees. The county is known for its farms and ranches, and recreational resources, especially fishing. Wheatland is the county seat and is the most populated city in Platte County. It is primarily an agricultural community and is surrounded by farms and ranches. Wheatland is home to Platte County Memorial Hospital, and the Laramie River Station power plant is located about 6 miles northeast of the city.

Construction Labor Characteristics. Five-county area employment in the construction industry totals approximately 4,500 workers. Most of these jobs are held in Laramie County. According to the Wyoming Department of Workforce Services (2013), the state and regional economies have enjoyed a sustained recovery, but the rate of job growth has recently slowed before achieving the levels of employment experienced in 2008. This means there is a labor force that is ready and willing to occupy new jobs.

The average annual wage for persons in construction and extraction occupations in Wyoming as of September 2012 was $46,767, while for production occupations the corresponding figure was $47,528. The mean annual salary for other occupations ranged from a low of $21,186 in the food preparation industry to a high of $83,490 in management occupations (http://doe.state.wy.us/LMI/EDS2012SeptECI/PAGE0023.HTM).

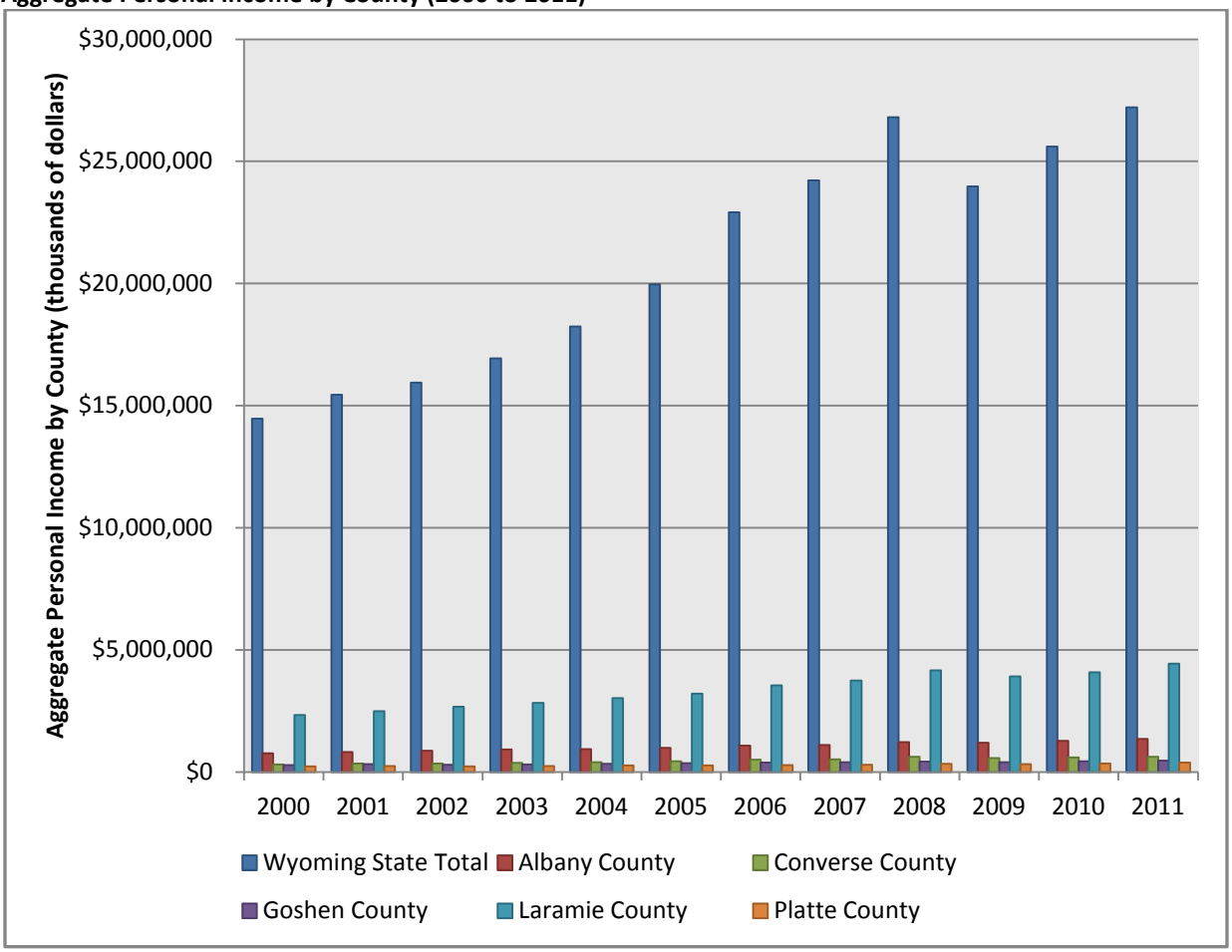
Inquiries were made with the ISD, Cheyenne Building and Development Office, Casper and Rawlins BLM Field Offices and the county planning offices in Laramie, Converse, Platte, and Goshen County to identify other sizable construction projects in the Platte County area that, in combination with the proposed Project, could cumulatively cause local labor and / or temporary housing shortages during WW&P's projected construction period from fourth quarter 2013 through 2019. While there are ongoing plans for a business park in Cheyenne and new retail, hotel, and multi-family developments, such construction projects are considered normal for the region. The Rawlins BLM Field Office identified a few projects, but they are all outside the area. Platte County officials noted the Suncor pump station construction in Guernsey would commence at the end of 2013. However, construction would be completed within two months. Thus, no large industrial projects were identified that could cause local workforce or housing shortages.

The region does anticipate additional economic diversification within its oil and gas sector as interests in the Niobrara Shale formation play continue to test the local geology and oil and gas operators refine plans to develop the oil-rich underground zone that underlies portions of Laramie, Platte, and Goshen counties. A recent market analysis report on the Niobrara shale play noted that nearly 87 percent of the actual gross production in 2011 occurred in Colorado (GlobalData, 2012). However, it also noted a significant increase in recent drilling activities in Wyoming, with gross production from that state's portion of the Niobrara play surging from 0.17 million of barrels of oil equivalent (MMboe) in 2007 to 1.32 MMboe in 2011, an increase of more than 675 percent. In addition, from January 1 to February 22, 2012, the Wyoming Oil and Gas Commission issued 455 horizontal well permits targeting the Niobrara (Global Data, 2012). It forecasts that the overall gross production from the Niobrara Shale play in Wyoming and Colorado is projected to increase 273 percent between 2007 (8.5 MMboe) and 2020 (31.7 MMboe), or an average annual increase of about 21percent. An economic impact study looking at the effects of oil / gas production in the Yampa Valley (Moffat and Routt counties) of northwest Colorado found that the biggest effect will likely be related to an increase in revenue to the local governments in terms of tax and royalty collections due to the small size and nature of oil / gas workforce (http://www2.craigdailypress. com/news/2012/apr/16/yampa-valley-data-partners-report-drilling-crews-l/, accessed April 16, 2012).

Earnings and Income. Total aggregate personal income increased in each of the counties in the area over the period 2000 through 2011 (unadjusted for inflation), as shown in **Figure 5-10**. At the state level, aggregate personal income grew all years except from 2008 to 2009. Aggregate income, presented in **Table 5-19**, shows Platte County, at $387 million in 2011, has the lowest income of the area counties. Laramie County's personal income was the highest in the five-county area, reaching $4.435 billion in 2011, while in Albany County, aggregate personal income approached $1.36 billion. In 2011, the area accounted for approximately 27 percent of the statewide aggregate personal income of $27.21 billion.

Per capita personal income also increased over the period, as shown in **Table 5-20**, and the statewide average has consistently exceeded that of each of the area counties. In 2011, Goshen County's per capita personal income of $34,618 was the lowest in the area. Laramie County earned the highest per capita income with $46,882 and Platte County was not far behind with $44,020. The statewide average was $47,898 in 2011.

FIGURE 5-10
Aggregate Personal Income by County (2000 to 2011)



Source: Bureau of Economic Analysis, 2013. "Total Personal Income." Accessed from *http://www.bea.gov/regional/bearfacts/action.cfm, June 2013.*

TABLE 5-19
Aggregate Personal Income (thousands of dollars) by County 2000 through 2011

Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Wyoming State Total	$14463473	$15441258	$15945633	$16933024	$18238847	$19969216	$22911824	$24219501	$26813002	$23977213	$25604496	$27213688
Albany Co.	$769966	$825589	$869043	$923763	$943483	$990032	$1078614	$1112694	$1230264	$1197408	$1279363	$1359879
Converse Co.	$316746	$355324	$350415	$371938	$405957	$447767	$510756	$519707	$627550	$573,678	$594032	$626981
Goshen Co.	$284684	$319805	$300452	$314914	$331202	$365204	$387292	$400331	$427581	$401382	$436232	$468995
Laramie Co.	$2338017	$2489949	$2669931	$2837159	$3028295	$3208059	$3549633	$3751313	$4168039	$3918152	$4080008	$4435022
Platte Co.	$229613	$244581	$232399	$246768	$268886	$276439	$290564	$301486	$334103	$321045	$356897	$387203

Notes:
All state and local area dollar estimates are in current dollars (not adjusted for inflation).
Last updated: November 26, 2012 - new estimates for 2011; revised estimates for 2008-2010.
Source: Bureau of Economic Analysis, 2013. "Total Personal Income." Accessed from http://www.bea.gov/regional/bearfacts/action.cfm, June 2013.

TABLE 5-20
Per Capita Personal Income for the State and Five-County Area Counties 2000 – 2011

Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Wyoming State Total	$29261	$31216	$31890	$33634	$35825	$38839	$43836	$45281	$49104	$42828	$45353	$47898
Albany Co.	$24087	$25466	$26597	$27910	$28097	$29438	$31771	$32864	$35513	$33500	$35105	$36864
Converse Co.	$26214	$29620	$28732	$30407	$32871	$35551	$39900	$39760	$46533	$41454	$42952	$45582
Goshen Co.	$22664	$25636	$24267	$25450	$26554	$29310	$30889	$31722	$33478	$30954	$32499	$34648
Laramie Co.	$28573	$30161	$32080	$33742	$35449	$37420	$40885	$42797	$46791	$43328	$41046	$46882
Platte Co.	$26275	$27904	$26511	$28400	$30800	$31844	$33437	$34725	$38750	$37296	$41046	$44020

Notes:
Per Capita personal income was computed by the Bureau of Economic Analysis using midyear population estimates. Estimates for 2000-2011 reflect county population estimates available as of November 2012.
All state and local area dollar estimates are in current dollars (not adjusted for inflation).
Source: Bureau of Economic Analysis, 2013. "Per Capita Personal Income." Accessed from http://www.bea.gov/regional/bearfacts/action.cfm, June 2013.

5.4.2.2 Governmental Revenues and Finances

Assessed. The assessed value of real property is the major source of *ad valorem* taxes. Properties are assessed at both the state and local (county) levels—the state assesses the value of utility and mineral properties and the counties assess residential, agricultural, commercial, and industrial land and improvements.

The total assessed value of real property in 2012 for the five-county area was $2.68 billion, as shown in **Table 5-21**. Laramie County and Converse County each contributed about $1 billion. Albany County contributed approximately $365 million, Platte County about $ 159 million, and Goshen County approximately $148 million. The state assessed property, minerals and non-minerals, contributed more than $1.7 billion in assessed value to the area. Industrial property in the area was assessed at $179 million, residential property at nearly $953 million, commercial property at more than $ 301 million, and agricultural land at $77 million. Together, the counties in the five-county area accounted for about 11 percent of the assessed value of all real property in Wyoming.

TABLE 5-21
State and Local Assessed Valuation (2012)

	Locally Assessed Valuation				State Assessed	
County	**Agricultural Land**	**Residential Land, Improvements, and Personal Property**	**Commercial Land, Improvements, and Personal Property**	**Industrial Property**	**Minerals and Non-Minerals (Utilities, Railroads, and Airlines)**	**Total**
Albany	$8,411,440	$214,037,119	$72,805,905	$8,310,822	$61,564,854	$365,130,140
Converse	$12,168,170	$82,537,378	$21,199,991	$80,304,163	$806,902,934	$1,003,112,636
Goshen	$24,278,937	$62,193,691	$14,291,069	$4,756,124	$42,758,229	$148,278,050
Laramie	$18,838,950	$549,071,522	$183,357,576	$83,161,691	$173,211,816	$1,007,641,555
Platte	$13,337,546	$44,960,736	$9,818,436	$2,732,917	$87,817,515	$158,667,150
Five-County Area	$77,035,043	$952,800,446	$301,472,977	$179,265,717	$1,172,255,348	$2,682,829,531
State Total	$245,913,632	$4,197,594,410	$1,146,893,447	$2,049,831,362	$17,602,411,727	$25,242,644,578

Source: Wyoming Department of Revenue, 2012. "2012 Annual Report." Accessed at http://revenue.wyo.gov/dor-annual-reports, June 2013.

Ad valorem taxes (calculated by applying county- and use-specific mill rates to the assessed value of property) support a number of county and municipal operations including airports, fire protection, hospitals, libraries, museums, public health, recreational systems, special districts, and education. **Table 5-22** presents the major beneficiaries of *ad valorem* taxes at the state level.

TABLE 5-22
Beneficiaries of *Ad Valorem* Taxes in Wyoming (2012)

Beneficiary	Percent of Total
Schools	54.29
Counties	18.22
Foundation Program	18.86
Special Districts	7.21
Municipalities	1.42

Source: Wyoming Department of Revenue, 2012.

Sales, Use, and Lodging Taxes. Sales and use tax collections are two principal sources of revenue for state and local governments. Local governments can also impose a lodging tax. The rates for each of these taxes for all the counties in the area are shown in **Table 5-23**

TABLE 5-23
Wyoming Sales, Use, and Lodging Tax Rates by County
(effective January 1, 2012)

County	State Tax Rate	General Purpose Option	Specific Purpose Option	Economic Development Option	Total S & U Tax Rate	Local Government	Lodging Tax Rate	Total Tax Rate
Albany	4%	1%	1%		6%	Albany	4%	10%
Converse	4%	1%			5%	Converse	3%	8%
Goshen	4%	1%		.25%	5.25%	Goshen	4%	9.25%
Laramie	4%	1%	1%		6%	Laramie	4%	10%
Platte	4%	1%	1%		6%	Guernsey only	2%	8%

Note: In Platte County, the lodging tax is imposed only in this city, i.e., not on a countywide basis.

Source: Wyoming Sales, Use, and Lodging Tax Revenue Report, 2012, page 9 (http://eadiv.state.wy.us/s&utax/Report_FY21.pdf).

Sales Tax. The state-imposed sales tax rate is 4 percent and revenues collected are divided 69 percent to the state and 31 percent to the counties. Each of the counties in the area imposes a 1 percent general purpose optional sales tax, as is shown in **Table 5-23**. Revenue derived from the optional sales tax, less administrative costs, is returned by the state to the county of origin. Total sales tax collections for the years FY2010 through FY2012 for each county in the area are presented in **Table 5-24**. Sales tax revenue can vary from year to year and is tied to the level of economic activity. In fiscal year (FY) 2010, as the economy was beginning its recovery from a downturn, sales tax collections were at their low over this period. In FY 2011 and again in FY 2012, sales tax revenues had increased for all of the counties except for Albany County, where they fell 6 percent in FY 2011 from FY 2010. However, by FY 2012 Albany County receipts increased over 2010 levels. In FY 2012, Platte County collected more than $7.6 million in total sales taxes compared with $27.4 million in Albany County, $37.4 million in Converse County, $8.7 million in Goshen county and $95.8 million in Laramie County.

TABLE 5-24
Sales and Use Tax Collections by County (2010-2012)

Total Sales Tax Collections by County			
County	**FY 2010**	**FY 2011**	**FY 2012**
	Total Taxes	Total Taxes	Total Taxes
Albany	$25,843,437	$24,275,688	$27,384,972
Converse	$18,268,908	$24,228,132	$37,408,008
Goshen	$6,247,872	$7,523,463	$8,717,858
Laramie	$78,882,302	$90,189,323	$95,834,069
Platte	$6,496,409	$6,961,701	$7,630,800
State of Wyoming	**$694,855,847**	**$748,364,960**	**$857,780,696**
Total Use Tax Collections by County			
County	**FY 2010**	**FY 2011**	**FY 2012**
	Total Taxes	Total Taxes	Total Taxes
Albany	$2,671,953	$2,748,146	$2,479,464
Converse	$2,605,236	$2,617,799	$2,289,055
Goshen	$978,587	$1,040,172	$1,337,095
Laramie	$8,026,562	$8,146,623	$9,175,716
Platte	$2,324,640	$2,840,595	$3,530,939
State of Wyoming	**$87,147,717**	**$105,223,085**	**$112,184,724**

Source: Wyoming Sales, Use, and Lodging Tax Revenue Report, 2012, pages 17 and 50 (http://eadiv.state.wy.us/s&utax/Report_FY12.pdf).

Use Tax. A state use tax is imposed on purchases made outside a taxing jurisdiction for first time, storage, or other consumption within that jurisdiction, thus preventing sales tax avoidance. Use tax is a complement to sales tax. Effective January 1, 1981, the adoption of an optional sales tax required a change in the use tax rate of equal amount. The state-imposed tax rate is 4 percent. State use tax collections are shared between state government and the county of origin on the same distribution basis as sales tax. Use tax collections for the state totaled less than 14 percent of the sales tax revenues in 2012. Use tax collections by year and county are shown in **Table 5-24**.

Lodging Tax. Cities, towns, and counties may impose an excise tax of up to 4 percent on all sleeping accommodations for guests staying less than 30 days. All tax collections, less state administrative costs, are distributed to the taxing jurisdiction. At least 90 percent of the tax distributions must be used to promote travel and tourism. The tax collections for each of the counties, cities, and towns comprising the five-county area are shown in **Table 5-25**.

TABLE 5-25
Lodging Tax Collections by County and Local Entity (2000-2012)

Area	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Albany County	$36,588	$33,086	$29,041	$31,590	$44,100	$61,014	$64,837	$62,661	$66,378	$60,768	$54,702	$58,087	$63,280
Laramie	$244,627	$265,979	$282,262	$282,914	$356,934	$349,187	$414,426	$524,036	$567,553	$618,058	$600,606	$587,477	$640,645
Rock River	$595	$728	$739	$588	$314	$490	$416	$223	$711	$544	$526	$461	$357
TOTAL	$281,810	$299,793	$312,042	$315,092	$401,348	$410,691	$479,679	$586,921	$634,643	$679,370	$655,833	$646,025	$704,281
Converse County	$4,431	$3,455	$2,955	$3,822	$4,603	$4,179	$4,553	$4,484	$7,697	$13,701	$8,024	$8,887	$15,240
Douglas	$58,310	$48,933	$55,896	$57,393	$84,436	$104,480	$130,936	$159,723	$197,526	$184,532	$141,266	$153,744	$253,168
Glenrock	$1,895	$2,195	$2,849	$2,554	$3,865	$3,763	$2,670	$3,878	$3,530	$6,300	$6,072	$4,063	$4,940
TOTAL	$64,636	$54,583	$61,701	$63,769	$92,904	$112,421	$138,158	$168,085	$208,753	$204,533	$155,361	$166,694	$273,349
Goshen County	$1,044	$2,414	$3,528	$2,946	$2,587	$2,958	$3,676	$3,673	$4,187	$6,267	$6,765	$6,064	$5,923
Fort Laramie	$110	$190	$287	$17	$15	$15	$7	$21	$103	$72	$180	$186	$164
Torrington	$48,198	$48,518	$40,436	$41,921	$38,733	$41,532	$43,334	$49,166	$50,615	$62,743	$92,210	$96,179	$104,718
TOTAL	$49,352	$51,122	$44,251	$44,885	$41,335	$44,505	$47,017	$52,860	$54,905	$69,082	$99,154	$102,428	$110,805
Laramie County	$134,655	$126,834	$121,672	$120,041	$164,458	$159,754	$162,943	$54,626	$80,627	$59,457	$72,853	$84,749	$76,872
Cheyenne	$245,706	$281,828	$289,999	$329,817	$485,896	$501,793	$600,112	$855,710	$1,090,759	$1,037,264	$1,059,130	$1,312,247	$1,296,904
Burns	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pine Bluffs	$3,351	$3,626	$3,017	$3,268	$4,702	$4,216	$4,295	$5,215	$5,861	$5,507	$5,231	$5,787	$5,959
TOTAL	$383,712	$412,288	$414,688	$453,126	$655,057	$665,764	$767,350	$915,552	$1,177,246	$1,102,227	$1,137,215	$1,402,783	$1,379,734
Platte County	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Guernsey	$4,491	$5,370	$4,437	$4,254	$3,944	$4,854	$5,438	$6,147	$6,637	$8,545	$3,288	$7,307	$9,756
TOTAL	$4,491	$5,370	$4,437	$4,254	$3,944	$4,854	$5,438	$6,147	$6,637	$8,545	$3,288	$7,307	$9,756

Source: Wyoming Sales, Use and Lodging tax Revenue Report, 2012 (http://eadiv.state.wy.us/s&utax/Report_FY12.pdf).

Industrial Siting Impact Assistance Funds. Another important source of revenues for local governments is the payment of impact assistance funds when a major industrial project is built. The program is designed to assist cities, towns, or counties in deflecting the impact a major industrial project may have on community resources. The program measures the increase in tax revenue caused by the industrial project and matches that increase with additional monies from the state general fund to help communities respond to project-related impacts. The distribution of impact assistance funds is accomplished by transferring the funds from the state general fund, via the office of the state treasurer, directly to county treasurers' offices.

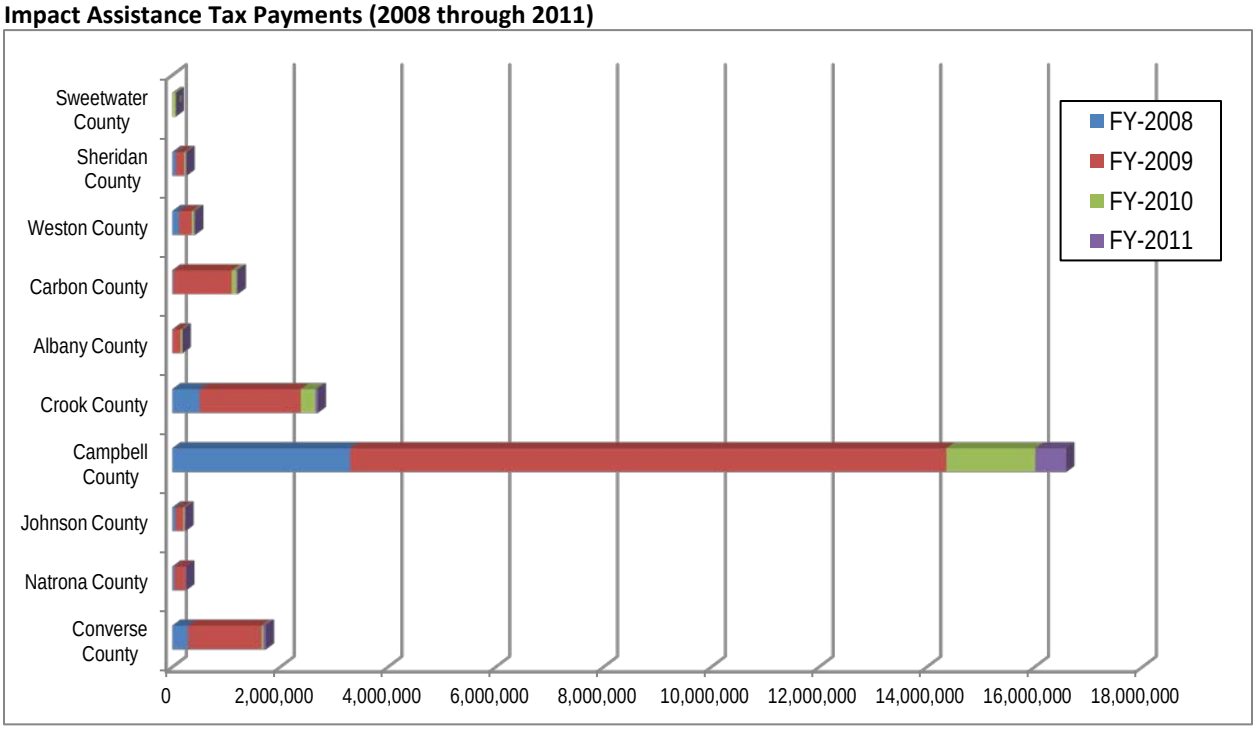
Under the Industrial Development Information and Siting Act,[10] a county or town may qualify to receive industrial impact assistance payments. The impact assistance payments are made to the county in which the facility is located, as well as adjoining counties provided that: 1) the commissioners of the adjoining county or counties have made a request; and 2) the ISC has determined that the social and economic impacts from construction of the facility upon the adjoining counties are significant. The payments are made based on a ratio established by the ISC during a public hearing held in accordance with W.S. 35-12-110, as certified to the state treasurer. The ISC regularly reviews the distribution ratio for facilities under construction and makes appropriate adjustments. A governing body that is primarily affected by the facility, or any person issued a permit pursuant to W.S. 35-12-106, may petition the ISC for review and adjustment of the distribution ratio upon a showing of good cause.

The impact assistance payments are in addition to all the other tax revenues discussed above; however, no impact assistance payments are made for any period in which the county or counties are not imposing at least a 1 percent tax authorized by W.S. 39-15-204(a)(i) and 39-16-204(a)(i), or at least a total of a 2 percent sales tax authorized under W.S. 39-15-204(a)(i), (iii) and (vi), and at least a total of a 2 percent use tax authorized under W.S. 39-16-204(a)(i), (ii) and (v).

Figure 5-11 illustrates the impact assistance payments received from FY 2008 through FY 2011 by Wyoming counties. These payments were made in direct proportion to any increase in other tax revenues to mitigate project-related impacts. Over the period 2008 through 2011, Campbell County received the most impact assistance funds, with Crook, Converse, and Carbon counties running a distant second, third, and fourth, respectively. By comparison, the remaining counties of Sweetwater, Sheridan, Weston, Natrona, Albany, and Johnson each received modest impact assistance funds. Platte, Laramie, and Goshen counties did not receive any impact assistance over this period.

[10] W.S. 35-12-101 through 35-12-119

FIGURE 5-11
Impact Assistance Tax Payments (2008 through 2011)



Source: Wyoming Department of Revenue (WDOR). 2011. Wyoming State Government Annual Report 2010 - 2011. http://revenue.state.wy.us/PortalVBVS/uploads/DOR%20Annual%20Report%202011.pdf.

Table 5-26 presents the impact assistance funds in tabular form covering the period from FY 2009 to FY 2011. Converse County received payments all 3 years ranging from about $30,000 in FY 2010 to nearly $1.4 million in FY 2009. Albany County was the only other area county to receive impact assistance in any of the past 3 years. In 2009, Albany County received nearly $151,000 in impact assistance funds. This figure decreased to approximately $32,000 in 2010 and dropped again in 2011 to less than $10,000.

TABLE 5-26
Distribution of Impact Assistance Funds FY 2009 – FY 2011

Entity	Sales Tax	Use Tax	Total
FY-2009			
Carbon County	$1,087,114.34	0.00	$1,087,114.34
Albany County	$150,558.51	0.00	$150,558.51
Converse County	$1,252,801.51	$116,384.88	$1,369,186.39
Natrona County	$192,575.18	$15,445.96	$208,021.14
Campbell County	$9,502,831.94	$1,564,746.31	$11,067,578.25
Weston County	$199,235.37	$35,591.41	$234,826.78
Crook County	$1,621,844.45	$256,516.41	$1,878,360.86
Johnson County	$123,849.01	$22,124.39	$145,973.40
Sheridan County	$134,618.47	$24,048.26	$158,666.73
Totals	**$14,265,428.78**	**$2,034,857.62**	**$16,300,286.40**

TABLE 5-26
Distribution of Impact Assistance Funds FY 2009 – FY 2011

Entity	Sales Tax	Use Tax	Total
FY-2010			
Albany	$24,033.47	$7,836.16	$31,869.63
Campbell	$124,406.07	$1,527,377.69	$1,651,783.76
Carbon	$8,011.16	$80,905.74	$88,916.90
Converse	$170.84	$30,013.12	$30,183.96
Crook	$29,934.12	$241,783.92	$271,718.04
Johnson	$130.98	$23,010.06	$23,141.04
Sheridan	$142.36	$25,010.92	$25,153.28
Sweetwater	-	$65,364.45	$65,364.45
Weston	$210.69	$37,016.19	$37,226.88
Totals	**$187,039.69**	**$2,038,318.25**	**$2,225,357.94**
FY-2011			
Albany	$7,586.84	$1,663.87	$9,250.71
Campbell	0.00	$574,600.04	$574,600.04
Carbon	$22,760.52	$4,991.61	$27,752.13
Converse	$28,263.34	$21,021.95	$49,285.29
Crook	0.00	$45,547.56	$45,547.56
Johnson	0.00	$16,116.83	$16,116.83
Natrona County	$14,559.90	0.00	$14,559.90
Sheridan		$17,518.29	$17,518.29
Weston		$25,927.07	$25,927.07
Totals	**$73,170.60**	**$707,387.22**	**$780,557.82**

Source: Wyoming Department of Revenue 2010 - 2011 Annual Report, page 24.

5.4.2.3 Future Economic Conditions

This section addresses economic projections without the WW&P Project. The description of potential future economic conditions in Wyoming is mainly derived from the report entitled Wyoming Occupational Projections 2011 to 2021, prepared by the Wyoming Department of Workforce Services.[11] Forecasts such as these are intended to capture the long-term trends, rather than year-to-year variations in employment, which are particularly susceptible to unanticipated events. While the projections are based upon recent trends (the last 120 months), the last 36 months are given more weight.[12] As a result, these projections do not attempt to predict the effects of structural changes such as those that could result from a recession, major national investments in energy efficiency, or health care.

[11] Wyoming Department of Workforce Services. 2012. Research and Planning. *Wyoming Occupational Projections 2011 to 2021*. http://doe.state.wy.us/lmi/projections/WY_Occ_Proj_2011_2021.pdf. Accessed May 2012.

[12] Glover, T. 2011. "Wyoming's Industry and Occupational Projections Methodology 2011 to 2021." Draft document prepared by the Wyoming Department of Workforce Services Research and Planning. November, 2011.

Overall, the study found that there were a total of 272,211 jobs in Base Year 2011. The projected number of total jobs for 2021 is 313,083 for a net growth in jobs from 2011 to 2021 of 40,872. This equates to a 15percent increase over the 10-year period or an average increase in jobs of 1.5 percent per year.

The top five fastest-growing employment sectors were Mining (+32 percent); Transportation and Warehousing (+29.9 percent); Health Care and Social Assistance (+29.1 percent); Management of Companies and Enterprises (+27.9 percent); and Educational Services (+26.9 percent). Four employment sectors showed decreases in employment over the 10-year period: Administrative and Support and Waste Management and Remediation Services (-9.2 percent); Information (-7.7 percent); Manufacturing (-6.4 percent); and Retail Trade (-0.2 percent). Of the remaining 11 employment sectors that showed growth, the sectors growing the least were Accommodation and Food Service (+5.6 percent), and Construction (+9.4 percent). More detail on certain job sectors is provided following the table.

Table 5-27 summarizes the report's forecast. For each job category description, the table provides 1) the number of jobs for Base Year 2011; 2) the number of jobs projected in 2013; 3) the resulting net growth from 2011 to 2013; 4) the number of jobs projected in 2021; 5) the resulting net growth from 2011 to 2021; and 6) the overall percent growth from 2011 to 2021. Finally, the table provides the totals in each of these categories for all occupations.

TABLE 5-27
Wyoming Employment Projections 2011 – 2021

	Base Year 2011	Projected Year 2013	Net Growth 2011 to 2013	Percent Growth 2011 to 2013	Projected 2021	Net Growth 2011 to 2021	Percent Growth 2011 to 2021
Agriculture, Forestry, Fishing, and Hunting	2,408	2,458	50	2.1	2,660	252	10.5
Mining	26,423	28,115	1,692	6.4	34,881	8,458	32.0
Utilities	2,501	2,590	89	3.6	2,945	444	17.8
Construction	21,665	22,073	408	1.9	23,704	2,039	9.4
Manufacturing	9,061	8,945	-116	-1.3	8,478	-583	-6.4
Wholesale Trade	8,684	9,047	363	4.2	10,498	1,814	20.9
Retail Trade	29,161	29,150	-11	0.0	29,105	-56	-0.2
Transportation and Warehousing	9,167	9,714	547	6.0	11,904	2,737	29.9
Information	3,844	3,785	-59	-1.5	3,549	-295	-7.7
Finance and Insurance	6,736	6,884	148	2.2	7,476	740	11.0
Real Estate and Rental and Leasing	3,951	4,110	159	4.0	4,747	796	20.1
Professional, Scientific, and Technical Services	8,955	9,299	344	3.8	10,673	1,718	19.2

TABLE 5-27
Wyoming Employment Projections 2011 – 2021

	Base Year 2011	Projected Year 2013	Net Growth 2011 to 2013	Percent Growth 2011 to 2013	Projected 2021	Net Growth 2011 to 2021	Percent Growth 2011 to 2021
Management of Companies and Enterprises	856	904	48	5.6	1,095	239	27.9
Administrative/ Support Waste Management and Remediation Services	7,565	7,425	-140	-1.9	6,866	-699	-9.2
Educational Services	30,106	31,727	1,621	5.4	38,215	8,109	26.9
Health Care and Social Assistance	31,779	33,630	1,851	5.8	41,036	9,257	29.1
Arts, Entertainment and Recreation	2,304	2,348	44	1.9	2,525	221	9.6
Accommodation and Food Services	28,004	28,319	315	1.1	29,581	1,577	5.6
Other Services (Except Public Administration)	8,090	8,335	245	3.0	9,316	1,226	15.2
Public Administration	30,951	31,527	576	1.9	33,829	2,878	9.3
Total All Occupations	272,211	280,385	8,174	3.0	313,083	40,872	15.0

Source: Wyoming Occupational Projections downloaded from http://doe.state.wy.us/lmi/projections/WY_Occ_Proj_2011_2021.pdf. Accessed May 2012.

Wyoming's economy is largely driven by natural resources. Of the state's natural resource industries, including oil and gas, mining, and wind generation, the mining sector has been the greatest contributor of economic and revenue activity in Wyoming's recent history.

Mining Industry. The mining sector demonstrated strong growth from 2000 to 2009. For instance, in 2005, the mining industry contributed approximately one-third of both the state's total earnings growth and job growth. The energy-driven growth continued through 2009, as low industrial diversity tied the state's fortunes to mining extraction, most recently dominated by natural gas production. In 2009, mining jobs hit a historical high of more than 33,000, but were back down to 26,423 in 2011. As shown in **Table 5-27**, mining sector jobs are projected to grow to 28,115 jobs by 2013 and 34,881 jobs by 2021, which would be the new historical high for this industry. This constitutes a forecasted 32 percent growth from 2011 to 2021.

The projected increased demand for the natural resources in the state from national markets will help provide a steady source of mining jobs and revenues for the state. Outside of the mining industry, however, the state's future prospects will be somewhat limited by a job market that fails to attract high-growth job opportunities, and many younger workers will move to other states with more versatile job opportunities. Wyoming is the least diversified state in the nation in terms of employment distribution across industries.

Service Sector Categories. Wyoming's economy is shifting more toward a service orientation than one that is goods-driven. Much like the rest of the country, the service industries have continually grown even during recessions. For example, in 2001 and 2002, despite the slowdown of the economy, total employment for various service industries still increased 2.5 and 2.2 percent, respectively, and 1.6 percent in 2003 and 2.1 percent in 2004. Over the next 10 years (2011 to 2021), the service sector categories include several of the fastest-growing sectors, both in terms of growth rate and total number of new jobs. The main drivers will be Health Care and Social Assistance (29.1 percent growth); Educational Services (up 26.9 percent); Management of Companies and Enterprises (27.9 percent growth); Transportation and Warehousing (up 29.9 percent) along with Professional, Scientific, and Technical Services (up 19.2 percent); and Finance and Insurance (11 percent growth). The service sector categories were and will continue to be Wyoming's fastest-growing sector as Wyoming continues to undergo a structural shift from a goods-producing economy to a service-producing economy.

Government. The government jobs sector is Wyoming's largest employment sector. Government employment serves as a significant stabilizer for Wyoming's overall economy, particularly in the southeast region.

The proportion of full-time state and local government employees in Wyoming was the highest in the country in 2003, at 869 per 10,000 people, compared to the national average of 542 employees per 10,000 people. One explanation for the high proportion of government employees is that because Wyoming's population is sparsely distributed, state and local governments have to hire a relatively large number of employees to provide services to residents from public schools and fire districts, to road maintenance and health care. Other states with higher than average state/local government employee rates were also states with large land areas and low population, such as Alaska, New Mexico, and Nebraska, while high population density states have lower proportions of government employment.

In 2004, there were 64,590 jobs in Wyoming in the government sector comprising one-fourth of the total jobs in Wyoming. From 1990 to 2000, 5,500 government jobs were added for an annual growth rate of 1 percent in this sector, compared with an overall growth rate of 1.9 percent for the state as a whole. Nearly all of the new jobs added were in local government, which includes K–12 education and hospitals. Since 2000, state government jobs increased 3.1 percent annually because of the accelerating revenues from mineral production. Over the forecast period 2011 through 2012, jobs in public administration are projected to grow from 30,951 in 2011 to 33,829 in 2021, an increase of 9.3 percent. While government jobs are not among the five fastest growing employment sectors, they will remain a consistent and steady source of new jobs in the future.

Retail Trade. Although the retail trade sector experienced fast job growth in the first half of the 1990s, averaging nearly 2 percent each year, it slowed to only about 1 percent annually up until 2007, largely because of out-migration from the state. Much like the nation, the real concern for many retailers in the state is how to continue competing with remote sellers who do not have to charge sales tax. In 2011, jobs in the retail trade sector totaled 29,161. The projected future trend in this industry is decreasing jobs, with projected jobs in 2021 of 29,105 or a decrease of 56 jobs or a .02 percent decrease over the 10-year period.

Accommodation and Food Service (Tourism) Wyoming's travel and tourism industry is an important part of the overall economy, particularly for the northwest region of the state, with more than $1 billion in direct expenditures and 28,000 jobs. The primary tourist destinations are Yellowstone National Park and the Grand Teton National Park, which are visited annually by millions of people from all over the world. Tourism is not classified as an independent or separate economic sector;

instead, it is mainly included in the accommodation and food services sector. The economic effect of tourism crosses many retail trade- and services-related sectors such as gasoline stations, general merchandise stores, arts, entertainment, and recreation services. Unfortunately, most jobs directly connected with tourism tend to be lower skilled and lower paying by nature. Long-term, Wyoming's travel and tourism industry is not expected to deviate substantially from the past trend of an extremely low growth rate. Specifically, the accommodations and food services industry is projected to grow only a modest 5.6 percent from 2011 to 2021.

Construction. The real estate and housing industries were strong until 2007 when Wyoming, along with much of the rest of the nation, experienced a slowdown in this sector. Until then, Wyoming's residential construction boom resulted in substantial job growth in the general building and specialty trades subsectors. In general, the direct effects from housing are through construction activity, real estate transactions, and mortgage finance. The multiplier benefits are substantial, such as demand for numerous supply industries, and the income earned from construction-related industries drives spending elsewhere in the economy.

As the fastest-growing sector in the 1990s, the construction industry in Wyoming added 7,100 jobs in that decade at an annual average rate of 5.2 percent. Continuing this trend, in 2002 the construction sector remained the strongest industry in the state, expanding by 1.9 percent because of historically low interest rates. From 1992 to 2002, total residential home permits averaged nearly 1,800 units per year, increasing to 2,877 in 2003 and 3,318 in 2004.

Subsequently, consistent with the national downturn in housing starts, in 2008, the state saw the number of annual housing units fall to 2,669, the lowest level in years. Statewide, however, due to the "boom" years, housing units increased by 17 percent between 2000 and 2010 compared to an increase of 10 percent between 1990 and 2000.

Long term, it is anticipated that residential construction will once again be tied closely to population growth. Construction industry employment in 2011 was recorded at 21,665 jobs and is projected to increase by 9.4 percent from 2011 to 2021, or an average of .94 percent per year. The projected increase of 2,039 jobs will bring the total construction jobs to 23,704 in 2021 (**Table 5-27**).

Table 5-28 provides another view of construction employment in Wyoming from 1990 through 2018, providing total construction employment numbers, but also historical employment and projected employment in three divisions of construction: 1) construction of buildings; 2) heavy and civil engineering construction; and 3) special trade contractors.

According to **Table 5-28**, total construction jobs in 2018 will be 30,408 growing at 0.79 percent per year from 2008 to 2018. This is a higher total number of jobs than forecasted in **Table 5-27** for 2021 of 23,704; however, the average growth rates are not substantially different (0.79 percent versus 0.94 percent). The difference in total jobs and projected growth rates can also be explained by the fact that the statistics in **Table 5-27** include a broader set of construction occupations than those in **Table 5-28** and cover a shorter period. The data in **Table 5-28** are useful, however, because they confirm conservative forecasted growth in the construction industry over the next few years.

TABLE 5-28
Construction Employment in Wyoming 1990, 2000, 2008, and 2018

					Change		Average Annual Change	
	1990	**2000**	**2008**	**2018 Projected**	**1990 to 2008**	**2008 to 2018**	**1990 to 2008**	**2008 to 2018**
Construction of Buildings	2,099	4,285	5,007	5,300	2,908	293	7.7%	0.59%
Heavy and Civil Engineering Construction	3,866	5,301	9,660	10,450	5,794	790	8.33%	0.82%
Special Trade Contractors	4,815	8,085	13,518	14,658	8,703	1,140	10.04%	0.84%
Total Construction	**10,780**	**17,671**	28,185	30,408	17,405	2,223	8.97%	0.79%

Source: Wyoming Statewide Long-Term Employment Projections by Industry: 2008-2013, April 2010; http://doe.state.wy.us/LMI/projections08_18/LTI_08_18.pdf

Future Personal Income. Between 2002 and 2006, real personal income in Wyoming increased by nearly $3.5 million, or an average annual rate of 5.4 percent. The 2007 Wyoming Economic Analysis Division Report projects that during the period 2006 to 2016, real personal income in the state will increase at an annual rate of 6.4 percent (**Table 5-29**).[13] The projected 1.3 percent rate of growth in the civilian labor force between 2006 and 2016 will be slightly lower than the 1.4 percent growth rate experienced between 2002 and 2006.

TABLE 5-29
Wyoming Personal Income, Wage and Salary Earnings, Labor Force, Employment, and Unemployment (2002, 2006, 2016)

	2002	**2006**	**2016**
Total Personal Income (Then-year $)	$15,463,330	$20,948,050	$34,481,470
Real Personal Income (2000-year $)	$14,995,590	$18,472,030	$34,481,470
Per Capita Personal Income (Then-year $)	$30,991	$40,676	$61,236
Per Capita Personal Income (2000-year $)	$30,053	$35,868	$44,372
Median Household Income (Then-year $)	$39,963	$48,351	$65,626
Wages and Salaries	$7,568,720	$10,497.020	$17,237,250
Civilian Labor Force	269,650	284,690	324,630
Number Employed	258,460	275,620	315,210
Number Unemployed	11,190	9,070	9,430
Unemployment Rate (Percent)	4.2	3.2	2.9

Source: Wyoming Department of Administration and Information, Economic Analysis Division (WY EAD), 2007a.

[13] Wyoming Department of Administration and Information, Economic Analysis Division. 2007. *10-Year Outlook Wyoming Economic and Demographic Forecast 2007 to 2016*, prepared by the Economic Analysis Division of the Wyoming Department of Administration and Information. 2007.

5.4.2.4 Construction Impacts

A variety of tools are available to estimate regional economic impacts, but by far the most widely used today are I-O models combined with social accounting matrices (SAMs). Referred to as I-O/SAM models, these tools form the basis for estimating economic impacts for industry (manufacturing, mining, construction), commercial business activity (restaurants, hotels), and agriculture (irrigation and livestock water uses).

The I-O/SAM model is an accounting framework that traces spending and consumption among various economic sectors, including businesses, households, government, and "foreign" economies in the form of exports and imports. "Direct effects" represent the response (e.g., change in value-added or employment) for a given industry's expenditures of final demand for that same industry. Value-added refers to the additional value of a commodity produced by that industry over the cost of commodities used to produce it from the previous stage of production. It is the *net* measure of the economic contribution of an industry to the regional economy less the intermediate goods and services used. "Indirect effects" represent the response by all local industries caused by the iteration of purchasing for a given industry. "Induced effects" represent the response by all local industries caused by the expenditures of new household income generated by the direct and indirect spending.

Collectively, indirect and induced effects are referred to as "secondary impacts." In their entirety, all of the previously discussed changes (direct and secondary) are referred to as "total economic impacts." By their nature, total impacts are greater than initial changes because of secondary effects. The magnitude of the increase is what is popularly termed a "multiplier effect." I-O models generate numerical multipliers that estimate indirect and induced effects. The I-O/SAM models are run using propriety software known as IMPLAN PRO (Input Output Model for Planning Analysis). IMPLAN is a modeling system originally developed by the USFS in the late 1970s. Today, the Minnesota IMPLAN Group (MIG, Inc.) owns the copyright and distributes data and software. It is probably the most widely used economic impact model in existence. IMPLAN comes with databases containing the most recently available economic data from a variety of sources.

Using IMPLAN software and data for 2011, the most current model year, transaction tables were estimated for the five potentially affected counties (Platte, Goshen, Laramie, Converse, and Albany) in Wyoming. Although most of the local economic impacts are expected to be felt in and around Platte County, the nearby counties of Albany, Goshen, Converse, and Laramie are sufficiently close and of a size that they could contribute direct and/or indirect labor, materials, and services to the Project. Thus, for the purpose of the construction economic impact analysis, these five counties comprise the local regional economy.

Each transaction table in IMPLAN contains 509 economic sectors and allows users to estimate a variety of economic statistics. The most relevant measures for the purpose of understanding the economic impacts to the region due to the WW&P Project construction are value-added and employment. For perspective, current economic conditions for the five-county region of influence in terms of employment, output, value-added, and labor income are derived from data compiled by the IMPLAN, which uses the information provided by the U.S. Bureau of Economic Analysis (BEA), BEA's Regional Economic Information System (REIS), BLS, the Census of Agriculture, the U.S. Census Bureau, the U.S. Census Bureau's Economic Census, the U.S. Census Bureau's Annual Survey of Manufacturers, and the Internal Revenue Service Quarterly Payroll File (FICA). The latest available data are for 2011 and appear in **Table 5-30**.

The top 10 industries in terms of their employment contribution to the region-wide economy are shown. The region produces more than $9.2 billion in annual value-added per year and employs 105,560 people. Output (Column 3 in **Table 5-30**) is a measure of the total goods and services used and produced by a given industry and is closely related to sales. By all three measures, employment, labor income, and output, the top industry is state and local government, including education. Even after excluding education, state and local government is the top employer. Food services are next on the list, followed by federal government (military), real estate establishments, non-residential construction, securities, health care professionals, federal government (non-military), and retail sales.

TABLE 5-30
Top 10 Industries by Employment in the Local Region Composed of Platte, Goshen, Converse, Laramie, and Albany Counties (2011 data)

Sector	Description	Employment	Labor Income	Output
438	Employment and payroll only (state & local government, education)	12,241	$652,986,800	$743,199,600
437	Employment and payroll only (state & local government, non-education)	9,666	$545,973,800	$619,963,800
413	Food services and drinking places	6,439	$112,890,700	$331,452,100
440	Employment and payroll only (federal government, military)	4,390	$514,312,400	$667,055,800
360	Real estate establishments	3,945	$41,489,970	$468,278,900
36	Construction of other new non-residential structures	3,213	$173,972,900	$353,828,300
356	Securities, commodity contracts, investments, and related activities	2,450	$35,882,620	$301,569,600
394	Offices of physicians, dentists, and other health practitioners	2,418	$199,440,900	$304,651,200
439	Employment and payroll only (federal government, non-military)	1,784	$387,384,500	$414,541,600
329	Retail Stores - General merchandise	1,773	$44,719,160	$102,536,100

Source: IMPLAN Data for 2011.

5.4.2.5 WW&P Construction Impacts on Employment and Value Added

The estimate of economic impacts from WW&P construction activities on the five-county economic region is measured in terms of value-added and employment. These figures depend upon the local share of direct costs to construct the Project. To develop a construction cost model and estimate of labor requirements for the WW&P Project, WW&P worked with wind energy construction contractor Renewable Energy Systems (RES), a member of the RES Group of companies that has constructed nearly 100 wind projects around the world with a total capacity of more than 6,000 megawatts (MW). The estimate for the local share of the workforce was based upon this experience and knowledge of the local labor market. Local construction costs for the Project and local expenditures on accommodations and food by the non-local workforce are estimated as shown in

Table 5-31. While it is assumed that the outside labor force would send their payroll remittances to their home origins, they do contribute to the local economy through their expenditures on food and housing. The local labor force would spend their payroll within the local economy similar to other local households. Most local construction expenditures would be for procurements in the wholesale trade and non-residential construction sectors. The expenditures are reported annually and by IMPLAN sector to show the inputs to the IMPLAN model. The IMPLAN model was built using economic data for 2011. The local WW&P construction costs were converted to 2011 dollars using the GDP deflator to run the model and then converted back to 2013 dollars for reporting results. Regional price coefficients were set to 1 for each model run as only local expenditures were included as inputs. In 2013, the first year of construction, total local expenditures come to $1.12 million. Expenditures increase to $7.3 million in 2014 and increase again to $19.8 million in 2015 before peaking at $38.27 million in 2016. In the last 3 years of construction, expenditures hold steady at about $15 million. Excluding the wind turbines, the local construction expenditures represent approximately one-third of total costs to construct the Project.

TABLE 5-31
Local Annual Expenditures to Construct the Project (2013 dollars) by IMPLAN Sector

IMPLAN Sector Input ($2013)	2013	2014	2015	2016	2017	2018	2019
36 - Non-Residential Construction	$370,673	$2,120,201	$5,609,265	$17,042,825	$5,084,944	$5,084,944	$4,223,159
319 - Wholesale and Trade Businesses	$624,977	$4,314,078	$11,903,289	$15,639,831	$7,814,905	$7,814,905	$7,814,905
369 - Engineering	$32,697	$98,092	81,743	$32,697	$32,697	$32,697	$16,349
411-Accommodations	$60,214	$481,712	$1,379,686	$3,479,322	$1,748,824	$1,651,829	$1,526,294
413 - Food	$35,972	$287,776	$824,228	$2,078,556	$1,044,752	$986,807	$911,812
Total	$1,124,533	$7,301,859	$19,798,211	$38,273,231	$15,726,123	$15,571,183	$14,492,519

Sources: Renewable Energy Systems (2013), CH2M HILL (2013), and GSA rates of $77 per day for accommodations and $46 per day for food, 20 days per month by number of non-local workers downloaded from http://www.gsa.gov/portal/category/100120.

Table 5-32 shows the summary results of the analysis for years 2013 through 2019. The IMPLAN model uses the BLS Growth Model to convert nominal dollars into 2013 dollars. Local construction costs are estimated at $1.2 million in 2013. This creates six jobs directly involved with the Project, and a total of nine jobs in the five-county region. Total value added is estimated at $0.5 million. Total sales volume as measured by total output is $0.9 million.

TABLE 5-32
Local Expenditures ($2013 million) and Economic Impacts 2013 through 2019

Year	Costs Total	Total Value-Added	Total Output (sales volume)	Direct Jobs Created	Secondary Job Creation	Total Jobs Created
2013	$1.2	$0.5	$0.9	6	3	9
2014	$7.3	$2.2	$5.7	33	15	48
2015	$19.8	$8.3	$15.2	86	38	124
2016	$38.3	$20.5	$38.2	244	96	340
2017	$15.7	$7.5	$13.8	91	35	126
2018	$15.6	$7.5	$13.8	90	35	125
2019	$14.5	$6.6	$12.3	71	32	103

Source: Developed by CH2M HILL (2013).

The economic impact of the Project increases in 2014 with $7.3 million in direct expenditures, $2.2 million in value added, and $5.7 million in total output while creating 33 direct jobs and 48 jobs overall. In 2015, local expenditures climb to $19.8 million with corresponding increases in value added of $8.3 million and output of $15.2 million. In 2015, the Project creates 86 direct jobs and 38 indirect jobs, raising total employment in the five-county area by 124 jobs. In 2016, local expenditures peak at $38.3 million, value added at $20.5 million, and output at $38.2 million. New direct jobs rise to 244, leading to an additional 96 secondary jobs for 340 total new jobs created. The years 2017 and 2018 are relatively similar with direct expenditures more than $15 million, value added of $7.5 million, output of $13.8 million, and about 90 direct and 125 total jobs. Despite a similar level of direct expenditures in 2019, the impacts, especially job creation, are slightly lower in the final year of construction. On an average annual basis, the Project contributes about 89 direct jobs to the region. This represents about 3 percent of the total number the region employs in the non-residential construction sector.

Wage and Benefits for Construction and Operations. The Research and Planning section of the Wyoming Department of Employment, in cooperation with the BLS, conducts an Occupational Employment Statistics (OES) Wage Survey. The OES program estimates occupational employment and wages. Data obtained from polled establishments are used to estimate occupational employment and wage rates for unemployment insurance (UI) covered wage and salary jobs in non-farm establishments. Wages for the OES Wage Survey include base pay rates, cost-of-living allowances, guaranteed pay, hazard pay, incentive pay, commissions, piece rates and production bonuses, length-of-service allowances, on-call pay, and portal-to-portal pay. The hourly wage estimates are calculated using a year-round, full-time figure of 2,080 hours per year (52 weeks times 40 hours).

Employee Wage Estimates. As mentioned above, the workforce estimate was developed by WW&P's construction consultant, Renewable Energy Systems. This workforce is classified by nine primary disciplines defined by the Wyoming Department of Workforce Services for Construction Projects in Wyoming. Information compiled by the Department of Employment on annual and hourly wages is presented in **Table 5-33** for skilled labor categories that are expected to be present throughout the construction phase. Similar data for the operations phase are presented in **Table 5-34**. Construction managers are at the high end of the pay scale earning more than $86,000 per

year on average. Supervisors and millwrights each draw over $60,000 per year, while electricians earn more than $50,000 annually. Operators, carpenters, ironworkers, and truck drivers earn between $40,000 and $50,000 on average and construction laborers are paid about $30,000 per year.

TABLE 5-33
Average Wages (Annual and Hourly) Per Construction Occupations, Wyoming, 2012

Occupation/Occupational Code	Estimated Employment	Mean Wage Annual & Hourly ($)	10th percentile ($)	25th percentile ($)	Median Wage ($)	75th percentile ($)	90th percentile ($)
Laborers/47-2060	2,640	31,302	22,620	26,507	30,507	35,786	39,135
		15.04	10.88	12.75	14.67	17.2	18.82
Operators/47-2070	5,600	48,722	35,278	41,152	47,701	56,693	63,534
		23.42	16.96	19.78	22.93	27.25	30.55
Carpenters/47-2031	2,530	41,566	25,613	33,044	38,578	49,297	60,468
		19.99	12.31	15.89	18.54	23.71	29.07
Ironworkers/47-2170	230	44,969	27,151	34,130	46,023	56,170	60,771
(47-2173 was the closest code with data)		21.62	13.05	16.41	22.13	27.01	29.22
Truck Drivers/53-3032	6,150	44,378	30,692	35,578	42,841	50,635	61,106
		21.33	14.76	17.11	20.6	24.34	29.38
Millwrights/49-9044	220	62,563	45,228	52,990	61,501	73,165	85,889
		30.08	21.75	25.48	29.56	35.18	41.3
Electricians/47-2111	2,730	53,152	31,468	40,902	53,404	63,297	75,688
		25.56	15.13	19.66	25.68	30.44	36.39
Supervisors/47-1011	3,220	65,724	41,246	48,837	61,493	77,238	101,255
		31.59	19.83	23.48	29.56	37.13	48.68
Construction Management/11-9020	400	86,859	54,406	67,693	83,165	101,825	131,757
		41.76	26.16	32.54	39.99	48.95	63.35

Source: Occupational Employment and Wages September 2012, downloaded June 11, 2013, from http://doe.state.wy.us/LMI/EDS2012SeptECI/TOC000.htm.

Similar data for the operations phase are presented in **Table 5-34**, where the plant site manager in charge of production earns about $108,000 on average in Wyoming. The average wage for wind turbine technicians is more than $21/hour. The other occupations that will be employed to operate and maintain the wind farm are paid salaries ranging on average between approximately $60,000 and $85,000 annually.

TABLE 5-34
Average Wages (Annual and Hourly) Occupations, Wyoming, 2012

Occupation/Occupational Code	Estimated Employment	Mean Wage Annual & Hourly ($)	10th percentile ($)	25th percentile ($)	Median Wage ($)	75th percentile ($)	90th percentile ($)
Plant Site Manager/ 11-3051	230	108,512	68,443	95,019	108,747	120,902	149,901
		52.17	32.91	45.68	52.28	58.13	72.07
Health and Safety Coordinator/ 17-2111	60	67,486	48,196	53,812	61,614	79,527	95,414
		32.45	23.17	25.87	29.62	38.23	38.23
Inventory Coordinator/ 51-801	50	83,738	74,177	81,040	84,971	91,482	95,697
		40.26	35.66	38.96	40.85	43.98	46.01
Site Planner/ 51-8013	410	63,493	38,535	55,728	67,030	74,081	80,130
		30.52	18.53	26.79	32.23	35.62	38.52
O&M Wind Turbine Technicians/49-9081	Not Available	44,250	31,700	33,940	37,680	51,440	68,100
(Note 1)		21.27	15.24	16.32	18.11	24.73	32.74

Note 1: The data for this category were downloaded from BLS for May 2012 from http://www.bls.gov/oes/tables.htm.
Source: Occupational Employment and Wages September 2012, downloaded June 11, 2013, from http://doe.state.wy.us/LMI/EDS2012SeptECI/TOC000.htm

Employee Benefits Estimates. Total employee compensation includes wages and salaries as well as benefits such as health insurance and retirement plans. In 2011, wages and salaries comprised 83.3 percent of Wyoming compensation costs, while medical, dental, and vision insurance contributions came to 10.6 percent and retirement contributions made up the remaining 6 percent.[14] These percentages are expected to apply to the WW&P Project, as it is consistent with the information provided by Renewable Energy Systems, a construction contractor with experience constructing wind energy projects.

5.4.2.6 Tax Revenue

During the construction phase, the Project would contribute to state and local revenue through *ad valorem* and sales and use taxes. The *ad valorem* tax receipts are described first followed by the sales and use taxes.

Ad Valorem Taxes During Project Construction

Ad valorem taxes support a variety of county and municipal operations including airports, fire protection, hospitals, libraries, museums, public health, recreational systems, special districts, and education. Assessed property values are the basis for *ad valorem* taxes. Property values related to the Project are determined annually on a centralized basis by the Wyoming Department of Revenue (WDOR).

[14] Wyoming Department of Workforce Services, Research and Planning, 2011; W*yoming Benefits Survey, 2012 published March 2013*, Downloaded from http://doe.state.wy.us/LMI/benefits2012/benefits2012.pdf, Accessed June 10, 2013.

It is the WDOR's role to estimate the fair market value (FMV) of the industrial facility, including the value of the land and improvements. It is the owner's responsibility to provide WDOR with all necessary information to enable the department to make this determination. The owner provides WDOR with all property located in the state on the lien date, which is January 1 of each calendar year. Developments or Construction Work in Progress (CWIP) are taxable prior to their completion and operation, especially in the case of multi-year construction schedules. Under such circumstances, the owner provides WDOR with cumulative construction costs that are then incorporated into its appraisal.

After WDOR determines the FMV of the industrial facility, the assessed value is stated as 11.5 percent of this value. The assessed value is then allocated to the counties within which the Project is located. These counties then apply the property tax levy (for the tax district within which each Project is located) to calculate the annual property taxes due. The proposed site is primarily located in Platte County, where the average 2012 tax levy is 72.8 mills. Thus, for every $1,000 of assessed value of real property (land and improvements), Platte County will levy property taxes of $72.83 annually. The property tax revenues received by the county are distributed across a number of taxing entities, as shown in **Table 5-36**, with the majority supporting public education. As shown in Figure 5-2, a small fraction of the wind farm will be located within Goshen County, where the average 2012 levy is 70.127. WW&P projected future property tax payments based upon guidance issued by WDOR, Property Tax Division on cost method of value assessment for wind energy facilities. With construction beginning in 2013, improvement values from that year are reportable in 2014. WW&P estimated the value of wind facility improvements, by year, and calculated the assessed value using the 11.5 percent assessment rate assigned by WDOR. The assessed value was then multiplied by the average Platte County mill levy rate of 72.8, starting in 2014, and escalating over time. The wind facility improvements were depreciated to 21 percent of their initial value by the end of the 25-year operating term.

As shown in **Table 5-35**, WW&P estimates that $23,000 in *ad valorem taxes* will be paid to Platte and Goshen Counties in 2014 following the first year of construction. Payments rise to $134,000 in 2015 and $493,000 in 2016 before jumping to $4,309,000 in 2017. In the last year of construction, the estimated revenue from the Project is $6,652,000. Total receipts during the construction phase amount to more than $17 million. This means that the average annual payment over 6 years is about $2.8 million.

TABLE 5-35
WW&P Estimated *Ad Valorem* Taxes During Construction Phase

Year	*Ad Valorem* Tax Payments
2014	$23,000
2015	$134,000
2016	$493,000
2017	$4,309,000
2018	$5,409,000
2019	$6,652,000
Total	$17,020,000

In 2012, Platte County collected over $11.6 million in *ad valorem* taxes. With most of the property taxes paid by the Project going to Platte County, on average, this would contribute about 24 percent additional revenue to the county from this source during the construction phase. The current mill levies for Chugwater and Wheatland, and how they are distributed among the taxing entities in these jurisdictions, are shown in **Table 5-36**. Schools will be the primary beneficiaries of the increase in revenue. Other beneficiaries include the county, special districts, and municipalities as well as Goshen County.

TABLE 5-36
Millage by Taxing Entity, Chugwater and Wheatland, Platte County (2012)

Taxing Entity	Chugwater Millage	Wheatland Millage
General County Levy	12	12
Special District (fire, cemetery, weed & pest, conservation, senior citizens' services)	16	
Special District (weed & pest, Conservation, Senior Citizens' services)		11
Schools	44.5	44.5
Municipal	5.0	8.0
Total	77.5	75.5

Wyoming Department of Revenue, 2012.

Sales, Use, and Lodging Taxes from Constructing the WW&P Project

The State of Wyoming levies a state sales tax of 4 percent on a wide array of goods and services purchased within the state. The use tax is a companion to the sales tax and is imposed upon goods purchased tax-free outside Wyoming for use in Wyoming. Collected taxes are shared between the state (69 percent) and counties (31 percent). Counties can levy the following additional sales and use taxes: general-purpose option tax of 1 percent, specific-purpose option tax of 1 percent, and lodging tax of up to 4 percent on hotel and motel room charges for stays under 30 days.

The sales and use taxes that will accrue to the state and area as a direct result of constructing the WW&P Project are estimated as the product of the non-labor construction expenditures and the 6 percent sales and use tax rate that applies to three of the five counties in the area. Goshen County's tax rate is 5.25 percent and Converse County's tax rate is 5 percent. In 2013, the payments relate only to the fourth quarter. In all other years, it is assumed that the annual payments are divided equally among each quarter. In addition to expenditures to construct the Project, local tax revenues would accrue from the sale of goods and services to non-local workers. The sources of these potential tax revenues are shown in **Table 5-37a** and the estimated annual sales and use tax revenue are reported in **Table 5-37b.**

TABLE 5-37A
Estimate of Sources of Sales and Use Tax Revenues in Connection with the Purchase of Materials for Construction of the Facility and Purchases by Nonlocal Workforce

Source of Tax Revenue	2013	2014	2015	2016	2017	2018	2019
Construction	$53,483,000	$4,300,000	$11,900,000	$550,250,000	$164,083,000	$164,083,000	$162,167,000
Accommodations and food	$96,000	$769,000	$2,204,000	$5,558,000	$2,794,000	$2,639,000	$2,438,000

Sources: WW&P and CH2M HILL, 2013

TABLE 5-37B
Estimate of Tax Revenues Accruing to Local Governments from Purchases and from Non-Local Worker Expenditures in Platte, Goshen, Converse, Laramie and Albany Counties

Type of Tax	Tax Rate	2013	2014	2015	2016	2017	2018	2019	Total
State	4%	$2,143,167	$202,780	$564,157	$22,234,315	$6,675,063	$6,668,865	$6,584,204	$45,072,551
General Purpose Option	1%	$535,792	$50,695	$141,039	$5,558,579	$1,668,766	$1,667,216	$1,646,051	$11,268,138
Specific Purchase Option	1%	$535,792	$50,695	$141,039	$5,558,579	$1,668,766	$1,667,216	$1,646,051	$11,268,138
Total	**6%**	**$3,214,751**	**$304,169**	**$846,235**	**$33,351,473**	**$10,012,595**	**$10,003,298**	**$9,876,306**	**$67,608,827**

Source: WW&P, 2013, and CH2M HILL, 2013.

Estimated sales and use tax revenues totaling approximately $68 million will accrue over the construction period to the state general fund, the area counties, and their communities. Tax revenue receipts from the state's 4 percent tax account for approximately $45 million of this total. Of this $45 million, 69 percent or $31million accrues to the state general fund. The remaining $14 million, less a small administrative fee, will be returned to the local jurisdictions. The area counties will also receive revenue from the 1 percent general purpose tax and the 1 percent specific purpose tax, each exceeding $11 million. This brings the county share to about $36 million in all or about $5 million on an average annual basis over the 7 years that sales and use taxes would be collected. Most of the county share of the sales and use tax revenue will accrue to Platte County, where the majority of Project is located.

As shown in **Table 5-24,** Platte County collected about $11 million from this source of tax revenue in 2012. A $5 million boost to sales and use taxes from Project construction would represent a 45 percent increase measured relative to Platte County's recent tax receipts.

Lodging tax revenues could accrue to the counties in which Project-related construction workers temporarily reside. Estimates of these potential tax revenues are not presented in **Table 5-37b**. This is because lodging taxes are levied only on sleeping accommodations for guests staying less than 30 days. In general, the non-local workers are expected to stay longer than 30 days.

Impact Assistance Payments

The ISD provided an estimate of Impact Assistance Payments (summarized in **Table 5-38**). The document received from ISD is attached as Appendix C.

TABLE 5-38
Forecast of Impact Assistance Payments

Serial No.	Month	SLR	Base Period	Impact Assistance
107	May 2013	182,899	181,590	1,309
108	June 2013	183,305	181,590	1,715
109	Jul 2013	183,712	181,590	2,122
110	Aug 2013	184,118	181,590	2,528
111	Sep 2013	184,525	181,590	2,935
112	Oct 2013	184,931	181,590	3,341
113	Nov 2013	185,338	181,590	3,748
114	Dec 2013	185,744	181,590	4,154
115	Jan 2014	186,150	181,590	4,561
116	Feb 2014	186,557	181,590	4,967
117	Mar 2014	186,963	181,590	5,373
118	Apr 2014	187,370	181,590	5,780

The forecasted average monthly impact assistance payment is $3,544, and the forecasted yearly impact assistance payment is $42,533. The forecasted growth rate in sales and use tax is 1.024 percent.

5.4.2.7 Operation Impacts

WW&P Operations Impacts on Employment and Value Added

Following completion of the Project, it is anticipated that annual O&M of the newly installed equipment will require up to 31 new positions, which will be filled primarily by workers resettling to the area on a permanent basis. Total compensation is estimated at $1.88 million per year. WW&P estimates that annual local procurements for the operations phase will average approximately $8.6 million. Thus, the combined total for annual local O&M is $10.48 million. These direct local expenditures generate $8.4 million in total value added and a total of 55 new jobs in the area, including the 31 new employees working at the WW&P.

The results of the analysis of the total economic impacts for the five-county area are shown in **Table 5-39**.

TABLE 5-39
Annual Economic Impacts of WW&P O&M ($2012)

IMPLAN Sector	Local O&M Costs Per Year	Total Value Added	Total Output	Direct Jobs Created	Total Jobs Created
31 (Electricity Generation, Transmission, and Distribution)	$10.48 million	$8.4 million	$14.1 million	31	55

The top 10 industries in the region affected in terms of employment are shown in **Table 5-40**. The electric power generation, transmission, and distribution industry will add 31 new direct jobs. The remaining new jobs are due to the new spending on supplies and services to support this industry as well as the new spending in the area by the WW&P employees. The food services sector is expected to add four new jobs and the maintenance, repair, and construction of non-residential structures sector will employ three additional workers. The other sectors that make the top 10 list will each add one job with the exception of retail stores, which will gain 0.5 FTEs.

TABLE 5-40
Top 10 Industries Experiencing Job Creation Due to the O&M Phase

Sector	Description	Total Employment	Total Labor Income ($)	Total Value Added ($)	Total Output ($)
31	Electric power generation, transmission, and distribution	31	$1,892,545	$6,611,415	$10,607,663
413	Food services and drinking places	4	$74,998	$110,951	$223,014
39	Maintenance and repair construction of non-residential structures	3	$195,283	$205,955	$349,236
360	Real estate establishments	1	$13,782	$106,143	$158,846
356	Securities, commodity contracts, investments, and related activities	1	$13,783	$14,790	$113,112
367	Legal services	1	$45,376	$69,896	$97,007
354	Monetary authorities and depository credit intermediation activities	1	$42,754	$161,259	$259,561
333	Transport by rail	1	$86,088	$146,225	$341,438
394	Offices of physicians, dentists, and other health practitioners	1	$57,180	$58,860	$89,674
329	Retail stores - general merchandise	0.5	$12,364	$21,813	$28,290

Source: Minnesota IMPLAN Group and CH2M HILL, 2013.

Ad Valorem Taxes during WW&P Project Operations

Ad valorem tax revenues that would accrue to Platte and Goshen Counties during the operations phase were estimated in a similar manner, as described above in the section *Ad Valorem Taxes during Construction.* In sum, WW&P estimated the value of wind facility improvements, by year, and calculated the assessed value using the 11.5 percent assessment rate assigned by the Wyoming Department of Revenue. Because the Project falls almost entirely within Platte County, the assessed value was then multiplied by the average Platte County mill levy rate 72.8 starting in 2014 and escalating over time. The Goshen County mill levy is slightly smaller. The wind facility improvements were depreciated to 21 percent of their initial value by the end of the 25-year operating term. The estimated annual revenue due to the Project over the operations phase is shown in **Table 5-41**. The property tax revenues received by the county and Wheatland and Chugwater are distributed across a number of taxing entities, as shown in **Table 5-36** with the majority supporting public education.

The post-construction operations phase of the Project commences in 2020 and continues until 2041. Total payments come to more than $134 million over this period or approximately $6 million a year

on average. This figure is additive to the $17 million paid during construction, bringing the total to $151 million overall. The Project's average annual contribution of about $6 million to Platte County's current $11.6 million will raise annual property taxes by more than 50 percent, even with a small share of the tax payments going to Goshen County.

TABLE 5-41
Estimate of *Ad Valorem* Taxes Paid Per Year and in Total during the Operations Phase

Year	*Ad Valorem* Taxes
2020	$7,778,397
2021	$7,565,491
2022	$7,600,852
2023	$7,589,780
2024	$7,650,190
2025	$7,777,576
2026	$7,858,326
2027	$7,792,883
2028	$7,595,515
2029	$7,279,133
2030	$6,934,369
2031	$6,542,749
2032	$6,116,394
2033	$5,701,879
2034	$5,264,460
2035	$4,810,269
2036	$4,388,289
2037	$4,087,214
2038	$3,805,601
2039	$3,570,936
2040	$3,451,286
2041	$3,312,546
Total	$134,474,135

Excise Tax on Electricity Generated by Wind

In 2010, Wyoming imposed a new excise tax of $1.00 per megawatt-hour on electricity generated by wind commencing once a turbine has been in operation for 3 years. Under the statute, 40 percent of the revenue "shall be deposited in the state general fund." The remaining 60 percent of the revenue "shall be distributed to the counties in this state where the generating facility is located. The amount shall be proportionately distributed to each county based upon the percentage of the assessed value of the generating facilities located within the county as compared to the total

assessed value of generating facilities located within the state."[15] Because the WW&P Project will be located in Platte and Goshen Counties 60 percent of the excise tax revenue will be shared by the two counties (approximately 91 and 9 percent of the 60 percent, respectively), and 40 percent will go to the state general fund.

Turbines are scheduled to come online in three segments over a 4-year period. In 2020, the first year that generation taxes will be due (3 years after the first segment of turbines come online), the estimated electricity taxes come to $2.01 million. In 2021, the second year that generation taxes are paid, estimated electricity taxes increase to $2.55 million. In 2022, it is anticipated that $3.09 million in electricity generation taxes will be due. By 2023, the WW&P Project will be fully operational, with associated electricity generation taxes of $3.6 million from that year onward. Over a 25-year life of the Project, it should produce approximately $91 million in generation taxes. . Of this $91 million, $36.4 million will be distributed to the state general fund and $54.6 million will be distributed to Platte and Goshen counties, with most of the county share going to Platte County.

5.4.3 Housing and Housing Availability Analysis

This section addresses the following six major topics: 1) composition of the existing housing, 2) housing inventory and residential construction trends, 3) home value and rental housing costs, 4) rental housing vacancies, 5) housing needs, and 6) temporary accommodations. As noted in Section 5.3, Natrona and Niobrara counties were excluded from the area of influence (AOI) based on their relatively lengthy commuting times; none of the communities in either county is within a 60-mile or 60-minute drive of the Project. As a result, this section focuses on the housing resources of the other five area counties – Albany, Converse, Goshen, Laramie, and Platte.

5.4.3.1 Existing Conditions

Housing Stock. Statewide, housing units in Wyoming rose by 19 percent between 2000 and 2011 compared to an increase of 16 percent across the five counties within the AOI. While Wyoming's housing markets have historically experienced severe shortages and a lack of affordable housing, many of these conditions are beginning to ease (WCDA, 2012). The total number of housing units in the five-county area increased by 9,668 units between 2000 and 2011, adding approximately 1,112 units between 2010 and 2011 alone (see **Table 5-42**). Of these housing units added in the five-county area in the past decade, the majority were located in Albany, Converse, or Laramie counties, each of which posted a 19-20 percent increase in housing stock during this period. In contrast, Goshen and Platte counties added 2-3 percent in housing stock between 2000 and 2011.

[15] W.S. § 39-22-111.

TABLE 5-42
2000 – 2011 Changes in Housing Units for Wyoming and Five-County Area

	Number of Units			
Area	**2000**	**2010**	**2011**	**% change**
Wyoming	223,854	261,868	265,528	19%
Albany County	15,215	17,939	18,086	19%
Converse County	5,669	6,134	6,466	14%
Goshen County	5,881	5,972	5,982	2%
Laramie County	34,213	40,462	41,095	20%
Platte County	4,528	4,667	4,657	3%
Study Area Total	**65,506**	**75,174**	**76,286**	**16%**

Source: U.S. Census Bureau, 2010 Census.

Table 5-43 summarizes the occupied versus vacant housing units in the five-county area as well as those that are renter occupied. In 2010, there were a total of 68,089 occupied housing units and 7,354 vacant units in the five-county AOI extent. Of these vacant housing units, 39 percent, or 2,886 units, were in Laramie County and 31 percent, or 2,248 units, were in Albany County. While approximately 25-30 percent of the housing stock in most of the five-county area was renter occupied, similar to the state as a whole, housing stock in Albany County and the City of Laramie was over 50 percent renter occupied due to a large student population (University of Wyoming).

TABLE 5-43
2010 Housing Unit Characteristics (Occupied, Vacant and Renter-Occupied) for Wyoming and the Five-County Area

	Total Housing Units	Occupied Housing Units		Vacant Housing Units		Renter Occupied Units	
Area Name	**Number**	**Number**	**Percent of Total**	**Number**	**Percent of Total**	**Number**	**Percent of Total**
Wyoming	**261,868**	**226,879**	**86.6**	**34,989**	**13.4**	**69,802**	**30.8**
Five-County AOI Housing Extent	**75,443**	**68,089**	**88.0**	**7,354**	**12.0**	**24,001**	**32.8**
Albany County	**17,939**	**15,691**	**87.5**	**2,248**	**12.5**	**7,857**	**50.1**
Laramie city	14,307	13,394	93.6	913	6.4	7,380	55.1
Converse County	**6,403**	**5,673**	**88.6**	**730**	**11.4**	**1,590**	**28.0**
Douglas city	2,788	2,546	91.3	242	8.7	894	35.1
Goshen County	**5,972**	**5,311**	**88.9**	**661**	**11.1**	**1,571**	**29.6**
Fort Laramie town	143	111	77.6	32	22.4	25	22.5
La Grange town	135	115	85.2	20	14.8	52	45.2

TABLE 5-43
2010 Housing Unit Characteristics (Occupied, Vacant and Renter-Occupied) for Wyoming and the Five-County Area

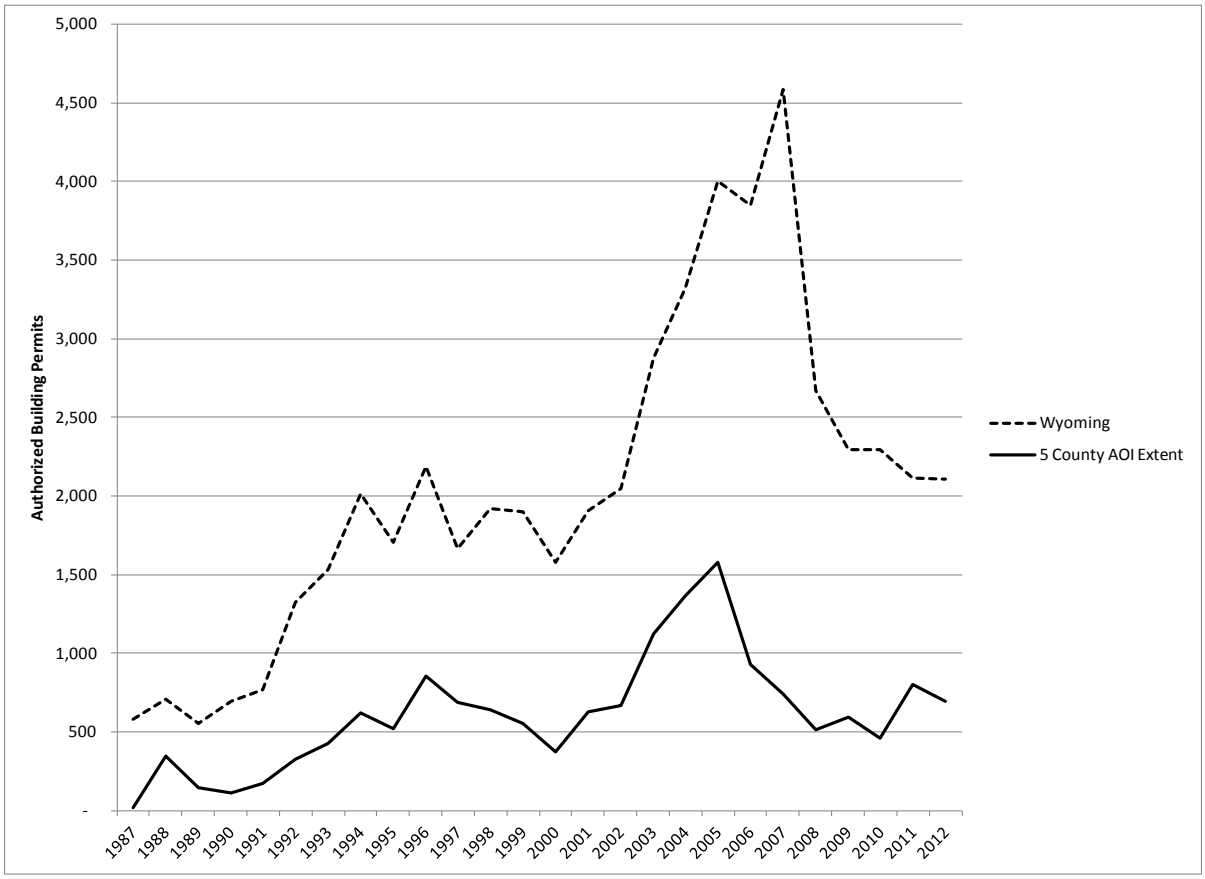
	Total Housing Units	Occupied Housing Units		Vacant Housing Units		Renter Occupied Units	
Area Name	**Number**	**Number**	**Percent of Total**	**Number**	**Percent of Total**	**Number**	**Percent of Total**
Lingle town	217	204	94.0	13	6.0	51	25.0
Torrington city	2,717	2,527	93.0	190	7.0	870	34.4
Laramie County	**40,462**	**37,576**	**92.9**	**2,886**	**7.1**	**12,043**	**32.0**
Cheyenne city	27,283	25,557	93.7	1,726	6.3	9,256	36.2
Platte County	**4,667**	**3,838**	**82.2**	**829**	**17.8**	**940**	**24.5**
Chugwater town	106	93	87.7	13	12.3	22	23.7
Glendo town	167	101	60.5	66	39.5	23	22.8
Guernsey town	581	504	86.7	77	13.3	35	26.8
Hartville town	45	32	71.1	13	28.9	4	12.5
Wheatland town	1,879	1,657	88.2	222	11.8	498	30.1

Source: U.S. Census Bureau, 2010 Census, prepared by WY DEA, 2011.

Housing Construction Activity. As demonstrated nationally during the past 5 years, the residential construction industry is highly cyclical and sensitive to economic and financial conditions. While Wyoming saw moderating sales prices due to the economic downturn, new housing unit production, indicated by residential permits, still exceeded 2,000 new units annually between 2002 and 2012. Construction peaked in 2007, with 4,584 units permitted, and then fell sharply by 42.0 percent between 2007 and 2008, and by another 14.0 percent between 2008 and 2009 (WCDA, 2011).

Figure 5-12 illustrates the number of housing units authorized annually for construction in Wyoming and the five-county WW&P AOI extent. While the growth and contraction of the new housing market has generally reflected that of the state overall historically, the WW&P AOI extent did not experience the same jump in construction activity in 2007. After witnessing steady growth in construction authorizations between 2000 (372 permits) and 2005 (1,582 permits), the AOI extent saw only 458 new units permitted in 2010 and 696 in 2012. The contribution that residential construction activity in the five-county AOI has made to that of the state has varied substantially from lows of approximately 4 percent in 1987 to highs of about 40 percent in 1996, 1997, 2003 to 2007 and, more recently, in 2011.

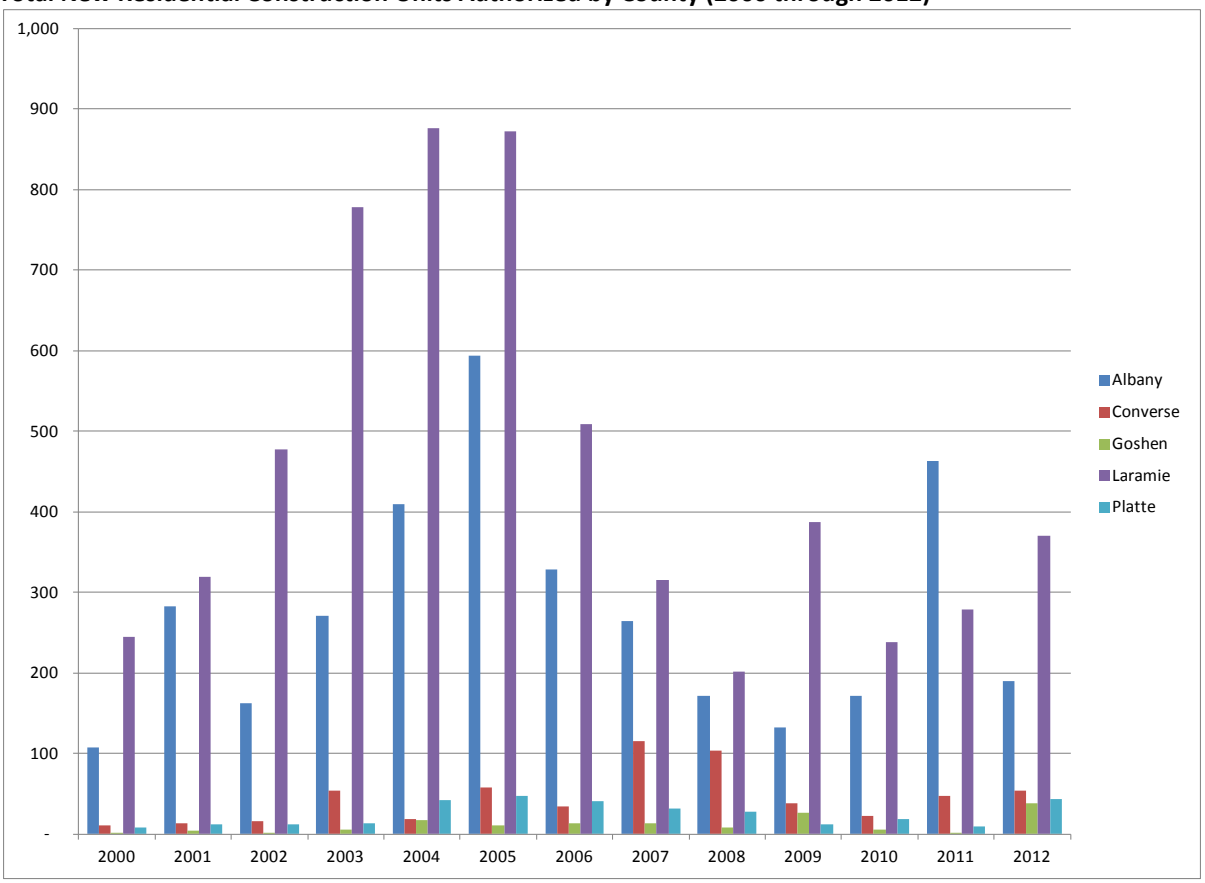
FIGURE 5-12
New Housing Units Authorized for Construction for the Five-County Area of Influence and State (1987 through 2012)



Source: Wyoming Economic Analysis Division (WY EAD), 2013.

On average, approximately 90 percent of the new housing authorized for construction over the past decade in the five-county area has been in either Laramie County or Albany County, as shown in **Figure 5-13**. Laramie County has contributed an average of 55 percent of the new construction in the five-county area since 2000, while Albany County has contributed 34 percent. **Figure 5-13** further illustrates that, with the exception of a relatively minor increase in permits in Laramie County in 2009, the five-county area overall experienced a peak in new construction earlier in the decade (2004-2005) than did the state and nation as a whole, both of which crested in 2007.

FIGURE 5-13
Total New Residential Construction Units Authorized by County (2000 through 2012)

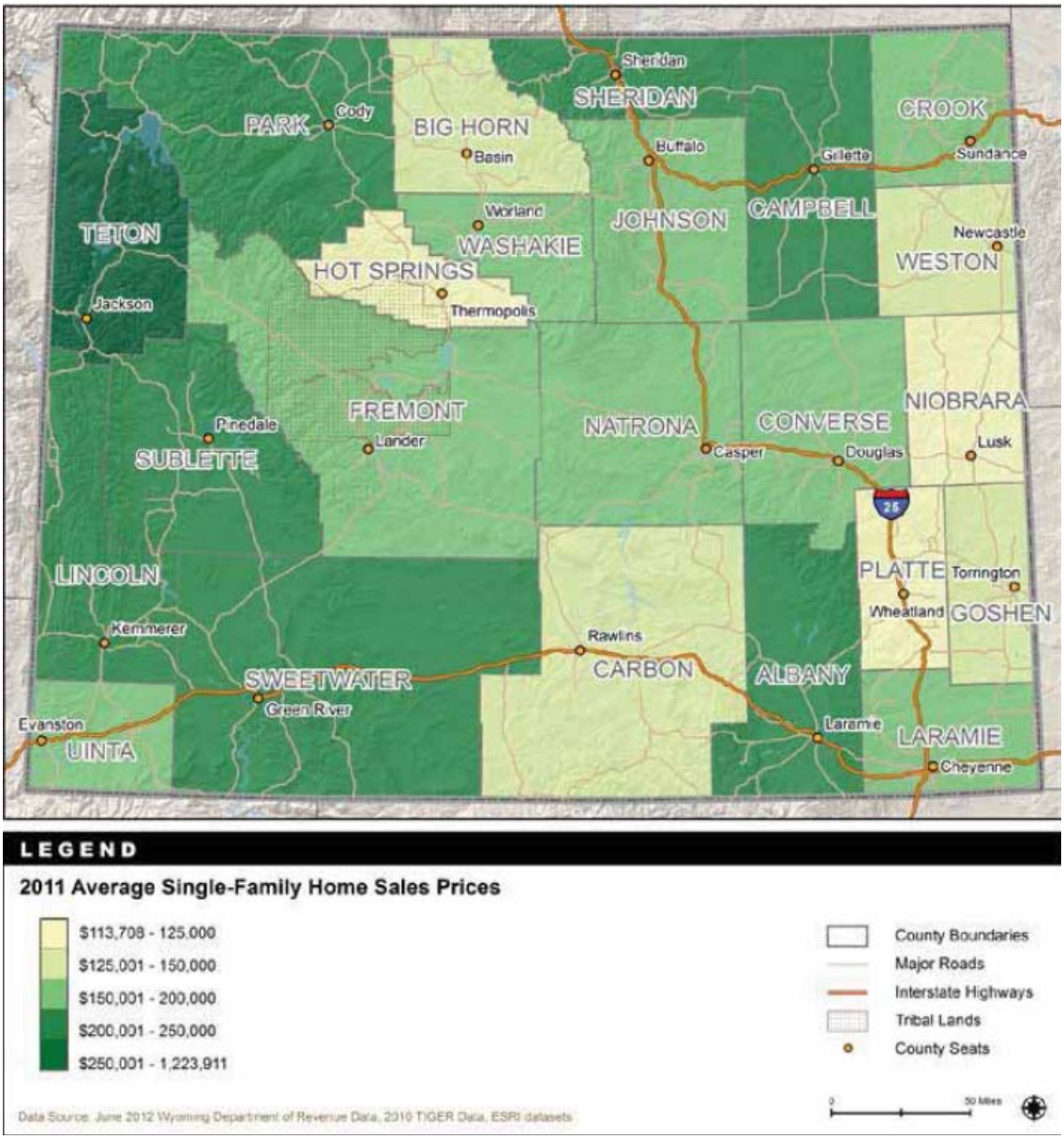


Source: Wyoming Housing Database Partnership, 2012.

5.4.3.2 Home Value and Rental Housing Costs

Home Values. The Wyoming Housing Database Partnership annually compiles the average sales price of existing, detached, single-family homes on 10 acres or less sold from each county's tax assessor. Home values across the state have varied only modestly since the 1980s when Wyoming experienced an average annual percentage decrease of 2.6 percent. An average annual growth of 4 to 5 percent was observed in the 1990s. In contrast, between 2004 and 2010, sales prices more than doubled from a statewide simple average of $142,501 to $261,532, an average increase of 10.7 percent per year (WCDA, 2011). This trend moderated some recently, with sales prices declining by 3.8 percent between 2010 and 2011 to $241,301 for existing homes. **Figure 5-14** illustrates that the average single-family home sales price in 2012 varied greatly by county across the state. Teton County, located on Wyoming's northwest border and home to multiple ski resorts, which saw a substantial 35.8 percent hike in the average sales price from $1.4 million to $1.9 million in 2010. However, a year later, the county suffered a sharp 38 percent drop in housing prices, with the average sales price of a home falling from $1,974,629 to $1,223,911.

FIGURE 5-14
Average Single-Family Home Sales Price in Wyoming in 2012



Source: Wyoming Community Development Authority, 2012.

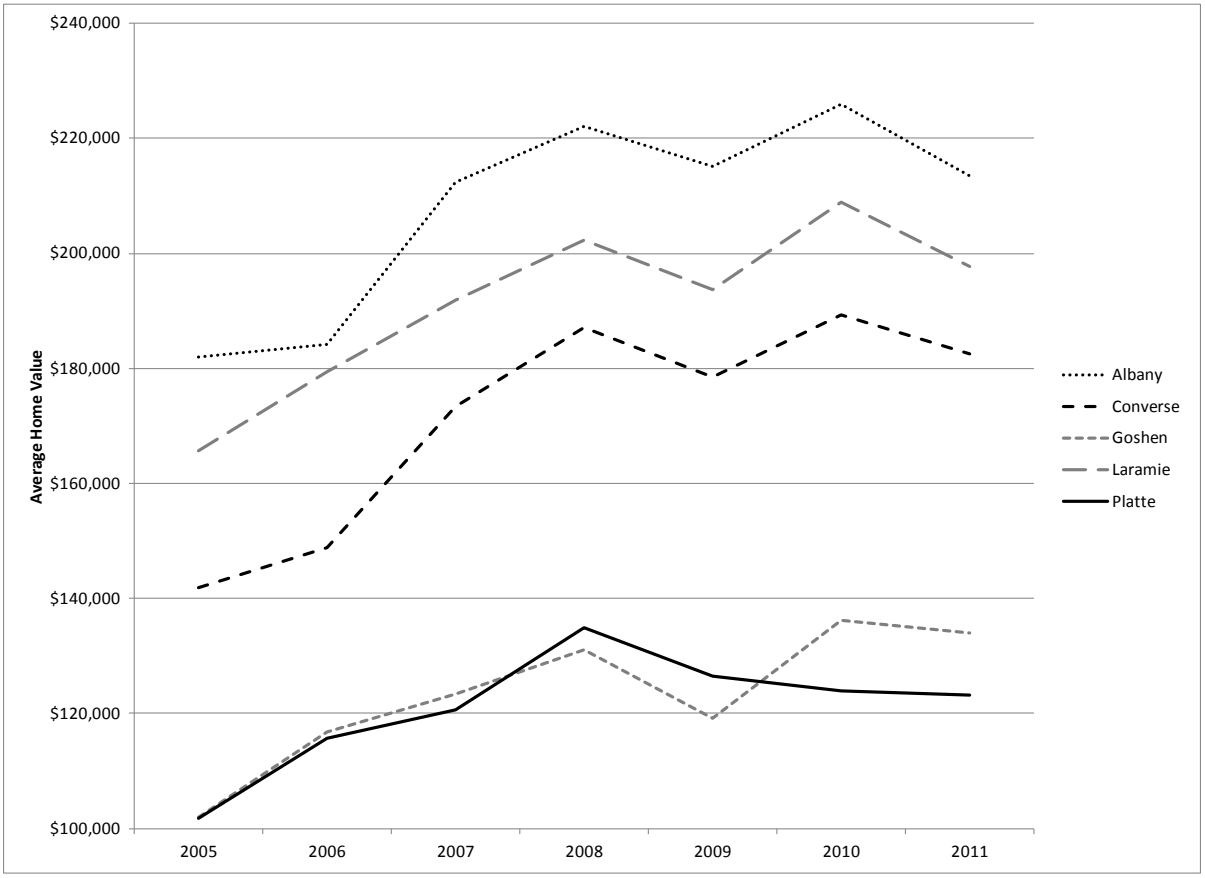
Recent home sales for the five counties in the AOI are summarized in **Table 5-44,** while **Figure 5-15** illustrates the change in average home values. Each county shows increasing sales prices through 2008, with noticeable declines in 2009. However, with the exception of Platte County, sale prices rebounded in the five-county area in 2010, only to decline again in 2011. The simple average home sale price in the five-county area in 2011 was $170,169, while the weighted average, integrating the number of home sales, was $191,918. Home sale prices were highest in Albany County at $213,452, followed by Laramie County ($197,700) and Converse County ($182,466). The average sale price of homes in Platte County, the location of the Project, was $123,137, the least expensive in the five-county area. The ranges in median prices in 2011 extend from a low of $116,000 in Platte County to a high of $198,750 in Albany County.

TABLE 5-44
Home Sales in the Five-County Area from 2005 through 2011 (Assessor Data: Nominal Dollars and Annual Percent Change)

County	2005	2006	2007	2008	2009	2010	2011	# Sales 2011	2010-11%	2011 Median
Albany	182,000	184,159	212,313	222,151	215,069	225,991	213,452	272	-5.50%	198,750
Converse	141,949	148,804	173,375	187,131	178,401	189,267	182,466	84	-3.60%	180,500
Goshen	102,053	116,812	123,393	131,037	119,207	136,174	134,089	125	-1.50%	125,000
Laramie	165,743	179,338	191,863	202,304	193,759	208,842	197,700	886	-5.30%	177,000
Platte	101,802	115,617	120,692	134,896	126,479	123,898	123,137	43	-0.60%	116,000
Simple Average	138,709	148,946	164,327	175,504	166,583	176,834	170,169			
Weighted Average								191,918		

Source: Wyoming Community Development Authority, The 2012 Wyoming Profile of Demographics, Economics, and Housing, Vol. 1, September 2012.

FIGURE 5-15
Average House Value for Counties in the Area of Influence (2005 through 2011)



Source: Wyoming Community Development Authority, 2012.

Rental Housing Costs. For workers seeking temporary relocation to an area, housing rental rates for apartments, houses, and mobile home lots are generally more relevant than home sale prices. The number of renter-occupied housing units and the percentage they represent of the total number of housing units in each county are summarized in **Table 5-43**. The most recent rental rate data cover the annual period from the second quarter of 2011 to the second quarter of 2012, as presented in **Table 5-45.** Rental rates for mobile homes increased approximately 2.4 percent across the AOI counties in 2011, averaging $601 compared to a statewide rental rate of $651. While apartment rental rates declined slightly in Converse and Laramie counties in 2011, they rose 3.7 percent in the AOI, overall, to an average of $593. Rates for home rentals in AOI counties increased 12.4 percent in 2011 to an average of $836 a month. Average rents were highest for mobile homes and houses in the second quarter of 2012 in Converse County followed closely by Albany and Laramie counties. Apartment rates were highest in Albany County averaging $685 a month versus $593 for the overall AOI and $666 for the state. Rental rates are by far the lowest in Platte County, although the supply of potential rental units is also relatively low as compared to the counties in the AOI.

TABLE 5-45
Average Apartment, Mobile Home Lot, and House Rental Rates for Counties in the Area of Influence

	Apartment [1]			Mobile Home [2]			House [3]		
County	**2Q12**	**2Q11**	**Percent Change**	**2Q12**	**2Q11**	**Percent Change**	**2Q12**	**2Q11**	**Percent Change**
Wyoming	$666	$656	1.5%	$651	$636	2.3%	$958	$935	2.5%
Albany	$685	$658	4.1%	$669	$647	3.4%	$1,023	$962	6.3%
Converse	$540	$550	-1.8%	$734	$646	13.6%	$1,167	$725	60.9%
Goshen	$589	$557	5.6%	N/A	N/A		$555	$579	-4.2%
Laramie	$649	$654	-0.8%	$667	$656	1.7%	$965	$991	-2.6%
Platte	$504	$452	11.5%	$333	$366	-9.1%	$468	$459	1.8%
AOI Average	**$593**	**$574**	**3.7%**	**$601**	**$579**	**2.4%**	**$836**	**$734**	**12.4%**

Notes:
[1] Two-bedroom units, unfurnished, excluding gas and electric.
[2] This price reflects total monthly rental expense, including lot rent.
[3] Two or three bedroom, single-family, excluding gas and electric.
NA - There were too few observations to report the data.
Source: WY EAD, 2012.

5.4.3.3 Rental Housing Vacancies

The State of Wyoming Housing Database Partnership estimates rental housing vacancy rates based on semiannual surveys, the most recent of which was conducted in December 2012 with 1,557 completed surveys from property managers overseeing a total of 34,632 rental units. A number of respondents continued to report that a portion of the rental stock was being sold into homeownership. Of the 34,632 total units in Wyoming, 1,444 were vacant, with the statewide rental vacancy rate rising modestly over the last 6 months to 4.2 percent. **Table 5-46** compares the survey sample size, total number of units, and vacancy rates for the five-county area and the state in 2011 and 2012. Of the 10,763 units in the five AOI counties administered by those surveyed in 2012, 292

were vacant, resulting in a vacancy rate of 4.1 percent, almost the same as the 4.0 percent vacancy rate for 2011.

TABLE 5-46
Rental Vacancy Rates in the Five-County Area of Influence

	2011b				2012b			
	Sample	Total Units	Vacant Units	Vacancy Rate	Sample	Total Units	Vacant Units	Vacancy Rate
Wyoming	1,400	29,990	1,646	5.5%	1,557	34,632	1,444	4.2%
Albany	110	2,228	48	2.2%	157	2,759	115	4.2%
Converse	44	619	13	2.1%	42	727	22	3.0%
Goshen	35	555	20	3.6%	35	572	8	1.4%
Laramie	203	5,739	199	3.5%	226	6,551	132	2.0%
Platte	16	190	16	8.4%	17	154	15	9.7%
AOI Counties	408	9,331	296	4.0%	477	10,763	292	4.1%

The most recent survey of property managers (June 2012) included 17 completed surveys for Platte County. Of the 154 rental units surveyed, 15 (9.7 percent) were vacant, well above the statewide average of 4.2 percent. **Table 5-47** summarizes the distribution of the vacant housing stock for rent by type in 2012; property managers indicated a waiting list of approximately 38 persons but indicated no desire to see units added to the rental market (WY EAD, 2012).

TABLE 5-47
Rental Vacancy Rates by Type of Unit in the Platte County in 2012

	Number of Vacant Units	Vacancy Rate
Single-Family Units	1	7.7
Apartments	10	9.1
Duplexes	0	0.0
Mobile Homes	3	14.3
Other	1	12.5
Total Vacant Units	15	
Size of Waiting List	38	
Total Number of Additional Units Desired	0	

5.4.3.4 Temporary Accommodations

Temporary accommodations, for purposes of this report, are defined as hotel and motel rooms and sites for RVs. These data were collected to assist with identifying the area primarily affected by non-local workers and to obtain housing commitments for the temporary non-local workforce. In years when facilities close to a project site have low vacancy rates, for example due to multiple projects, alternatives more distant from the project become more viable. However, it is reasonable

to assume that workers will tend to choose housing opportunities that are more convenient to their work in Platte County when such opportunities are available, affordable, and suitable.

Temporary accommodations in the five-county AOI experience an annual peak the last 2 weeks of July in association with Cheyenne Frontier Days™ (CFD), a 9-day western celebration with an outdoor rodeo, attractions, and entertainment held annually at Frontier Park near the Cheyenne Airport. Registered event attendance in 2009 totaled nearly 192,000, not including participation in events outside Frontier Park such as parades. During this time, many CFD attendees commute from communities within an hour drive of Frontier Park (CFD, 2012).

As discussed in Section 5.4.2, the potential also exists for an additional influx in temporary workers due to the increase in drilling related to the Niobrara Shale formation play beyond what has been observed historically in Laramie County. Of 154 permits approved in 2010, a total of 20 wells were completed, while in 2011, the 153 permits issued resulted in 35 well completions. To assess the potential impacts, a series of assumptions were based on records from the Wyoming Oil and Gas Commission databases and the reports discussed in Section 5.4.2. The Yampa Valley economic impact study helped inform the assumptions regarding the average life span of 100 days for each well construction project from site preparation to completion and production as well as the average number of workers needed by phase. These estimates include:

- Phase I – Infrastructure Development – Two crews of six to 10 workers each. One crew works 12-hour shifts every day for 2 weeks before switching with the second crew. Thus, the total duration of Phase I is under 30 days and the maximum number of temporary workers on any given day is 10.
- Phase II – Drilling – Four crews of seven to eight workers each. Two crews work every day for 2 weeks, with one crew taking the 12-hour day shift and the other crew taking the 12-hour night shift. After 2 weeks, the second team takes over. The rotation is repeated, if necessary. The average total duration of this phase is 40 days and the maximum number of temporary workers on location on any given day is 16.
- Phase III – Completion / Production– Two crews of six to eight workers each. One crew works 14-hour shifts for 2 weeks in duration before switching with the second crew. Total duration of Phase III is 30 days with a maximum number of eight temporary workers (YVDP, 2012).

An analysis of the well activity in Laramie County since July 2009 compared the number of permits received by quarter with the number of well completions. The quarterly average of well completions was six, with a high of 13 completions reported in the second quarter of 2011 (http:// wogcc.state.wy.us/RepByCountyApdY.cfm?&RequestTimeOut=500, Accessed March 28, 2012). To conservatively estimate the potential impacts of these additional oil/gas workers, the peak historical quarterly average of 13 was projected forward to 2013 – 2014. Applying the same annual growth rates assumed in the GlobalData market analysis report for the Niobrara Shale formation in Wyoming and Colorado, it is estimated that the number of well completions could reach a peak of 18 per quarter in 2013 and 20 wells per quarter in 2014.Because temporary housing is the resource most likely to be affected by an increase in oil and gas well construction/drilling, potential impacts were conservatively estimated assuming a maximum of 16 workers temporarily located at an additional seven drilling sites per quarter for the duration of construction, or approximately 112 workers. This number represents an estimate of the increase in demand for temporary housing to consider below in an assessment of the impacts of the WW&P construction activities on temporary accommodations.

Table 5-48 compiles a listing of hotels and motels within an hour of the Project location as well as their corresponding number of rooms. There are at least 5,406 temporary lodging units in the five counties within an approximate hour commute of the Project site.

TABLE 5-48
Hotel and Motel Rooms by County and Community (2012)

			Sum of Total Rooms
Albany County			**1,597**
	Laramie		1,597
		Albany Lodge	26
		America's Best Value Inn	33
		AmericInn Lodge and Suites	59
		Aspen Creek Cabin	6
		Best Western	62
		Comfort Inn	55
		Days Inn	54
		Deerwood Station	2
		Downtown Motel	30
		Econo Lodge	52
		Fairfield Inn and Suites	82
		Gas Lite Motel	30
		Hampton Inn	84
		Heaven's Little Wonder B&B	4
		Hilton Garden Inn	135
		Holiday Inn	100
		J4Brehm's Ranch	6
		Laramie Express Inn Motel	79
		Motel 6	99
		Motel 8	141
		Quality Inn & Suites	72
		Ramada Inn	100
		Ranger Motel	31
		Rodeway Inn	104
		Sunset Inn	51
		Super 8	42
		Travel Inn	28
		Travelodge	30
Converse County			**509**
	Douglas		509
		1st Interstate Inn	43
		Carriage House B&B	27
		Clarion	117
		Deer Forks Ranch	2

TABLE 5-48
Hotel and Motel Rooms by County and Community (2012)

		Douglas Sleep Inn	63
		Four Winds Motel	13
		Holiday Inn Express	76
		Hotel Labonte	22
		Motel 6 Douglas	40
		Parson's Nook B&B	3
		Super 8 Douglas	75
		Two Creek Ranch	28
Goshen County			**270**
	Fort Laramie		16
		Real McCoy Hotel	16
	Torrington		254
		Americas Best Value Inn Torrington	57
		Blue Lantern Motel	5
		Days Inn	52
		Gentry Guest House	3
		Holiday Inn Express Hotel & Suites	67
		Maverick Motel	13
		Motel 6	52
		Tea Kettle Ranch B&B	5
Laramie County			**2,674**
	Cheyenne		2,674
		America’s Best Value Inn	60
		Atlas Motel	31
		Best Western Plus Frontier Inn	74
		Candlewood Suites	86
		Central Plaza	66
		Cheyenne Motel	30
		Comfort Inn	77
		Days Inn	108
		Double M & N	4
		Express Inn	60
		Fairfield Inn	61
		Firebird Motel	50
		Fleetwood Motel	22
		Gators Travelyn Motel	19
		Guest Ranch Motel	32
		Hampton Inn	64
		Historic Plains Hotel	131
		Hitching Post Inn	70

TABLE 5-48
Hotel and Motel Rooms by County and Community (2012)

		Holiday Inn / I-80	245
		Holiday Inn Express Hotel & Suites	76
		Howdy Pardner	3
		La Quinta Inn	105
		Lariat Motel	16
		Little America Hotel & Resort	188
		Luxury Inn	32
		Microtel	56
		Motel 6	107
		My Place Extended Stay	64
		Nagle Warren Mansion B&B	12
		Oak Tree Inn	61
		Pioneer Hotel	55
		Ranger Motel	22
		Rodeo Inn	68
		Rodeway Inn	105
		Round-Up Motel	37
		Sands Motel	50
		Sapp Bros/Travelers Inn	20
		Sleep Inn Suites	74
		Springhill Suites	92
		Stage Coach Motel	25
		Super 8 Motel	60
		Terry Bison Ranch	24
		The Storyteller Pueblo	3
		Traveler's Inn	20
		Windy Hills Guest House	9
Platte County			**356**
	Chugwater		24
		Buffalo Lodge Inn	24
	Glendo		13
		Hall's Glendo Marina	6
		Lakeview Motel & Campground	7
	Guernsey		47
		Bunkhouse Motel	31
		Guernsey Hotel	4
		Sagebrush Motel	12
		LaGrange	2
		Bear Creek Inn	2
	Wheatland		270
		All American Inn	42

TABLE 5-48
Hotel and Motel Rooms by County and Community (2012)

	Best Western Torchlite Motor Inn	50
	Blackbird Inn B&B	4
	Motel 6	46
	Parkway Motel	14
	Super 8	58
	West Winds Motel	30
	Wyoming Motel Wheatland	26
Total for Five-County AOI		**5,406**

Sources: Wyoming Official State Travel Website, City Data Website, Smith Travel Research, and CH2M HILL, 2010.

Hotels and Motels. Platte County, including the communities of Chugwater, Glendo, Guernsey, and Wheatland, offers approximately 356 hotel / motel rooms, or nearly 7 percent of the total rooms in the five-county AOI (see **Table 5-48**). The Cheyenne area has approximately 2,674 rooms at 45 hotels and motels, including seven facilities with more than 100 rooms each (**Table 5-48**). For high-occupancy periods such as July, there are an additional 1,597 rooms available in the Laramie area (ACTB, 2012). Hotel and motel occupancy rates for the period from 2006 to 2012 are presented in **Table 5-49** based on information from Smith Travel Research. The estimated vacancy rates are derived from a sample of 82 hotels and motels in the five-county AOI. The average monthly vacancy rate between 2007 and 2013 was lowest in July at 22 percent and highest in December at 60 percent.

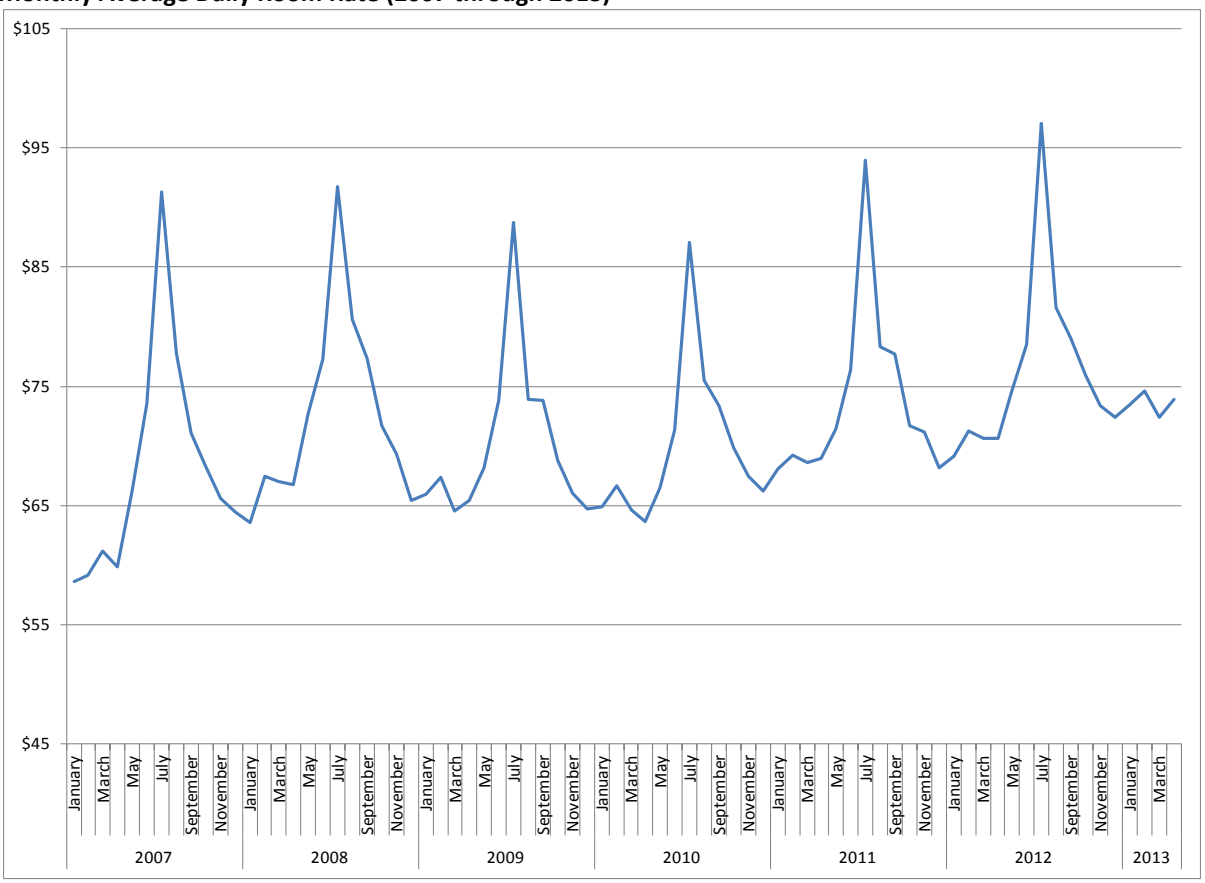
TABLE 5-49
Average Monthly Hotel and Motel Vacancy Rates for the Five-County AOI Extent January 2007 to April 2013

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Average	56%	52%	50%	44%	36%	25%	22%	25%	29%	40%	53%	60%

Source: Smith Travel Research, 2013

The average daily room rate fluctuates depending on the month, as can be seen from the information presented in **Figure 5-16**. Room rates generally vary little from January through May and then gradually increase, peaking in July and August, and decrease throughout the remainder of the year. The average annual rates have continued to generally trend upwards over the period, from just under $70 in 2007 to $77 in 2012, with the exception of 2009 and 2010, when rates fell or remained the same. The 7-year average of room rates during the peak month of July was $91.69 while the daily room rate in July 2012 was $97.02.

FIGURE 5-16
Monthly Average Daily Room Rate (2007 through 2013)



Sources: Smith Travel Research, 2012.

Recreational Vehicle Sites. Many RV sites within an hour drive of the Project site can provide accommodations for visits with durations of weeks or months. **Table 5-50** summarizes the RV sites available in the five counties of the AOI; there are a total of 1,414 individual RV sites for camping, 55 percent (780) of which are located in Cheyenne in Laramie County. Platte County offers 167 RV sites, or 12 percent of the AOI supply.

TABLE 5-50
RV Sites by County and Community (2012)

County / Community	Sum of Total Sites
Albany County	**178**
Laramie	178
Converse County	**142**
Douglas	142
Goshen County	**147**
Fort Laramie	22
Lingle	65
Torrington	60
Laramie County	**780**

TABLE 5-50
RV Sites by County and Community (2012)

Cheyenne	780
Platte County	**167**
Glendo	76
Guernsey	16
Wheatland	75
Total	**1,414**

5.4.3.5 Construction Impacts

Average quarterly employment during the construction phase of the Project would range from a low of 39 non-local workers for each quarter through 2014 to a peak of 308 workers in the third quarter of 2016. The overall peak is in July of 2016, the month that coincides with CFD, when 409 total workers will be onsite of which 348 are anticipated to be nonlocal in need of temporary lodging. The average number of non-local workers over the 54-month construction period is approximately 123. Impacts to temporary housing are expected to be minor, with the Project workforce representing less than 0.15 percent of the typical visitors to CFD during peak periods (CFD, 2012).

5.4.3.6 Number of Units Required

Estimates of selected characteristics of the peak-month (September 2016) workforce are shown in **Table 5-51**. It is estimated that an average of 308 single non-local construction workers would relocate to the five-county AOI during the third quarter of 2016; it is assumed that all of these workers would secure temporary accommodations for the duration of their involvement in the Project. It is also assumed that, due to little or no construction activity occurring in the winter months of December through March that a negligible number of non-local workers would choose to bring their families with them or to access permanent housing units.

TABLE 5-51
Estimate of Local and Non-local Construction Worker Breakdown: 3rd Quarter 2016 Peak

Average Peak Quarterly Workforce	Number of Workers
Total Peak Workforce	409
Local Workers	61
Non-Local Single Workers	308
Housing Requirement	**Number of Rooms**
Temporary Accommodation Units by Type	
Recreational Vehicle Spaces	46
Houses, Apartments, and Rental Mobile Homes	0
Hotel and Motel Rooms	229
Temporary Accommodation Units by Occupancy	**Number of Type**
Single-Occupancy	197
Double-Occupancy	33

Source: CH2M HILL, 2012.

The estimated housing requirements shown in **Table 5-51** are based on the assumption that one quarter of the single, non-local workers will share temporary accommodation units such as hotel/motel rooms (i.e., double-occupancy). The remaining three-quarters would occupy units singly. The aggregate demand for accommodations created by the non-local workers could total 276 units. The Project assumes that hotel/motel rooms in close proximity to the Project would generally be the primary accommodation type due to the abundance of rooms, even in the peak month of September 2016.

5.4.3.7 Construction Workforce Housing Plan

A preliminary assessment of housing options was made to ensure that housing is available to temporary construction workers employed during the construction period from November 2013 until December 2019. Due to the variety of the housing options and locations within commuting distance of the site, the housing market analysis suggests that there will not be a housing shortage for the non-local workforce.

To accomplish a successful and implementable housing plan an extensive temporary housing market survey in the AOI was conducted. Housing availability was determined by compiling a listing of temporary housing purveyors in the five counties of the AOI. **Table 5-52** provides a breakdown of the housing vacancies by type.

TABLE 5-52
Potentially Available Temporary Accommodations

Type of Rental Housing	Number of Accommodation Units Required by Project During Average Peak Quarter (Demand)	Number of Accommodation Units in Five-County AOI Extent	Vacancy Rate [1]	Number of Available Accommodation Units in Study Area (Supply)	Housing Gap (Supply minus Demand)
Hotel/Motel Rooms	229	5,406	22.3%	1,521	+1,292
RV Sites	46	1,414	22.3%	315	+269
TOTAL	**275**	**6,820**		**1,836**	**+1561**

Notes:
[1] The vacancy rate for hotel/motel rooms is based on the average occupancy for the peak month of July over the January 2006 to April 2013 period.
+ indicates a surplus of housing units.
Source: Smith Travel Research, 2012; CH2M HILL, 2012.

The aggregate sum of rooms available for use by members of the construction workforce during the peak occupancy month numbers about 1,521, which compares to an average quarterly peak demand of 229 units. The potential supply in the Cheyenne area alone exceeds demand; this excess supply of temporary housing is sufficient to also accommodate the projected growth in demand for temporary housing posed by the growth in oil/gas well activity projected by an independent party (GlobalData, 2012). The increase in demand for local housing from this source could reach a peak of 275 rooms over the construction period. After accommodating this reduction in supply, the region will have excess capacity of 1,561 rooms.

5.4.3.8 Effects on Vacancies of Local Motel/Hotels, Recreational Vehicles, and Apartments

The supply of temporary accommodations in the five-county area includes hotel and motel rooms, apartments, single-family rental housing units, rental mobile homes, and RV spaces located in RV parks. Estimates of the available supply of each type of accommodation are shown in **Table 5-52**, along with the demand generated by the non-local workers associated with the Project. The number of potentially available units is derived by applying the vacancy rates shown to the total number of each type of unit in the five-county area. More than adequate housing is available to meet the needs of the non-local workers as well as any growth in the number of non-local construction workers related to the Niobrara Oil Shale play in Laramie County.

Implementation of the Project would reduce temporary housing vacancy rates as the demand absorbs a fraction of the available units. **Table 5-52** shows estimates of vacancy rates, by type of accommodation unit, prior to the period of peak construction activity of the Project. Responses were received from 11 of the hotels (1,165 rooms), all of which are located within a 15-minute drive of the Project, to obtain housing commitment letters (**Appendix F**). If no specific commitment was provided by a facility, it was assumed that it could commit no more than its total number of rooms times the corresponding vacancy rate for that month. Given, 1) the commitment letters to provide hotel/motel rooms, and 2) the available supply of other types of temporary accommodations, the likely demand for 259 accommodation units would be satisfied.

5.4.3.9 Operations Impacts

During operation of the proposed Project, it is estimated that there will be 31 full-time employees. No impacts to housing resources are expected.

5.4.4 Wind Energy Projects and Residential Property Values

Platte County is the least populated of the area counties, and with four people per square mile, has a low population density. The statewide average is six persons per square mile, which is the second lowest of all 50 states and well below the U.S. average of 88 people per square mile. The nearest population centers to the WW&P Project, Chugwater and Wheatland, are each at least a few miles, and in the case of Wheatland over ten miles, from the nearest turbine. The WW&P Project will be sited on leased ranch land, where cooperating private landowners will be compensated. For such landowners, it is reasonable to assume that there will be no unmitigated impacts to property values. However, some private landowners, about a dozen in all, have residences outside of the leased area and are within 1 mile, but beyond at least a quarter mile, of the nearest turbine.

Concerns exist regarding the possible adverse impact that wind energy projects might have on nearby residential property values. Three potential types of adverse impacts have been identified as possible sources of downward pressure on property values resulting from siting wind energy projects. They are as follows:

- **Area stigma.** A concern that the general area surrounding a wind energy facility will appear more developed, which may adversely affect home values in the local community regardless of whether any individual home has a view of the wind turbines.
- **Scenic vista stigma.** A concern that a home may be devalued because of the view of a wind energy facility, and the potential impact of that view on an otherwise scenic vista.
- **Nuisance Stigma.** A concern that factors that may occur in close proximity to wind turbines, such as sound and shadow flicker, will have a unique adverse influence on homes.

Since 2002, multiple studies have been conducted in the United States and elsewhere regarding property values. Some of these more recent studies are outlined below.

Sunak and Madlener 2013 Study: This study involves property sales within a 50-square-mile area in a semi-urban region in Germany, including parts of the cities of Rheine and Neuenkirchen. In 2011, a population of 26,900 lived within an approximate 3.5-mile radius of the site. The study found that negative impacts on property values were limited to the immediate vicinity of the wind farm. For distances of about 1 mile or more from the turbines, the effects diminished. The authors did not find a separate effect from having wind turbines in the view shed.

Magnusson and Gittell 2012 Study: This involved the Lempster Wind Power Project in Sullivan County, New Hampshire. Their data included more than 2,000 property transactions throughout the county over a 5-year period (2006 to 2011) that encompassed the facility coming on line. About 16 of those transactions were in the Town of Lempster and 72 were from the surrounding towns. Because of the hilly terrain and forested cover of the site, only a few of the properties had even a partial view of the turbines. This study failed to find a statistical relationship between the facility siting and local residential property values. The authors did not rule out potential impacts to isolated residences, but it was clear that no evidence of systematic widespread effects exists.

Heinztelman and Tuttle 2011 Study: This covered three counties on New York State's northern border with Canada, each with one wind project: Clinton, Franklin, and Lewis counties. The study results were mixed as it found a negative statistical relationship between wind farms and residential property values for two of the counties and a positive relationship for one. Their dataset included more than 11,000 transactions spanning 9 years. Property value impacts diminished with distance and were no longer statistically significant at distances greater than 2 miles in Franklin and Lewis counties, and 5 miles in Clinton County.

Hoen 2009 Study: This study addressed the potential relationship between residential property values and area stigma, scenic vista stigma, and nuisance and health effects. The authors collected data on nearly 7,500 sales of single-family homes situated within 10 miles of 24 existing wind facilities in nine different states. They used three different types of modeling approaches including eight different hedonic pricing models, repeat sales, and sales volume models. By employing this range in approaches, the authors explored the many different ways that siting a wind farm could affect property values. The research design demonstrated a statistically significant relationship between the quality of a view and home value. However, the evidence is not sufficient to conclude that views of turbines affect home sales. Nor does sufficient evidence exist to conclude that distance from the facility affects home values. Regarding scenic vista values, no decrease was found, and sufficient evidence does not exist to conclude that views of the facility affect scenic vista values.

Hoen 2006 Study: This provides a statistically rigorous analysis of the potential relationship between wind farm siting and residential property values using 280 home sales within 5 miles of a wind energy project in Madison County, New York. This study failed to find any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes. Additionally, the analysis failed to uncover a relationship between sales price and view, even when concentrating on homes within 1 mile or that sold immediately following the announcement and construction of the wind farm. The conclusion of the study was that, in this community, a view of the wind farm does not produce either a universal or a localized effect. Residential property values were not positively or negatively affected by the wind energy project. The instruments used to measure any effect were the hedonic pricing model and measurements of turbine visibility.

The various analyses are strongly consistent in their conclusions that none of the models suggests the existence of any widespread property value impacts that might be present in communities surrounding wind energy facilities. There is some evidence in some semi-urban locations that residences in the immediate vicinity of a wind farm could have diminished property value, but the effect is reduced at a distance of about 1 mile from the closest turbine. Sample sizes were smaller for tests of nuisance effects, but no statistically significant relationship was found between home values and homes located within 1 mile of the nearest wind facility where the exposure to nuisance factors was most likely.

In summary, the WW&P Project is sited on private ranch lands in a rural environment, significantly removed from most offsite residences, on property leased from willing landowners. The closest turbines are still miles away from the nearest municipalities. There are about a dozen scattered residences within 1 mile, but beyond a quarter mile of a turbine and any potential for safety or nuisance concerns. Finally, if the Project is not repowered at the end of their usable lifespan, the wind farm would not be a permanent fixture on the landscape, so that no turbines will be visible or proximate to any residences in the future when the Project is fully decommissioned, as detailed in Section 3.

5.4.5 Public Education

The major topics addressed in this section are location and characteristics of educational facilities, current and historical school enrollment, and student-teacher ratios for Platte and Goshen counties. The area of primary influence for public education is smaller than the broader study area, because it is anticipated that the majority of the non-local workers will temporarily relocate to the Wheatland area and other communities within Platte County. Goshen County was also included because it is relatively unpopulated so that small increases in school age population could have an effect.

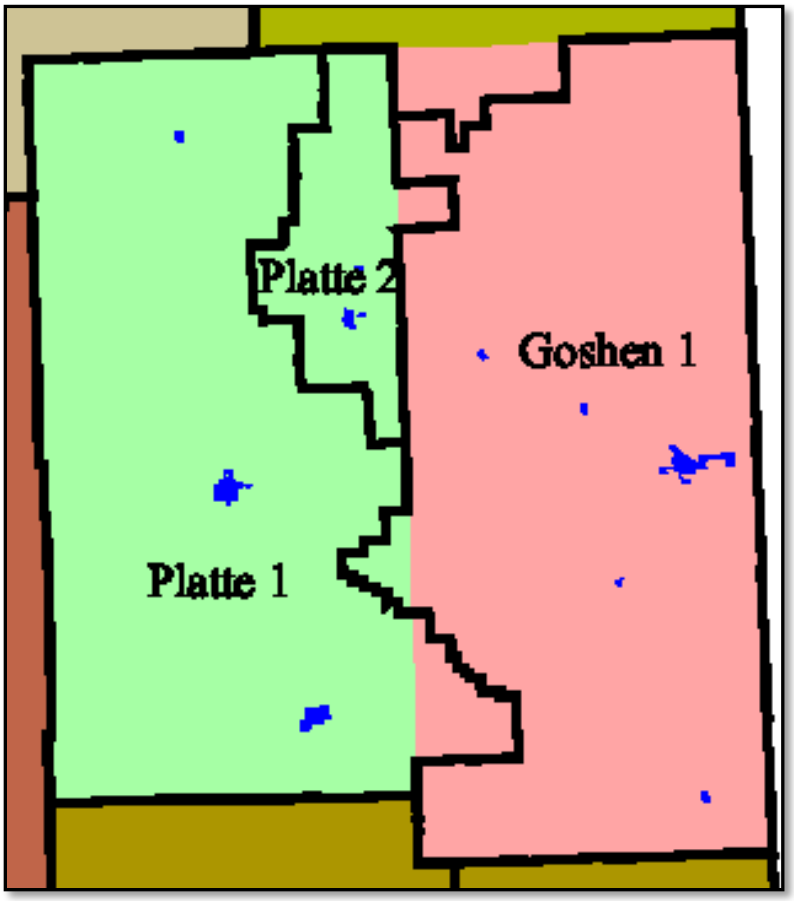
5.4.5.1 Location and Characteristics of Educational Facilities

Platte County contains two school districts, Platte County School District #1 (PCSD1) and Platte County School District #2 (PCSD2). PCSD1, which is within the Project location, serves Chugwater, Glendo, and Wheatland, while PCSD2 serves Guernsey, Hartville, and the surrounding area. PCSD1 includes four elementary schools, three middle schools, and three high schools. PCSD2 includes one elementary school, one junior high school, and one high school (Platte County Chamber of Commerce, 2013).

Goshen County contains one school district, Goshen School District #1 (GCSD1). GCSD1 includes three high schools, three middle schools, and five elementary schools (Goshen County School District, 2013).

The school districts in the study area are illustrated in **Figure 5-17**. **Table 5-53** shows the type and number of schools by district and selected district-wide characteristics.

FIGURE 5-17
Platte and Goshen County Public School District Boundaries



Source: Wyoming Economic Analysis Division, 2010.

TABLE 5-53
Selected Characteristics of School Districts (2010)

	Platte County School District 1	Platte County School District 2	Goshen County School District 1
Elementary Schools	4	1	5
Secondary Schools	6	2	6
2009-2010 School Year Enrollment			
Kindergarten	71	12	132
Grade 1	81	13	128
Grade 2	82	11	125
Grade 3	69	16	129
Grade 4	62	4	127
Grade 5	97	14	131
Grade 6	85	20	166
Grade 7	77	11	138
Grade 8	85	9	151
Grade 9	77	21	143

TABLE 5-53
Selected Characteristics of School Districts (2010)

	Platte County School District 1	Platte County School District 2	Goshen County School District 1
Grade 10	85	18	149
Grade 11	82	23	154
Grade 12	109	21	151
Total	**1,062**	**193**	**1,824**
Staff (Full-Time Equivalent [FTE]) (2010)			
Total*	314	71	436
Teachers	118	26	161
Student Instructional Aids, Support Staff, Counselors	56	14	93
Other General Support (Administration, O&M, Bus Drivers, Mechanics, Food Service)	76	16	98
Student-Teacher Ratio	**8.5**	**6.5**	**11.3**
Revenue Source (Percent) (2010 – 2011)			
Local	23.83	13.96	15.98
County	6.98	5.11	4.23
State	69.20	80.93	79.79
Federal	0	0	0
Total	**$17,526,122**	**$4,616,315**	**$28,048,291**
Revenue per Student	**$16,503**	**$23,919**	**$15,377**

**Includes secondary staff subject areas.*
Sources: USA.com, 2013; Wyoming Department of Education, 2010; Wyoming Department of Education, 2011.

Revenues per student in 2010 -2011 vary by school district, with PCSD1 reporting revenues per student at $16,503, PCSD2 reporting per-student revenues of $23,919, and GCSD1 reporting per-student revenues of $15,377. However, the contribution to total revenues from federal, state, and local sources for each of the school districts is similar. The state contributes the most of the total revenue for the three school districts, while the federal government contributes none.

5.4.5.2 Student Enrollment

In the past decade, student enrollment in Platte and Goshen counties has declined. Between 2003 and 2012, PCSD1 enrollment decreased by 189 students (-15 percent), while enrollment in PCSD2 decreased by 60 students (-23 percent). Similarly, enrollment in Goshen County fell by 139 students, or 7 percent, between 2003 and 2012, as seen in **Table 5-54**. There are several possible explanations why these rural areas are experiencing declining student enrollment, including an increase in the percentage of the senior citizen population, the relocation of younger families with children to larger cities in search of better opportunities, and a decline in births (American Association of School Administrators, 2009).

TABLE 5-54
School District Enrollment (2003-2012)

Year	Platte County School District 1	Platte County School District 2	Goshen County School District 1
2003	1,228	259	1,858
2004	1,187	241	1,887
2005	1,155	233	1,924
2006	1,168	246	1,833
2007	1,115	229	1,827
2008	1,089	205	1,816
2009	1,062	193	1,807
2010	1,044	211	1,791
2011	1,053	189	1,778
2012	1,039	199	1,719
Change (2003-2012)			
Numeric	-189	-60	-139
Percent	-15%	-23%	-7%
Average Annual Percent	-1.8	-1.9	-0.83

Source: Wyoming Department of Education, 2013.

5.4.5.3 Student-Teacher Ratios

A commonly used measure of overall school quality is the student-teacher ratio (i.e., the ratio of total student enrollment in a school, school district, or other unit to the number FTE certified teachers). This ratio provides a means of comparing different educational units, such as school districts, to a state or national parameter. As a whole, the pupil-teacher ratios, which can be used as an indicator of school quality, within the study area tend to be better than the state and national standards. The implementation of the 16:1 student teacher ratio is mandated by House Enrolled Act 98 of 2011, specifically W.S. § 21-13-307(a)(iv).

Of the three school districts in the Project vicinity, PCSD2 (with a 2010 student-teacher ratio of 6.5) had the lower student-to-teacher ratio followed by PCSD1 with 8.5 and GCSD1 with 11.3. All districts are below the 2010 national ratio of 15.6 and the Wyoming ratio of 13.3.

5.4.5.4 Construction Impacts

If all the non-local workers relocated to Platte County during the peak onsite employment months, it would average an additional 308 workers in the county. Based on the historical data, it is expected that less than 2 percent of these non-local workers would be accompanied by family members. For the non-local workers bringing school-age children to Platte County, attendance to area schools would not be needed during the Project's annual winter shut- down months between December and March or during the summer school break between June and August. Thus, no impacts to public education are anticipated.

5.4.5.5 Operations Impacts

The permanent workforce of 31 associated with the operation of the proposed facility is not expected to impact public education. Even if all of the new workers have school-age children, the increase in enrollment would be too small to cause an adverse impact to the student-teacher ratios.

5.4.6 Public Safety

This section addresses the availability of fire protection, law enforcement services, and crime levels in Platte and Goshen counties. The Project is located in Platte County so the entire workforce will be spending a large portion of their time in this county. In addition, more than half of the non-local workforce is expected to reside in Platte County. Any impacts on community resources related to public safety are expected to be concentrated in this county, especially in the Wheatland and Chugwater areas. The influx of temporary workers to other communities is dispersed, small and of short duration. Nonetheless, it is worth also considering potential impacts to Goshen County given its relatively small population size to ensure that potential impacts outside of Platte County are not being overlooked.

5.4.6.1 Fire Protection and Rescue Services

There are three fire districts within Platte County and 11 fire districts within Goshen County (Wyoming State Fire Marshall, 2013). Within the Platte County fire districts, there are 33 fire stations, 12 full-time employees, and 203 volunteers. Goshen County, meanwhile, has nine fire stations with 204 volunteers and no full-time employees, as shown in **Table 5-55**. As evidenced by the numbers, most of the fire districts are staffed by volunteers and support each other in the event of a large fire or catastrophic event as discussed in **Section 3.**

TABLE 5-55
Fire Departments in Platte and Goshen Counties

Fire Districts	No. of Stations	No. of Firefighters		Emergency Medical Services (EMS)	Basic Emergency Medical Technicians (EMTs)	Advanced EMTs
		Full-Time Paid	Volunteer			
Platte County Total	**33**	**12**	**203**	**--**	**18**	**5**
Camp Guernsey Fire Department	1	12	2	NA	6	0
Chugwater Fire Protection District	1	NA	16	0	0	0
Glendo Volunteer Fire Department	1	NA	12	0	0	0
Guernsey Rural Fire District	1	0	24	0	0	0
Guernsey Volunteer Fire Department	1	0	18	NA	12	5
Hartville Fire Department	1	0	17	0	NA	NA
Platte County Rural Fire District 2F	25	0	50	0	0	0
Sybille Volunteer Fire Department	1	0	26	0	0	0
Wheatland Fire Department	1	0	38	0	0	0
Goshen County Total	**9**	**--**	**204**	**--**	**25**	**6**
Fort Laramie National Historic Site Fire Brigade	NA	NA	NA	NA	NA	NA

TABLE 5-55
Fire Departments in Platte and Goshen Counties

Fire Districts	No. of Stations	No. of Firefighters		Emergency Medical Services (EMS)	Basic Emergency Medical Technicians (EMTs)	Advanced EMTs
		Full-Time Paid	Volunteer			
Goshen County Fire District #3A – Prairie Center Fire Department	1	0	30	0	0	0
Goshen County Fire District #5A – Yoder Fire Department	1	0	30	NA	2	4
Goshen County Fire District #5B – Veteran Fire Department	NA	0	20	NA	NA	NA
Goshen County Fire District #5C – Hawk Springs Fire Department	1	0	12	NA	3	2
Goshen County #8- La Grange Fire Department	1	0	25	NA	9	0
Goshen County #12- Lingle Fire Department	2	0	22	NA	6	NA
Goshen County #12C- Jay EM Fire Department	NA	0	15	NA	NA	NA
Goshen County #12E- Fort Laramie Fire Department	2	0	15	NA	5	0
Torrington Volunteer Fire Department	1	0	35	0	0	0

Notes:
NA = No data available
Source: Wyoming State Fire Marshal, 2013.

Wyoming participates in the National Fire Incident Reporting System (NFIRS). With its partnership with the Wyoming State Forestry Division, software and computers are provided to the fire departments throughout the state and incident reports are managed electronically. This allows demands on time and resources to be recorded and managed by all fire departments. **Table 5-56** presents the number of calls reported in 2011 for the State of Wyoming. Rescue and emergency medical calls accounted for the majority of calls through the NFIRS (Wyoming State Fire Marshal, 2011).

TABLE 5-56
State of Wyoming Call Volume (2011)

Call Type	Number of Calls	% of Total Calls
Total Calls	**35,473**	
Rescue and Emergency Medical	22,567	64%
Fires (All Types)	2,985	8.3%
False Alarm and False Calls	2,626	7.3%
Good Intent Calls	3,579	10%

TABLE 5-56
State of Wyoming Call Volume (2011)

Call Type	Number of Calls	% of Total Calls
Service Calls	1,688	4.7%
Hazardous Conditions (no fire)	1,867	5.3%
Special Incident Types	64	0.2%
Ruptures, Explosions, Overheats	48	0.1%
Severe Weather and Natural Disaster	49	0.1%

Source: Wyoming State Fire Marshal, 2011.

Fire emergencies will be handled by calling 911 and alerting the Platte County Sheriff and Police office dispatch center in Wheatland, where the appropriate fire crews are paged for dispatch. The Chugwater, Wheatland, and Hawk Springs Fire Departments would respond to fire emergencies. **Table 5-57** summarizes the fire response and rescue incidents for the departments within Platte and Goshen counties for 2011.

TABLE 5-57
Fire Incidents in Chugwater, Wheatland, and Hawk Springs Communities (2011)

Department	Total Incidents	Fire Calls	EMS Rescue Calls	Civilian Fire Injuries	Firefighter Injuries	Civilian Fire Deaths	Firefighter Deaths
Platte County Total	**640**	**149**	**236**	—	—	—	—
Chugwater Fire Protection District	60	9	31	—	—	—	—
Wheatland Fire Department	276	69	122	—	—	—	—
Goshen County Total	**239**	**128**	**26**	—	—	—	—
Goshen County Fire District #5C – Hawk Springs Fire Department	No records						

Source: Wyoming State Fire Marshal, 2011.

For other types of incidents, the Wyoming Emergency Response Act (W.S. § 35-9-151) established seven Regional Emergency Response Teams (RERTs) under the authority of the director, Wyoming Office of Homeland Security. Members of these teams are specially trained and available to respond to incidents involving hazardous materials and weapons of mass destruction. Each county in Wyoming has a coordinator responsible for mitigation and preparedness activities to protect against and prepare for disasters. This involves planning, training, exercising, procuring/maintaining equipment, and designating facilities for shelter and other purposes.

5.4.6.2 Law Enforcement Services

Law enforcement services will be provided by Platte and Goshen counties pursuant to their jurisdictional authority (**Table 5-58**).

TABLE 5-58
Law Enforcement in the Study Area

Name	Address	Phone	City
Platte County Sherriff's Office	850 Maple Street, Wheatland, WY 82201	307-322-1343	Wheatland
Wheatland Police Department	951 Water Street, Wheatland WY 82201	307-322-4636	Wheatland
Guernsey Police Department	81 West Whalen, Guernsey, WY 82214	307-836-2111	Guernsey
Goshen County Sherriff's Office	2120 East B Street, Torrington, WY 82240	307-532-4026	Torrington
Torrington Police Department	436 East 22nd Avenue, Torrington, WY 82240	307-532-7001	Torrington

Sources: Platte County Wyoming Government, 2013; Wheatland Police Department, 2013; Guernsey Wyoming, 2013; Goshen County Sheriff, 2013; Torrington Police Department, 2013.

The Platte County Sherriff's Office is based in Wheatland and serves Platte County, an area of approximately 2,000 square acres. Platte County consists of four divisions within the Sherriff's Office comprising Administration, Patrol, Detention, and Communication. The Administration Section consists of two secretaries and a records person who handle correspondence, accounts, payroll, civil processes, abandoned vehicles, filing, etc. Some of the responsibilities of the nine employees of the Patrol Division include investigating crimes, assisting with calls from the public, enforcing statutes, and serving arrest warrants. The Detention Division consists of an administrator and 14 detention deputies who take care of prisoners and provide a safe and secure environment. The Communication Division consists of one supervisor and six dispatchers. The Communication Division dispatches all city and county law enforcement agencies as well as fire and ambulance services (Platte County Wyoming Government, 2013).

The Goshen County Sherriff's Office is based in Torrington and serves Goshen County, an area of approximately 2,200 square miles. In addition, they patrol more than 100 miles of state highway and assist the Wyoming Highway Patrol, Wyoming Game and Fish, Wyoming State Parks, and local municipal police stations. The Goshen County Sherriff's Office consists of five departments, including Patrol, Detention, Investigation, Homeland Security, and Search and Rescue. The Patrol Division provides law enforcement to all unincorporated areas within the county and is comprised of 10 patrol deputies including command staff. The Detention Center employs 15 deputies, five control clerks, two cooks, two nurses, and one administrative assistant, and can house up to 90 prisoners. There are two investigators within the Sherriff's Office who work with patrol deputies and other law enforcement agencies to investigate crimes such as theft, fraud, and murder. The Homeland Security Coordinator works with other departments such as fire, law, EMS, and public works to organize overall emergency response for Goshen County. The Search and Rescue is an all-volunteer, non-profit team currently consisting of 12 members (Goshen County Sherriff, 2013).

Table 5-59 details the law enforcement personnel in Platte and Goshen counties as reported during 2011 by the Wyoming Attorney General's Office. The number of officers per 1,000 residents is 2.3 in Platte County and 3.0 in Goshen County, about the same as the state average of 2.3, while the index of crimes per officer is 29 and 6.1, respectively, compared to the state average of 10.5.

TABLE 5-59
Law Enforcement Personnel in Platte and Goshen Counties (2011)

Location	Total Employees	Officers		Civilians		Officers per 1,000 Population	Index Crimes per Officer
		Male	Female	Male	Female		
Platte County	**29**	**15**	**4**	**0**	**10**	**2.3**	**29**
Sheriff	18	7	2	0	9	2.3	18
Guernsey	2	2	0	0	0	1.8	2
Wheatland	9	6	2	0	1	2.4	9
Goshen County	**57**	**35**	**3**	**0**	**16**	**3.0**	**6.1**
Sherriff	36	23	1	3	9	3.5	2.8
Torrington	21	12	2	0	7	2.4	11.6

Source: Wyoming Office of Attorney General, 2011.

5.4.6.3 Crime

Reported crimes (i.e., crimes known to law enforcement) are categorized into the more serious Part 1 crimes and less serious Part 2 crimes. Part 1 crimes (also referred to as index crimes) are further subdivided into violent crimes against persons (murder, forcible rape, robbery, and aggravated assault) and crimes against property (burglary, larceny, and motor vehicle theft [MVT]).

Goshen County, covering a larger population in 2011, also saw the greater number of crimes in that same year (**Table 5-60)**. However, for comparative purposes, the most relevant statistic is the crime rate per 10,000 inhabitants because this statistic adjusts for the size of the population. Goshen County's overall 2011 crime rate index was 182.4, ranging from 98.7 for residents served by the Goshen County Sheriff's Office to a 280.3 rate for residents served by the Torrington Police Department. In Platte County in 2011, the crime rate index ranged from a low of 9.2 per 10,000 inhabitants served by the Guernsey Police Department to a high of 474.2 for those residents served by the Wheatland Police Department. A rate of 228.8 was observed overall for Platte County, which is just below the state average of 247.7 in 2011. Most of the crime events in 2011 are classified as crimes against property rather than crimes involving the element of personal confrontation between the perpetrator and the victim, which entail the use or threat of force or violence.

TABLE 5-60
Number of Reported Index Crime Events (2011)

Location	Murder	Rape	Robbery	Aggravated Assault	Burglary	Larceny	MVT	2011 Total	2010 Total	% Change	2011 Population Coverage	Crime Rate per 10,000 Inhabitants
Platte County	**5**	**1**	**1**	**6**	**25**	**147**	**6**	**191**	**199**	**-4%**	**8,348**	**228.8**
Sherriff	0	0	0	2	13	19	0	34	33	3.0%	3,974	85.6
Guernsey	0	0	1	0	0	0	0	1	1	0.0%	1,084	9.2
Wheatland	5	1	0	4	12	128	6	156	165	-5.5%	3,290	474.2
Goshen County	**0**	**3**	**2**	**13**	**36**	**173**	**3**	**230**	**255**	**-9.8%**	**12,607**	**182.4**
Sherriff	0	1	1	6	16	41	2	67	76	-11.8%	6,791	98.7
Torrington	0	2	1	7	20	132	1	163	179	-8.9%	5,816	280.3

Source: Wyoming Office of Attorney General, 2011.

Part 2 crimes are considered less serious in nature than Part 1 crimes, but they are significantly more numerous and often of an antisocial nature, with the majority related to alcohol and drug abuse. Part 2 crimes are classified into the following groups: manslaughter by negligence; arson; other assault; forgery and counterfeiting; fraud; embezzlement; buying, receiving, or possessing stolen property; vandalism; carrying or possessing weapons; prostitution and commercial vice; sex offenses (except rape and prostitution); drug abuse – sale and manufacture; drug abuse – possession; gambling; offenses against family and children; driving under the influence; liquor laws; drunkenness; disorderly conduct; vagrancy; and all other (except traffic). Information regarding Part 2 crimes is available only in the form of arrest data, as shown in **Table 5-61**. As the numbers reflect, drug- and alcohol-related arrests and other assaults top the list of offenses that result in arrests.

TABLE 5-61
2011 Part 2 Crime Arrests by Type of Crime an Entity

		Platte County		Goshen County	
Classification of Offenses	**Sex**	**Adult**	**Juvenile**	**Adult**	**Juvenile**
Manslaughter by Negligence	M	0	0	0	0
	F	0	0	0	0
Arson	M	0	0	0	0
	F	0	0	0	0
Other Assaults	M	24	7	25	10
	F	6	6	25	7
Forgery and Counterfeiting	M	1	0	2	2
	F	1	0	2	0
Fraud	M	0	0	4	0
	F	0	0	3	0

TABLE 5-61
2011 Part 2 Crime Arrests by Type of Crime an Entity

Classification of Offenses	Sex	Platte County		Goshen County	
		Adult	Juvenile	Adult	Juvenile
Embezzlement	M	0	0	0	0
	F	0	0	0	0
Stolen Property: Buy Receive	M	0	0	0	0
Possess	F	0	0	0	0
Vandalism	M	4	1	9	5
	F	0	0	1	0
Weapons: Carry Possess etc.	M	1	2	0	1
	F	0	0	0	0
Prostitution and Commercialized Vice	M	0	0	0	0
	F	0	0	0	0
Sex Offenses	M	1	1	0	0
(Except Rape and Prostitution)	F	0	0	0	0
Drug Abuse Violations Total	**M**	**37**	**4**	**14**	**8**
	F	**18**	**0**	**4**	**0**
1) Sale Manufacture Subtotal	M	0	0	1	0
	F	0	0	0	0
2) Possession Subtotal	M	37	4	13	8
	F	18	0	4	0
Gambling Offenses	M	0	0	0	0
	F	0	0	0	0
Offenses Against Family and Children	M	1	1	0	0
	F	0	0	2	0
Driving Under the Influence	M	100	2	62	0
	F	21	0	30	0
Liquor Laws	M	13	5	25	15
	F	4	4	13	6
Drunkenness	M	1	0	37	0
	F	0	0	10	0
Disorderly Conduct	M	7	0	28	1
	F	5	0	8	5
Vagrancy	M	2	0	0	0
	F	1	0	0	0
All Other Offenses (Except Traffic)	M	94	6	121	35
	F	10	3	44	10

TABLE 5-61
2011 Part 2 Crime Arrests by Type of Crime an Entity

Classification of Offenses	Sex	Platte County		Goshen County	
		Adult	Juvenile	Adult	Juvenile
Suspicion	M	0	0	0	0
	F	0	0	0	0
Curfew and Loitering Law Violations	M	NA	1	NA	12
	F	NA	1	NA	10
Runaways	M	NA	1	NA	0
	F	NA	0	NA	0
Total Male	M	298	33	334	94
Total Female	F	100	17	148	38
Total		**398**	**50**	**492**	**132**

NA – not available

Source: Wyoming Office of Attorney General, 2011.

5.4.6.4 Construction Impacts

5.4.6.5 Fire Protection

The peak quarterly average non-local workforce is estimated at 308 onsite workers. The temporary influx of a peak number of 308 onsite workers associated with the construction phase of the Project would have negligible effect on the quality of service provided by fire protection agencies. All nearby fire chiefs anticipate serving the fire prevention and response needs of the Project in either a primary or backup role, as well as coordinating with WW&P to ensure proper training is received for addressing fire response issues unique to the Project. WW&P will proactively coordinate with fire departments from both Platte and Goshen counties to minimize fire safety hazards, coordinate response efforts, and effectively train WW&P and subcontracting personnel in the fire safety issues.

5.4.6.6 Law Enforcement

Although enforcement capabilities for the Project would be provided by Platte and Goshen counties due to jurisdictional authority, more than half of the non-local workforce is expected to relocate in Platte County. As shown in **Table 5-59**, the current level of service in Platte County is 2.3 officers per 1,000 in population. Thus, the temporary increase in persons attributable to construction of the Project would equate to an increase in demand addressed by less than one additional law enforcement officer for a short period of time.

With an index crime rate of about 229 per 10,000 residents in Platte County, the additional construction workers could account for an increase of approximately seven crimes annually, assuming the average of the crime rate index would hold for the population of construction workers and the quarterly average non-local workforce of 308 would settle in Platte County. However, unlike the general population, the construction population has additional incentives to reduce criminal incidences as they could lose their jobs.

5.4.6.7 Operations Impacts

The permanent workforce of 31 associated with the operation of the proposed facility would represent a negligible increase in the demand for fire protection and law enforcement personnel.

5.4.7 Health Care

This section discusses the location and characteristics of health care facilities in Platte and Goshen counties, including the number and type of facilities, availability of EMS, and the health needs of the existing population. As with the other community services, it is anticipated that most of the demand for health services would be in Platte County where the new workers are employed and where most of the non-local work force will reside. Any other demands are expected to be dispersed and incidental. Health care services in Goshen County are also considered for potential impacts given its relatively sparse population size.

5.4.7.1 Location and Characteristics of Health Care Facilities

Platte and Goshen counties are primarily served by two hospitals: Platte County Memorial Hospital in Wheatland and Community Hospital in Torrington. Platte County Memorial Hospital is located approximately 10 miles from the Antelope Gap Project area and 30 miles from the Chugwater Project area. Community Hospital is located in Torrington approximately 40 miles from the Antelope Gap Project area and 50 miles from the Chugwater Project area (**Figure 5-18**).

Both Platte County Memorial Hospital and Community Hospital are 25-bed critical access facilities providing general medical and surgical services (inpatient and outpatient). Selected summary statistics from an American Health Association Survey of more than 5,000 hospitals across the nation related to patient volume are provided in **Table 5-62**. These data were extracted from the *U.S. News and World Report* website, which maintains a searchable directory.

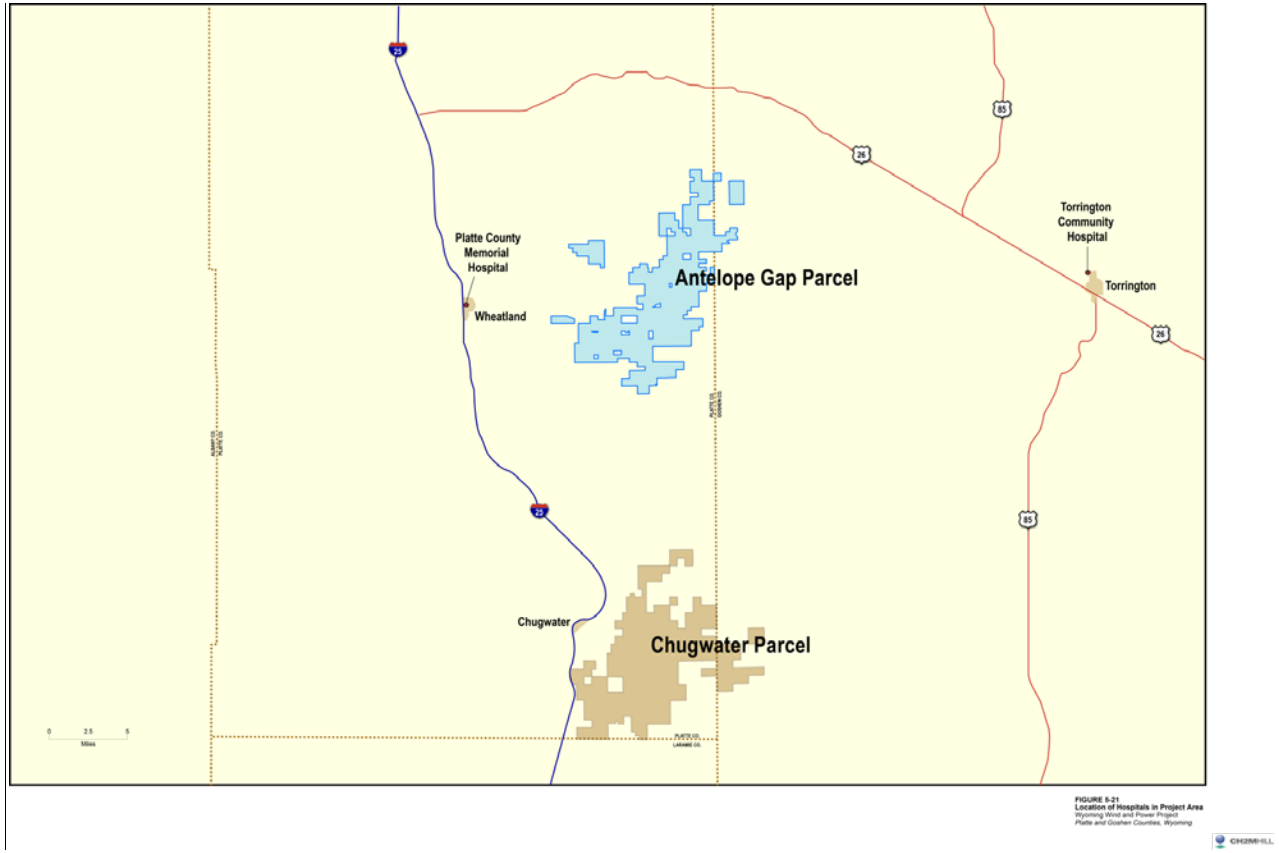
TABLE 5-62
Hospitals in the Project Area: Selected Statistics

	Platte County Memorial Hospital, Wheatland	Community Hospital, Torrington
Beds	25	25
Admissions	690	947
Inpatient Surgeries	59	92
Outpatient Visits	18,500	29,185
Emergency Room Visits	3,332	4,648

Source: U.S. News & World Report, 2013.

Another measure of health care service levels relates to the availability of primary care physicians. The Wyoming Department of Health (WDH) evaluated the status of the primary care provider workforce (2009). Primary care providers are physicians in family practice, general practice, internal medicine, pediatrics, or OBGYN, as well as non-physician providers such as physician assistants, nurse practitioners, and nurse midwives. WDH estimated the number of primary care physicians needed using Rural Health Works formulas and compared the needs to the number of physicians in place. It found that Platte County had a slight 0.13 shortage in primary care physicians in 2009 while Goshen County had a surplus of 2.1 physicians (WDH, 2009).

FIGURE 5-18
Location of Hospitals near the Project



Source: CH2M HILL, 2013.

The public health response coordinators (PHRC) program consists of a coordinator for each participating county's public health office. The primary goal of the PHRC is to achieve local preparedness for responding to public health incidents through education, planning, training, and surveillance. Platte and Goshen counties are in Region 7 with Laramie County. PHRCs develop and maintain county public health emergency response plans. They work with county health officers and local emergency planning committees to coordinate county health and medical plans with WDH and other agencies, including hospitals, EMS, and county emergency management agencies (WDH, 2013).

EMS in the vicinity of the Project is provided utilizing firefighters in the delivery of EMS and fire services. **Table 5-55** summarizes EMS, Basic EMT, and Advanced EMT staffing in Platte and Goshen counties. A list of hospitals located in neighboring counties is presented in **Table 5-63**. Although these hospitals are further away from the Project area, if a serious 911 emergency were to occur, medical facilities outside of Platte and Goshen counties could be used.

TABLE 5-63
Hospitals in Neighboring Counties

Medical Facility	Location	Estimated Driving Distance to Chugwater Project Area (miles)	Estimated Driving Distance to Antelope Gap Project Area (miles)
Cheyenne Regional Medical Center	Cheyenne, Laramie County	48	76
Cheyenne Veterans Affairs Medical Center	Cheyenne, Laramie County	50	78
Ivinson Memorial Hospital	Laramie, Albany County	93	83
Memorial Hospital of Converse County	Douglas, Converse County	87	65

5.4.7.2 Health Needs of the Existing Population

This section discusses a report prepared for the Wyoming Health Care Commission in 2007 entitled *Status and Future of Health Care Delivery in Rural Wyoming* (RUPRI, 2007). Wyoming is undergoing significant changes in population. According to the report, which was published prior to the recent economic downturn, some areas of the state were expected to continue experiencing extraordinary growth, while others were predicted to endure continued population declines. Like many predominantly rural states, Wyoming is seeing a dramatic increase in the number of persons aged 65 and older. However, the state is also experiencing substantial growth in the working-age population that supports the growth in extraction of natural resources. The two population shifts will place different pressures on the health care system. The increase in persons aged 65 and over will create more demand for geriatric care and care management of patients with multiple chronic conditions associated with the elderly. The increase of working-age persons will increase demand for dental services, preventive services, and primary care services associated with young families.

Wyoming has an adequate array of facilities offering inpatient services, hospitals, and skilled nursing facilities (nursing homes). Despite the availability of these institutional services and the presence of qualified clinical personnel, many Wyoming residents who could be served in Wyoming are using health services in Colorado, Utah, and Nebraska.

The key findings of the analysis contained in the report are as follows:

- The demographic shift of the aging population will increase an already growing demand for health care professionals. Recruitment and retention should be priorities at all levels, from local to state, including public and private entities.
- To reduce the number of health care professionals who leave Wyoming, the state should support and encourage increased participation in programs with proven success.
- Stakeholders in Wyoming health care delivery recommended a step-wise strategy of integrating services in local communities and then building regional systems.
- Stakeholders believe there is no pattern of sustained leadership in health care in Wyoming, but there are potential sources of leadership that can be explored.
- Community members expressed concern about continuous population growth combined with the number of providers reaching retirement, and stressed the importance of recruitment and retention efforts.
- Respondents identified services for the elderly as a current or future need, particularly assisted living.
- Considering the combined effect of the direct and indirect impact on Wyoming's economy, health care accounts for 10.3 percent of the state's total employment, 10.5 percent of the state's total income, and 8.2 percent of the state's total output.
- The estimated total lost revenue for Wyoming hospitals due to inpatient out-migration to Colorado, Utah, and Nebraska was $101.3 million in 2003. As a result, an estimated $32.5 million less was spent in other economic sectors of Wyoming communities in the same year.
- Other states have formal or informal networks of providers to coordinate care. Examples of strong comprehensive networks across providers are the Alaska Federal Health Care Access Network and the Nebraska Rural Comprehensive Care Network.
- State health agencies use advisory groups to provide technical assistance and formulate recommendations. The Health Policy Commission in New Mexico, for example, is an independent commission monitoring the health status and health care services in the state.

5.4.7.3 Construction Impacts

The estimated average peak non-local construction workforce of 308 persons (during the third quarter of 2016) could generate between a 3 and 4 percent increase in demand for primary care physicians, assuming all of the non-local workers relocated to Platte County. Due to the 2009 recorded deficit of 0.13 physicians in Platte County, temporary workers relocating to Platte County may experience an extended wait time to see a physician or seek medical assistance in neighboring communities in Goshen and/or Laramie counties, both of which reported a surplus of primary care physicians (WDH, 2009). At its peak, the construction workforce could generate an additional 117 emergency room visits, an increase of 3.5 percent based on the number of emergency visits posted by American Health Association Survey in 2013 *(U.S. News & World Report*, 2013).

Medical emergencies would be initiated through 911 calls alerting the EMS system. Calls to 911 from the Project area would be received by Wheatland, where the appropriate fire/ambulance crew is paged and dispatched. Chugwater has ambulance service, although it is not 24/7. If Chugwater ambulance service is not available for emergencies near the town, EMT response will come from Wheatland and Hawk Springs, both with 24/7 EMT service. For emergencies near Antelope Gap, EMT services will be provided by Wheatland, Guernsey, and Fort Laramie. In the event of a serious

911 emergency medical incident, helicopter service will be provided by AIRLIFE Denver, an air ambulance service stationed in Cheyenne.

The large majority of non-local workers are not expected to be accompanied by family members, and it is assumed that all workers would secure temporary accommodations for the duration of their involvement in the Project. It is unlikely that the presence of the non-local workers in the area, for the relatively short period of construction, would adversely impact the demand for human services or over-extend existing facilities and personnel.

5.4.7.4 Operations Impacts

The jobs created through the O&M of the proposed facility would be staffed by 31 workers. Based on current LOS statistics, these workers, and any associated family members and dependents, would not generate a noticeable increase in demand for health care personnel, services, or facilities and, thus, Project-related impacts would be negligible. The addition to the local economy of permanent direct and secondary jobs would add to the stability of the local workforce and communities, and is unlikely to increase the demand for human services. Increased long-term employment would benefit the social and economic condition of present and expected inhabitants in the area of site influence. No substantial impairments to the health, safety, and welfare of the present or expected inhabitants in the area of site influence are anticipated.

5.4.8 Municipal Services

This section describes the location and characteristics of the following municipal services:

- Wastewater treatment facilities
- Water distribution and treatment facilities
- Nonhazardous waste collection and disposal
- Electricity service
- Natural gas service

It is anticipated that the municipal services of Platte County and the Towns of Wheatland, Guernsey, Glendo, and Chugwater have the greatest potential to be affected by the WW&P workforce. Impacts to municipal services due to the lodging choices of the nonlocal workers are likely to be negligible because use of these temporary lodging units is already reflected in the facilities' baseline capacity projections and will be disbursed throughout the region of influence. However, more localized impacts are possible in the communities where the Project is located due to the 409 workers onsite at the Projects peak in September 2016. Additionally, during the operations phase, it is anticipated that most of the permanent workforce will relocate to these communities.

5.4.8.1 Wastewater Treatment

The Water and Wastewater Program within the Wyoming Department of Environmental Quality (WYDEQ) administers the Wyoming statutes governing these municipal and private services. Private septic systems are permitted and administered by the WYDEQ's Water Quality Division in Platte and Niobrara counties, while balance of study area counties permit their own systems. The Cheyenne-Laramie County Health Department requires small wastewater system contractors, installers, and cleaners to be licensed. The Natrona County Health Department also licenses small wastewater system contractors and installers (WYDEQ, 2013). A review of the permits issued by the WYDEQ for small wastewater systems, sewage collection facilities, water distribution facilities, pilot plants, and other permits in the study area over the past decade, as shown in **Table 5-64**, demonstrates ongoing public and private water and wastewater system improvements to meet local

capacity needs. For example, it documents the water and sewer improvements that Wheatland made to the area around the hospital in 2012.

TABLE 5-64
WYDEQ Water and Wastewater Issued Permits (2003-2013)

County	2003 – 2013 Permits	Percent of Total
Albany	201	14%
Converse	98	7%
Goshen	80	6%
Laramie	540	37%
Natrona	229	16%
Niobrara	27	2%
Platte	274	19%
Chugwater	7	
Glendo	7	
Guernsey	8	
Hartville	2	
Wheatland	11	
Grand Total	1449	

Sources: WYDEQ Water and Wastewater Program, 2013.

Additionally, Platte County updated its *1978 Comprehensive Plan* in 2008 to reflect current conditions and added a three-tier planning structure that integrates the Wheatland Growth Area, which is to be developed as an urban residential, commercial, and industrial area. These suburban residential lands are targeted for development with only public water and sewer; and with a priority for annexation of new development to Wheatland (WLC, 2008).

Public wastewater treatment in Platte County is provided by lagoons in the towns of Chugwater, Guernsey, and Wheatland, while private septic systems serve the areas outside of these communities. In the Town of Chugwater, the wastewater treatment facility is located outside of Chugwater in a lagoon that is designed to service 350 people. In the Town of Wheatland, the wastewater treatment facility is located outside of Wheatland in a three-cell lagoon System with two more holding ponds available (Novelution Wind, 2010).

5.4.8.2 Potable Water Treatment and Distribution

Potable water in Platte County is primarily provided by wells, with Wheatland and Chugwater currently withdrawing from a total of 10 wells (**Table 5-65**). **Table 5-65** also summarizes information pertaining to water system usage, total population served, amount of use, and other factors that may affect water consumption levels.

TABLE 5-65
Water Distribution and Treatment Facilities

Name of Entity	Number of Wells	Total Treated Water Storage (gallons)	Total population	Number of taps Inside Entity	Number of taps Inside Entity	Total Annual System Water Use (gallons)	Peak Day System Water Use (gallons)
Wheatland	7	3,000,000	2,565	1,852	56	369,912,100	450,000
Hartville	4	100,000	94	45	0	8,030,000	
Guernsey	3	0	1,147	638	5	81,384,300	1,600,929
Glendo	1	485,000	229	150	2	11,850,000	70,000
Chugwater	3	190			0	Unknown	

Sources: Wyoming Water Development Commission, 2011.

5.4.8.3 Electricity Service

There are two suppliers of electricity in Platte County: Wheatland Rural Electrical Association (REA), which serves the majority of the County including the Project tracts, and Niobrara Electric, which serves the northeastern corner of the county. **Table 5-66** summarizes the seven certified electrical service providers for the five counties containing the area of site influence communities. Wheatland REA is expected to provide electricity service to the Project site during both construction and operations.

TABLE 5-66
Electric and Gas Utility Company Service Areas

Company	Areas Served
Electricity	
Carbon Power & Light	Southwestern Albany County
Cheyenne Light, Fuel & Power	Southwestern Laramie County, including the City of Cheyenne
High West Energy	Southeastern Laramie County, I-80 Corridor at the Albany / Laramie County border
Niobrara Electric	Northeastern corner of Platte County, eastern Converse County, and all of Niobrara County
Rocky Mountain Power	Western four-fifths of Converse County and northeastern corner of Natrona County, including the City of Casper
Wheatland REA	Majority of Platte County, northwestern one-sixth of Laramie County, and northeastern Albany County
Wyrulec Company	Northeastern Platte County, including the Town of Guernsey; Goshen County, including the Town of Torrington; and a small area along Laramie County's border with Goshen County
Gas	
Cheyenne Light, Fuel & Power	Southern one-third of Laramie County, including the City of Cheyenne
MGTC, Inc.	North-central Converse County
Source Gas	Majority of AOI communities, including the towns of Douglas, Glendo, Wheatland, Guernsey, and Torrington, and the City of Laramie
Town of Walden	Corridor southwest of the City of Laramie in Albany County

Sources: Wyoming Public Service Commission, 2011.

5.4.8.4 Natural Gas Service

Source Gas provides natural gas service to the majority of the communities in the area of site influence, including portions of Platte County, as shown in **Table 5-66**. However, southern Platte County, including the Project sites and the Town of Chugwater, do not currently have natural gas service.

5.4.8.5 Nonhazardous Waste Collection and Disposal

Nonhazardous waste collection and disposal in Platte County is serviced by the county's Wheatland Landfill; however, this landfill does not accept construction waste and, therefore, would not accept waste from the Project.

A new landfill cell, Landfill Cell #7 in Torrington, opened in June 2013. This 600-acre facility, managed by TDS Services, serves both Platte and Goshen counties, and accepts construction waste as well as household solid waste and petroleum products. The life of this landfill is expected to extend beyond 100 years. Landfills in Converse County are located in Douglas and Glenrock, approximately 60 and 90 miles, respectively, from Wheatland. The Douglas landfill serves the eastern half of Converse County, including the City of Douglas, and the landfill in Glenrock serves the western half of Converse County, including the Town of Glenrock. The City of Cheyenne Landfill in Laramie County, located approximately 45 miles south and 11 miles west of the Town of Chugwater, currently accepts construction demolition waste. Cheyenne presently routes its municipal solid waste through the Felix Pino Transfer Station, from which it is transported to the North Weld County Landfill in Ault, Colorado. The Cheyenne Landfill has a current life of approximately 8 years.

The Project's solid waste would include materials from construction trailers, collection systems, foundations, turbines, substation, O&M building construction, and the transmission line. It is anticipated that these wastes will be transported to the Landfill #7 Cell in Torrington. This facility does accept construction waste and is closer to the Project than the landfills in Converse County, and has greater capacity to accept waste than the landfill in Laramie County.

Nonhazardous Waste Collection and Disposal, including Construction Waste Materials.

WW&P is planning for the collection and disposal of nonhazardous waste characterized in **Table 5-67.**

TABLE 5-67
Nonhazardous Construction Waste Collection

Type of Waste	Waste Generated (CY)							Total (CY)
	2013	2014	2015	2016	2017	2018	2019	
Antelope Gap								
Construction Trailers – 4-yd dumpster - Emptied every week	16	128	128	128	0	0	0	
Collection System – 40-yd roll-off dumped biweekly	0	0	320	80	0	0	0	
Foundations – 30-yd roll-off dumped biweekly	0	0	360	0	0	0	0	
Concrete Wash Out – 30-yd roll-off dumped biweekly	0	0	360	0	0	0	0	
Turbines – 40-yd roll-off dumped biweekly	0	0	0	480	0	0	0	
Substation – 30-yd roll-off dumped monthly	0	0	30	210	0	0	0	
O&M Building Construction – 30-yd roll-off dumped once monthly	0	0	0	120	0	0	0	

TABLE 5-67
Nonhazardous Construction Waste Collection

Type of Waste	Waste Generated (CY)							Total (CY)
	2013	2014	2015	2016	2017	2018	2019	
Antelope Gap Total	**16**	**128**	**1,198**	**1,018**	**0**	**0**	**0**	**2,360**
Chugwater								
Construction Trailers – 4-yd dumpster - Emptied every week	0	0	128	128	128	128	128	
Collection System – 40-yd roll-off dumped biweekly	0	0	0	640	320	320	0	
Foundations – 30-yd roll-off dumped bi-weekly	0	0	60	360	240	240	240	
Concrete Wash Out – 30-yd roll-off dumped biweekly	0	0	0	360	240	240	240	
Turbines – 40-yd roll-off dumped biweekly	0	0	0	640	480	480	480	
Substation – 30-yd roll-off dumped monthly	0	0	0	240	210	240	210	
O&M Building Construction – 30-yd roll-off dumped once monthly	0	0	0	90	0	0	0	
Chugwater Total	**0**	**0**	**188**	**2,458**	**1,618**	**1,648**	**1,298**	**7,210**
Project Total	**16**	**128**	**1,386**	**3,476**	**1,618**	**1,648**	**1,298**	**9,570**

Source: RES, 2013.

Waste from the Antelope Gap portion of the Project is expected to be collected and disposed of between 2013 and 2016 with the amount of waste ranging from 16 cubic yards (CY) in 2013 to 1,198 CY in 2015. Waste from the Chugwater portion of the Project is expected be collected and disposed of between 2015 and 2019 with the amount of waste ranging from 188 CY in 2013 to 2,458 CY in 2016. Therefore, most of the waste generated from this Project will occur in 2016 in the amount of 3,476 CY. It is estimated that WW&P will generate a total of 9,570 CY by the close of the project in 2019.

All waste will be stored within designated temporary waste collection areas until it is disposed of properly. Waste materials that can be recycled will be stored and transported. Waste that cannot be recycled will be transported offsite to the Landfill Cell #7 in Torrington. The landfill in Torrington can accommodate the waste expected to be generated during construction and operations of the Project. No significant impacts to local solid waste disposal sites or services are expected from the amount of waste generated by the Project given its anticipated volume.

5.4.8.6 Construction Impacts

Nonlocal construction workers are expected to reside primarily in hotel/motels and RVs located at established sites and facilities in the existing housing stock dispersed across the area of site influence. The temporary influx of a peak nonlocal workforce associated with the construction phase of the Project will have a negligible effect on the quality of municipal services since the additional capacity needed is already factored into the baseline due to ongoing use of the temporary lodging units. The additional temporary employment onsite near Wheatland and Chugwater will increase the demand for municipal services such as water, wastewater, and solid waste. However, WW&P is taking the actions described below to accommodate these demands so that the effects on the provision of these services or the facilities required for the administration of government are negligible.

Wastewater Treatment and Potable Water Treatment and Distribution.

The additional employment in the communities of Wheatland and Chugwater will cause a minor increase in the demand for municipal services such as potable water and generate additional quantities of wastewater. WW&P plans to permit and install two new groundwater wells (withdrawing 1,000 and 6,000 gallons/day) at the two O&M buildings as well as septic systems which will not impact potable water and wastewater distribution and treatment facilities in Wheatland and Chugwater.

Water usage during construction for the WW&P Project includes industrial uses such as dust suppression, road compaction, and concrete production, as well as domestic and sanitary uses. The amount of water used for construction depends greatly upon the final lengths and design of the roads and the dust control methods used. Estimates of construction and operational water consumption are presented in more detail in Section 6.5, *Water Supply and Yield Analysis*.

The project construction and the temporary influx of a peak construction onsite workforce of 409 employees in September 2016 will have negligible effect on electricity and natural gas services. Construction of the Project is expected to require no natural gas supplies and a limited amount of electricity, easily within the existing capacity of Wheatland REA or temporary on-site generation. The temporary workforce will be housed in existing temporary housing accommodations in Platte County as well as disbursed throughout the five-county area. As such, these hotels and motels are accounted for in the baseline demands for electricity and natural gas services.

5.4.8.7 Operations Impacts

During operations, it is expected that 31 permanent workers will be needed, some of who will relocate to the region. Negligible quantities of wastewater, potable water, municipal solid waste (MSW), hazardous waste materials, electricity, and natural gas will be associated with this minor population influx. Operation and maintenance (O&M) of the Project is estimated to generate approximately one or two dumpsters per week. All waste will be stored within designated temporary waste collection areas until it is collected for transport to an approved landfill. Materials that can be recycled will be stored and transported separately. The facilities will rely upon newly installed ground water wells for their on-site potable water supply, and septic systems to handle wastewater.

5.5 Summary of Impacts

Tables 5-68 and 5-69 present a summary of impacts for the major resources addressed earlier. The Project will have a positive short-term impact on construction jobs, employing 61 local workers during the peak construction month and an average of 22 local workers during the construction phase. The economic impact of constructing the Project includes the direct effect from the expenditures to construct the Project plus the additional direct expenditures by the non-local workers on food and accommodations. These two sources of direct expenditures represent new dollars for the local economy, which has the effect of creating additional local jobs, known as secondary jobs. These direct and secondary jobs are measured in terms of their full-time equivalents (FTEs) in **Table 5-69** for the purposes of standardizing the employment statistics. As shown in Section 5.3.3, *Economic and Fiscal Conditions*, the five-county area economy employs 105,560 FTEs, with 3,213 working in the non-residential construction sector. After the brief start-up period in the fourth quarter of 2013, the Project, on average, contributes 103 direct FTEs to the region each year during the remaining 6 years of construction. This represents a gain of more than 3 percent measured relative to the size of the five-county area construction workforce, which numbered 3,213

in 2011, according to the IMPLAN model for the study area economy. After accounting for secondary job creation, total new employment averages 144 FTEs over the same period. The contribution to the area economy is about .13 percent.

Similarly, the operations phase will have a modest positive long-term effect on employment, contributing 31 direct jobs and 55 total jobs to the region. It is anticipated that most of these jobs will be in Platte County where the majority of the Project and supporting communities are located. According to the IMPLAN model, for the five-county area, the electricity generation, transmission, and distribution industry employed 740 FTEs in 2011. Thus, the additional 31 direct jobs contributed by the Project represent a 4.2 percent increase in employment in this sector. The 55 new FTEs across all sectors are small relative to the size of the economy in the region, creating a modest beneficial increase of 0.05 percent.

Most service impact levels are low (less than 4 percent of baseline conditions). This includes temporary housing with the Project projected to have between 3 and 4 percent of an effect on the supply of temporary housing units. Similarly, the operations phase would employ 31 new workers and even if those new workers have school -age children, the increase in enrollment would be too small to cause an adverse impact to the student-teacher ratios. Even at the peak influx of temporary onsite workers associated with the construction phase of the Project, effect on the quality of service provided by fire protection agencies would be negligible. All nearby fire chiefs anticipate serving the fire prevention and response needs of the Project in either a primary or backup role, as well as coordinating with the Project to ensure proper training is received for addressing fire response issues unique to the Project. The temporary increase in persons attributable to construction of the Project and the 31 workers associated with the operation of the Project would represent a negligible increase in demand for law enforcement; the addition of less than one law enforcement officer. In addition, the workforce population has additional incentive to reduce criminal incidences as it puts their employment at risk. Local demand for primary care physicians increases by 3.5 percent, but this represents the addition of less than one primary care provider. Because construction debris from WW&P will be transported to Landfill Cell #7 in Torrington with a life capacity of over 100 years, as confirmed by TDS Services, impacts are expected to be minor.

The Project will make substantial contributions to tax revenues for the state, the five-county area, and especially for Platte County and the local jurisdictions within Platte County. Goshen County and the local jurisdictions within Goshen County will receive a small fraction of the total *ad valorem taxes.* During construction, WW&P will pay more than $2.8 million on average in annual *ad valorem* taxes with most of this revenue going to Platte County and the rest to Goshen County. With completion of construction this figure increases to more than $6.1 million. If this entire amount went to Platte County, this would increase average annual *ad valorem* tax receipts by 53 percent with the completion of construction. These property tax payments will exceed $151 million over the life of the Project. Sales and use taxes paid to the state and area counties will average more than $9.6 million each year of construction, totaling $67.6 million. The annual revenue represents about 87 percent of annual Platte County sales and use tax receipts and 5 percent of annual collections for the five-county area. The third new source of revenue from the Project is provided by the recently-enacted wind energy production tax. The fully operational wind farm will pay an estimated $3.6 million a year or $91 million over the Project life to the state, of which 60 percent will be distributed back to the counties, while retaining 40 percent for the state's general fund.

TABLE 5-68
Summary of Direct Project Effects and Project-Induced Impacts

Direct Project Effects		
	Peak Month	**Construction Period Average**
Construction Phase		
Total Onsite Workers	409	146
Non-Local Workers	348	124
Local Workers	61	22
Operations Phase	**Average Annual**	
Local Workers	31	

Project-Induced Impacts			
	Area Baseline Condition	**Project Effect**	**Project Impact**
Construction Phase Employment (Average 2014-2019) (FTEs in 2010)			
Direct	3,213	103	3.2%
Total	105,560	144	0.13%
Operations Phase Employment (FTEs in 2010)			
Direct	740	31	4.2%
Total	105,560	55	0.05%
Housing Supply			
Recreational Vehicle Spaces	1,414	46	3.25%
Motel and Hotel Rooms	5,406	229	4.24%
Public School (Platte County)			
Students	1,255	0	0.0%
Teachers and Staff	385	0	0.0%
Fire Protection (Platte County)			
Full-Time Paid Personnel	12	0	0.0%
Emergency Medical Technicians	23	0	0.0%
Law Enforcement (Platte County)			
Officers	19	0	0.0%
Index Crimes (crimes per 10,000)	229	7	3.7%
Healthcare (Platte County)			
Physicians (primary care)	2	0.07	3.5%
Emergency Room Visits	3,332	117	3.5%
Solid Waste Generation (Cubic Yards)			
Construction Debris	NA	9,570	a
Taxes			
Ad Valorem Average Annual During Construction Phase (2014 - 2019)	$11,600,000	$2,836,620	24%
Ad Valorem Platte County – Average Annual	$11,600,000	$6,112,461	53%

TABLE 5-68
Summary of Direct Project Effects and Project-Induced Impacts

During Operations Phase (2019 - 2042)			
Cumulative *Ad Valorem* Platte County (2014 – 2041)		$151,500,000	
Five-County Area Average Annual Sales and Use Taxes Construction Phase (2013-2019)	$195,788,000	$9.658,000	5%
Platte County Average Annual Sales and Use Taxes Construction Phase (2013-2019)	$11,162,000	$9,658,000	87%
Five-County Area Cumulative Sales and Use Taxes Construction Phase (2013- 2019)		$67,609,000	
Annual Wind Production Taxes (when fully operational)	No receipts to compare; excise tax just enacted; no information available on first-year excise tax receipts from existing wind farms.	$3,600,000	
Cumulative Wind Production Taxes		$91,000,000	

NA – not available

a – Waste generator from WW&P is planned to be transported to Landfill Cell #7 in Torrington. This is a new facility, opened in June 2013 with a life capacity of over 100 years. Accommodation of waste from Project was confirmed by TDS Services.

Source: CH2M HILL, 2013.

5.6 Cumulative Impacts

Cumulative impacts, as defined in the ISA Rules and Regulations, are the combined impacts to the social or economic conditions resulting from construction and operation of the proposed industrial facility and from construction and operation of other ongoing or proposed developments in the area of site influence. Proposed developments to be included in the cumulative impact analysis include those developments that are actively permitting or have public information available. The following projects and events were included because of their location within or near the AOI, they access the same temporary housing sources, and/or they have some element of overlap with the fourth quarter 2013-to-fourth quarter 2019 construction schedule:

- Laramie River Power Station Outages (Wheatland)
- Wyoming-Colorado Intertie Project (Wheatland to Brush, Colorado)
- Choke Cherry-Sierra Madre Wind Project (South of Rawlins, limited overlap with Laramie Housing resources)
- Cheyenne Frontier Days™ (CFD)

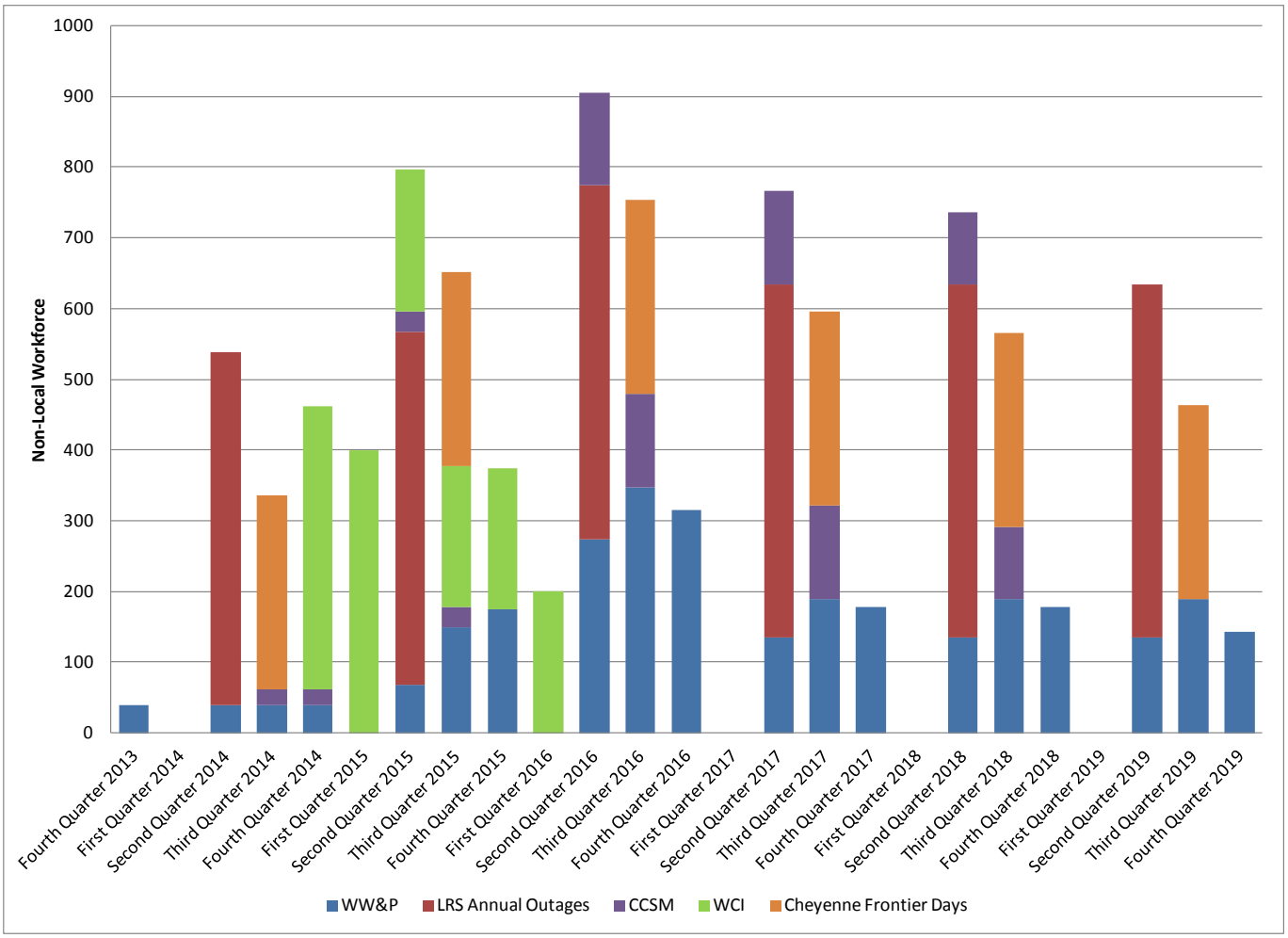
The Platte County Fair and Rodeo in Wheatland, Laramie Jubilee Days in the City of Laramie, and the Niobrara Shale Play were considered but not included in this cumulative analysis because their activities have been ongoing for a number of years, encompass relatively short periods of time, and the demands on temporary housing and local community services are already represented in the

baseline data for the existing condition. This could also be said of CFD as well as the Laramie River Power Station Outages, although these events place such a large demand on temporary housing in the region of influence that they are included in the cumulative analysis anyway. This means that the cumulative analysis will tend to overestimate demands for temporary housing during the month of July due to CFD and the months of May and June due to the Laramie River Power Station Outages.

5.6.1 Workforce Estimates

Quarterly workforce estimates for WW&P as well as for each of the events or projects included in the cumulative impacts analysis are described below. The cumulative number of workers, by quarter, from fourth quarter 2013 through fourth quarter 2019, is shown below in **Figure 5-19**.

FIGURE 5-19
Cumulative Number of Workers, by Quarter



Source: Developed by CH2M HILL (2013).

Laramie River Power Station Annual Outages

The Laramie River Station (LRS), located east of Wheatland, Wyoming, is one of the largest consumer-operated, regional, joint power supply ventures in the United States (BEPC, 2013a). It has three coal-based units that are typically maintained every 3 years on a rotating basis via annual

outages lasting 7 to 8 weeks, typically in April and May (BEPC, 2013b). What is believed to be the first triennial maintenance outage began in late March 2012 with scheduled completion by May 20, 2012. However, upon start-up, equipment problems were encountered and the unit did not return to full operation until early August, a 4-month outage (MP, 2013). Based on the typical schedule experienced by LRS historically, the cumulative analysis assumed approximately 500 non-local workers onsite from April to May (second quarter) of each year.

5.6.1.1 Choke Cherry-Sierra Madre Wind Project

Power Company of Wyoming LLC's Chokecherry and Sierra Madre (CCSM) Wind Energy Project is a 1,000-turbine wind farm to be located south of Sinclair and Rawlins in Carbon County, Wyoming. The project's long-term surface disturbance will be less than 2,000 acres of a 320,000-acre ranch owned and operated by an affiliate company. Located entirely in Carbon County, Wyoming, the CCSM Wind Energy Project's Record of Decision was issued on October 9, 2012 (PCW, 2013). If all permits are approved and all dates are met, initial construction is projected to begin by the fall of 2014 (RDT, 2013).

Construction-related housing demand would occur primarily from May through November during each of five consecutive years, with the majority of such demand focused on temporary housing units (hotel/motel rooms and RV pads) in Rawlins or Saratoga, although temporary workers would certainly use rental housing, apartments, and mobile homes if available for short-term occupancy. Temporary construction employment, based on the preliminary engineering and conceptual layouts for the project, would be anticipated to peak at 300 workers during Year 1 and 400 workers in Year 2. In Years 3 and 4 of construction, projected onsite direct construction employment would range between 900 and 1,200 workers during the summer, when wind turbine pad, road, and internal transmission line construction would coincide with wind turbine installation and commissioning. In Year 5, anticipated construction employment would peak at 1,000 workers. Of these total workers, the project's environmental impact statement (EIS) (BLM, 2012) estimates the following number of non-local workers relocating either temporarily or long-term:

- Year 1 (2014): 230
- Year 2 (2015): 293
- Year 3 (2016): 1,322
- Year 4 (2017): 1,322
- Year 5 (2018): 1,024
- Year 6 (2019): 125 to 194

The BLM EIS impact analysis area encompasses the central and western portions of Carbon County and the eastern portion of Sweetwater County (Wamsutter east), although it acknowledged that shortage of housing in Years 3,4, and 5 could necessitate that workers either find other housing options or commuting further to destinations such as Laramie in Albany County (BLM, 2012). For the purposes of this cumulative analysis, it is assumed that there will only be limited overlap of temporary housing resources in Laramie and, thus, 10 percent of the non-local workforces above were integrated into the analysis.

Wyoming-Colorado Intertie Project

The Wyoming-Colorado Intertie (WCI) transmission project is described in Section 2. The WCI is owned by a subsidiary of LS Power, but is being developed through a public/private partnership between the Wyoming Infrastructure Authority (WIA) and LS Power (jointly the WCI Developers).

Upon completion of development, the WIA will no longer be involved in WCI. The WCI is a new 345-kV transmission project connecting southeast Wyoming to northeast Colorado, in which WW&P has secured up to 900 MW of long-term firm point-to-point transmission service through a Federal Energy Regulatory Commission (FERC)-approved agreement (FERC, 2012). WW&P plans to interconnect to the WCI transmission project and deliver energy to Colorado via long-term firm transmission service.

The WCI will connect the Laramie River Station substation to the Pawnee substation in Colorado, a distance of approximately 180 miles. Based upon similar projects, it is anticipated that total construction time for the transmission line will be up to 3 years. The corridor leaves the power station in Wheatland, crossing the southwest corner of Goshen County and the eastern quarter of Laramie County, before leaving Wyoming and crossing Weld and Morgan counties in Colorado, to a terminus at the Pawnee substation near Brush, Colorado. For purposes of this analysis, it is conservatively assumed that approximately half of the route is in Wyoming; construction would commence in the second quarter of 2015 and be completed by the second quarter of 2017 with an estimated construction workforce as shown in **Table 5-69.**

TABLE 5-69
Cumulative Non-Local Workforce and Visitors

Time Period	WW&P	LRS Annual Outages	CCSM	WCI	Cheyenne Frontier Days	Total Non-Local Workforce
Fourth Quarter 2013	39					39
First Quarter 2014	0					50
Second Quarter 2014	39	500				539
Third Quarter 2014	39		23		274	336
Fourth Quarter 2014	39		23	400		462
First Quarter 2015	0			400		400
Second Quarter 2015	67	500	29	200		796
Third Quarter 2015	149		29	200	274	652
Fourth Quarter 2015	174			200		374
First Quarter 2016	0			200		200
Second Quarter 2016	274	500	132			906
Third Quarter 2016	348		132		274	754
Fourth Quarter 2016	315					315
First Quarter 2017	0					0
Second Quarter 2017	134	500	132			767
Third Quarter 2017	190		132		274	596
Fourth Quarter 2017	178					178
First Quarter 2018	0					0
Second Quarter 2018	134	500	102			737
Third Quarter 2018	190		102		274	566
Fourth Quarter 2018	178					178
First Quarter 2019	0					0
Second Quarter 2019	134	500				634
Third Quarter 2019	190				274	463
Fourth Quarter 2019	144					144

Table 5-69 provides a composite view of the quarterly non-local construction workforce estimates for the five projects and CFD. The cumulative non-local workforce will range from 39 in the fourth quarter of 2013 to a peak of 906 in the second quarter of 2016, with a quarterly average over WW&P'S construction period of 403 workers.

5.6.1.2 Cheyenne Frontier Days (CFD)

Temporary accommodations in the area of site influence experience an annual peak the last 2 weeks of July in association with CFD, a 9-day western celebration with an outdoor rodeo, attractions, and entertainment held annually at Frontier Park near the Cheyenne Airport. Registered event attendance in 2009 totaled nearly 192,000, not including participation in events outside Frontier Park, such as parades. A total of 460,282 people attended all combined events during the celebration in 2012 and a total of 236,455 tickets were sold; data indicated that 146,602 individual and unique attendees came to the event with 114,350 from outside of Laramie County (KGWN – Cheyenne, WY– Scottsbluff, NE News, February 12, 2013). Economic impacts resulting from direct visitor spending surrounding the event totaled approximately $25 million. During this time, many CFD attendees commute from communities within an hour drive of Frontier Park (CFD, 2012). CFD refers visitors on its accommodation website to the following resources:

- Cheyenne bus routes and pick-up times
- Cheyenne lodging, hotels, and camping
- Laramie, Wyoming Tourism (for Laramie area)
- Platte County, Wyoming Tourism
- Goshen County, Wyoming Tourism
- Tourism Sites for Fort Collins, Denver, Greeley, and Loveland, Colorado (CFD, 2013).

As noted previously, the Project anticipates needing to access Cheyenne's temporary housing resources for up to 35 percent of the non-local workers (43 persons) on average, and 10 percent (23 workers) during the Project's peak for the Antelope Gap tract in July 2016. Temporary housing in Laramie is also frequently used as a housing alternative during CFD when it is notoriously difficult to book lodging in Cheyenne. Based on the recent Economic Impact Study findings, this cumulative analysis assumes that of the 114,350 visitors from outside of Laramie County, approximately half (51 percent) stayed overnight, and that among overnight visitors, over half (58 percent) stayed in a hotel, motel, lodge, or bed and breakfast (B&B) (KGWN –Cheyenne, WY– Scottsbluff, NE News, February 12, 2013). Further, it was assumed that a small percentage, 5 percent or 274 persons, would access the temporary housing resources of Platte County.

5.6.2 Cumulative Temporary Housing Estimates

The peak in cumulative temporary housing needs is projected to occur in the second quarter of 2016. As discussed in Section 5, there are 34 RV parks or campgrounds with 1,414 sites in the five AOI counties that can provide accommodations for visits with durations of weeks or months, which will be adequate to meet the peak RV/campsite needs of 136 units in the second quarter of 2016 (**Table 5-70**). The AOI counties have approximately 5,406 rooms at 110 hotels and motels that experienced average peak occupancies of 71 to 78 percent in the July to September period from 2007 to 2013. Assuming historical vacancy trends continue, approximately 1,389 hotel units will be available in the AOI to accommodate the cumulative peak nonlocal hotel needs of 674 hotel units in the second quarter of 2016, a surplus of 715 units.

TABLE 5-70
Cumulative Temporary Housing Needs, Fourth Quarter 2013 to Fourth Quarter 2019[a]

Time Period	Total Non-Local Workforce and Visitors	Non-Local Workforce Allocated to RV / Campsites (15%)	Non-Local Workforce Allocated to Hotel / Motels (85%)	Single Occupancy Hotel Units (75%)	Double Occupancy Hotel Units (25%)	Aggregate Hotel Units Needed	Minimum Units Committed or Available in the AOI Per Qtr	Hotel Surplus / Shortage in AOI	WW&P % of Total NonLocal Workforce and Visitors
4Q 2013	39	6	33	25	4	29	2190	2161	100%
1Q 2014	0	0	0	0	0	0	2707	2707	0%
2Q 2014	539	81	458	344	57	401	1389	988	100%
3Q 2014	336	50	286	214	36	250	1240	991	5%
4Q 2014	462	69	393	295	49	344	2190	1846	8%
1Q 2015	400	60	340	255	43	298	2707	2410	0%
2Q 2015	796	119	677	508	85	592	1389	796	23%
3Q 2015	652	98	554	416	69	485	1240	756	13%
4Q 2015	374	56	318	239	40	278	2190	1911	47%
1Q 2016	200	30	170	128	21	149	2707	2558	0%
2Q 2016	906	136	770	578	96	674	1389	715	67%
3Q 2016	754	113	641	480	80	561	1240	680	28%
4Q 2016	315	47	268	201	34	235	2190	1955	100%
1Q 2017	0	0	0	0	0	0	2707	2707	0%
2Q 2017	767	115	652	489	81	570	1389	819	50%
3Q 2017	596	89	506	380	63	443	1240	797	17%
4Q 2017	178	27	151	113	19	132	2190	2058	100%
1Q 2018	0	0	0	0	0	0	2707	2707	0%
2Q 2018	737	111	626	470	78	548	1389	841	57%
3Q 2018	566	85	481	361	60	421	1240	820	18%
4Q 2018	178	27	151	113	19	132	2190	2058	100%
1Q 2019	0	0	0	0	0	0	2707	2707	0%
2Q 2019	634	95	539	404	67	472	1389	917	100%
3Q 2019	463	70	394	295	49	345	1240	896	20%
4Q 2019	144	22	122	92	15	107	2190	2083	100%

Notes:
[a] Based on commitments or average quarterly vacancies from 2007 to 2013.
Source: Developed by CH2M HILL; Smith Reports (2013)

5.6.2.1 Cumulative Temporary Housing Impacts

The AOI has adequate hotel/motel capacity to accommodate the WW&P non-local work force every quarter, including during the third quarter of 2016, when the cumulative demand peaks and the supply of temporary housing is at its low point. WW&P's contribution towards the cumulative non-local workforce will range from lows of 0 percent during the first quarter of each year, when no workers will be onsite, to highs of 100 percent later in construction, such as the fourth quarter of years 2016 through 2019, due to no other Projects occurring in the AOI other than the Project at these times. Because there are no projected shortages for temporary housing in the area of influence, it is not necessary to identify mitigation measures.

5.6.3 Trade-Off Analysis

The proposed Project is expected to create significant and ongoing tax benefits, most notably for Platte County, and modest temporary and long term increases in employment throughout the area of site influence. It is anticipated that Project-related impacts, especially on community services, would be minor, and distributed throughout the area of site influence, with the majority occurring in the Wheatland and Chugwater areas.

Implementation of the Project will create both primary and secondary employment opportunities, contribute modest growth to the local economy, including the service sectors, and provide a substantial source of revenues for local governments through the collection of significant *ad valorem*, sales and use, and wind energy production taxes. The potential for short-term impacts associated with implementation of the Project on socioeconomic resources is minimal and more than offset by increases in local tax revenues.

The major long-term impacts of the Project will be the additional revenue collected by the state and distributed to Platte County through increased *ad valorem* and wind energy production taxes. The increased *ad valorem* tax revenues would be distributed by the state and county for schools, roads, and other community infrastructure. Further expansion of wind energy-related resources in the region will continue to add jobs to the growing economies and generate additional tax revenues. Goshen County and the jurisdictions within Goshen County would receive a small increase in *ad valorem* tax revenue.

5.6.4 Beneficial and Adverse Impacts

The proposed Project is expected to create significant long-term tax benefits to Platte County, a small long-term tax benefit to Goshen County and, a modest increase in employment. Project-related impacts, especially on community services, will be small and will be concentrated in the Wheatland and Chugwater areas in Platte County, the primary area of site influence. These communities and Platte County will be the primary beneficiaries of the project and the substantial increases in tax revenues will more than compensate for any minor demands the Project will place on any community services. The Project will benefit the local communities and counties comprising the study area and area of site influence in the following ways:

- The creation of an annual average 103 direct FTE jobs filled by the local area workforce over the construction period.
- Secondary employment creation would add an additional 31 FTEs on average to area jobs each year for the duration of construction.

- The creation of a total of 31 area jobs annually would be directly attributable to O&M and 14 secondary jobs would be created for a total increase of 55 workers due to the operations phase of the Project.
- *Ad valorem* (property) taxes would increase as a result of an increase in the fair market value (and assessed value) of the real property comprising the Project site. *Ad valorem* taxes would be approximately $2.8 million annually over the construction phase, primarily within Platte County. This represents an increase in Platte County property taxes of 24 percent. The average increase to Platte County property taxes is even more significant during the operations phase when the average annual *ad valorem* taxes paid by the Project exceed $6 million, which is more than 50 percent of current annual property tax revenue for the county.
- On average, the construction phase is expected to generate approximately $9.7 million per year in sales and use taxes in the 5-county area, for a cumulative total of $67.6 million. The annual receipts represent an 87 percent increase in Platte County's sales and use tax revenue and 5 percent of the total annual revenue for the five-county area.
- Temporary construction workers are expected to reside mostly in local hotels and motels. Depending on their length of stay, area counties will gain revenues from the lodging tax levied on room expenditures.
- *Wind energy production tax revenue could average $3.6 million per year once the wind farm was fully operational and would continue for the life of the facility, contributing an estimated $91 million in total to the state and to Platte and Goshen Counties.*
- *Minor impacts on local community and public services are more than offset by increases in local government revenue to fund local services.*
- Impact assistance funds will further supplement revenues for the local jurisdictions that are affected by the Project.

5.6.5 Impacts to Community Services

During the construction phase of the Project, the number of non-local workers (and any accompanying family members) entering the five-county area temporarily will peak at 348 in September 2016. The quarterly peak of 308 workers occurs in the third quarter of 2016. It is not anticipated that workers would be accompanied by family members or occupy permanent housing as the Project has a lengthy shut down period, lasting about 4 months each year. The potential impacts this inflow of persons would have on community services in the area of site influence would be negligible. Their short-term presence would have negligible impacts on schools, law enforcement, fire protection, health care, or municipal services.

Hotel/motels are the expected primary temporary lodging choices. Thus, the most noticeable impact would be on the availability of hotel and motel rooms for other visitors, especially tourists during the annual Cheyenne Frontier Days held in mid-July. However, the demand exerted by the temporary workers would not exhaust the likely available supply of vacant units, especially given that WW&P's expected workforce construction peak would primarily occur outside of peak tourism weeks.

5.7 Mitigation Measures to Offset Adverse Cumulative Impacts to Housing

Housing for a temporary construction workforce can be a concern of communities in Wyoming. The cumulative analysis shows that there is adequate temporary housing in the area of influence over the 6-year construction period. There can be periods of relatively short duration when some communities within the area of influence will experience a very tight market for temporary housing. Every July during CFD, it is not unusual for Cheyenne to be at 100 percent capacity, forcing rodeo visitors to seek accommodations in other communities. The Project's non-local workforce will be competing for some of the same temporary lodgings as the rodeo visitors, but also has relatively easy access to additional housing resources in communities, such as Torrington and Douglas, that are less practical for participants in the festivities at CFD. Nonetheless, the Project proponent has acquired 15 letters of interest from hotels and motels to ensure that the temporary workforce is adequately housed. Letters of interest from local hotels are shown in **Appendix F.**

Section 6
Environmental Impact Evaluation

6.0 Environmental Impact Evaluation

Potential environmental impacts associated with the construction, operation, and maintenance of the Wyoming Wind Farm Project (Project) are presented in this section. Resource data were collected from existing sources and field studies performed for the Project. Impact analyses were performed to evaluate the effects of the Project on the natural environment. Methods of mitigating and avoiding impacts will be implemented as part of the Project and are incorporated into the impact analyses and site-specific monitoring plans. Unless otherwise stated, the area of analysis for the evaluated environmental resources consists of the area within the Project boundary as detailed in **Appendix A**. Resource maps for selected resources are included in **Appendix B**.

6.1 Physical, Chemical, Biological, and Radiological Discharges

There are no anticipated chemical, physical, biological, or radiological discharges associated with construction or operation of the Project that would substantially impair the health, safety, or welfare of the present or expected inhabitants in the area of site influence or the Project area.

6.2 Air Quality

6.2.1 Regulatory Jurisdiction

The Wyoming Department of Environmental Quality (WYDEQ) —Air Quality Division (AQD) implements adopted air quality standards and regulations. Air emissions associated with construction and operation of the Project will be subject to the WYDEQ-AQD Standards and Regulations. Specifically, Chapter 6 of the Standards and Regulations establishes permitting requirements for all sources being constructed and/or operating in the State of Wyoming.

6.2.2 Emission Sources

6.2.2.1 Construction Emissions

Particulate matter, consisting primarily of cement dust but including some aggregate and sand dust emissions associated with concrete batch plant operations, is the primary pollutant of concern. In addition, there are emissions of metals that are associated with this particulate matter. Most emission points are fugitive in nature. The main point source is the transfer of cement and pozzolan material to silos, and these are vented to a fabric filter.

Each turbine tower will be supported by a reinforced and poured concrete foundation. The foundation could be either a spread-foot or caisson-type concrete foundation. The wind turbine tower foundations will require approximately 450 to 600 cubic yards, (yd^3) of concrete per tower, for a total of approximately 180,095 yd^3, including the concrete needed for project substation foundations, transformer pads, and other equipment. The most efficient way to produce this volume of concrete will require setting up two portable concrete batch plants onsite to provide the needed concrete for the foundations. The batch plants will mix the ingredients together and load the resulting concrete into mixer trucks for transit to the wind turbine generator (WTG) locations throughout the Project site.

Raw materials such as aggregate, sand, cement, and water will be delivered to the mobile batch plant by truck for onsite concrete production. If possible, they will be obtained on the property of participating or nearby landowners to minimize hauling distances and the amount of offsite traffic in the area of site influence. These raw materials are typically staged in temporary silos onsite and

proportionately combined based on the required concrete mix design for each foundation or pad. The concrete is placed in the delivery trucks and continuously mixed on the way to the turbine site, where the concrete is poured into the foundation forms.

Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer of sand and aggregate depends primarily on the surface moisture content of these materials. The extent of fugitive emission control would vary from plant to plant. A permit will be obtained from the WYDEQ-AQD, and operation of the batch plant will be in accordance with the permit. Fugitive dust from road use in the Project area will contribute to particulate matter levels.

6.2.2.2 Operation Emissions

The sources of pollutants during operation of the Project will be limited to the vehicles and equipment used by maintenance staff. The emissions from these sources will be minor in comparison with the levels of activity that would be required to exceed emissions thresholds; thus, these emissions are not quantified.

No air emissions will be generated from operation of either the WTGs or the substation.

6.2.3 Construction Impacts

Portable concrete batch plants on private fee lands will require WYDEQ-AQD permits with emissions limitations set by the State of Wyoming pursuant to Chapter 6, Section 2, of the regulations and standards. Required air permits will be obtained by the batch plant operator prior to operation.

Particulate emission factors for concrete batching are detailed in **Table 6-1** and expressed in pounds of pollutant per cubic yard of concrete.

TABLE 6-1
Estimated Plant-Wide Emissions per Yard of Truck-Mix Concrete

Component	Total PM (lb/yd^3)	Fine PM (lb/yd^3)
Aggregate delivery to ground storage	0.0064	0.0031
Sand delivery to ground storage	0.0015	0.0007
Aggregate transfer to conveyor	0.0064	0.0031
Sand transfer to conveyor	0.0015	0.0007
Aggregate transfer to elevated storage	0.0064	0.0031
Sand transfer to elevated storage	0.0015	0.0007
Cement delivery to silo	0.0002	0.0001
Cement supplement delivery to silo	0.0003	0.0002
Weigh hopper loading	0.0079	0.0038
Mixer truck loading	0.0346	0.0096
Total dust emissions estimate per yard of concrete	0.0667	0.0251

Source: AP-42, 1995.

Guided by **Table 6-1**, total emissions for 600 yd^3 of concrete, which constitute the greatest potential amount of concrete for one tower foundation, are estimated to include 40.0 pounds of total dust and 15.1 pounds of fine dust.

The concrete batch plant will include appropriate filtration in accordance with the air quality permit. A fugitive dust control plan, including measures such as applying water or dust suppressants to exposed soil or material piles, will be implemented at the Project site to control and prevent the creation of dust associated with construction activities.

Water trucks will be used as appropriate during construction activities to wet the surface of access roads and other potential work area sources of fugitive particulate matter. The selected balance of plant (BOP) contractor or subcontractor and holder of the issued air quality permit will be responsible for ensuring that the plant is operated in accordance with the issued permit conditions.

The resulting construction emissions will not significantly impair the environment or the social and economic condition of present or expected inhabitants in the area of site influence.

6.2.4 Operation Impacts

The operation of the WTGs will have negligible effect on air quality (e.g., visible plumes, fogging, misting, icing, impairment of visibility, or changes in ambient levels caused by emitted pollutants). Potential fugitive dust and tailpipe emissions from operations staff vehicles traveling within the Project area will be minimal, and no substantial impairment to the health, safety, or welfare of the present or expected inhabitants in the area of site influence or the Project area is anticipated.

6.3 Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Existing sources of noise in the immediate vicinity of the Project include traffic from Interstate 25 (I-25) and local roads, ranching activities, and overhead aircraft.

6.3.1 Regulatory Jurisdiction

Platte County does not have a general noise ordinance; however, the Platte County Wind Energy Siting Regulations address noise specifically from wind projects. Section IX.F.4 requires that all Wind Energy Conversion System (WECS) projects comply with all federal, state, and local requirements. There are no federal, State of Wyoming, or other local requirements that impose numerical noise level limits on the Project. Section XV.A.2 addresses specific requirements for non-commercial WECS, including a noise limit of 40 decibels (A-weighted scale) (dBA) at the closest neighboring inhabited dwelling. However, since the Project will be a commercial facility, this limit will not apply. In summary, there are no numerical noise level limits that will apply to the portion of the Project located in Platte County.

There are no environmental noise limits, either general or specific, for wind energy for Goshen County.

Given the lack of a regulatory threshold, this section provides an overview of federal environmental noise policy and examples of how other jurisdictions establish noise limits for similar facilities.

The National Environmental Policy Act (NEPA), requires “Federal agencies to include in their decision-making processes appropriate and careful consideration of all environmental effects of proposed actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible”(United States Code of Federal Regulations [CFR])Title 40 Part 6). NEPA requires an environmental impact statement (EIS) be prepared when a “Federal action may directly or through induced development have a significant adverse effect upon local ambient air quality, *local ambient noise levels*, surface water or groundwater quality or quantity, water supply, fish, shellfish, wildlife, and their natural habitats.”

(emphasis added). It is important to note that NEPA does not specify a threshold for "significant adverse effect" for noise and that NEPA is only triggered when there is a "federal action," such as the issuance of a federal permit. Though the Project is not subject to NEPA, methods used to assess noise impacts for NEPA analyses can be used to show how such impacts can be assessed.

While there are no federal regulations that limit overall environmental noise levels, there are federal guidance documents that address environmental noise and regulations for specific sources such as aircraft or federally funded highways.

The only energy facility-specific requirements are those of the Federal Energy Regulatory Commission (FERC), which regulates interstate electrical transmission lines, natural gas, and petroleum pipelines. The FERC limits specifically address compressor facilities associated with pipelines under its jurisdiction and limits the noise to 55 dBA Day-Night Level (DNL or Ldn) in noise sensitive areas (FERC, 2002). A Day-Night Level of 55 dBA is equivalent to 55 dBA during the day and 45 dBA at night, or a continuous level of 49 dBA.

There are also federal highway and aircraft guidelines/regulations established by the Federal Highway Administration (FHWA) (CFR Title 23 Part 772) and Federal Aviation Administration (FAA) (CFR Title 18 Part 150). A summary of federal guidelines/regulations is presented in **Table 6-2**.

TABLE 6-2
Summary of Federal Guidelines/Regulations for Exterior Noise (DBA)

Agency	L_{eq}	DNL
Federal Energy Regulatory Commission	[49]	55
Federal Highway Administration	67	[67]
Federal Aviation Administration	[59]	65
U.S. Department of Transportation—Federal Rail and Transit Authorities (FRA 1998 and FTA 1995)	Sliding scale, refer to **Figure 6-1**	Sliding scale, refer to **Figure 6-1**
U.S. Environmental Protection Agency (EPA 1974)	[49]	55
U.S. Department of Housing and Urban Development (HUD) (CFR Title 24 Part 51B)	[59]	65

Note: Brackets [59] indicate calculated equivalent standard. Because FHWA regulates peak noise level, the DNL is assumed equivalent to the peak noise hour.

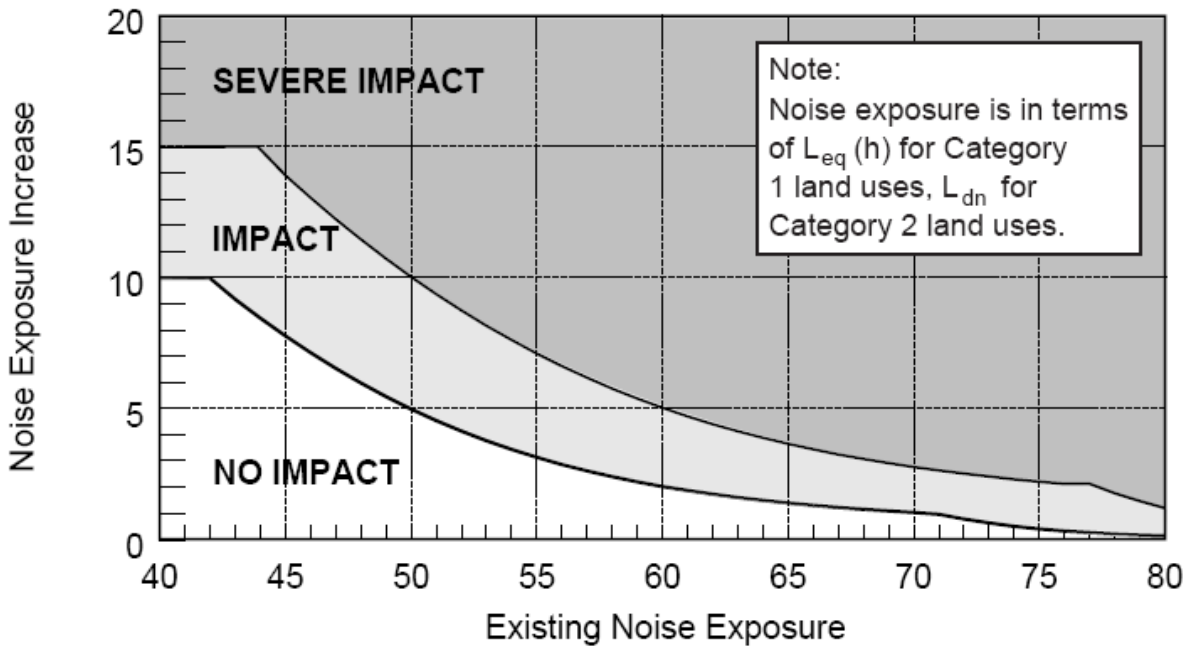


FIGURE 6-1
FRA and FTA Allowable Increase in Cumulative Noise Level
Note: Residential uses are included in Category 2.

The Bureau of Land Management (BLM) is the federal agency charged with managing federal public lands and is responsible for the development of wind energy resources on BLM-administered lands. The BLM prepared a Programmatic EIS (BLM, 2005) in accordance with the NEPA requirements to establish a "Wind Energy Development Program." Despite the fact that the Project contains no federal lands, several key findings/statements relevant to assessing noise impacts of a wind project in rural areas are cited below:

- At many wind energy project sites on BLM-administered lands, large fluctuations in broadband noise are common, and even a 10-decibel (dB) increase would be unlikely to cause an adverse community response.
- The U.S. Environmental Protection Agency (EPA) guideline recommends a DNL (L_{dn}) of 55 dBA to protect the public from the effect of broadband environmental noise in typically quiet outdoor and residential areas (EPA, 1974). This level is not a regulatory goal but is "intentionally conservative to protect the most sensitive portion of the American population" with "an additional margin of safety."

Regulatory approaches for wind projects, like other facilities, vary among jurisdictions within the United States and internationally. A recent review was published in 2012 (Bastasch in Bowdler & Leventhall, 2012) from which several North American examples are excerpted below.

Ontario, Canada. The Ontario Ministry of the Environment (MOE) guidelines for the assessment of sound from wind turbines establishes relative limits with both a floor and ceiling (MOE, 2010). Rather than require monitoring to establish existing background levels, an assumed wind-induced background sound level is established. The standard also dictates the various modeling parameters to be used in ISO 9613. The standard essentially results in 40 dBA at residences in rural areas under moderate wind speeds (**Figure 6-2**).

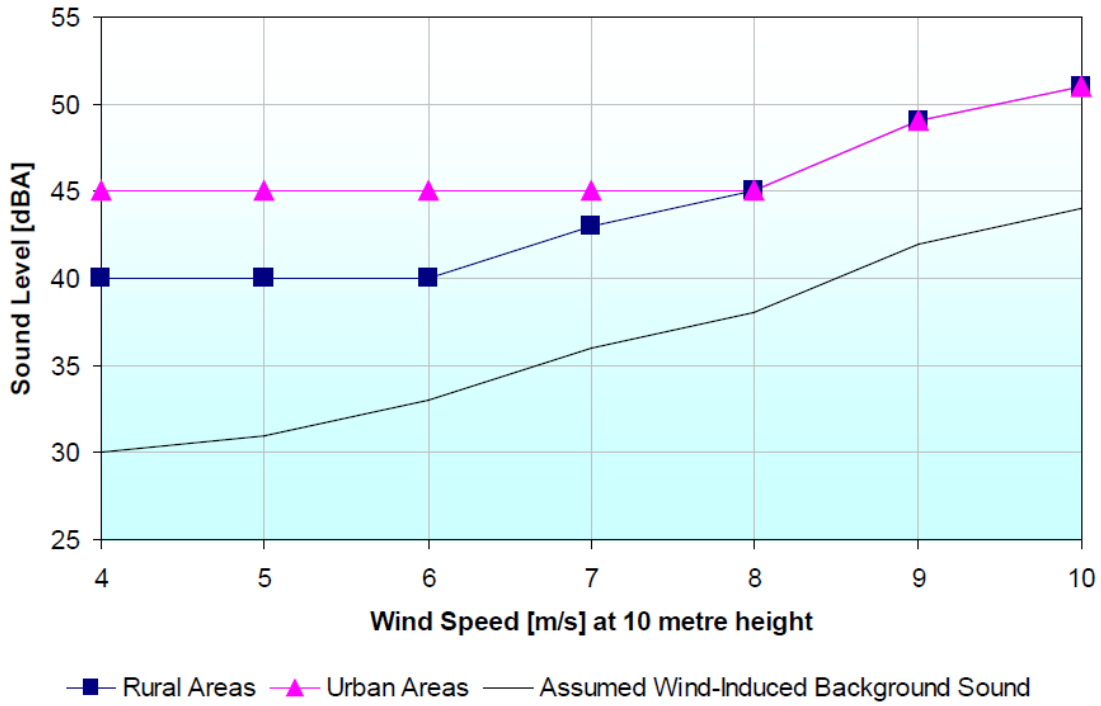


FIGURE 6-2
Summary of Sound Level Limits for Wind Turbines in Ontario, Canada

Source: Ontario MOE, 2010.

State of Washington. The State of Washington's general noise rules are applied to wind turbines. While local jurisdictions are allowed to develop independent, state-approved noise standards, it is primarily the urban communities such as Seattle that have done so. The state's noise limits are based on the environmental designation for noise abatement (EDNA), which is defined as "an area or zone (environment) within which maximum permissible noise levels are established." There are three EDNA designations that roughly correspond to residential, commercial/recreational, and industrial/agricultural uses.

Table 6-3 summarizes the maximum permissible levels applicable to noise received at noise-sensitive areas such as residences (Class A EDNA) and at industrial/agricultural areas (Class C EDNA) from a Class C EDNA.

TABLE 6-3
State of Washington Noise Regulations

Statistical Descriptor	Maximum Permissible Noise Levels (dBA) from a Class C EDNA		
	Class A EDNA Receiver		Class C EDNA Receiver
	Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)	Anytime
L_{eq}	60	50	70
L_{25}	65	55	75
$L_{8.3}$	70	60	80
$L_{2.5}$	75	65	85

Source: Washington Administrative Code, Chapter 173-60.

State of Oregon. The Oregon noise regulations (Oregon Administrative Rule [OAR] Chapter 340 Division 35) contain two noise standards that are generally referred to as the "Table 8 Test" and the "ambient degradation test" (other portions of the rules address octave, third-octave band and tonal limits). The "Table 8 Test" refers to Table 8 of the rule (reproduced here as **Table 6-4**), which limits the maximum permissible statistical noise levels generated by a project. The "ambient degradation test" specifically limits the increase in the existing L10 or L50 to a maximum of 10 dBA.

TABLE 6-4
Oregon's "Table 8" Limits: Maximum Permissible Levels for New Industrial and Commercial Noise Sources

Statistical Descriptor	Daytime (7 a.m. – 10 p.m.) (dBA)	Nighttime (10 p.m. – 7 a.m.) (dBA)
L_{50}	55	50
L_{10}	60	55
L_1	75	60

Source: Oregon Administrative Rule 340-35-035.

The rule allows an applicant to address the ambient degradation standard by accepting a minimum background L50 of 26 dBA, resulting in a noise floor of 36 dBA. The evaluation of these criteria is generally conducted with all turbines operating at their maximum warranted sound level consistent with the request by the State agency overseeing the permitting of large wind energy projects. The rule also exempts properties that have entered into a noise easement from the ambient degradation standard. For residences that have entered into a noise easement, the 50 dBA "Table 8" limit becomes the controlling limit.

6.3.2 Fundamentals of Acoustics

It is useful to understand how noise is defined and measured. There are several ways to measure noise, depending upon the source, the receiver, and the reason for the noise measurement. **Table 6-5** summarizes the technical noise terms used in this report.

TABLE 6-5
Definitions of Acoustical Terms

Term	Definitions

TABLE 6-5
Definitions of Acoustical Terms

Term	Definitions
Ambient noise level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the measured pressure to the reference pressure, which is 20 micropascals.
A-weighted sound pressure level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent sound Level (L_{eq})	The L_{eq} integrates fluctuating sound levels over a period of time to express them as a steady-state sound level. As an example, if two sounds are measured and one sound has twice the energy but lasts half as long, the two sounds would be characterized as having the same equivalent sound level. Equivalent sound level is considered to be related directly to the effects of sound on people since it expresses the equivalent magnitude of the sound as a function of frequency of occurrence and time.
Day–night level (L_{dn} or DNL)	The day-night level is a 24-hour average L_{eq} where 10 dBA is added to nighttime levels between 10 PM and 7 AM. For a continuous source that emits the same noise level over a 24-hour period, the L_{dn} will be 6.4 dB greater than the L_{eq}.
Statistical noise level (L_n)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (for example, L_{50} is the level exceeded 50 percent of the time).

Table 6-6 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

TABLE 6-6
Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Qualitative Description
Carrier Deck Jet Operation	140	
	130	Pain Threshold
Jet takeoff (200 ft)	120	
Auto Horn (3 ft)	110	Maximum Vocal Effort
Jet takeoff (2,000 ft) Shout (0.5 ft)	100	
New York Subway Station Heavy Truck (50 ft)	90	Very Annoying; Hearing Damage (8-hour, continuous exposure)
Pneumatic drill (50 ft)	80	Annoying
Freight Train (50 ft) Freeway Traffic (50 ft)		
	70	Intrusive; Telephone Use Difficult
Air Conditioning Unit (20 ft)	60	
Light auto traffic (50 ft)	50	Quiet
Living Room or Bedroom	40	

TABLE 6-6
Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Qualitative Description
Library Soft whisper (5 ft)	30	Very Quiet
Broadcasting Studio	20	Recording Studio
	10	Just Audible

Source: Adapted from Table E in NY DEC, 2001.

The most common metric for sound measurement is the overall A-weighted level (dBA) that has been adopted by regulatory bodies worldwide. The A-weighting network measures sound in a similar fashion to the way a person perceives or hears sound. There is consensus that A-weighting is appropriate for estimation of the hazard of noise induced hearing loss. With respect to other effects, such as annoyance, A-weighting is acceptable if there is largely middle and high frequency noise present, but if the noise is unusually high at low frequencies, or contains prominent low frequency tones, the A-weighting may not give a valid measure (**Figure 6-3**).

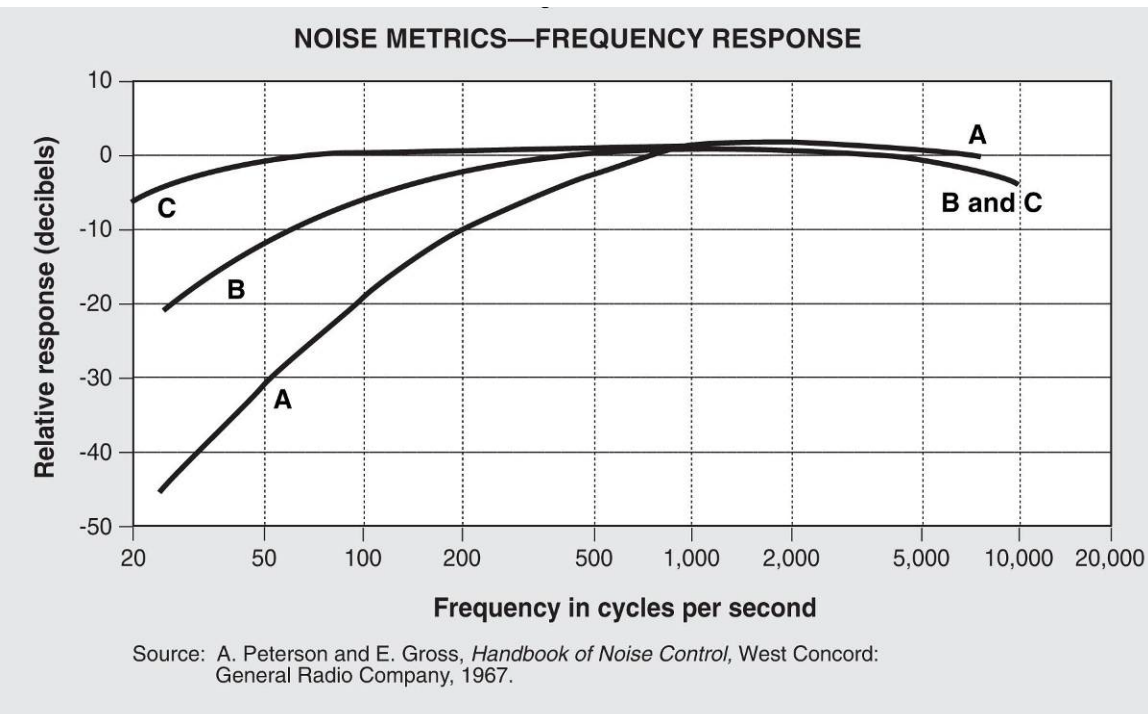


FIGURE 6-3
Noise Metrics—Frequency Response

The measurement of sound is not a simple task. Consider typical sounds in a suburban neighborhood on a normal or "quiet" afternoon. If a short duration of those sounds is plotted on a graph, it would look very much like Figure 6-4. In this figure, the background, or residential sound level in the absence of any identifiable noise sources, is approximately 45 dB. During roughly three-quarters of the time, the sound level is 50 dB or less. The highest sound level, caused by a nearby

sports car, is approximately 70 dB, while an aircraft generates a maximum sound level of about 68 dB. The following provides a discussion of how variable community noise is measured.

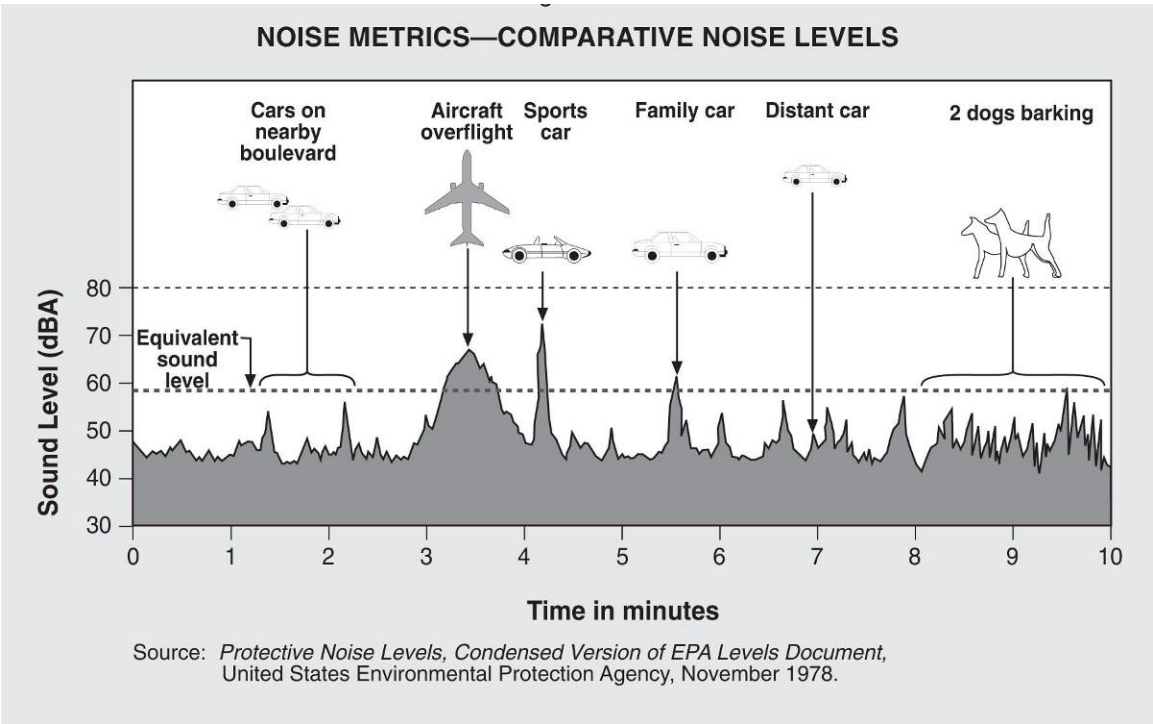


FIGURE 6-4

Noise Metrics - Comparative Noise Levels

Sound power level data are used in acoustic models to predict sound pressure levels. This is because sound power levels take into account the size of the acoustical source and account for the total acoustical energy emitted by the source. For example, the sound pressure level 15 feet from a small radio and a large orchestra may be the same, but the sound power level of the orchestra will be much larger because it emits sound over a much larger area. Similarly, 2-horsepower (hp) and 2,000-hp pumps can both achieve 85 dBA at 3 feet (a common specification), but the 2,000-hp pump will have significantly larger sound power level. Consequently, the noise from the 2,000-hp pump will travel farther. A sound power level can be determined from a sound pressure level if the distance from and dimensions of the source are known. Sound power levels will always be greater than sound pressure levels, and sound power levels should never be compared with sound pressure levels such as those in **Table 6-3**.

The sound power level of the wind turbine model being considered for the Project is estimated to be 105 dBA. This level could change as turbine vendor data is updated or a different turbine model is selected. It may also be influenced by various meteorological factors, including the potential accumulation of ice on the blades.

6.3.3 Construction Impacts

The EPA Office of Noise Abatement and Control studied noise from individual pieces of construction equipment, as well as from construction sites for power plants and other types of facilities, as shown in **Table 6-7**. Because specific information about types, quantities, and operating schedules of

Project construction equipment is not known at this stage, data from the EPA document for industrial projects of similar size have been used. These data are conservative because the evolution of construction equipment generally has gravitated toward quieter design. Use of these data is reasonable for estimating noise levels, given that they are still used widely by acoustical professionals.

TABLE 6-7
Average Noise Levels from Common Construction at a Reference Distance of 50 Feet

Construction Equipment	Typical Average Noise Level at 50 feet (dBA)
Air compressor	81
Backhoe	85
Concrete mixer	85
Concrete pump	82
Crane, mobile	83
Dozer	80
Generator	78
Grader	85
Loader	79
Paver	89
Pile driver	101
Pneumatic tool	85
Pump	76
Rock drill	98
Saw	78
Scraper	88
Shovel	82
Truck	91

Source: EPA, 1971.

Table 6-8 shows the total composite noise level at a reference distance of 50 feet, based on the pieces of equipment operating for each construction phase and the typical usage factor for each piece. The calculated level at 1,500 feet is conservative because the only attenuating mechanism considered was geometric spreading – reduction in sound level with increasing distance – that results in an attenuation rate of 6 dBA per doubling of distance; attenuation related to the presence of structures, trees or vegetation, ground effects, and terrain was not considered.

TABLE 6-8
Composite Construction Site Noise Levels

Construction Phase	Composite Equipment Noise Level at 50 ft (dBA)	Composite Equipment Noise Level at 1,500 ft (dBA)
Clearing	88	58
Excavation	90	60
Foundation	89	59
Erection	84	54
Finishing	89	59

Source: EPA, 1971.

6.3.4 Operation Impacts

Standard acoustical engineering methods were used in the noise analysis. The sound propagation factors used in the model have been adopted from ISO 9613-2, *Acoustics—Sound Attenuation During Propagation Outdoors, Part 2: General Method of Calculation* (ISO, 1993a). Atmospheric absorption for conditions of 10°C and 70 percent relative humidity (conditions that favor propagation) was computed in accordance with ISO 9613-1, *Acoustics—Sound Attenuation During Propagation Outdoors, Part 1: Calculation of the Absorption of Sound by the Atmosphere* (ISO, 1993b).

Each wind turbine was considered to be a point source of noise at the hub height of 91 meters with an overall sound power level of 105 dBA. These sound power levels represents the maximum turbine noise level determined in accordance with IEC61400-11, *Wind Turbine Generator Systems—Part 11: Acoustic Noise Measurement Techniques* (IEC, 2006) and are representative of best estimate of expected long term average sound levels for the turbines being considered for this Project. This level could change as turbine vendor data is updated or a different turbine model is selected. It may also be influenced by various meteorological factors, including the potential accumulation of ice on the blades.

The expected sound levels for receptors (e.g., residences) with estimated Project noise of 35 dBA or greater resulting from the preliminary turbine layout are depicted in Predicted Sound Pressure Levels Figures (**Appendix B**) and in **Table 6-9**. As shown in **Table 6-9**, the predicted Project sound level at the closest sensitive receptor is about 48 dBA with all of the turbines operating at their expected levels. As indicated in the Predicted Sound Pressure Levels Maps, the anticipated noise level decreases with increasing distance from the Project. Under calmer turbine wind conditions, the turbines emit less noise and the expected levels would be less than those described above or depicted.

TABLE 6-9
Estimated Project Operational Noise Levels in Decreasing Order

Receptor ID[1]	Project Participant?	Project Noise Level (dBA)
23	Yes	49
13	No	48
10	No	47
5	No	47

Receptor ID[1]	Project Participant?	Project Noise Level (dBA)
16	No	47
3	No	46
22	No	46
14	No	46
11	No	46
21	No	46
32	No	46
CHURCH	No	46
15	No	46
9	No	46
7	No	45
35	No	45
4	No	45
20	Yes	45
17	No	45
12	No	45
36	No	45
18	No	44
52	No	44
39	No	44
30	No	43
19	No	43
1	No	43
29	No	42
37	No	41
8	No	41
38	No	41
34	No	41
28	No	38
6	No	36
24	No	36
31	No	36
27	No	35
33	No	35
40	No	35
46	No	35

[1] *Receptor numbers are indicated on the Predicted Sound Pressure Levels Figures in* ***Appendix B.***

6.4 Cultural Resources

Cultural resources are non-renewable, finite locations of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional, cultural, or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for the public benefit.

6.4.1 Regulatory Jurisdiction

The National Historic Preservation Act (NHPA) is the principal federal law guiding federal actions with respect to the treatment of cultural, archaeological, and historic resources. Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to taking action, to consider the effects of their undertaking on historic properties and to give the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Office (SHPO) a reasonable opportunity to comment. Historic properties are “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP” (16 USC 470w [5]). The criteria used to evaluate the NRHP eligibility of properties affected by federal agency undertakings are contained in 36 CFR 60.4.

The NHPA created the National Register of Historic Places (NRHP). Through the process outlined in Section 106 of the NHPA, federal agencies and SHPOs may recommend significant archaeological sites for listing on the NRHP. Significant sites are defined by law as sites:

> (A) That are associated events that have make a significant contribution to the broad patterns of our history;
>
> (B) That are associated with the lives of persons significant in our past;
>
> (C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the works of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinctions; or
>
> (D) That have yielded, or may be likely to yield, information important in prehistory or history.

(36CFR 60.4).

For archaeological sites to be significant, they also need to retain aspects of integrity that would make the data they currently posses usable. Such aspects of integrity include location, design, materials, workmanship, setting, feeling, and association.

Archaeological sites are initially evaluated in the field and recommended to be either “Eligible” or “Not Eligible” for listing on the NRHP. Once the SHPO reviews and agrees, the archaeological site becomes “Determined Eligible” or “Determined Not Eligible” for listing on the NRHP. Some archaeological sites go through a formal process to become listed on the NRHP. Archaeological sites listed on the NRHP and archaeological sites determined eligible for listing on the NRHP are afforded the same protections under federal law. Archaeological sites determined not eligible for listing on the NRHP are afforded no protection under federal or state law. Archaeological sites located on private lands are not protected, regardless of their NRHP eligibility status, unless federal monies or permits are involved.

Because this Project will be carried out on private lands and there exists no known federal or state permits or laws that would require compliance with the NHPA or NEPA, the following information is presented as informational only as there is no regulatory framework with jurisdiction over this Project.

6.4.2 Literature Search

CH2M HILL archaeologist Aaron Fergusson, RPA, conducted a review of the online Wyoming State Historic Preservation Office (SHPO) Wyoming Cultural Records Office (WYCRO), and online database of cultural resources, to identify previously conducted cultural resource surveys and the types and quantities of known cultural resources within the Project limits. Because this Project is located entirely on private land, very little of the Project area was expected to have been surveyed and there would likely be few known archaeological sites. Nevertheless, the search was performed in an effort to obtain whatever cultural resource information is available. This online file search was conducted in May and June 2013.

Two searches were conducted using WYCRO, one querying for all known sites and previously conducted cultural resource surveys within the Project boundaries by Township, Range, and Section and one by conducting a geographical information system (GIS) map search. The GIS map search offers a visual, geospatial relationship of sites and surveys within the proposed Project area, but the disadvantage of a smaller data set is only approximately 50 percent of the data is digitized and retrievable by this method. Due to the limited availability of geospatial data for cultural resources, and the age and methods of plotting older sites, it is difficult to identify with certainty if a site located within the same Section also falls within the boundaries of this Project from a desktop review of available data.

6.4.3 Results

Very little of the overall Project area has been surveyed for cultural resources, an estimated 1 percent. The areas that have been surveyed were part of linear surveys associated with utility lines or road corridors that cross private lands.

There are 31 prehistoric and historic resources located within the same Township, Range, and Sections as the Project. From the WYCRO data, it is possible to determine that 10 of these sites are located outside of the Project area. The remaining 21 sites may be located within the Project area; the uncertainty owing to the low spatial accuracy of some of the older data. These 21 sites include prehistoric lithic and artifact scatters, historic artifact scatters, historic ranches, historic road or transportation routes, and historic military facilities. The 21 sites are listed in **Table 6-10**, including their eligibility status for listing on the National Register of Historic Places (NHRP). The locations of these sites are shown on the Cultural Resources figure in **Appendix B**. To protect the precise location of these sites, specific sites have not been identified on the figure. Rather, the figure illustrates the distribution of the known sites from the data search.

TABLE 6-10
Archaeological Sites located, or that may be located, within the Project

Site Number	Site Type	In Project Area?	NRHP Eligibility
48GO23	Historical Cheyenne and Black Hills Stage Route	Yes, crosses	Listed on the NRHP
48GO81	Historical site (no site record in WYCRO)	Unknown	Unknown
48GO128	Historical Six Mile Ranch	Unknown, but	Unknown

TABLE 6-10
Archaeological Sites located, or that may be located, within the Project

Site Number	Site Type	In Project Area?	NRHP Eligibility
		likely	
48GO167	Historical Cheyenne to Fort Laramie Road	Yes, crosses	Determined Eligible
48GO168	Historical Fort Halleck to Fort Laramie Road	Unknown, likely crosses	Unknown
48PL67	Prehistoric stone quarry and stone circles	Yes	Unknown
48PL73	Prehistoric campsite	Yes	Unknown
48PL174	Historical Eagles Nest Station	No	Recommended Eligible
48PL177	Historical Cheyenne to Deadwood Stage Line	Yes, crosses	Recommended Eligible
48PL179	Historical Fort Laramie to Fort Halleck Road	Yes, crosses	Unknown
48PL180	Historical Camp Wallach to Fort Laramie Road	Unknown, likely crosses	Unknown
48PL236	Historical Lutzke/Stafford Homestead	Yes	Recommended Eligible
48PL316	Prehistoric lithic scatter	Yes	Unknown
48PL317	Prehistoric lithic scatter	Yes	Unknown
48PL1214	Prehistoric campsite	Unknown	Not eligible
48PL1217	Prehistoric lithic scatter	Unknown	Not eligible
48PL1218	Prehistoric campsite	Unknown	Recommended Eligible
48PL1233	Historical Peacekeeper missile launch facility	Yes	Determined Eligible
48PL1237	Historical Peacekeeper missile launch facility	Yes	Determined Eligible
48PL1420	Prehistoric lithic scatter	Yes	Not eligible
48PL1701	Historical homestead	Mostly out, part could be in	Not eligible

Though only a few cultural resource surveys have examined the Project area, the sites in the table above serve as a representative sample of the types of sites that would likely be found in the Project area. The locations of Peacekeeper missile sites are well known, and most of the known road and trail corridors have likely been documented, so it is unlikely new sites of this type would be found. There are probably additional unrecorded sites in the Project area likely dominated by non-architectural prehistoric sites (including lithic scatters, stone circles, lithic quarries, campsites, etc.) and small historic sites associated with early homesteading, ranching, exploration, and transportation as exhibited by historic artifacts (such as tin cans, bottles, equipment, etc.). However, this sample size is too small to make predictions on the relative frequency or even if all site types that may be found are represented.

There is no way to infer from the existing data on the potential significance of any unknown archaeological site that might be located in the Project. From the table above, the sites that are listed, determined, or recommended eligible for the NRHP are predominantly historic sites that are associated with events that made a significant contribution to the broad patterns of history, such as significant transportation corridors used by parties expanding the nation west, homesteads that helped develop the region, or Peacekeeper missile sites significant in our nation's response to the Cold War. Prehistoric sites are almost always significant for the data they may possess that would add to our understanding of the past. Sites located in areas that have been disturbed through historic or modern activities risk losing integrity. Generally speaking, integrity is lost when a site is disturbed through ground disturbing activities, such as plowing, construction, development, etc.

Thus, the data collected from this literature review cannot answer many questions about the types of archaeological sites that may be affected by the Project, nor the potential significance of any of those archaeological sites. It does seem clear that the Project area hosted human activities throughout both the prehistoric and historic eras. This area appears to have served as an important transportation route in historical times, resulting in later homesteading and settlements.

6.4.4 Construction/Operation Impacts

In response to the review of existing data and consultation with SHPO, the Project will site WTGs, roads, and facilities to avoid sites identified as eligible for or listed on the NRHP. As the final locations of Project facilities have not been made, and the lengthy construction schedule, surveying the entire Project at this stage is not practical. As the Project will be built over several years, the Project will perform a Class III pedestrian survey in advance of each construction season, likely the year before, for all work areas. The survey results will be shared with the SHPO to identify and avoid register-eligible resources.

Therefore, no adverse impacts to cultural resources are anticipated from construction or operation of the Project. Siting activities will avoid impacts that may impair the health, safety, or welfare of the resource or the health, safety, or welfare of the present or expected cultural resources in the area of site influence.

6.5 Water Supply Yield and Analysis

The Wyoming Constitution provides that all natural waters within the boundaries of the State are declared to be the property of the state. The Wyoming State Engineer's Office (WSEO) is charged with the regulation and administration of the water resources in Wyoming.

6.5.1 Regulatory Jurisdiction

If an applicant for an industrial siting permit plans to construct a facility that will use more than 260.7 million gallons (MG) (800 acre-feet [ac-ft]) of water per year, the applicant must submit a water supply and water yield analysis to the State Engineer. The State Engineer will then review the analysis and "render a preliminary opinion as to the quantity of water available for the proposed facility" (W.S. 35-12-108(c)). This preliminary opinion will be made available for public comment, and the State Engineer will consider submitted comments in preparing a final opinion. The State Engineer's final opinion will be binding on the ISC.

6.5.2 Construction Water Uses

Water use during construction will include applications for dust control and for mixing concrete. During Project construction, water will be obtained from a municipal water source, an existing surface or ground water rights holder and trucked to the site, or a new ground water well. If

possible, water will be obtained onsite to minimize hauling distances and traffic within the area of site influence. Once available onsite, water will either be put to immediate use or placed in an onsite temporary water storage tank. **Table 6-11** provides an estimate of total construction water use for the Project.

Approximately 779 ac-ft will be required to support the Project over the 74-month construction period, as shown in **Table 6-11**. The main water use will be for dust control on access roads. The actual amount of water applied daily to roads is variable and is dependent on daily weather temperatures, humidity, wind speeds, and local precipitation amounts. In addition to the water used for construction and maintenance of the site access roads, a smaller volume of water will be used in the concrete mixing for the turbine foundations at the onsite batch plants.

An estimated 52.8 MG (162 ac-ft/yr) will be required for the peak construction year of 2016.

Based on the estimated construction water balance calculations, the Project will not exceed the 800 ac-ft/yr threshold and will not require a WSEO water supply yield analysis or opinion.

TABLE 6-11
Estimated Construction Water Use

	Foundations	**Estimated Water Use**
Water Use for Concrete Mixing		
Water for concrete mixing (30 gallons per cubic yard of concrete, 450 to 600 cubic yards of concrete per foundation)	300	17 ac-ft (maximum)
Water Use for Dust Control and Road Compaction		
	Road Length	**Total Water Use**
Compaction watering during access road construction (25 gallons per cubic yard of road material)	142 mi	33 ac-ft
Road watering for dust control[1]	44mi	729 ac-ft
Total Water Use		779 ac-ft

[1] The peak construction period of 2016 will entail the use roughly 44 miles of access roads. It is assumed each mile will need 4,000 gallons for dust control for each of the 270 days of construction that year. This represents the maximum water use for dust control, and was applied to each of the 5 years of construction. As road use would be less in non-peak years, this is an over-estimate of total water use for dust control.

6.5.3 Operations Use

Once the Project is operational, only minimal daily water use will be required. The primary water requirement will occur at the main operations and maintenance (O&M) building and will likely be limited to restrooms, sinks, hand washing station(s), shower, internal/external hose, and dishwasher. At peak employment, up to 31 staff will be employed at the Project, and are expected to require 6,000 gallons per day, or approximately 6.7 ac-ft/yr. The small O&M building located at the Antelope Gap parcel would require 1,000 gallons per day, or approximately 1.1 ac-ft/yr.

Based on the 7.8 ac-ft/yr total water balance calculation for operations, the Project will not exceed the 800 ac-ft/yr threshold and will not require a WSEO water supply yield analysis or opinion.

6.5.4 Water Sources

Wyoming water law operates under the prior appropriation doctrine, or “first-in-time, first-in-right.” Those holding an earlier priority water right are allowed to receive their full portion of water before those with junior rights may receive water under their right.

Water rights can be issued to anyone who plans to make beneficial use of the water. Recognized beneficial uses include irrigation, municipal, industrial, power generation, recreational, stock, domestic, pollution control, instream flows, and miscellaneous. Water rights holders are limited to withdrawals necessary for the specified purpose.

During Project construction, water will be obtained from a municipal water source, an existing surface or ground water rights holder and trucked to the site, or a new well installed in accordance with a permit issued by the WSEO to appropriate groundwater. If possible, water will be obtained onsite to minimize hauling distances and hauling traffic within the area of site influence. During operations, water will be obtained from new domestic ground water wells at each O&M building as permitted by the WSEO . The WSEO will regulate surface and groundwater use/supply for the Project to ensure compliance with applicable regulations, including the Platte River Implementation Agreement.

6.6 Surface and Groundwater

6.6.1 Regulatory Jurisdiction

The Wyoming Constitution provides that all natural waters within the boundaries of the State are declared to be the property of the State. The Wyoming State Engineer’s Office (WSEO) is charged with the regulation and administration of the water resources in Wyoming. Water quality impacts associated with construction and operation of the Project will be subject to the WYDEQ – Water Quality Division (WQD) Standards and Regulations. Specifically, implementing Water Quality Rules and Regulations are found in Chapters 1 to 23, as well as promulgated rules adopted in the Wyoming Environmental Quality Act.

6.6.2 Surface Water

The Project lies within the North Platte River Basin, Lower Laramie Sub-Basin watershed (HUC 10180011), and Horse Creek Sub-Basin watershed (HUC 10180012). The three major tributaries to the North Platte River within the Project vicinity are Horse Creek, Chugwater Creek, and the Laramie River. All three waterways are classified as 2AB by the Wyoming Surface Water Classification List, which means they support coldwater fisheries and drinking water (WYDEQ, 2001).

Several smaller ephemeral and intermittent waters within the Project boundaries include Sixmile Creek, Cherry Creek, Deer Creek, Little Deer Creek, Cottonwood Draw, Little Cottonwood Draw, Eagles Nest Canyon, Dry Creek, and Fox Creek. Unnamed tributaries to these waterways are also within the Project boundaries, as well as tributaries to Chug Spring, Box Elder Creek, and Chugwater Creek. Surface water resources are presented in the Surface Water figure in **Appendix B**.

The majority of the water from the Antelope Gap parcel drains generally to the northeast to Deer Creek and to the east into Cherry Creek. Deer Creek flows into the Laramie River approximately 1.5 miles west of the confluence of the North Platte River, approximately 1 mile southwest of Fort Laramie. Cherry Creek is not hydrologically connected to other surface water, and dissipates approximately 8.5 miles to the east of the Antelope Gap parcel. A portion of the Antelope Gap

parcel also drains northwest to the Laramie River above Grayrocks Reservoir. The Laramie River then continues east to its confluence with the North Platte River.

Water from the northern portion of the Chugwater parcel drains to the northwest into Dry Creek and Chugwater Creek. Chugwater Creek is located north of the parcel, where it flows north into the Laramie River just northwest of the Antelope Gap Parcel. The southern portion of the Chugwater Parcel drains into Bear Creek, which flows into Horse Creek approximately 20 miles to the east. Horse Creek then flows to the northeast into the North Platte River just south of Morrill, approximately 30 miles northeast of the parcel.

6.6.3 Groundwater

The North Platte River Basin, North Platte Sub-Basin watershed contains a wide variety of geologic formations and structural elements. The Project area is within the High Plains aquifer system that covers both the Antelope Gap Parcel as well as the Chugwater Parcel. The High Plains aquifer is a principal source of ground water for the High Plain Region. The principal geologic unit of the High Plains aquifer is the Miocene age Ogallala formation. It consists of unconsolidated gravel, sand, silt, and clay. The depth to water in this aquifer is typically shallow, even shallower within the Project area, as it is adjacent to the Platte River, which is hydrologically connected to the aquifer through the stream valley aquifer (USGS, 2012).

6.6.4 Construction

The main water use during construction will be applications for dust control. During Project construction, water will be obtained from permitted water sources or a new well. Once onsite, water will either be put to immediate use, or placed in an onsite temporary water storage tank. The actual amount of water applied daily to control dust is variable and is dependent on daily weather temperatures, humidity, wind speeds, and local precipitation amounts. Water will also be used in the concrete for foundations and other footings.

Two new groundwater wells will be installed during construction to be used for operation and maintenance activities. One well will be installed at each of the two proposed O&M buildings.

Impacts to surface water resources are anticipated to be limited to minimal impacts associated with road and power collection line crossings within the Project area. Actual impacts from final designs may vary; however, roads and culverts will be designed by licensed engineers to ensure structural stability, regulatory compliance, and minimize erosion concerns. Clean Water Act permits issued by the U.S. Army Corps of Engineers (USACE) will be obtained as necessary.

The Project will be operated in accordance with all issued conditions of approval from the WYDEQ-ISD and all relevant local, state, and federal permits. Therefore, operation of the Project will not result in significant impact to surface or groundwater resources that would impair the health, safety, or welfare of current or expected inhabitants in the area of site influence.

6.6.5 Operations

The Project will be operated in accordance with all issued conditions of approval from the WYDEQ-ISD and all relevant local, state, and federal permits. Therefore, operation of the Project will not result in significant impact to surface water resources that would impair the health, safety, or welfare of current or expected inhabitants in the area of site influence.

The two new domestic ground water wells, one at each of the two proposed O&M buildings, will be used for operations and maintenance activities onsite. The majority of the water usage will be

associated with potable water needs for operations staff. It is estimated annual water use will be approximately 7.9 ac-ft/year.

A septic permit will be obtained, and issued conditions will be maintained to protect any potential impacts to ground water. Therefore, operational impacts to ground water will not result in substantial impairment to the ground water resources or the health, safety, or welfare of the present or expected inhabitants in the area of site influence.

6.7 Land Use

This section presents information regarding existing and future land uses, zoning, and adopted land use plans and regulations for the study area. It analyzes the consistency of the Project with current and future land uses, policies, and plans.

The Project site is located within unincorporated Platte County and Goshen County, Wyoming. The Project area is composed entirely of private-fee lands, which are currently dedicated to livestock grazing, agricultural cultivation, and rural residence land uses. The Project site lies within areas designated as Agricultural under the Platte County and Goshen County zoning codes. Refer to the Land Cover figure in **Appendix B** for an illustration of land uses on the Project site. **Table 6-12** presents the land cover types present within the Project area. Agricultural (primarily wheat) and shrubland/grasslands (grazing) represent 79 percent of the land cover, and reflect the primary land uses within the Project boundaries.

TABLE 6-12
Land Cover

Cover Type	Acres[1]	Percent of Total
Agricultural Vegetation	27,166	38
Developed & Other Human Use	1,362	2
Forest & Woodland	568	1
Introduced & Semi Natural Vegetation	10,392	15
Nonvascular & Sparse Vascular Rock Vegetation	2	0
Semi-Desert	2,026	3
Shrubland & Grassland	29,391	41
Total	**70,907**	**100**

[1] Antelope Gap and Chugwater areas are combined.
Source: GAP, 2010.

The nearest towns are Chugwater, Wheatland, Fort Laramie, and Guernsey, located in Platte and Goshen Counties.

6.7.1 Consistency with Land Use Plans

Land use plans establish the vision for how a jurisdiction can develop and establish the goals, objectives, and action items for achieving that vision. The plans also establish a framework to guide and evaluate future development. A land use plan is a key tool that communities use to protect valued resources, guide development in a predictable manner, and encourage a preferred patterning and design of the built environment. These land use plans, in combination with a zoning

code, provide a community the ability to evaluate the compatibility of new development and ensure that the objectives of that community are achieved.

6.7.1.1 Platte County Adopted Land Use Plans and Regulations

Platte County adopted their *Development Plan* in May 2008. The plan outlines the goals, objectives, and strategies to implement those goals for the county and the incorporated municipalities located within the county. Platte County and all incorporated communities within the county use this document as a guide for evaluating future land use proposals. Primary goals identified in the Development Plan encompass the four following themes: sound planning, economic development, tourism, and preservation of natural resources. Under the umbrella of sound planning goals relevant to this Project, Platte County seeks to:

- Coordinate on gravel and wind farm development issues on public and private lands with landowners and state and federal officials to ensure policy strategies that are beneficial to the County's interest as well as others.
- Encourage proper development of land and allow enough flexibility in land use to support the economic diversification of the County while protecting property rights.
- The Rural Area shall be planned for rangeland and irrigated agriculture, wind farms, utility corridors, development of gravel and minerals, with preservation of forested and other natural resources.
- Protect and enhance the historical and traditional economic uses of rural lands from exploitation, premature development, and conflicting land uses while maintaining economic productivity and private property rights.

Under the umbrella of Economic Development goals relevant to this Project, Platte County seeks to:

- Expand the economic and tax bases of the County through enhancement of agricultural and wind energy development opportunities, while working toward diversification of the economy through new, clean, profitable, basic industries, and tourism.
- Support the management of renewable and non-renewable natural resources to provide for the economic well-being while respecting the custom and culture of the county, and be open to new land use patterns that allow new economic uses to grow and support the economy.

Under the umbrella of tourism and preservation of natural resources, Platte County seeks to:

- Continue viability of commercial ranching and agriculture in Platte County
- Promote utilization of the County's natural resource base by both the public and private sectors as a key factor in a strong economy, while maintaining environmental quality, minimizing land use conflicts, and maintaining stability in resource based tax revenues to County Government.

An inventory of existing conditions indicates a lack of electrical power transmission in Platte County. The county map of irrigated land indicates some irrigated land lies within the Antelope Gap parcel and that all of the land in the Chugwater parcel is not irrigated. The *Development Plan* also urges preserving vistas for the vast majority of the people of Platte County and encourages developing limitations for wind farms and other uses, which have visual impacts from state highways, county roads, recreational areas, and towns. The only vista noted in the *Plan* is for preservation.

Additionally, Platte County adopted *Wind Energy Siting Regulations*. These regulations require the turbines to be painted white or gray or another non-reflective, unobtrusive color. The regulations also establish the following distance setbacks:

- All Project structures must be located at least one-quarter mile from any primary structure. Property owners may waive this distance requirement, but a turbine may be sited no closer than 1.10 times the turbine height to a primary structure.
- All Project structures must be setback at least 1.10 times the tower height from third party transmission lines, communication towers, and adjacent property lines.
- All Project structures must be set back at least one-half mile from any primary structure in a residential zoning district.
- All Project structures must be setback at least 1 mile from any incorporated municipality, unless waived by the municipality.
- All Project structures must be setback at least one-quarter miles from I-25, Highway 34, Highway 26, Highway 270, Highway 319, Highway 320, and from State Parks.

6.7.1.2 Goshen County Adopted Land Use Plans and Regulations

Goshen County adopted their Land Use Plan in 1996. The plan outlines the goals and objectives as well as the strategies to implement those goals for the county and the incorporated municipalities located within the county. Goshen County and all incorporated communities within the county use this document as a guide for evaluating future land use proposals. Primary goals identified in the Development Plan encompass 13 themes: 1) citizen participation; 2) environmental quality; 3) economic and social analysis; 4) agricultural-rural lands; 5) water; 6) natural resources; 7) natural hazards; 8) scenic, historic, and recreational lands; 9) public lands; 10) public facilities; 11) urban lands; 12) residential lands; and 13) energy conservation.

As noted in the Land Use Plan, the economy in Goshen County is driven primarily by agriculture. Under the umbrella of economic goals relevant to this Project, Goshen County seeks to:

- Create and maintain a strong and balanced economic base of production and to preserve the agricultural element of the County's economy to insure that the overall rural character of the County is retained and protected.
- Attract new employers and new people to Goshen County; to prevent the out-migration of residents (especially young adults), create better paying jobs, and provide sound economic and social conditions.

Under the umbrella of environmental quality goals relevant to this Project, Goshen County seeks to:

- Reduce particulate substances that often become airborne in the form of dust, which in turn have the potential of polluting surface water resources due to the formation of sediment.

Under the umbrella of agriculture and rural land goals relevant to this Project, Goshen County seeks to:

- Preserve the fertile agricultural lands that exist in Goshen County for the production of crops and the grazing of livestock. Water currently associated with a farm or rural unit of land should be retained for agricultural uses.

Under the umbrella of natural hazards policy relevant to this Project:

- Development will be discouraged in or near natural hazard areas in order to minimize the risk of injury to persons and the loss of property. Construction in floodplains, steep areas, geological fault areas, and other dangerous or undesirable building areas will be discouraged through the enforcement of existing land use regulatory tools.

The *Plan* identifies Fort Laramie and the Iron Army Bridge as historic resources in proximity to the Project area. Under the umbrella of scenic, historic, and recreational goals relevant to this Project, Goshen County seeks to:

- Conserve and develop scenic, historic, and recreational resources for the benefit of present and future generations.
- Conserve and protect all historic artifacts that exist in Goshen County, and promote these areas in terms of stimulating tourism.

6.7.1.3 State of Wyoming Lands

The Project is located entirely upon privately owned land, and no Special Use Lease would be required from the State of Wyoming Board of Land Commissioners.

6.7.2 Construction Impacts

Existing access roads will be used or improved where practicable to minimize the Project's impact on the land. The Project will be designed with all turbines located at least 1.1 times the tip height from any residence, publicly accessible land and existing infrastructure, including public roads, transmission lines, and railroads. This will ensure the Project does not impact activities on land adjacent to the Project area. The surrounding land is primarily used for grazing. Construction of the Project will not conflict with any adopted land use plan, policy, or regulation.

6.7.3 Operation Impacts

Direct land use impacts include the conversion of undeveloped grazing lands and cultivated cropland to an industrial facility and corresponding access roads. However, the operation of wind turbines is compatible with grazing and farming activities. Cattle, sheep, and other domestic animals routinely graze underneath operating wind turbines at projects across the United States and around the world, and ranchers regularly farm around wind turbines. Operation of the wind energy facility will be compatible with existing and the future planned land uses identified in the county land use plans.

The proposed wind energy Project generally supports the goals and objectives put forth in the Platte County *Development Plan*:

- *Sound Planning Goals:* Coordinate on gravel and wind farm development issues. Encourage proper development of land and allow enough flexibility in land use while protecting property rights. The Rural Area shall be planned for rangeland and irrigated agriculture, wind farms, utility corridors, development of gravel and minerals, with preservation of forested and other natural resources. *The Project will be compatible with surrounding rural residential, grazing, and cropland while allowing for the full development of property rights.*
- *Natural Resources Goals:* Continued viability of commercial ranching and agriculture in Platte County. Minimizing land use conflicts and maintaining stability in resource based

tax revenues to County Government. *Operation of the Project will not preclude the continued viability of ranching and agriculture on the Project site. The Project will be compatible with existing land uses and will generate tax revenue for the County during construction and operation.*

- *Economic Development Goals:* Support the management of renewable and non-renewable natural resources to provide for economic well-being. Expand the economic and tax bases of the County through enhancement of wind energy development opportunities, while working toward diversification of the economy. *The Project will employ a peak local workforce of 54 during the construction period and will employ 31 full time, permanent workers during operations, expanding job opportunities for skilled laborers and the County's tax base.*

Additionally, the proposed wind energy Project will comply with the Platte County *Wind Energy Siting Regulations.*

The proposed wind energy Project generally supports the goals and objectives put forth in the Goshen County *Land Use Plan*:

- *Economic Goals:* To create and maintain a strong and balanced economic base of production and to preserve the agricultural element of the County's economy to insure that the overall rural character of the County is retained and protected. To attract new employers and new people to Goshen County. *The Project will employ a peak workforce of 308 during the construction period and will employ 31 full time, permanent workers during operations, expanding well-paying job opportunities for skilled laborers and the County's tax base.*

- *Environmental Quality:* Reduce particulate substances that often become airborne in the form of dust. *The Project will implement fugitive dust mitigation measures to minimize dust emissions, especially on unpaved roads and during construction.*

- *Agriculture and Rural Land Goals:* Preserve the fertile agricultural lands that exist in Goshen County for the production of crops and the grazing of livestock. Water currently associated with a farm or rural unit of land should be retained for agricultural uses. *Operation of the Project will not preclude the continued viability of ranching and agriculture on the Project site. The Project will likely purchase water from landowners with existing water rights within the Project area for temporary construction use, after which the water will be returned to agricultural use. Additionally, the Project will install wells for de minimis domestic uses during operation of the Project. These uses are consistent with the vision of the* Land Use Plan*. It should be noted that the* Plan *indicates that additional quantities of surface and groundwater supplies are available for utilization.*

- *Natural Hazards Policy:* Construction in floodplains, steep areas, geological fault areas, and other dangerous or undesirable building areas will be discouraged. *Construction of the Project will avoid mapped 100-year floodplains, steep slopes, and known geologic fault zones where possible.*

- *Scenic, historic, and recreational goals*: To conserve and develop scenic, historic, and recreational resources for the benefit of present and future generations. *The Project will not affect any known sites on the National Register of Historic Places or state register historic resources or parks, recreational facilities, or trails. The* Land Use Plan *does not identify specific scenic resources for preservation. The Project will change the visual character of the*

area from a primarily undeveloped rural and agricultural character to a developed, industrial character. For additional details on impacts to visual resources, please refer to Section 6.10 Scenic Resources.

6.8 Recreational Resources

This section provides details on the parks and recreational opportunities in the vicinity of the Project. Recreational resources were identified based on geographic information from the Bureau of Land Management and municipal and state parks websites. No public parks or recreational facilities exist within the Project area, though state and local parks are located nearby. They offer opportunities for walking, biking, picnicking, playgrounds, baseball fields, tennis courts, and a golf course for surrounding communities.

6.8.1 Local City and County Parks

Table 6-13 lists the local parks and recreation facilities located within 10 miles of the Project boundaries. There are three county-owned parks or recreation facilities within 10 miles of the Project boundary The Recreation figure in **Appendix B** illustrates the location of the facilities listed in **Table 6-13** in relation to the Project site.

TABLE 6-13
Local Parks within 10 Miles of the Project Boundary

Location	Facility Name	Description
Wheatland, Platte County	Lewis Park	Tennis courts, baseball fields, swimming pool, picnic tables
Wheatland, Platte County	Wheatland Golf Course	Golf course
Chugwater, Platte County	Legion Park	Undeveloped

Source: ESRI, BLM

6.8.2 State and National Parks

There is one Wyoming State Park, several historic sites, one Wildlife Habitat Management Area (WHMA) within the 10-mile study area. There are no U.S. Fish and Wildlife Service (USFWS) National Wildlife Refuges or National Parks within 10 miles of the Project boundary. There are no hatcheries and rearing stations, or public access or float areas located within 10 miles of the Project boundary. The following provides summary details on the parks in the region.

Grayrocks Wildlife Habitat Management Area. The Grayrocks WHMA is seven miles south of Guernsey and nine miles northeast of Wheatland along the Laramie River. Through a cooperative agreement between the Wyoming Game and Fish Commission and the Missouri Basin Power Project, these lands are being managed for public recreational activities and to maintain or improve present wildlife habitat. Many species of ducks and Canada geese use these waters, especially during migration periods and some winter months. Birds, small game, and big game species inhabit the area. This 3,500-acre reservoir provides opportunities for fishing, boating, swimming, and water skiing. Public facilities, including parking areas, vault toilets, and boat ramps, are provided on the south side of the reservoir.

Guernsey State Park and Reservoir. Guernsey State Park is located approximately 3.5 miles northwest of the town of Guernsey. The park offers boating, swimming, water skiing, camping, fishing, hiking, bird watching, and picnicking. Civilian Conservation Corps' projects in the park

include hiking trails, roads, bridges, buildings – including the Castle, Brimmer Point, and the Museum, and a nine-hole golf course that was abandoned in the early 1940s.

Fort Laramie National Historic Site. This historic site is located approximately 2 miles southeast of the town of Fort Laramie. This historic site functioned for 56 years, serving the needs of trappers, traders, Native Americans, missionaries, emigrants, soldiers, miners, ranchers, and homesteaders. Its history commenced in 1834 with the beaver fur trade and grew into the buffalo hide trade. It eventually became a place for westward emigrants on the Oregon, California, and Mormon trails. In 1849, the U.S. Army purchased the fort in order to have a military presence on the trails and renamed it Fort Laramie. The military post became a principle transportation and communication hub for the Pony Express, stage lines, and the transcontinental telegraph. The military post's last purpose was as a launching point for military campaigns against the Native American populations. In 1938, Fort Laramie became part of the National Park System.

Oregon Trail Ruts State Historic Site. One mile south of the town of Guernsey, this historic site shows the Oregon Trail wagon ruts carved in the sandstone.

Register Cliff State Historic Site. Four miles south of the town of Guernsey, this historic site on the Oregon Trail a day's journey from Fort Laramie, is where emigrants would spend the night and inscribe their names in the rock face. Most inscriptions date from the 1840s and 1850s.

Old Bedlam Trail Ruts. Two miles northwest of Fort Laramie, this historic site on Bureau of Land Management property provides a historical marker at the site of the Oregon Trail wagon ruts.

6.8.3 Construction Impacts

It is anticipated that the Project will result in a temporary visitor increase in the area of site influence during construction. Construction will occur from November 2013 through December 2019, with annual winter suspensions between December and March. The peak temporary non-local workforce of 308 is expected to primarily use housing in Cheyenne, Douglas, and Wheatland. This potential increase in usage will be temporary, and limited to periods when employees are not working, and will not result in a significant increase in annual visitation. Therefore, the Project is not expected to result in impacts from increased visitation to area parks that will substantially impair the health, safety, and welfare of present or expected local inhabitants.

The transportation analysis concluded that the additional vehicle trips generated by the construction and operations of the Project will have a negligible impact on the operations of the adjacent roadway network and will not affect recreationalists' access to facilities. The main access road onto the Antelope Gap site is via Antelope Gap Road, while the main access road to Grayrocks WHMA is via Grayrocks Road. Restricted access and traffic delays are not anticipated to occur to visitors of Grayrocks WHMA.

Due to the distance between the Project site and recreation facilities and the size of the construction workforce, no temporary construction impacts, such as fugitive dust or construction noise emissions, are anticipated at any parks or recreation facilities in the area of site influence. Access to parks and recreation facilities will not be restricted during the construction phase.

6.8.4 Operation Impacts

Operation of the proposed Project will not directly impact any parks or recreation facilities. It will not require the conversion of park or recreation facilities to non-recreational uses. Grayrock WHMA shares a boundary with the Antelope Gap Project site, and the closest proposed wind turbine generator is 1.10 miles from the WHMA boundary. However, given the topography and elevation difference between the Project area and the WHMA, visibility of the site from the WHMA will be

limited. Given the near distance, the proximity of wind turbines to the WHMA could generate limited visual impacts for recreational users and diminish the quality of the recreational experience for users. Views from the WHMA of the Project would be limited to the north side of the Grayrocks Reservoir. Given the topography between the reservoir and the Project site, turbines will not be visible to viewers on the south side of the reservoir. Between 30 and 40 turbines will be visible from the north side of the reservoir from a distance of 3.0 miles. The Visual Resources section contains additional information on turbine visibility and visual impacts.

6.9 Wetlands and Waters of the United States

The USACE provides authorization for fill impacts to jurisdictional waters of the United States and adjacent wetlands under Section 404 of the Clean Water Act (CWA).

6.9.1 Regulatory Jurisdiction

The Clean Water Act (CWA) (33 U.S.C. § 1251, *et seq*.) is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States. The following are jurisdictions within the CWA.

- Section 404—Regulates the discharge of dredged and fill material into waters of the United States, including wetlands
- Section 402—National Pollutant Discharge Elimination System (NPDES) permits for discharge of pollutants
- Section 401—State certification of water quality

6.9.2 Wetlands and Other Waters of the United States

The USFWS National Wetland Inventory (NWI) database is typically reviewed for mapped wetlands according to the classification scheme of Cowardin et al. (1979). The NWI database indicates the general proximity of wetland habitat based on changes in vegetation patterns as observed from satellite imagery. This database is used as a preliminary indicator of wetland habitats as the aerial interpretation is not precise (i.e., wetlands identified in this database require field verification).

NWI mapping is not available for the Project area. The site generally consists of upland areas crossed by a few ephemeral drainages (see Surface Water, Section 6.6.2). There are no large areas of vegetation classified as those that would indicate wetland or riparian conditions.

A formal waters of the United States survey will be completed prior to construction. All streams and drainages that are jurisdictional under the CWA will be mapped and evaluated.

6.9.3 Construction Impacts

Waters of the United States must be delineated to determine potential impacts and the delineations must typically be no more than one year old at the time of permitting evaluation. Therefore, given the multi-year construction schedule, surveying the entire Project area in a single survey effort would not be practical. The Project commits to performing waters of the United States surveys prior to construction, likely surveying the areas planned for construction the following year. The Project will be designed to avoid and/or minimize impacts to those waters of the United States, including wetlands, where practical. If work is necessary within jurisdictional waters of the United States, it will be done in compliance with Sections 404 and 401 permits of the CWA. Therefore, no significant impacts to surface water resources are anticipated during construction of the Project.

6.9.4 Operation Impacts

Impacts to waters of the United States will be limited to those resulting from construction. Operation of the Project is not expected to result in additional impacts to waters of the United States. Culverts and other crossings installed for the Project will be maintained, but no adverse impacts to wetlands or waters of the United States are anticipated from operation of the Project that may impair the health, safety, or welfare of the resource or the health, safety, or welfare of the present or expected jurisdictional features in the area of site influence.

6.10 Scenic Quality

Visual or scenic resources are defined as those natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Visual resource or scenic impacts are generally defined in terms of a Project's physical characteristics and potential visibility and the extent to which the Project's presence would change the perceived visual character and quality of the environment in which it would be located.

6.10.1 Regulatory Jurisdiction

ISA regulations state that scenic resources must be taken into account in the application process. However, visual resource standards have not been specified at the state or county level.

6.10.2 Visual Conditions on the Site and in its Surroundings

The Project is proposed for development on a combined 70,907-acre area, consisting exclusively of private-fee lands located in Platte and Goshen Counties. The Project is composed of two parcels. The Chugwater parcel boundary is 2.2 miles east of the town of Chugwater and the Antelope Gap parcel boundary is 5.0 miles east of the town of Wheatland. The majority of the Project site is used for cultivated cropland and ranching. The Project site is sparsely populated. Existing developed features on the Project site include rural residences and associated accessory structures, paved and unpaved roads, agricultural fencing, and electric transmission and distribution lines. The natural landscape is sparsely vegetated, with low-lying grasses and sagebrush that is typical of landscapes in the surrounding region. The Project site is reflective of the broader regional context typical of many Platte and Goshen Counties landscapes: rolling topography with intermittent ridges rising up and low-growing grasses and sagebrush. Refer to **Appendix B** for the **Land Cover** figure.

Scenic Setting images are provided to present the present-day views of the Project area from several public vantage points. Refer to the Visual Resource Overview Map in **Appendix B** for the locations of the views. **Figure 6-5** and **Figure 6-6** illustrate the existing visual conditions that are representative of the two Project parcels seen from public roads, Chugwater and Antelope Gap, respectively. All images are provided courtesy of Google Earth Streetview.

FIGURE 6-5
Scenic Setting Point 1: Representative view of Chugwater Parcel from Wyoming 313, looking east

FIGURE 6-6
Scenic Setting Point 2: Representative view of Antelope Gap parcel from Deer Creek Road, looking southeast

6.10.3 Project Visibility

The first step in understanding the visual impact of the Project is to identify the areas from which the Project would be visible. This analysis, known as a viewshed or "zone of visual influence" (ZVI) analysis, supplies a computer-generated graphic that relies upon the maximum elevations of the Project features and surrounding topography to identify locations from which the Project would theoretically be visible via an unobstructed or partial line-of-sight. A viewshed radius of 18 miles was used, as recommended by the Sinclair-Thomas Matrix of Potential Visual Impacts of Wind Turbines given the proposed turbine height (Argonne National Laboratory, 2012). Refer to **Appendix B** for the **Zone of Visual Influence** figure.

The analysis is conservative in that the areas of potential Project visibility include areas in which any part of a turbine may be visible (even if what is seen is only the tip of a blade), and areas in which the turbine is at a great distance. Although this analysis takes into account the role that topography plays by blocking views towards the turbines, it does not take into account the screening of views that could be provided by buildings or vegetation in the foreground.

Areas that are potentially sensitive to visual changes were evaluated, including travel corridors, residences, parks, recreational and historical trails, historic sites, scenic overlooks, scenic highways and byways, and local, regional, or national focal points and landscapes. There are no designated scenic highways or byways, or locally, regionally, or national significant focal points or landscapes.

The Project vicinity does contain portions of several of the historic emigrant routes, including the Oregon Trail, California Trail, and Mormon Trail, that travel along the North Platte River through today's Goshen and Platte Counties. Additionally, the Fort Laramie National Historic Site, Oregon Trail Ruts State Historic Site, Register Cliff State Historic Site, and Old Bedlam Trail Ruts all occur within the 18-mile viewshed of the Project site. Known parks and recreational facilities include a number of local parks that occur within town limits, Guernsey State Park, and Grayrocks WHMA. Refer to **Appendix B** for the **Recreation** figure.

Figure 6-7 is representative of views for visitors of the Fort Laramie National Historic Site looking toward the Project site. Cottonwood trees growing along the banks of the North Platte River provide screening of the Project Site. **Figure 6-8** is representative of views for recreationalists looking southeast from the south shore of Grayrocks WHMA.

FIGURE 6-7
Scenic Setting Point 3: View at the entrance to the Fort Laramie National Historic Site, looking south toward the Antelope Gap parcel, approximately 7.8 miles from the nearest proposed turbine

FIGURE 6-8
Scenic Setting Point 4. View from Grayrocks Road, looking southeast toward the Antelope Gap parcel, approximately 2.0 miles from the nearest proposed turbine

The ZVI or viewshed analysis for the Project suggests that the Project will have limited visibility at most populated areas and along travel corridors (I-25, Highway 26, Highway 160). The closest views toward the turbines that have the potential to be seen by residents and travelers are along Interstate 25. This highway passes 0.3 miles from the nearest turbine that would be located immediately east of the highway in the southwest portion of the Chugwater parcel. The view from the interstate to the east offers viewers a series of ridgelines and plateaus covered by low growing grasses and sagebrush. **Figure 6-9** is representative of views seen by motorists driving northbound on I-25.

FIGURE 6-9
Scenic Setting Point 5. View from Interstate 25, looking north toward the Chugwater parcel, approximately 0.3 mile from the nearest proposed turbine

The greatest concentrations of nearby viewers are in the communities of Chugwater, Wheatland, Guernsey, and Fort Laramie. According to the U.S. Census Bureau, the town of Chugwater's population was 216 in 2011. The closest turbine would be visible from approximately 2.3 miles from the town of Chugwater. The town of Wheatland's population was 3,680 in 2011. The turbines would be visible from the town of Wheatland at a distance of approximately 10.9 miles. The town of Guernsey's population was 1,165 in 2011. The turbines would be visible from the town of Guernsey at a distance of approximately 10.8 miles. The town of Fort Laramie's population was 233 in 2011. The turbines would be visible from the town of Fort Laramie at a distance of approximately 9.7 miles. There are also several rural residences in the proximity of the Project site. **Figure 6-10** and **Figure 6-11** illustrate views from Chugwater and Wheatland, respectively, toward the Project from the edges of town.

FIGURE 1-10
Scenic Setting Point 6. Representative view of the Chugwater parcel from the town of Chugwater on Highway 321/Ty Road, looking southeast, approximately 2.6 miles from the nearest proposed turbine

FIGURE 6-11
Scenic Setting Point 6. Representative view from the town of Wheatland, looking east toward the Antelope Gap parcel, approximately 10.7 miles from the nearest proposed turbine

As a part of the process of evaluating the sensitivity of views, a review was made of the plans, regulations, ordinances, and design standards adopted by each of the jurisdictions in which the Project is located to identify any provisions that designate specific landscape areas or features as scenic resources deserving of special protection. No adopted state, county, or municipal planning documents limit or restrict the amount of visual alteration that may occur on state- or privately-owned fee lands in the Project area. Platte County seeks to protect views of Laramie Peak west of I-25. The Project is located east of I-25 and, it will not conflict with this land planning goal. Additionally, the Project is not located within a protected view shed.

6.10.4 Project Appearance

6.10.4.1 Project Construction

As described in Section 3, up to 300 turbines are proposed for construction in a single phase. The construction period is anticipated to commence November 2013 and be completed by December

2019. Primary construction activity will be associated with the site civil work to build the access roads, followed by the wind turbine foundation, erection, and commissioning.

During that time, large earth moving equipment, trucks, cranes, and other heavy equipment will be in use on the Project site and within the proposed corridors for both the access roads and transmission line and temporary staging yards.

At some times, small, localized clouds of dust created by road building and other grading activities may be visible at the site, although active dust suppression should minimize the frequency of such dust events. Because of the construction-related grading activities, areas of exposed soil and fresh gravel that contrasts with the colors of the surrounding undisturbed landscape may be visible. Any visible construction activities will be relatively short in duration, and will not result in any substantial impact to visual resources. As such, construction-related impacts are not discussed any further in this analysis.

6.10.4.2 Project Operation

The Project's most visible features will be the wind turbines. Each turbine will be constructed with a maximum hub height of 300 feet and a maximum rotor diameter of 383 feet, for a total height of 490 feet. The turbines will be arranged as array strings along unpaved access roads. The Project will also consist of the following appurtenant infrastructure: power collection system including 34.5-kilovolt (kV) buried collector lines, step-up substations, a 345-kV transmission line, two operation and maintenance (O&M) facilities, temporary laydown yards, approximately six permanent meteorological towers, and unpaved maintenance roads.

To respond to the FAA aircraft safety lighting requirements, the Project will be marked in accordance with the FAA rules for lighting wind turbines that were adopted in 2007. These rules do not require daytime lighting if the towers are bright white or off white in color. For nighttime marking, the FAA requires lights that flash red at 2,000 candela. The exact number of turbines that will require lighting will be specified by the FAA after it has reviewed final Project plans; however, the current rules specify that warning lights be mounted on the first and last turbines of each string, and every 1/2 mile on the turbines in between. The nighttime warning lights are designed to concentrate the beam in the horizontal plane, thus minimizing light diffusion down toward the ground and up toward the sky. Aside from any required aircraft warning lights, the turbines will not be illuminated at night. The lighting at the Project substation and O&M facility will be the minimum required for safety and security, and all light fixtures will be fully shielded and down lit to prevent light from shining into the sky or into areas outside of the substation site.

6.10.4.3 Project Decommissioning

As described in Section 3, the Project's operational period is assumed to be 25 years or more. Upon the Project reaching the end of its useful life, the Project owner will either upgrade or replace the equipment to extend the Project's operating life, or remove the Project. Upon decommissioning, all visible Project features will be removed and the surface of the site will be restored. As a consequence, after decommissioning, there will be no lasting visual impact of any significance.

6.10.5 Project Impacts

The landscape will be impacted with visually prominent vertical structures. In the context of low-growing vegetation and limited presence of built elements, the turbines will be the dominant built features in the view. Because the turbines will extend above the ridgelines with only the sky as a backdrop, the turbines will become a noticeable addition due to their distinctive form and will introduce vertical patterning not currently seen in this area. The addition of the turbines to this view

will produce a high degree contrast with the open, largely undeveloped landscape. The perceptibility of the turbines depends greatly upon the time of day and the atmospheric conditions, and the effect of their presence in these views will in many cases be attenuated by the distance between viewers and the turbines.

A literature review helps to provide an understanding of the role of distance in determining the potential visibility and visual impacts of turbines. The Argonne National Laboratories study, sponsored by the United States Department of the Interior - Bureau of Land Management, found wind energy facilities to be visible to the unaided eye at 36 miles under optimal viewing conditions, with turbine blade movement often visible at 24 miles. Under favorable viewing conditions, the wind facilities were judged to be major foci of visual attention at up to 12 miles and likely to be noticed by casual observers at 23 miles (Argonne National Laboratories, 2012).

Although the turbines have the potential to be visible in much of the surrounding area, the extent to which the turbines will be noticeable and have the potential to affect the view is greatly influenced by distance. Studies of the visibility of wind turbine structures suggest that structures in the size range proposed for this Project have the greatest potential to be visually dominant within a radius of about 4.7 miles from the structures, and that the degree of perceived visual dominance tapers off to a moderate level after about 10.6 miles and a low level after about 16.8 miles (Argonne National Laboratories, 2012). The Sinclair-Thomas Matrix of Potential Visual Impacts of Wind Turbines is summarized in **Table 6-14**, based on the turbines selected for the Project.

TABLE 6-14
Sinclair-Thomas Matrix of Potential Visual Impacts of Wind Turbines

Dominant Impact due to large scale, movement, proximity, and number	0.0 to 2.5 miles
Major impact due to proximity, capable of dominating landscape	2.5 to 4.7 miles
Clearly visible with moderate impact, potentially intrusive	4.7 to 7.5 miles
Clearly visible with moderate impact, becoming less intrusive	7.5 to 10.6 miles
Less distinct, size is reduced, but movement still is discernible	10.6 to 13.7 miles
Low impact, movement noticeable in good light, becoming noticeable components in the overall landscape	13.7 to 16.8 miles
Becoming indistinct with negligible impact on the wider landscape	16.8 to 21.7 miles
Noticeable in good light, but negligible impact	21.7 to 24.9 miles
Negligible or no impact	24.9 miles and beyond

The Project will be partially visible from the majority of the visually sensitive locations that were identified. The Project will not be visible at the Register Cliff State Historic Site and the Oregon Trail Ruts State Historic Site. Due to the topography, the Project will only be visible to recreational users of Grayrocks Reservoir from the north side of the Reservoir. Again, the ZVI does not take into account the role that vegetation and structures play in screening views of the Project. This is especially pertinent inside the town limits, where buildings and trees would screen views of the Project. Please refer to **Figure 6-6** and **Figure 6-7** for views from the towns of Chugwater and Wheatland.

According to the Sinclair-Thomas Matrix, the proposed Project will generate a dominant impact in the town of Chugwater, which is located 2.3 miles from the nearest turbine, and at the Grayrock Wildlife Habitat Management Area. According to the Sinclair-Thomas Matrix, from the visually sensitive locations in the vicinity ranging from 8.0 to 10.9 miles to the nearest turbine, the Project will generate a moderate impact. **Table 6-15** presents the turbines visible from the locations and the distances from the locations analyzed.

TABLE 6-15
Turbines Visible from Sensitive Locations

Visually Sensitive Locations	Range of Turbines Visible	Distance to Nearest Turbine
Chugwater	110s	2.3 miles
Wheatland	Not visible to low 80s	10.9 miles
Guernsey	Low 20s	10.8 miles
Fort Laramie	40s to 50s	9.7 miles
Register Cliff State Historic Site	Not visible	8.4 miles
Oregon Trail Ruts State Historic Site	Not visible	10.0 miles
Old Bedlam Trail Ruts	High 70s	8.4 miles
Fort Laramie National Historic Site	Low 60s	8.0 miles
Grayrock Wildlife Habitat Management Area	30s to 40s (north side of reservoir only); Not visible on south side of reservoir	3.0 miles

Identifying the degree of visual impact based exclusively on the visual dominance in relation to distance does not necessarily answer the question of the potential significance of the Project-related visual changes. To address this issue, visual impact evaluation criteria, as recommended by the National Research Council in their 2007 research paper (National Research Council, 2007), asks the following questions:

- Is the project located within an area of identified scenic or cultural significance? *The Project is located within 8 miles of the Fort Laramie National Historic Site. This cultural heritage district is of regional, statewide, and national significance.*
- Would the project significantly degrade views or scenic resources of statewide significance? *There are no scenic resources of statewide importance in the Project vicinity.*
- Is the project on or close to a natural or cultural landscape feature that is a regional focal point? *There are no natural or cultural features of regional importance that are present in the Project vicinity.*
- Is the project in a landscape area that is visually distinct and rare or unique? *The Project is located in an area that is typical of the landscape of the region. It is not visually distinct, rare, or unique.*

- Is the project unreasonably close (usually less than 0.5 mile) to many residences that would be severely affected, especially as a result of noise, shadow flicker, or being completely surrounded by wind turbines? *The nearest residences, either participating or non-participating, are at least 0.25 mile from the nearest proposed turbine.*

The Project will create new sources of nighttime lighting. The Project will add nighttime turbine marking lights on some of the turbines pursuant to FAA rules, and the lighting associated with the substations and O&M facilities. The lighting at the Project substations and O&M facilities will be the minimum required for safety and security, and all light fixtures will be shielded and aimed downward to prevent light from being cast into the sky and projecting outward. Because of these measures, and because the substation will be located well within the boundary of a large Project site far from surrounding roadways and the homes of non-participating landowners, there will be little potential for the lighting at the substations to be noticed by or to adversely affect sensitive offsite viewers. To minimize any effects on nighttime views, any lighting required at the substation and O&M facility will be the minimum needed for operation and safety. The Project will make use of heavily shielded fixtures that will be aimed downward and into the facility to ensure that this lighting does not produce glare that would adversely affect motorists or spill into areas outside of the substation's fenced area.

The Project site and immediately surrounding area are dark at night. The flashing red lights will introduce a new element into the Project area's nighttime environment. Because the nighttime aircraft safety lights will be limited in number, red, and highly directional, their potential to create skyglow or backscatter will be minimal. Experience at other wind power facilities indicates that the flashing red nighttime aviation safety lights have the greatest potential to be visible in areas within 1 mile of the site. There are several residential dwellings within 1.0 mile of the Project area.

6.11 Wildlife

This section identifies wildlife species known to occur or that potentially occur within the area of site influence. The State of Wyoming has jurisdiction over all wildlife in the state under the management of the WGFD or the state Department of Agriculture. The WGFD is responsible for oversight of big game species, nongame species, and small game species that are non-migratory. The evaluation, plans, and proposals presented in this application therefore address terrestrial and aquatic wildlife, as well as threatened, endangered, and other species of concern identified in the Wyoming State Wildlife Action Plan (SWAP) (WGFD, 2010). Additionally, W.S. 35-12-110 (b) requires the WGFD to provide information and recommendations to the ISC regarding the impacts of projects under the jurisdiction of the ISD.

The USFWS has oversight of migratory bird species, whether they are hunted (e.g., waterfowl) or not (e.g., passerine species), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos)*, and all species listed under the ESA as Threatened, Endangered, or Candidate species. Some of the species groups under USFWS regulations also receive management and protection under state statutes and regulations.

Species of Greatest Conservation Need (SGCN) identified in the Wyoming SWAP that may occur in or near the Project are presented in **Table 6-16**. Potential for occurrence of each SGCN was determined using range maps and habitat associations for each species as identified in the SWAP (WGFD, 2010; CH2M HILL, 2011). Particular species groups (Big Game, Avian, and Aquatic Species) are addressed in detail, whereas species with a federal status are discussed separately. No SGCN herptile species were identified during baseline surveys of the Antelope Gap parcel (Taylor and Bay, 2012; Taylor and Bay, 2013).

The Chugwater parcel is entirely within the 'Minimal Environmental Conflicts' area as identified in the 2010 Wyoming Wind Energy Development Environmental Conflicts map (**Appendix B**; WGFD, 2010). The majority of the Antelope Gap parcel is also in that area, with only a small portion falling within the 'Sensitive' area (WGFD, 2010).

Two years of baseline biological surveys were conducted in 2011 and 2012 in the Antelope Gap parcel and in a second area called the Dwyer parcel (formerly referred to as the Emma parcel) located to the northwest. The Project areas have changed since the 2011 surveys and the Dwyer parcel is no longer being considered for development. The Dwyer parcel was replaced with the Chugwater parcel where studies have begun. Baseline biological surveys in the Chugwater are underway in 2013 for year 1 data. Big game and avian surveys will continue through winter 2013, and bat acoustic studies will conclude in fall 2013. Also note the Antelope Gap parcel was formerly referred to as the Will parcel, but is referred to as Antelope Gap herein. Because the Dwyer and Antelope Gap data were analyzed collectively for many of the metrics, results are influenced by data collected at the Dwyer parcel even though it will not be developed. To present all of the data available, the Dwyer parcel-influenced data is included. Some data, such as nest locations, has been limited to only the Antelope Gap parcel, and are noted as such.

Studies were conducted in accordance with the *Biological Resources Study Plan* for the Project which was developed in coordination with Wyoming Game & Fish Department (WGFD) and U.S. Fish and Wildlife Service (USFWS) (CH2M HILL, 2011; WGFD, 2013).

TABLE 6-16
Species of Greatest Conservation Need Identified in the Wyoming 2010 State Wildlife Action Plan Potentially Occurring in or near the Project Area

Species	Scientific Name	Native Species Status (NSS)	Habitat
Mammals			
Black-footed ferret	*Mustela nigripes*	NSS1	Dependent on prairie dog colonies in basin-prairie shrublands, sagebrush grasslands, and grasslands.
Eastern red bat	*Lasiurus borealis*	NSSU	Primarily forested areas and riparian corridors. Occasionally found utilizing shrubs and conifers.
Great Basin pocket mouse	*Perognathus parvus*	NSS3	Primarily occupies steppe and arid open shrub and woodland habitats. Strongly associated with sandy sagebrush-dominated habitat.
Hispid pocket mouse	*Chaetodipus hispidus*	NSS3	A variety of dry grasslands. Most commonly found in shortgrass or open bunchgrass prairie with sparse or moderate vegetation density.
Idaho pocket gopher	*Thomomys idahoensis*	NSS3	Open sagebrush, grasslands, and montane meadows.
Olive-backed pocket mouse	*Perognathus fasciatus*	NSS4	A variety of arid and semiarid upland habitats. Primarily occurs in sparsely vegetated grasslands and sagebrush-grasslands and prefers loose sandy to clay soils.
Pallid bat	*Antrozous pallidus*	NSS3	Prefers low desert shrublands, juniper woodlands, and grasslands and is most commonly found in low arid regions with rocky outcroppings near water. Occasionally found in cottonwood riparian zones.
Plains harvest mouse	*Reithrodontomys montanus*	NSS3	Prefers well-vegetated grasslands and weedy fields with soil less than 40 percent and vegetation less than 10 inches (25 centimeters). Most commonly found in blue grama grasslands but also occupies sagebrush grasslands, buffalo grass, and mixed grasslands.
Plains pocket gopher	*Geomys bursarius*	NSS3	Prefers open lands such as sagebrush-grasslands, eastern Great Plains grasslands, and agricultural areas. Burrows usually associated with deep sandy or loamy soils.
Pygmy rabbit	*Brachylagus idahoensis*	NSS3	Dependent on dense, tall stands of big sagebrush. Usually found along intermittent streams or riparian areas in sagebrush-grasslands.
Silky pocket mouse	*Perognathus flavus*	NSS3	Inhabits a variety of arid habitats including grasslands, shrublands, and juniper woodlands on valley bottoms, mesas, and hillsides. Prefers low, thin grasses and minimal bare soil. Most abundant on loose, friable soils.
Spotted bat	*Euderma maculatum*	NSS3	Occupies a wide variety of habitats from desert scrub to coniferous forest. Most often found in low deserts and basins in association with canyons, prominent rock features, and permanent water sources.

TABLE 6-16
Species of Greatest Conservation Need Identified in the Wyoming 2010 State Wildlife Action Plan Potentially Occurring in or near the Project Area

Species	Scientific Name	Native Species Status (NSS)	Habitat
Spotted ground squirrel	*Spermophilus spilosoma*	NSS4	Arid and semiarid areas, including sagebrush-grasslands, grasslands, disturbed areas, and sand dunes. Prefers dry, deep, sandy soils with sparse vegetation.
Swift fox	*Vulpes velox*	NSS4	Prefers shortgrass prairie and mixed-grass prairie with gently rolling or level landscapes. Also found in sagebrush steppe in Wyoming.
Birds			
Bobolink	*Dolichonyx oryzivorous*	NSS4	Grasslands with large expanses of grass or forbs for cover. Prefers large open areas of tall grass, alfalfa, clover, or grain crops.
Brewer's sparrow	*Spizella breweri*	NSS4	Closely associated with sagebrush shrublands that have abundant, scattered shrubs and short grasses. Can also be found in mountain mahogany, rabbitbrush, pinyon-juniper, or bunchgrass grasslands.
Burrowing owl	*Athene cunicularia*	NSSU	Prefers sparse vegetation and bare ground on well drained, level to gently sloping areas. Can be found in a wide variety of arid and semiarid environments.
Chestnut-collared longspur	*Calcarius ornatus*	NSS4	Shortgrass and open mixed-grass prairies. Prefers relatively mesic areas within arid habitats.
Colombian sharp-tailed grouse	*Tympanuchus phasianellus*	NSS4	Prefers mountain-foothill shrub communities of serviceberry, snowberry, chokecherry, and Gambel oak. Found in sagebrush-grassland and willow-riparian habitats. Leks are often located in areas with little slope, good visibility, and low, sparse vegetation.
Dickcissel	*Spiza americana*	NSS4	Often inhabits grasslands with dense vegetation of taller grasses, forbs, or shrubs. Also uses hay and alfalfa fields.
Ferruginous hawk	*Buteo regalis*	NSS3	Primarily found on semiarid open grasslands, basin-prairie shrublands, and badlands. Requires large tracts of relatively undisturbed rangeland and nests on rock outcrops, cutbanks, cliffs, trees, or the ground.
Grasshopper sparrow	*Ammodramus savannarum*	NSS4	Shortgrass prairies, mixed grasslands, meadows, open sagebrush-grasslands, and agricultural areas. Requires herbaceous cover and conspicuous perches.
Greater sage-grouse	*Centrocercus urophasianus*	NSS2	Depends on sagebrush community types and associated habitats, including basin-prairie and mountain foothills shrub lands. Adjacent wet-moist meadows, alfalfa, and irrigated meadows also serve as habitat during the summer.
Lark bunting	*Calamospiza melanocorys*	NSS4	Shortgrass prairie, mixed-grass prairie, and shrubsteppe habitats support populations, as do weedy fallow croplands, minimum-tillage croplands, planted cover.

TABLE 6-16
Species of Greatest Conservation Need Identified in the Wyoming 2010 State Wildlife Action Plan Potentially Occurring in or near the Project Area

Species	Scientific Name	Native Species Status (NSS)	Habitat
Long-billed curlew	*Numenius americanus*	NSS3	Inhabits a wide variety of grassland types ranging from moist meadow grasslands to agricultural fields, wet and dry meadows and prairies, and grazed mixed-grass scrub communities.
McCown's longspur	*Calcarius mccownii*	NSS4	Found in open, dry, sparsely vegetated areas. It prefers 45 to 80 percent grass cover and 15 to 25 percent bare ground.
Mountain plover	*Charadrius montanus*	NSSU	Inhabits low, open habitats such as arid shortgrass and mixed-grass prairies with scattered clumps of cactus and forbs, and saltbush habitats.
Sage sparrow	*Amphispiza belli*	NSS4	Inhabits unfragmented sagebrush-dominated prairie and foothill habitat. Patchy tall shrubs and short grasses are preferred.
Sage thrasher	*Oreoscoptes montanus*	NSS4	Depends on sagebrush-dominated prairie and foothill shrubland habitat. Patchy tall shrubs and short grasses are preferred.
Short-eared owl	*Asio flammeus*	NSS4	Occupies broad expanse of open habitat with dense, low-growing vegetation. Strongly correlated with ungrazed and undisturbed native grasslands and wetlands that support dense small mammal populations.
Swainson's hawk	*Buteo swainsoni*	NSSU	Semi-open and open areas below 9,000 feet (2,740 meters) elevation, including prairies, plains, shrub-steppe, large mountain valleys, savannah, open pine-juniper woodlands, and cultivated lands with scattered trees.
Upland sandpiper	*Bartramia longicauda*	NSSU	Open grassland habitats, including prairies, meadows, pastures, hayfields, alfalfa fields, and highway right-of-ways. Large areas of short grasses interspersed with or adjacent to taller grasses are required.
Reptiles			
Great Basin skink	*Plestiodon skiltonianus utahensis*	NSSU	Only documented in Lincoln County. Prefers rocky habitat near streams with abundant vegetative cover, but may be observed on dry hillsides as well.
Great Plains earless lizard	*Holbrookia maculate maculata*	NSSU	Grassland communities. Yucca and exposed sandy habitats are preferred. May also be found along streams, prairie dog towns, and other flat open areas.
Greater short-horned lizard	*Phrynosoma hernandesi*	NSS4	A variety of habitats ranging from semiarid plains to the mountains. May be found in shortgrass prairie and sagebrush habitats, and open pine-spruce, pinyon-juniper, and spruce-fir forests.
Midget faded rattlesnake	*Crotalus oreganus concolor*	NSS1	Sagebrush communities in the plains zone. South-facing rock outcrops and exposed canyon walls are needed in abundance.

TABLE 6-16
Species of Greatest Conservation Need Identified in the Wyoming 2010 State Wildlife Action Plan Potentially Occurring in or near the Project Area

Species	Scientific Name	Native Species Status (NSS)	Habitat
Northern many-lined skink	*Plestiodon multivirgatus multivirgatus*	NSSU	Prefers grassland communities in the plains zone, including prairies and scarp woodlands with loose soil for burrowing. Often observed near cover such as logs, cow dung, trash, and rocks.
Northern tree lizard	*Urosaurus ornatus wrighti*	NSS1	Rocky cliffs, canyon walls, steep exposures to bedrock, and large boulders in sagebrush and juniper habitats.
Ornate box turtle	*Terrapene ornate ornata*	NSSU	Favors areas of loose soil within prairies and sandy treeless grasslands. Also occur in woodlands.
Plains black-headed snake	*Tantilla nigriceps*	NSSU	Often found in plains, grasslands, shrub brush, and woodlands. Prefers loose soil, outcroppings, and other structures that may provide cover.
Plains hog-nosed snake	*Heterodon nasicus*	NSSU	Prefers grasslands with sandy or gravelly areas for burrowing in areas near water. Also known to inhabit open brushland and woodland, farmlands, canyon bottoms, scrub brush, and floodplains.
Prairie lizard	*Sceloporus consobrinus*	NSSU	Prefers grassland and scarp woodlands in the plains zone of Wyoming. May be found in grassland hillsides, sandy areas, sandstone outcrops, limestone outcrops, cliffs, talus, and other types of outcrops.
Prairie racerunner	*Aspidescelic sexlineatus viridis*	NSSU	Prefers floodplains and yucca-covered grasslands. Requires an unvegetated or sparsely vegetated opening.

TABLE 6-16
Species of Greatest Conservation Need Identified in the Wyoming 2010 State Wildlife Action Plan Potentially Occurring in or near the Project Area

Species	Scientific Name	Native Species Status (NSS)	Habitat
Amphibians			
Great Basin spadefoot	*Spea intermontana*	NSSU	Sagebrush flats and semidesert shrublands in Wyoming. Loose, sandy soils are required for burrowing. Permanent or temporary water sources are needed for breeding.
Great Plains toad	*Anaxyrus cognatus*	NSSU	Grasslands, sand hills, and agricultural areas below 6,000 feet (1,830 meters) elevation.
Plains spadefoot	*Spea bombifrons*	NSSU	Prefers loose and well drained soils within plains grasslands and sagebrush communities below 6,000 feet (1,830 meters) in elevation.

Notes:
NSS1 = Population status imperiled, limiting factors are severe and continue to increase in severity.
NSS2 = Population status imperiled, limiting factors are severe and not increasing significantly; or vulnerable, limiting factors are severe and continue to increase in severity.
NSS3 = Population status vulnerable, limiting factors are severe and not increasing significantly.
NSS4 = Population status vulnerable, limiting factors are moderate and appear likely to increase in severity; or population status stable, limiting factors are severe and not increasing significantly.
NSSU = NSS unknown until additional information is obtained for the species.
Source: WGFD, 2010c.

6.11.1 Big Game

Important criteria for federal and state wildlife managers in Wyoming are land areas that are designated as crucial winter ranges, parturition areas, and migration routes for big game. Pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and elk (*Cervus canadensis*) were observed in the Dwyer and Antelope Gap parcels during baseline surveys in 2011 and 2012. Big game surveys are currently being conducted for the Chugwater parcel. Crucial mule deer range is found in the northern portion of the Antelope Gap parcel, while pronghorn crucial range is found on the far eastern portion of the Chugwater parcel. No big game migration corridors are found on either parcel (WISDOM, 2013). Crucial big game habitats in relation to the Project area are shown on the Crucial Big Game Ranges Figure in **Appendix B**.

A total of 4,087 pronghorn in 397 groups and 314 mule deer in 36 groups were recorded during the first year of baseline surveys in the Dwyer and Antelope Gap parcels, based on counts conducted at the start of each fixed-point bird use survey plot. Overall mean use by pronghorn was highest in the fall season (19.61 pronghorn/plot), followed by winter (14.47), spring (13.97), and summer (10.74). Overall mean use by mule deer was highest in the winter season (3.16 mule deer/plot), followed by the fall (0.66) and summer (0.09). No mule deer were recorded in the spring season. Pronghorn use was highest on the Dwyer portion of the Project, while mule deer mean use was highest in the north-central portion of the Antelope Gap area. Mule deer use in the winter season was higher in the designated crucial mule deer winter range relative to other points (Taylor and Bay, 2012).

Mule deer, pronghorn, and elk were observed within the Dwyer and Antelope Gap parcels during Year 2 of the baseline studies. Based on counts conducted at the start of each fixed-point bird use survey plot, a total of 2,173 pronghorn in 344 groups, 344 mule deer in 54 groups, and 10 elk observations in four groups were recorded during the Year 2 baseline studies. Overall mean use by pronghorn was consistent across seasons. Mule deer use was highest in the fall, followed by the spring, winter, and summer. Elk were only recorded during the spring season. In general, recorded winter use for pronghorn and mule deer was not higher at points in crucial winter ranges relative to points throughout the Dwyer and Antelope Gap parcels (Taylor and Bay, 2013).

6.11.1.1 Construction Impacts

The construction, operation, and maintenance of wind energy facilities can potentially affect big game species through several mechanisms, such as loss and fragmentation of habitat, disturbance and displacement effects, creation of barriers to movement and seasonal migrations, refuge effects on private lands, and increased mortality associated with legal harvest and poaching. The responses of big game to wind energy facilities are likely to be population- and site-specific and are likely influenced by a number of factors, such as availability and location of vegetative and topographic cover, forage quality, previous habituation to human activity, and climatic conditions (e.g., snow depth) (Taylor and Bay, 2013).

No rigorous scientific research has been completed to evaluate the effects of wind energy facilities on big game species. Long-term studies have recently been initiated on big game-wind energy interactions in Oregon and Wyoming, but data from these studies is currently unavailable (Taylor and Bay, 2013). The available literature suggests that roads and vehicle traffic at wind energy facilities have the potential to result in long-term displacement effects on big game (Rowland et al., 2000; Wisdom et al., 2004). While human-related activity associated with turbine operation and maintenance is significantly less than during turbine construction, it is not known whether such activities exceed big game tolerance thresholds over the long term (Taylor and Bay, 2013).

Observational information from existing wind facilities suggest that big game species do not abandon habitats within or adjacent to wind energy facilities. For example, numerous observations of mule deer and elk in the vicinity of turbines were documented during post-construction monitoring at the Elkhorn Valley Wind Farm in Oregon (Jeffery et al., 2009). At the Foote Creek Rim facility in Wyoming, pronghorn antelope observed during raptor use surveys were recorded year round (Johnson et al., 2000). The mean number of pronghorn antelope observed at the six survey points was 1.07 prior to construction of the wind energy facility and 1.59 and 1.14 per survey point the two years immediately following construction, indicating no reduction in use of the immediate area. A study of interactions of elk with operating wind-energy facilities was recently conducted in Oklahoma (Walter et al., 2004). The study found no evidence that operating wind turbines have a measurable impact on elk use of the surrounding area. Taylor and Bay (2013) report that research also indicated that some populations have the capacity to habituate to energy development and human activities over time (Sawyer et al., 2006; Haskell et al., 2006; Dyer et al., 2001).

To eliminate potential construction and operational impacts to big game, the Project will implement the following WGFD recommendations as appropriate and to the extent practical:

- If siting within big game winter ranges cannot be avoided, suspend construction activities from November 15-April 30.
- If siting within identified big game parturition areas cannot be avoided, suspend construction activities from May 1-June 15.

6.11.1.2 Operation Impacts

Based on the Project's adherence to the WGFD recommendations, impacts to big game during operation are anticipated to be negligible with no significant population-level impacts.

6.11.2 Avifauna

6.11.2.1 Regulatory Jurisdiction

Migratory passerine birds and raptor species are protected from being taken pursuant to federal acts and policies detailed below. There are currently no other applicable federal laws that address avian species in the Project area.

The Migratory Bird Treaty Act (MBTA) offers protection to 836 species of migratory birds (listed in 50 CFR 10.13), including waterfowl, shorebirds, seabirds, wading birds, raptors, and passerines. Generally speaking, the MBTA protects all birds in the United States, except gallinaceous (upland game) birds, rock pigeons, Eurasian collared doves, European starlings, and house sparrows.

The MBTA implements various treaties and conventions between the United States and Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Unless permitted by regulation, the MBTA provides that it is unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received, any migratory bird, part, nest, egg, or product, manufactured or not. The USFWS is responsible for implementing the provisions of the MBTA, which is enforced by the USFWS Division of Law Enforcement.

In addition to the protections afforded eagles under the MBTA, the Bald and Golden Eagle Protection Act (BGEPA) prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald eagle or golden eagle or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. Under the BGEPA, the term *take* "includes

also pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" (16 USC § 668c).

The term *disturb* under the BGEPA has recently been defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (72 CFR 31332). In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

The USFWS issued Land-Based Wind Energy Guidelines (WEG) (USFWS, 2012) to provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. The Guidelines assist developers in identifying species of concern that may potentially be affected by their proposed project, including migratory birds; bats; bald and golden eagles and other birds of prey; prairie and sage grouse; and listed, proposed, or candidate endangered and threatened species (USFWS, 2012).

In April 2013, USFWS issued Eagle Conservation Plan Guidance (ECPG) (USFWS 2013). This document provides specific in-depth guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. The ECPG guidance supplements the Service's WEG. WEG provide a broad overview of wildlife considerations for siting and operating wind energy facilities, but does not address the in-depth guidance needed for the specific legal protections afforded to bald and golden eagles. The ECPG fills this gap (USFWS, 2013).

6.11.2.2 Avian Species Baseline Assessment

Fixed-point avian surveys were conducted in 2011 (Taylor and Bay, 2012) and 2012 (Taylor and Bay, 2013) for the Antelope Gap parcel, and are currently being conducted in the Chugwater parcel. The objective of the fixed-point bird use surveys was to estimate the seasonal, spatial, and temporal use of the study area by birds, particularly diurnal raptors.

Fixed-point surveys were conducted from April 2011 through March 2012 in the Dwyer and Antelope Gap parcels at 30 points established throughout the survey area (Taylor and Bay, 2012). A total of 898 20-minute surveys were completed, and 93 bird species were identified. Canada goose had the highest exposure index followed by mallard and sandhill crane. Passerines composed nearly all of the small bird use and were observed during 97.3 percent of summer surveys, 90.0 percent of spring surveys, 75.8 percent of fall surveys, and 48.1 percent of winter surveys (Taylor and Bay, 2012). Passerine use was highest during the summer (7.37 birds/plot/20-min survey) and fall (6.43) compared to the spring (4.23) and winter (3.76). Lark bunting (2.16 birds/plot/20-min survey), western meadowlark (1.41), and horned lark (1.09) had the highest use of any passerine species during the summer season (Taylor and Bay, 2012). Horned lark and western meadowlark had the highest use of any species during the fall and spring seasons and horned lark had the highest use during the winter season (Taylor and Bay, 2012). Waterfowl, waterbirds, and shorebirds were observed within the Dwyer and Antelope Gap parcels during the first year of baseline surveys (Taylor and Bay, 2012). Twenty-six bird species listed as SGCN in the 2010 Wyoming Statewide Action Plan and/or Birds of Conservation Concern in the 2002 USFWS Migratory Bird Species of

Management Concern in Wyoming, were recorded during Year 1 surveys of the Dwyer and Antelope Gap parcels (Taylor and Bay, 2012).

Fixed-point surveys were conducted from March 20, 2012, through February 28, 2013, at 65 points established throughout the Dwyer and Antelope Gap parcels (Taylor and Bay, 2013). A total of 1,126 20-minute fixed-point surveys were completed, and 92 bird species were identified. Canada goose had the highest exposure index followed by red-tailed hawk, turkey vulture, and Swainson's hawk (Taylor and Bay, 2013). Passerines composed nearly all of the small bird use and were observed during 98.9 percent of spring surveys, 94.9 percent of summer surveys, 40.3 percent of fall surveys, and 24.6 percent of winter surveys. Passerine use was highest during the summer (7.64 birds/plot/20-min survey) and spring (6.57) compared to the fall (4.82) and winter (2.77). Horned lark (1.97 birds/plot/20-min survey), lark bunting (1.80), and western meadowlark (1.0) had the highest use of any passerine species during the summer season. Horned lark and western meadowlark had the highest use of any passerine during the spring season and horned lark had the highest passerine use during the fall and winter seasons (Taylor and Bay, 2013). Twenty special status species (all birds) were recorded during the year 2 fixed-point bird use surveys and as general wildlife observations (Taylor and Bay, 2013).

6.11.2.3 Raptors

Raptor Use

In 2011, diurnal raptor use was the highest during the fall (1.41 birds/plot/20-minute survey) and lowest during the summer (0.83) (Taylor and Bay, 2012). The most common raptors observed in the survey area were red-tailed hawk, northern harrier, and rough-legged hawk. The raptor species with the highest exposure index was red-tailed hawk which was ranked fourth out of all avian species. Of raptors, rough-legged hawk, Swainson's hawk, and golden eagle had the next highest exposure index. Diurnal raptor use was highest at the point located along the northwestern edge of the Antelope Gap parcel, primarily due to buteo use at this point. Mean annual diurnal raptor use was 1.03 raptors/plot/20-min survey, which ranked sixth highest out of 44 similar studies conducted at other wind energy facilities. Compared to nine other Wyoming studies, the raptor use value from the 2011 survey is at the upper end of areas evaluated in Wyoming. Based on studies conducted at the Foote Creek Rim facility in Carbon County, Wyoming, raptor fatality rates at the Dwyer and Antelope Gap parcels could be expected to be higher than fatality rates from the Foote Creek Rim facility (Taylor and Bay, 2012).

In 2012, diurnal raptor use was highest during the summer (0.91 birds/plot/20-min survey) and lowest during the winter (0.16). The most common raptors observed in the study area were red-tailed hawk (188 observations), American kestrel (114 observations), golden eagle (106 observations), and ferruginous hawk (91 observations). The raptor species with the highest exposure index was red-tailed hawk, which was ranked second highest out of all species. Of raptor species, respectively Swainson's hawk, ferruginous hawk, and golden eagle had the next highest exposure index. As in 2011, diurnal raptor use was highest at the survey point located along the southwestern edge of Antelope Gap, primarily due to buteo use at this point (Taylor and Bay, 2013).

During the Year 2 baseline studies of the Dwyer and Antelope Gap parcels, mean annual diurnal raptor use was 0.51 raptors/plot/20-min survey which ranked 21st out of 47 comparable studies (Taylor and Bay, 2013). Raptor use values from nine Wyoming studies ranged from 0.24 to 1.09 raptors/plot/20-min survey and averaged 0.60 raptors/plot/20-min survey.

Raptor Nests

A helicopter-based survey to locate nests of non-eagle raptors within 2-miles of the Dwyer and Antelope Gap parcels was conducted in April 2011 and 2012. A similar nest survey was conducted for the Chugwater parcel in 2013. Surveys were completed in accordance with the Project Biological Resources Study Plan (CH2M HILL, 2011). The principle objective of the survey was to identify the location and status of raptor nests that may warrant consideration during siting Project features, and to use the nest survey information as baseline data with which to evaluate potential impacts from the Project and to implement measures to avoid, minimize, or mitigate impacts, if necessary.

Approximately 443 mi^2 were surveyed for non-eagle raptors in April 2011. Eighty-one non-eagle raptor nests were recorded within the survey area, 30 of which were confirmed active during the survey. One active nest, a red-tailed hawk, was within the Antelope Gap parcel area. The remaining 23 active raptor nests were located outside the Dwyer and Antelope Gap areas: 17 red-tailed hawk, five ferruginous hawk, one prairie falcon, and one great horned owl nests. Density of nesting raptors was notably higher in the area surrounding the Dwyer and Antelope Gap parcels than within the Dwyer and Antelope Gap parcels. Raptor nest density was 0.046/mi^2 for active nests and 0.038/mi2 for inactive nests within the Dwyer and Antelope Gap parcels, whereas it was 0.077/mi^2 for active nests and 0.147/mi^2 for inactive nests within the 2-mile buffer area surrounding the survey area.

In 2012, a total of 125 non-eagles raptor nests were recorded within the Dwyer and Antelope Gap survey area (443 mi^2), of which 45 were confirmed active consisting of 12 ferruginous hawk, two great horned owl, one prairie falcon, and 30 red-tailed hawk nests. Three of the 45 active raptor nests detected in 2012 were located within the Antelope Gap parcel: two red-tailed hawk and one ferruginous hawk nests. Consistent with 2011 results, density of nesting raptors was notably higher in the area surrounding the Dwyer and Antelope Gap parcels (0.125 active nest/mi^2) than within the Dwyer and Antelope Gap parcels (0.046 active nest/mi^2). A similar density pattern was evident for inactive raptor nests: 0.069 inactive nest/mi^2 within the Dwyer and Antelope Gap parcels and 0.227 inactive nest/mi^2 within the 2-mile buffer area. Raptor Nests – Antelope Gap in **Appendix B** shows raptor nests identified during 2011 and 2012 nest surveys.

Approximately 181 mi^2 were surveyed for non-eagle raptors in the Chugwater parcel in 2013. Eleven non-eagle raptor nests were identified within the Chugwater Parcel, of which three were confirmed active, including two ferruginous hawk and one great-horned owl. Twenty nests were located outside the Project boundary within a 2-mile buffer, four of which were active, including two ferruginous hawk, one red-tailed hawk, and one great horned owl. The density of active non-eagle raptor nests outside the Chugwater Parcel (0.022 nests/mi^2) is slightly lower than the density of active non-eagle raptor nests within the Chugwater parcel itself (0.053 nests/mi^2). A similar density pattern was evident for inactive raptor nests: 0.141 nests/mi^2 within the Chugwater parcel and 0.089 nests/mi^2 within the 2-mile buffer area. Raptor Nests – Chugwater Parcel in **Appendix B** shows nests identified during the 2013 Chugwater raptor nest survey (WEST, 2013).

6.11.2.4 Bald and Golden Eagles

Bald eagles are identified as a USFWS species of concern in Platte and Goshen counties of Wyoming (USFWS, 2012), and both bald and golden eagles are designated as Birds of Conservation Concern in Bird Conservation Region 17 (Badlands and Prairies) (USFWS, 2008). Additionally, the species are identified in the USFWS Interim Guidance for Wind Energy Development in Wyoming (USFWS, 2011) and eagle roosts are specifically identified in the preconstruction avian activity survey recommendations as warranting evaluation both in and near the Project. Eagles are particularly sensitive to human disturbance at communal roosts and potentially vulnerable to take resulting

from collision with wind turbines or wind energy project features; therefore, protective buffers are needed around eagle roosts if they occur in proximity to wind energy development so that potential impacts can be avoided and successful conservation of the species can be ensured.

WW&P met with WGFD and USFWS in separate meetings on March 4, 2011, to develop an appropriate study plan for collecting baseline data prior to turbine siting to avoid potential conflicts with wildlife. Bald and golden eagle winter roosts were identified as warranting survey during wind project siting. Therefore, eagle winter roost surveys for the Project were completed to ensure responsible siting and aid in Project design and construction planning.

Eagle Use

In 2011, the mean golden eagle use at the Dwyer and Antelope Gap parcels was estimated at 0.09 golden eagles/plot/20-min survey and the mean bald eagle use estimate was 0.02 bald eagles/plot/20-min survey (Taylor and Bay, 2012). Compared to studies at other wind resource areas in Wyoming, the mean golden use estimate at the Dwyer and Antelope Gap parcels is at the lower end of golden eagle use estimates, suggesting that golden eagle fatalities could be less than experienced at most currently operating wind facilities in Wyoming (Taylor and Bay, 2012).

The mean golden eagle use at the Dwyer and Antelope Gap parcels during the Year 2 baseline studies was 0.04 golden eagles/plot/20-min survey (Taylor and Bay, 2013). The mean bald eagle use estimate was 0.01 bald eagles/plot/20-min survey during Year 2 surveys (Taylor and Bay, 2013). Mean golden eagle use estimates at wind resource areas in Wyoming ranged from 0.05 golden eagles/plot/20-min survey to 0.54 golden eagles/plot/20-min survey and averaged 0.26 golden eagles/plot/20-min survey (Taylor and Bay, 2013). The mean golden eagle use estimate at the Dwyer and Antelope Gap parcels is at the lower end of golden eagle use estimates from wind resources in Wyoming, suggesting that golden eagle fatalities could be less than experienced at most currently operating facilities in Wyoming (Taylor and Bay, 2013).

Bald eagle use estimates were similar for the Dwyer and Antelope Gap parcels in 2011 and 2012. The mean bald eagle use estimate was 0.02 bald eagles/plot/20-min survey in Year 1 studies and 0.01 bald eagles/plot/20-min survey during Year 2 studies (Taylor and Bay 2013).

Eagle Nests

A helicopter-based survey to locate nests of bald and golden eagles within 4-miles of the Dwyer and Antelope Gap parcels was conducted in April 2011. A similar nest survey was conducted for the Chugwater parcel in 2013. Surveys were completed in accordance with the Project Biological Resources Study Plan (CH2M HILL, 2011). The principle objective of the survey was to identify the location and status of eagle nests that may warrant consideration during siting Project features, and to use the nest survey information as baseline data with which to evaluate potential impacts from the Project and to implement measures to avoid, minimize, or mitigate impacts, if necessary.

In 2011, approximately 443 mi^2 were surveyed for eagle nests. Thirty-two nests characteristic of golden eagles were recorded within the survey area, of which seven were confirmed active during the survey. None of the active golden eagle nests was within the Dwyer and Antelope Gap parcel boundaries; however, four were within 1 mile of the survey area and three were within 3.3 miles of the Dwyer and Antelope Gap parcel boundaries. One active bald eagle nest was recorded just outside the survey area, located approximately 4.1 miles south of the Dwyer Project. Density of nesting eagles was notably higher in the area surrounding the Project than within the Project area itself. Golden eagle nest density was $0/mi^2$ for both active and inactive golden eagle nests within the Project area, whereas it was $0.013/mi^2$ for active golden eagle nests and $0.045/mi^2$ for inactive nests within the 4-mile buffer area surrounding the survey area.

Approximately 681 mi^2 was surveyed for eagle nests in 2012. A total of 75 eagle nests were recorded, of which 72 were identified as golden eagle and three as bald eagle nests. Consistent with 2011 findings, density of nesting golden eagles was substantially higher in the area surrounding Dwyer and Antelope Gap parcels than within the Dwyer and Antelope Gap parcels themselves. Density of active and inactive nests increased from 2011 to 2012 for both golden and bald eagles; however, this is likely more a function of having found more nests during 2012 than an indication of annual variation in nest density. Fourteen of the 72 (19 percent) golden eagle nests located in 2012 were confirmed active, which is similar to the 7 of 32 (22 percent) activity rate documented in 2011. Consistent with 2011 findings, density of nesting bald eagle nests remained low both in the survey area (0 nests/mi^2) and in the area surrounding the survey area (0.02 nests/mi^2). The Eagle Nests – Antelope Gap figure in **Appendix B** shows eagle nests located during the 2011 and 2012 nest surveys of the Dwyer and Antelope Gap parcels.

In 2013, 300 mi^2 were surveyed for eagle nests in the Chugwater parcel and a surrounding 4-mile buffer. One golden eagle nest was recorded. No bald eagle nests were identified. The density of active golden eagle nests in the Chugwater parcel was 0 nests/mi^2 and 0.003 nests/mi^2 in the 4-mile buffer. Inactive golden eagle nest density in the Chugwater parcel was 0.018 nests/mi^2 and within the 4-mile buffer was 0.030 nests/mi^2 (WEST, 2013).

Eagle Territories

As identified in the FWS Eagle Conservation Plan guidance, one-half the inter-nest distance has been used as a coarse approximation for the territory boundary in a number of raptor studies (USFWS, 2013). The mean inter-nest distance is defined as “the mean nearest-neighbor distance between simultaneously occupied eagle nests.” To evaluate the extent that eagle territories overlap with the Project area, the inter-nest distance was calculated for eagle nests in the vicinity. Based on eagle nest data collected in 2011 and 2012, the nearest-neighbor distance was calculated for each year. Territories were calculated separately for bald and golden eagles. The greater inter-nest distance of the two years was considered the approximate territory size, and was applied to all active nests.

In 2011, the mean inter-nest distance for occupied and/or active golden eagles was estimated to be 2.54 miles and ½ the inter-nest distance was 1.27 miles. In 2012, the mean inter-nest distance for occupied and/or active golden eagles was estimated to be 4.35 miles with half the mean inter-nest distance equal to 2.18 miles. Therefore, a buffer of 2.18 miles, the greater of the two years’ means, was used to approximate golden eagle territories in the vicinity of the Project.

There was only one bald eagle nest identified within 10 miles of the Project; therefore, calculating an inter-nest distance is not possible. Instead, a buffer distance of 1.2 miles was applied according to the 2011 Draft Eagle Conservation Plan Guidance (USFWS, 2011). Likewise, there was only one golden eagle nest identified in the vicinity of the Chugwater parcel, and the 2011 Guidance recommends 3.2 miles be used to approximate the territory associated with that nest.

The approximate territories were overlain on the Project facilities to assess the degree to which eagle territories could interact with the preliminary turbine layout (Eagle Inter-Nest Distance, **Appendix B**). Only 29 of the 330 turbine locations (300 planned plus 30 alternates) are located within the estimated eagle territories, or 8.8 percent of the turbines. Twenty-seven of these turbines are in the Antelope Gap parcel, two are at the Chugwater Parcel. The only eagle nest near the Chugwater Parcel is approximately 2.4 miles from the nearest turbine.

Eagle Winter Roosts

Winter eagle roost surveys were conducted to document the presence of winter roosts of bald eagles and golden eagles in the Project area and a 5-mile buffer. The surveys were completed to aid compliance with the BGEPA and MBTA and to enable implementation of impact avoidance measures during Project design and planning. The survey area was determined through coordination with USFWS and surveys were completed in accordance with the Biological Resources Study Plan for the Project (CH2M HILL, 2011).

In January and February 2012, a winter eagle roost survey was conducted in the Dwyer and Antelope Gap parcels. Four bald eagle winter roost areas were confirmed along the Laramie River, with maximum counts of 48 eagles at Roost 1; 26 eagles at Roost 2; 8 eagles at Roost 3; and 4 eagles at Roost 4 **Appendix B**, Eagle Nests – Antelope Gap depicts eagle nests and eagle roost sites in the Antelope Gap parcel Roost 1 is located approximately 0.38 miles from the Dwyer parcel boundary; Roost 2 is located approximately 0.37 miles from the Antelope Gap parcel boundary; Roost 3 is approximately 0.33 miles from the Antelope Gap parcel boundary, and Roost 4 is approximately 0.60 miles from the Antelope Gap parcel boundary. However, the nearest turbines are over three miles from the nearest roost. In addition, an area of concentrated bald eagle use was evident at Grayrocks Reservoir, where a convocation of eagles was seen during the survey. Grayrocks Wildlife Habitat Management Area is located north of the Antelope Gap parcel along the Grayrocks Reservoir. The nearest Project facility would be over four miles from this management area. No golden eagle nocturnal roosts were detected in the vicinity of the Antelope Gap parcel in 2012.

No bald eagle or golden eagle winter roost areas were identified during the 2013 winter eagle roost survey of the Chugwater parcel.

6.11.2.5 Construction Impacts

Project construction could affect birds through removal of habitat or potential fatalities from workforce vehicles or construction equipment (Taylor and Bay, 2013). The highest risk of direct mortality to birds from construction is most likely from potential destruction of a nest for ground- and shrub-nesting species during initial site clearing, which is best managed by timing ground disturbance outside the nesting period (Taylor and Bay, 2013).

Impacts to nesting raptors during construction will be minimized by adhering to WGFD and USFWS requested timing and distance stipulations for nesting raptors. Construction within 1 mile of the active golden eagle nests will be completed prior to February 1, and if necessary after July 15, to ensure no impact to nesting raptors. Human presence and construction activity can be expected to disrupt general avian use of the immediate construction area; however, these displacement impacts to avifauna are expected to be minimal and not significant. Nest and impact avoidance plans will be developed with input from the USFWS and WGFD to ensure that impacts to nesting raptors have been minimized or avoided to the extent practicable.

6.11.2.6 Operation Impacts

Impacts to avian species during operation will be primarily limited to collision with turbines. Collisions may occur with resident birds foraging and flying within the wind energy facility, or with migrant birds seasonally moving through the wind energy facility (Taylor and Bay, 2013).

Substantial data on bird mortality at wind energy facilities are available from studies across North America, and based on these studies (excluding Altamont Pass facility in California), passerines were the most common collision victims (Taylor and Bay, 2013). Most birds killed at wind turbines are songbirds which may be at the greatest risk during take-off and landing (NWCC, 2010). Given that

passerines made up a large proportion of the birds observed during the baseline study, passerines would be expected to make up the largest proportion of fatalities. Using mortality data collected during a 10-year period from wind energy facilities throughout the entire United States, the average number of bird collision fatalities is 3.1 fatalities/MW/year or 2.3 fatalities per turbine per year (NWCC, 2004). At the Foote Creek Rim facility in Carbon County, overall bird fatality estimates ranged from 1.93 to 3.40/MW/year and averaged 2.58/MW/year. However, 38 comparable mortality estimates for all bird species combined are publicly available from studies of wind energy facilities in western North America. Overall bird fatality rates in western North America have ranged from 0.16 to 8.3 birds/MW/year and averaged 2.59 birds/MW/year (Taylor and Bay, 2013).

Assuming a correlation between use and fatality rates exists, raptor fatality rates at the Dwyer and Antelope Gap parcel could be expected to be higher than the fatality rates observed at the Foote Creek Rim Facility and may be moderate to high relative to other fatality rates observed at Wyoming facilities and western North America (Taylor and Bay, 2013). It should be noted that the data represent raptor use at Dwyer and Antelope Gap parcels combined. As the Dwyer parcel is no longer included in the Project, raptor use, and therefore collision risk, may be different at the Antelope Gap parcel alone. For future consultations with WDFD and USFWS, the data will be reanalyzed to reflect only the Antelope Gap and Chugwater parcels.

Collision mortality is well documented at most wind-energy facilities; however, population level effects have not been detected or reported in the few studies and reviews that have evaluated the issue (Hunt, 2002; Hunt and Hunt, 2006; Johnson and Erickson, 2010). A recent publication that examined effects of collision mortality from buildings and communication towers found that although millions of birds are killed every year in North America by collisions with manmade structures, this source of mortality has had no discernible effect on populations (Arnold and Zink, 2011).

Examples of potential indirect loss of habitat near wind energy facilities include behavioral displacement (avoidance) by wildlife, which may lead to decreased overall habitat availability and/or breeding and nesting habitat for local populations. Birds displaced from wind energy facilities may move to lower quality habitat with fewer disturbances, with an overall effect of reducing breeding success near the project. It also includes increased habitat fragmentation (e.g., more habitat edges through roads), which could provide more generalized habitats and resistance-free travel lanes for predators and competitors in, for example, large grasslands and forests. This may impact the survivorship and reproductive ability of wildlife in the vicinity of wind energy facilities (Taylor and Bay, 2013).

Most studies on diurnal raptor displacement at wind energy facilities indicate these effects to be negligible (Howell and Noone, 1992; Johnson et al., 2000a, 2003; Madders and Whitfield, 2006). Notable exceptions include a study in Scotland that described territorial golden eagles avoiding the entire wind energy facility area, except when intercepting non-territorial birds (Walker et al. 2005). Based on observations at the Foote Creek Rim wind energy facility in southern Wyoming, and at Klondike I in Oregon, it is likely that there will be limited nesting displacement of raptors at the Project, although the creation of a buffer surrounding known nests when siting turbines will further reduce any impact (Taylor and Bay, 2013).

Studies concerning displacement of non-raptor species have concentrated on grassland passerines, waterfowl/waterbirds, and shorebirds (Winkelman, 1990; Larsen and Madsen, 2000; Mabey and Paul, 2007). Wind energy facility construction appears to cause small-scale local displacement of

some grassland passerines and is likely due to the birds avoiding turbine noise and maintenance activities. Construction also may reduce habitat effectiveness because of the presence of access roads and large gravel pads surrounding turbines (Leddy, 1996; Johnson et al., 2000a). There is the potential for small-scale local displacement of grassland passerines at the Project (Taylor and Bay, 2013).

Waterfowl, waterbird, and shorebird displacement effects of wind energy facilities appear to be mixed. Disturbance tends to be greatest for migrating birds while feeding and resting (Crockford, 1992; NRC 2007). The presence of similar habitat surrounding the Project suggests any displacement of these species is unlikely to impact their populations (Taylor and Bay, 2013). Siting turbines away from rivers, water bodies, and wetlands should help to minimize impacts to waterfowl, waterbirds, and shorebirds (Taylor and Bay, 2013).

Although impacts to birds are not expected to be significant, a post-construction avian (and bat) mortality monitoring program will be implemented to identify operation impacts to birds, if any. Mortality surveys and monitoring of the Project area will occur during construction and operation in accordance with standard industry monitoring practices acceptable to the WGFD as described in Section 7.

Research is unclear regarding the potential effects of commercial-scale wind development on eagle winter roosts, but it is likely that disturbance of eagles during the winter roosting period could negatively influence the use of that roost over time and be potentially detrimental to the regional or local population. Bald eagle fatalities at wind energy developments are infrequent, with three documented in the United States and two in Canada in recent years (Pagel, 2011); however, it is unclear if this low fatality rate is related to the location of projects outside of bald eagle habitat, minimal study or reporting requirements, or actual behavioral response of bald eagles to wind turbines.

6.11.3 Sharp-tailed Grouse

6.11.3.1 Regulatory Jurisdiction

The State of Wyoming, as implemented by WGFD, has management authority over the sharp-tailed grouse (*Tympanuchus phasianellus*) within the state's borders. As recommended in the *Wildlife Protection Recommendations for Wind Energy Development in Wyoming* ("Recommendations," WGFD, 2010), WWP discussed the need for a lek survey with WGFD in early 2012. WGFD requested that an existing lek survey route intersecting the project area be completed for 2 years so that findings could be considered during wind project siting. Sharp-tailed grouse surveys were completed for the Dwyer and Antelope Gap parcels in 2011 and 2012 and for the Chugwater parcel in 2013.

Sharp-tailed grouse lek surveys were conducted in the Antelope Gap parcel in April 2011 (CH2M HILL, 2011) and April 2012 (CH2M HILL, 2012) and in the Chugwater parcel in April 2013(CH2M HILL, 2013). The objective of the surveys was to identify sharp-tailed grouse leks in or near the Project area, abundance, trends, and distribution. Survey routes were approved by WGFD prior to conducting the surveys.

6.11.3.2 Construction Impacts

No leks were detected in 2011 on the Antelope Gap parcel. Seven total individuals were observed including two females and five males. In 2012, one sharp-tailed grouse lek was identified in the Antelope Gap parcel. Observations in the area included up to seven males strutting and sightings of

three other individuals. One lek and 45 individual sharp-tailed grouse (nine males, one female, 35 unknown) were identified in the Chugwater parcel in 2013.

The lek sites have been considered by the WGFD and the Project in the siting and timing of construction. To reduce potential construction and operational impacts to sharp-tailed grouse during the breeding season, the Project will implement the following WGFD recommendations:

- Any construction/ development activities within 2 miles of the perimeter of occupied plains and Columbian sharp-tailed grouse leks should be suspended from April 1 to July 15
- Turbines and all related aboveground infrastructure, including roads, should occur outside a 0.25-mile (no surface occupancy) distance from the perimeter of plains sharp-tailed grouse

6.11.3.3 Operation Impacts

Based on the Project's adherence to the WGFD recommendations, impacts to sharp-tailed grouse during operation are anticipated to be negligible with no significant population-level impacts that may impair the health, safety, or welfare of the resource or the health, safety, or welfare of the present sharp-tailed grouse in the area of site influence.

6.11.4 Bats

Bat casualties have been reported from most wind-power facilities where post-construction fatality monitoring data are available. However, the majority of recorded fatalities in the western United States have occurred during the fall migration period and involved non-protected bat species.

6.11.4.1 Regulatory Jurisdiction

Of the 45 species of bats found in the continental United States, six are federally listed as endangered under the ESA and are covered by incidental take provisions. In addition, the BLM recognizes some bat species as sensitive because of their rarity or vulnerability to various causes of habitat loss or population decline and are generally recognized by federal, state, or other agencies. In Wyoming, both the BLM and USFWS maintain sensitive bat species lists. The BLM and USFWS sensitive listing does not afford the bat species protection from incidental take provisions. Thirteen bats are listed as Species of Special Concern by WGFD (University of Wyoming, 2013).

6.11.4.2 Bat Species

Acoustic bat surveys were conducted on in the Dwyer and Antelope Gap parcels in 2011 (Taylor et al., 2012) and 2012 (Taylor et al., 2013). Bat surveys are currently being conducted on the Chugwater parcel. The bat acoustic survey objectives are to 1) estimate levels of bat activity throughout the project during spring migration, summer reproduction, and fall migration 2) characterize patterns of temporal and spatial variation of bat activity 3) identify presence of bat species and timing of species presence to the extent possible using acoustic monitoring 4) assess the potential risk wind energy development would pose to bats flying through the approximate height of turbine blades.

Acoustic surveys were conducted from April 19 through October 18, 2011 and April 16 through October 26, 2012 at six meteorological (met) tower stations in agricultural fields and grasslands, and eight temporary stations in various habitats throughout the Dwyer and Antelope Gap parcels. **Table 6-13** below shows bat activity levels for the 2011 and 2012 surveys.

TABLE 6-13
Bat Survey Activities

Bat Activity	April 19 through October 18, 2011	April 16 through October 26, 2012
SM2 Detectors	20 sampling locations using SM2 detectors for a total of 1,703 detector-nights	19 sampling locations using 8 SM2 detectors for a total of 1,671 detector-nights
	Fixed ground stations recorded 3,382 bat passes on 689 detector-nights for a mean of 4.86 ± 0.47 bat passes per detector night	Fixed ground stations recorded 5,623 bat passes on 758 detector-nights for a mean of 7.53 ± 0.60 bat passes per detector night
	Raised stations recorded 4665 bat passes on 689 detector nights for a mean of 0.72 ± 0.13 per detector night	Raised stations recorded 421 bat passes on 555 detector nights for a mean of 0.74 ± 0.09 per detector night
	Temporary stations recorded 40,173 bat passes on 325 detector nights for a mean of 116.43 ± 16.08 bat passes per detector-night	Temporary stations recorded 51,594 bat passes on 358 detector nights for a mean of 154.12 ± 11.87 bat passes per detector night
SD2 Anabat Detectors- two fixed ground locations	Recorded 2,451 bat passes on 348 detector-nights for a mean of 7.04 ± 0.65 bat passes per detector night	Recorded 2,272 bat passes on 337 detector-nights for a mean of 6.54 ± 0.42 bat passes per detector night

In 2011 and 2012, bat activity was generally higher at temporary stations than at fixed stations, with the highest activity rates recorded at a barn in the vicinity of the North Laramie River (Taylor et al., 2012; Taylor et al., 2013). However, this area is in the Dwyer parcel and is no longer a part of the current project.

For both years bat activity at met towers varied substantially between seasons, with relatively low activity in the spring and early summer and higher activity in late summer and fall, with activity rates peaking in July and August. Higher activity levels during the late summer and early fall may be due to bats travelling through the area during migration (Taylor et al., 2012; Taylor et al., 2013).

Between both years of surveys at the Dwyer and Antelope Gap parcels, ten bat species were identified through full-spectrum analysis for all detectors combined (Taylor et al., 2012; Taylor et al., 2013). In 2011 and 2012, western small-footed myotis (*Myotis ciliolabrum*) was the high-frequency species present on the most detector nights (about 1 percent in spring, 6 percent in summer and 5 percent in fall 2011; about 7 percent in spring, 9 percent in summer, and 7 percent in fall 2012). Western small-footed myotis also was detected at the most detector locations in 2011 and 2012 (10 of the 14 detector locations, and 14 of 19 detector locations, respectively). Big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris notivagans*), were low-frequency bats that had relatively high presence in both 2011 and 2012 (3-5 percent of all detector nights in summer and fall at 10-12 stations in 2011; 5-9 percent of all detector nights in summer and fall at 16-19 stations in 2012). Other species identified in the 2011 survey were pallid bats (*Antrozous pallidus*), long-legged bat (*Myotis volans*), Townsend's big-eared bat (*Corynorhinus townsendii*), western long-eared bat (*Myotis evotis*), and little brown bat (*Myotis lucifugus*). In addition to the species listed above, in 2012 fringed myotis (*Myotis thysanodes*) was also identified. Of the ten bat species identified, eight are identified as Species of Greatest Conservation Need (SGCN) in the 2010 Wyoming State Wildlife Action Plan.

Table 6-14 presents the bat species detected during 2012 surveys of the Dwyer and Antelope Gap areas.

TABLE 6-14
Bat species Identified within the Dwyer and Antelope Gap Parcels

Common Name	Scientific Name
High-Frequency (> 30 kHz)	
little brown bat[1,3]	*Myotis lucifugus*
long-legged bat[1,3]	*Myotis volans*
western long-eared bat[1,3]	*Myotis evotis*
western small-footed bat[3]	*Myotis ciliolabrum*
Low-Frequency (<30 kHz)	
big brown bat[1,3]	*Eptesicus fuscus*
fringed bat[3]	*Myotis thysanodes*
hoary bat[1,2]	*Lasiurus cinereus*
pallid bat[3]	*Antrozous pallidus*
silver-haired bat[1,2]	*Lasionycteris noctivagans*
Townsend's big-eared bat[3]	*Corynorhinus townsendii*

Source: Harvey et al. 1999, BCI 2003
[1]species known to have been killed at wind energy facilities (species reported by Anderson *et al*. 2004, Kunz *et al.* 2007b, Baerwald 2008)
[2] long-distance migrant
[3]Species of Greatest Conservation Need (2010 Wyoming State Wildlife Action Plan)

Bat activity recorded with Anabat detectors within the Dwyer and Antelope Gap parcels during the fall migration period (9.29 bat passes detector night, 2011; 7.28 bat passes per detector-night, 2012) was moderate relative to other wind facilities in the Rocky Mountains (Taylor and Bay, 2013). The bat activity at the Dwyer and Antelope Gap parcels is most similar to rates observed at Alberta facilities in the Rocky Mountains and Wisconsin facilities in the Midwest. Overall bat activity was higher at ground versus raised sampling stations during the study. High-frequency bat activity rates were greater than low-frequency bat activity rates. Low-frequency bat activity rates were higher at raised stations compared to high-frequency bat activity rates. Activity rates were relatively low in the spring and higher in the summer and fall with activity peaking in July and August (Taylor and Bay, 2013).

6.11.4.3 Construction Impacts

Monitoring studies of wind-energy facilities suggest that migratory tree-roosting species (e.g., eastern red, hoary, and silver-haired bats) comprise the majority of bats reported killed at wind facilities in most regions of North America, and bat fatalities peak at wind facilities during the late summer and early fall migration (NWCC, 2010).

Construction activities are not expected to coincide with the nocturnal activity of bats, nor are roost sites expected to be directly impacted. Therefore, no substantial impairment to bat species and the health, safety, or welfare of the present or expected bat inhabitants in the area of site influence is expected from construction of the Project.

6.11.4.4 Operation Impacts

It is currently unclear whether pre-construction bat acoustic data are able to adequately predict post-construction fatality (Hein et al., 2013). However, based on studies to date, hoary bats and silver-haired bats migrating in the fall will be the most susceptible to collisions with turbines in the Project area. Siting turbines away from buildings, river corridors, and pond/wetland habitat should help minimize potential impacts to bats (Taylor et al., 2013). No substantial impairment to bat species and the health, safety, or welfare of the present or expected bat migrants in the area of site influence is expected from the operation of the Project.

Although impacts to bats are not expected to be significant, based on consultations with the WGFD, a post-construction bat (and avian) mortality monitoring program will be implemented to identify impacts to bats, if any. Mortality surveys and monitoring of the Project area will occur during operation in accordance with standard industry monitoring practices acceptable to the WGFD and the USFWS as described in Section 7.

6.11.5 Federally Listed Wildlife Species

6.11.5.1 Regulatory Jurisdiction

Threatened and endangered wildlife species are protected under the federal ESA of 1973, as amended. Designated threatened and endangered plant, fish, and wildlife species are protected from incidental take by the ESA of 1973, as amended and federal policies.

Those species classified as threatened or endangered are protected under the ESA, which is enforced by the USFWS. Threatened or endangered species are considered “federally listed” or “listed” after a final rule has been published in the *Federal Register*. Federal candidate species, subspecies, or varieties are those plant and animal species being considered for listing as endangered or threatened, but for which a proposed regulation has not yet been published in the *Federal Register*. Wyoming does not have an endangered species act; therefore, only those species with federal designation are protected under the ESA.

Because the Project is entirely on private land and there is no federal nexus, ESA Section 7 consultation is not required; however, Section 9 compliance may be necessary. If the construction or operation of the Project results in the take of an endangered species, the Project would be in violation of the ESA.

Endangered species are those plant and animal species, subspecies, or varieties that are in danger of extinction throughout all or a significant portion of their range. The threatened category comprises plant and animal species, subspecies, or varieties likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Federal candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher-priority listing activities. Candidate species receive no statutory protection under the ESA. However, the USFWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA.

6.11.5.2 USFWS Threatened and Endangered Species

A review of the USFWS endangered, threatened, and candidate species for Wyoming was conducted to identify species listed under the ESA that have the potential to occur in Platte and Goshen Counties (USFWS, 2013). No USFWS-designated critical habitat is found in the project area (WISDOM, 2013). No federally listed species were observed in the Dwyer and Antelope Gap parcels

during 2011/2012 baseline wildlife surveys (Taylor and Bay, 2012; Taylor and Bay, 2013). **Table 6-15** identifies endangered, threatened, proposed, and candidate species potentially occurring in or near the project area.

No federally listed wildlife were documented during baseline surveys of the Dwyer and Antelope Gap parcels in 2011 and 2012 avian and big game surveys, bat acoustic surveys, and raptor nest searches. Greater sage grouse are known to occur in the project area; however, the Project is not within sage grouse core area, nor are there any known greater sage grouse leks within two miles of the project boundary (WISDOM 2013). Preble's meadow jumping mice occur in low undergrowth consisting of grasses or forbs; in wet meadows and riparian corridors; or areas where tall shrubs and low trees provide adequate cover (USFWS, 2013). Preble's meadow jumping mice are known to occur in Platte and Goshen Counties (USFWS, 2013). However, suitable habitat for this species is not found in the project area and there is no mapped habitat for this species in the project area (WISDOM, 2013).

TABLE 6-15
Federal Endangered, Threatened, Proposed, and Candidate Species Potentially Occurring in or near the Project Area

Species/Critical Habitat	Scientific Name	Status	Habitat
Blowout penstemon	*Penstemon haydenii*	Endangered	Sand dunes or blowouts
Colorado butterfly plant[a]	*Gaura neomexicana coloradensis*	Threatened	Wet meadows and riparian areas
Greater sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush communities
Platte River Species			
Interior least tern	*Sternula antillarum*	Endangered	Downstream riverine habitat of the Platte River system[b]
Pallid sturgeon	*Scaphirhynchus albus*	Endangered	
Piping plover	*Charadrius melodus*	Threatened	
Whooping crane (and Critical Habitat)	*Grus americana*	Endangered	
Western prairie fringed orchid	*Platanthera praeclara*	Threatened	
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Threatened	Lush vegetation along watercourses or herbaceous understories in wooded areas near water
Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 feet (2,133 meters) elevation

[a] Designated Critical Habitat for the federally threatened Colorado butterfly plant is located in Platte and Laramie counties, the nearest of which is the Tee Pee Ring Creek Unit located in Platte County, more than 20 miles (32 kilometers) from the project.
[b] If the proposed action may lead to consumptive use of water or have the potential to affect water quality in the Platte River System, there may be impacts to threatened and endangered species inhabiting the downstream reaches of this river system.
Source: USFWS, 2013.

6.11.5.3 Construction Impacts

Because of the absence of the species and potential habitat, federally listed species are not expected to be present or affected by construction of the project. Water depletions and effects to water quality in the Platte River System could affect five additional federally listed wildlife species and/or their critical habitats in downstream reaches in other states. Five species (interior least tern [*Sternula antillarum*], pallid sturgeon [*Scaphirhynchus albus*], piping plover [*Charadrius melodus*], western prairie fringed orchid [*Platanthera praeclara*], and whooping crane [*Grus Americana*]) occur downstream; however, water depletions associated with Project activities, described in Section 6.5, are minimal and will have no impact on the Platte River Watershed. Construction will use water from a permitted source and will not increase water depletions in the North Platte River System. No impacts to Platte River Species downstream of the Project area are expected.

6.11.5.4 Operation Impacts

Because of the absence of the species and potential habitat, federally listed species are not expected to be present or affected by operation of the Project. Operation will consume a small quantity of water from a permitted source and will not affect Platte River species. Therefore, there will be no substantial impairment to the health, safety, or welfare of the present or expected federally listed animals potentially occurring in the area of site influence.

6.12 Aquatic Systems

6.12.1 Regulatory Jurisdiction

Water quality concerns associated with construction of the Project fall under the direct jurisdiction of WYDEQ. The Project area contains perennial, ephemeral, and intermittent waterways. Impacts to water quality may also affect aquatic organisms and WGFD has issued guidance and recommendations to preserve water quality for those species.

6.12.2 Background

The Project lies within the North Platte River Basin, Lower Laramie Sub-Basin watershed (HUC 10180011), and Horse Creek Sub-Basin watershed (HUC 10180012). The three major tributaries to the North Platte River within the Project vicinity are Horse Creek, Chugwater Creek, and the Laramie River. All three waterways are classified as 2AB by the Wyoming Surface Water Classification List, which means they support coldwater fisheries and drinking water. All of these systems are tributaries to the North Platte River. The majority of the waterways within the Project area are ephemeral tributaries to these systems.

According to Wyoming Interagency Spatial Database & Online Management (WISDOM), WGFD data indicate the following aquatic habitats occur within the vicinity of the Project area: Box Elder Creek - trout class green (1-49); the Laramie River - trout class orange (any cool, warm water game fish present); and Deer Creek - trout class clear (no trout present). Data provided by WGFD list the following fish species known to occur within those habitats: Box Elder Creek (rainbow trout); Deer Creek (brassy minnow, central stoneroller, creek chub, fathead minnow, white sucker, and carp), and; the Laramie River (bigmouth shiner, brassy minnow, central stoneroller, common shiner, channel catfish, Johnny darter, longnose sucker, quillback, river carpsucker, shorthead redhorse, stonecat, red shiner, creek chub, fathead minnow, longnose dace, sand shiner, white sucker, black crappie, brown trout, carp, gizzard shad, green sunfish, smallmouth bass, walleye, and yellow perch).

A review of WISDOM and data supplied by WGFD that indicates the aquatic systems within the vicinity of the Project area also support amphibian species such as bullfrog (*Lithobates*

catesbeianus), northern leopard frog (*Lithobates pipiens*), boreal chorus frog (*Pseudacris maculata*), tiger salamander (*Ambystoma mavortium melanostictum*), Great Plains toad (*Anaxyrus cognatus*), Plains spadefoot (*Spea bombifrons*), and Rocky Mountain toad (*Anaxyrus woodhousii woodhousii*). Invertebrates known to occur within the Project area include cylindrical papershell (*Anodontoides ferussacianus*), fatmucket (*Lampsilis siliquoidea*), ottoe skipper (*Hesperia ottoe*), plain pocketbook (*Lampsilis cardium*), and regal fritillary (*Speyeria idalia*).

Ephemeral streams, by definition, do not flow all of the time and function in a state of continuous non-equilibrium. Perennial streams continuously transport sediment, while sediment movement in ephemeral systems occurs only in conjunction with specific runoff events. Under natural conditions, larger scale events and associated high velocity flows can transfer relatively large amounts of coarse sediment into the watershed (Meehan, 1991).

Ephemeral streams are known to support diverse assemblages of macro-invertebrates (Grimm and Fisher, 1989). Additionally, ephemeral streams have been recognized (Cummins and Wilzbach, 2005) to indirectly support fish populations in perennial systems through the delivery of nutrients and macro-invertebrates. Hydrologic connectivity is required for many invertebrates to facilitate spatial distribution, even if it occurs only intermittently (Nadeau and Rains, 2007).

The management of ephemeral stream networks can have a direct impact on the hydrology and geomorphology of the overall drainage (Bull, 1997). Road construction and maintenance when not implemented properly have the potential to deleteriously affect hillslope drainage processes, and shift naturally occurring hydrologic regimes. This can exacerbate concerns surrounding erosion and sedimentation into nearby perennial reaches (USDA, 2002). Effective management of such systems requires a watershed-based approach, involving preservation of riparian vegetation and channel connectivity which translates to preserved ecosystem function in the drainage.

6.12.3 Construction Impacts

As with all ground disturbing activities in highly erosive environments, sediment transport is primary the concern for aquatic resources. Any potential effects to aquatic resources, such as fisheries and macro-invertebrates in the Project area will be mitigated through Best Management Practices (BMPs), as outlined in Section 7. These include design of roads and culverts to minimize erosion and sediment transport, revegetation of all disturbed areas to at least pre-project conditions using native vegetation, implementing erosion retention measures in all areas where the potential for sediment transport occurs, and monitoring of the Project Area to ensure that mitigation measures have successfully addressed any concerns associated with increased erosion and/or sediment transport, as well as retaining natural connectivity in the system.

No effects to fisheries or aquatic resources in the North Platte River are anticipated to occur as a result of construction of the proposed Project. Primary concerns, relative to aquatic resources, are those associated with the construction of new roads and culverts, as well as the preservation of riparian vegetation, wetlands, and system connectivity. No impacts to riparian vegetation or wetlands are expected. Additionally, connectivity in the systems will remain intact. Stream crossings are proposed, all of which will be implemented under specified BMPs (described in Section 7) and constructed using culverts designed to carry 50-year flood events at minimum. Any potential impacts to aquatic resources from erosion and sedimentation associated with construction activities (including roads and culverts) will be reduced by measures implemented to control runoff during construction and operation of the project as outlined in the Stormwater Pollution Prevention Plan (SWPPP), as well as additional BMPs. Any potential concerns associated with hazardous materials

will be managed and controlled in accordance with federal and state regulations to prevent the release of petroleum products to surface waters.

Any groundbreaking activity, no matter how minor, , by its very nature, increases the risk of erosion and sediment loading in surface water processes until natural vegetation has re-established itself to pre-project conditions. Implementation of BMPs will minimize the risk and the perennial streams in the Project Area (Horse Creek, Chugwater Creek, the Laramie River, and their tributaries), and subsequently the North Platte River, will be at insignificant risk of altered sediment loading as a result of the proposed Project. Therefore, construction of the Project will avoid significant impacts that may impair the health, safety, or welfare of the resource or the health, safety, or welfare of the present or expected aquatic resources in the area of site influence.

6.12.4 Operations Impacts

No ground breaking activity or in stream activity will occur during operation and management of the proposed Project. In turn, no indirect and/or direct effects are anticipated to occur in association with continued operation and maintenance of the proposed project. Therefore, operation of the Project will avoid significant impacts that may impair the health, safety, or welfare of the resource or the health, safety, or welfare of the present or expected aquatic resources in the area of site influence.

6.13 Transportation

6.13.1 Transportation Facilities

This section outlines the methodology used to determine impacts of the Project on the transportation assets of the surrounding area. The Antelope Gap parcel of the Project near Wheatland is adjacent to WY 316 (Antelope Gap Road) and the Chugwater Parcel is adjacent to WY 313 (Lone Tree Road). **Table 6-16** shows the major roadway corridors within the study area with WY 313 being the primary route to the south site and WY 316 the primary route to the north site. There are three interchanges affected in the study area: I-25 / WY 313 and I-25 / Ty Road near Chugwater, and I-25 / Mariposa Parkway in Wheatland.

TABLE 6-16
Major Roadway Corridors within the Study Area

Road	Type	General Direction
I-25	Interstate	North-South
WY 313 (South Site)	Major Collector	East-West
WY 316 (North Site)	Major Collector	East-West
WY 321 (South Site)	Local	North-South
WY 320 (North Site)	Major Collector	North-South

Source: CH2M HILL, 2013.

Traffic counts are recorded at several locations by Wyoming Department of Transportation (WYDOT), and can be seen in **Table 6-17**. The traffic counts shown in **Table 6-17** were used to determine the background existing scenario for the year 2011.

TABLE 6-17
2011 Traffic Count and Percent Truck Traffic

Route	Direction	Description	Average Annual Daily Traffic	% Trucks
25	NB	N of County Line Int.	3,213	21
25	NB	N of Chugwater Int.	2,976	21
25	NB	S of S Wheatland Int.	3,285	21
25	NB	N of S Wheatland Int.	3,203	20
25	SB	S of Chugwater Int.	3,266	21
25	SB	S of Ty Basin Int.	3,172	21
25	SB	S of S Wheatland Int.	3,513	21
25	SB	N of S Wheatland Int.	3,348	21
313	EB/WB	WY 313 between NB off ramp & 4th St.	1,405	15
313	EB/WB	Between 4th St. & WY 321	739	15
321	NB/SB	Between WY 313 & Clay Ave.	342	15
321	NB/SB	N of WY 313	208	1
313	EB/WB	E of WY 321	159	15

Source: Wyoming Department of Transportation, 2011.

There is existing rail infrastructure in the study area which is operated by Burlington Northern Santa Fe (BNSF). The existing line generally runs north-south. Starting in Cheyenne the line goes through Horse Creek before passing through both Chugwater and Wheatland. From Wheatland the rail line goes north and connects with another BNSF line near Guernsey. This second line generally runs northwest-southeast from Torrington to Bonneville and it passes near both Douglas and Glendo. There is an at grade crossing in Chugwater that passes over WY 313 and one in Wheatland on Cole St. It is assumed that the rail operations will avoid the peak road traffic hours so not to cause significant delay at the grade crossings. Therefore, it is assumed that the rail lines will not significantly increase the frequency or volume of rail traffic and, thus, will not impact or be impacted by the construction operations traffic scenario.

6.13.2 Roadway Facilities Adjacent to the Project

The Project parcels are located east of I-25 near Wheatland and Chugwater. I-25 is the only interstate within the study area and it, consists of two lanes in each direction with a speed limit of 75 mph. The sites will be accessed from both the north and the south. At Chugwater, the site will be accessed via I-25, WY 321, and WY 313. Both WY 313 and 321 are major collectors that lead to the Project area. Near Wheatland, the site will be accessed via I-25, Mariposa Parkway, Cole St, Y-O Ranch Rd (County Road 49), and WY 316 (Antelope Gap Rd).

Other facilities that will be used include I-80, US 26, WY 34, and US 85. I-80 connects to I-25 and is the route that would be used by workers coming from Laramie to the Chugwater site. WY 34 would be used by workers coming from Laramie to the Wheatland site. US 26 connects to I-25 from Guernsey and extends through Torrington, Lingle, and Fort Laramie, and would be used by the workers in those towns to access the Project. US 85 would be used by local Torrington residents working at the Chugwater site to access the Project from the east.

The intersections that will be affected by the Project include:

- NB I-25 Off-Ramp / Mariposa Parkway (Unsignalized)
- SB I-25 Off-Ramp / Mariposa Parkway (Unsignalized)
- Mariposa Parkway / 16th St. (Unsignalized)
- 16th St. / Cole St. (Unsignalized)
- Cole St. / 12th St. (Unsignalized)
- Cole St. / Y-O Ranch Rd. (Unsignalized)
- Y-O Ranch Rd. / WY 316 (Unsignalized)
- WY 316 / 9th St. (Signalized)
- 9th St. / WY 320 (Unsignalized)
- WY 320 / US 26 (Unsignalized)
- NB I-25 Off-Ramp / WY 313 (Unsignalized)
- SB I-25 Off-Ramp / WY 313 (Unsignalized)
- WY 313 / 4th St. (Unsignalized)
- WY 313 / WY 321 (Unsignalized)
- WY 321 / WY 313 (Unsignalized)
- NB I-25 Off-Ramp / Ty Rd. (Unsignalized)
- SB I-25 Off-Ramp / Ty Rd. (Unsignalized)

All affected intersections in Wheatland and Chugwater have one lane approaches except the following:

- 9th St. / WY 320 (Signalized intersection with turn lanes at each leg)
- NB and SB I-25 Off-Ramps / Mariposa Parkway (Turn pockets)
- US 26 / WY 320 (Turn pockets)

6.13.3 Potentially Affected Roads and Highways

During Project construction, roads and highways may be impacted by vehicles hauling materials to and from the site. Contractors will comply with existing federal, state, and county requirements and restrictions to protect the road network and the traveling public. In addition, load limits will be observed at all times to prevent damage to existing paved road surfaces and structures.

6.13.3.1 Personnel Access Routes

Construction for the Project is anticipated from late 2013 through late 2019 with an anticipated peak construction workforce during September 2016. The workforce is expected to travel from Cheyenne, Fort Laramie, Guernsey, Lingle, Glendo, Torrington, Laramie, and Douglas and to both Project sites. The workforce going to the Chugwater parcel is expected to use the following access routes to Chugwater:

- Cheyenne north on I-25 to WY 313 to WY 321 to WY 313
- Laramie east on I-80 to I-25 to WY 313 to WY 321 to WY 313
- Douglas and Glendo south on I-25 to Ty Road Interchange to WY 321 to WY 313
- Wheatland south on I-25 to WY 313
- Torrington south on US 85 to WY 313
- Lingle, Fort Laramie, and Guernsey west on US-26 to I-25 to Ty Road Interchange to WY 321 to WY 313

The workforce going to the Antelope Gap parcel is expected to use the following access routes to Wheatland:

- Cheyenne north on I-25 to Mariposa Parkway to 16th St. to Cole St. to Y-O Ranch Road to WY 316
- Laramie north on US 287 to WY 34 to I-25 to Mariposa Parkway to 16th St. to Cole St. to Y-O Ranch Road to WY 316
- Chugwater north on I-25 to Mariposa Parkway to 16th St. to Cole St. to Y-O Ranch Road to WY 316
- Torrington, Lingle, Fort Laramie, and Guernsey west on US-26 to WY 320 to 9th St. to WY 316
- Douglas and Glendo south on I-25 to Mariposa Parkway to 16th St. to Cole St. to Y-O Ranch Road to WY 316

6.13.3.2 Truck Access Routes

Construction deliveries to the sites will be made by truck. If deliveries are made by rail, truck traffic would transport those deliveries from the rail to the Project site; however, as the rail delivery location is not know, it is assumed deliveries will be made only by truck. Deliveries may use the same roadways as the personnel routes unless restricted by load limits. The recommended route for long vehicles accessing the north site is to exit I-25 at Exit 73 (SH 34) and take the Frontage Road north to Cole Street to avoid the tight turns at Mariposa Parkway. These trips will be scheduled outside of the peak traffic hours. Frequent heavy truck traffic is not expected during the operations period.

Access will be coordinated with the Town of Wheatland. In particular, restrictions on the bridge at Cole St. and east of 8th St., and the bridge at Gilchrist St. east of 8th St. will be coordinated with the Town of Wheatland.

6.13.4 Traffic Analysis – Existing Conditions

In order to assess the potential traffic impacts associated with the Project, existing and future traffic conditions were analyzed both with and without the Project for three time periods: existing, construction, and operations.

The operating conditions, or Level of Service (LOS), provided by the intersections were assessed using *Highway Capacity Manual* un-signalized and signalized intersection methodologies. LOS is a term used to qualitatively describe operating conditions at an intersection based on the delay in seconds for each movement from the minor approaches and the left turns from the major street. There are six LOS classifications given with a letter designation from A to F, with A being the best operating conditions and F the worst. LOS C is typically considered acceptable for peak hour operations based on guidelines from the American Association of State Highway and Transportation Officials (AASHTO). For unsignalized intersections, the LOS is the delay going from the minor street to the major street and the worst leg LOS is taken as the overall intersection LOS. The signalized intersection LOS is defined in terms of average delay per vehicle. The method incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue.

The 2011 daily volumes were used to calculate the peak hour volumes. The peak hour percentage used for all of the roads was ten percent based on current engineering practices. For this analysis, it is assumed that the intersection volumes during the AM and PM peak hours would be slightly different in Chugwater but the same in Wheatland, thus both scenarios were analyzed for the

background analysis in Chugwater. The peak hour roadway volumes were then used to determine peak hour intersection movements used in the traffic operations analysis. The 2011 peak hour volumes indicate that most intersections in Chugwater and Wheatland operate at a LOS A, with a few at LOS B.

6.13.5 Traffic Analysis – Construction

Approximately 21,290 trucks are expected to make deliveries to the two sites over the 74-month construction period. All deliveries will be during the off-peak hours and will come from the I-25/WY 313 interchange in Chugwater and either the I-25/Mariposa Parkway Interchange or the I-25/WY 34 Interchange near Wheatland. All oversized loads will avoid peak traffic hours, holidays, and nighttime hours unless given prior approval. Suppliers, and/or haul contractors will be required to check each proposed load to verify clearances prior to hauling to ensure that no detours are necessary. The lowest clearance provided at an interchange is 14’ 7” at the I-25 / Ty Road interchange. Other interchanges have clearances of 16’ 6” or greater.

The potentially affected intersections were analyzed with and without the Project to determine impacts to the facilities due to the construction of the Project. The construction will take place from late 2013 to late 2019, with the peak analysis year of 2016.

6.13.5.1 Background Analysis

The traffic count data was projected to 2019 by increasing the volumes from the 2011 base year volumes. The growth was forecasted using WYDOT’s traffic data spreadsheet, which uses historical count data and projects it to a specified year. For the year 2019, most of the intersections operate at LOS A; however, some in Wheatland are LOS B which is still acceptable.

6.13.5.2 Total Analysis

Adding the Project-generated traffic to the background traffic yields the volumes for the analysis of the Project’s construction period. Although the peak construction period is in 2016, the analysis used 2019 background volumes to be conservative. The scenarios that generated the most traffic due to construction at each site were analyzed separately at Chugwater and Antelope Gap. The trip generation and distribution process used the following assumptions to calculate the additional turn movement volumes due to the construction of the Project:

- Estimated peak Chugwater and Antelope Gap construction workers at 275 and 152, respectively;
- Construction will occur in one daily shift with personnel arriving in the morning peak hour and departing in the evening peak hour;
- No carpooling; and
- The proposed trips were distributed as shown in **Table 6-18.**

TABLE 6-18
Trip Distribution

Departure	Destination	
	Wheatland	**Chugwater**
Chugwater	1	4
Fort Laramie	3	1
Guernsey	9	4
Lingle	7	2
Glendo	6	3
Torrington	15	42
Wheatland	40	54
Douglas	55	39
Laramie	8	26
Cheyenne	8	100
Total	**152**	**275**

Adding the site generated traffic to the background traffic yields the volumes for the analysis of the Project's construction period. Analysis during the construction period shows that intersection delay increased due to the construction traffic. However, the intersections still operate at acceptable levels with LOS B or better.

6.13.6 Traffic Analysis – Operations

The potentially affected intersections were analyzed with and without the Project to determine impacts to the facilities due to the operations at the site once construction is complete. The operations will begin in 2019, so the operations analysis year is the same as the construction analysis year.

6.13.6.1 Background Analysis

The background volumes for the operations analysis scenario are the same as those for the background construction analysis scenario. All of the intersections operate at acceptable levels of service.

6.13.6.2 Total Analysis

Adding the site generated traffic to the background traffic yields the volumes for the analysis of the Project's operations period. The trip generation and distribution process used the following assumptions to calculate the additional turn movement volumes due to the operation of the Project:

- The Project will require an estimated 31 personnel daily during one shift for operations
- All personnel will be traveling to the Chugwater site: 50 percent from the north, 50 percent from the south
- There will be infrequent heavy truck deliveries during the operations period

- All personnel will travel in their own vehicles to the Project site
- Personnel will not leave the site during the shift

The existing facilities operate at acceptable levels of service during the peak hours at intersections. The additional volume generated by the Project operations does not decrease the level of service.

6.13.7 Conclusion

The existing intersections analyzed in Chugwater and Wheatland have adequate capacity to accommodate the expected increase in traffic during the construction and operation phases of the Project. All intersections analyzed operate with acceptable levels of service both with and without the site-generated traffic. The contractor must determine the structural sufficiency of major structures and culvert crossings while planning haul routes. As necessary, arrangements to transport oversized loads will be coordinated with and approved by WYDOT. Coordination with the Town of Wheatland is required. Two bridges in the Town of Wheatland may have additional load restrictions which may require an alternate route.

6.14 Vegetation, Special Status Plants, and Rare Plant Communities

6.14.1 Regulatory Jurisdiction

Special-status plant species are recognized by federal, state, or other agencies for their rarity or vulnerability to various causes of habitat loss or population decline. Some of these species receive specific protection under federal or state endangered species legislation. “Species of concern” is an informal term that refers to those species that federal agencies believe might be in need of concentrated conservation actions. Conservation actions vary depending on the health of the populations and degree and types of threats. In some cases, only periodic monitoring of populations and threats to the species and its habitat may be needed. At the other extreme, a species may need to be listed as a federal threatened or endangered species. “Species of concern” receive no legal protection, and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species under the Endangered Species Act (ESA).

The ESA establishes broad prohibitions against “taking” endangered or threatened plant species. It is important to note that this prohibition does not extend to plants; however, by statute, it is illegal to “remove or reduce to possession” or “maliciously damage or destroy” threatened or endangered plants. Furthermore, protection for listed plants is significantly weaker on private lands, where it is illegal to “remove, cut, dig up, or damage or destroy” plants only when it is “in knowing violation of any state law or in the course of any violation of state criminal trespass law.” Stated another way, there are no federal prohibitions under the ESA for the take of listed plants on federal or nonfederal lands, unless taking of those plants is in violation of state law. There are no state laws in Wyoming that prohibit the take of plants.

6.14.2 Vegetation

The Project is in the High Plains ecological region, which is characterized by moderate relief rangeland, valleys, and terraces (Chapman et al., 2004). The physiography of this area includes irregular plains with moderate slopes, intermittent low-gradient streams, and a few large perennial streams, which mostly originate in the mountains or high relief areas.

The land is used mainly for dry land and irrigated agriculture and ranching. The Project area consists of shrub and grassland (41.4 percent), agricultural vegetation (38.3 percent), introduced and semi-

natural vegetation (14.7 percent), semi-desert land (2.9 percent), developed and other human use (1.9 percent), forest and woodland (0.8 percent), and nonvascular and sparse vascular rock vegetation (less than 1 percent) (**Table 6-12**, Land Cover figure in **Appendix B**).

6.14.3 Federally Listed Plant Species

The USFWS reports three federally listed plant species as potentially occurring in Platte and Goshen counties (USFWS, 2013; **Table 6-19**): Colorado butterfly plant (*Gaura neomexicana coloradensis*), blowout penstemon (*Penstemon haydenii*) and Ute ladies'-tresses orchid (*Spiranthes diluvialis*). Western prairie fringed orchid (*Platanthera preaeclara*) is a federally listed Threatened plant that occurs in downstream reaches of the North Platte River system in other states; however, water use for the Project is minimal and will not affect flows in the river system or this downstream species.

Blowout Penstemon - Blowout penstemon is listed as Endangered under the ESA. It is a perennial herb, less than 12 inches (30.5 cm) high, with bluish to pale lavender flowers. It grows in active sand dune habitats and is only known to occur in northwestern Carbon County and extreme eastern Goshen County. There are no records of blowout penstemon in Platte County, and is unlikely to occur within the Project area due to the lack of suitable habitat.

Colorado Butterfly Plant - Colorado butterfly plant is listed as Threatened under the ESA. This species is endemic to moist soils in wet meadows of flood plain areas. These plants are often found in low depressions or along bends in wide meandering stream channels a short distance upslope of the actual channel. It is known from Goshen, Platte, and Laramie counties. Designated Critical Habitat for the federally threatened Colorado butterfly plant is located in Platte and Laramie counties, the nearest of which is the Tee Pee Ring Creek Unit located in Platte County, more than 20 miles (32 kilometers) from the Project. There are no known records of Colorado butterfly plant occurring within the Project area.

Ute Ladies'-tresses Orchid - Ute ladies'-tresses orchid is listed as Threatened under the ESA. In Wyoming, Ute ladies'-tresses orchid is found in wet, alkaline meadows on the banks or in oxbows of perennial streams (Fertig and Heidel, 2007). Habitats are open and often dominated by grasses. Habitat is maintained by periodic flooding, grazing, or mowing. Threats to the species come from use of herbicides, overgrazing, mowing at critical times in the plant lifecycle, and loss of habitat to development or water management actions (Fertig and Heidel, 2007). There are no known records of Ute ladies'-tresses orchid occurring in the Project area, nor are there any perennial waterways within the Project area.

6.14.4 Construction and Operation Impacts

Because of a lack of habitat within the Project area, it is unlikely any listed plant species are present. Road and collector lines may impact drainages at crossings. These crossings will be assessed for Clean Water Act permitting compliance. Through that assessment, drainages will also be assessed for the potential presence of listed plant species, and the USFWS will be consulted if conditions exist that could support these species.

Operation of the Project will be limited to access roads and facilities, and will not involve work in drainages that could support listed plant species. Therefore, operation is not expected to impact any listed plant species.

TABLE 6-19
Listed Threatened and Endangered Plant Species in Platte and Goshen Counties, Wyoming

Species/Listing Name	Scientific Name	Status	Habitat	Potential for Occurrence
Blowout penstemon	*Penstemon haydenii*	Endangered	Sandhills of Nebraska and isolated areas of Wyoming (Carbon County) in sandy, blowout locations with little to no vegetation present.	Unlikely—no observations in Platte County; observed in extreme eastern Goshen County.
Colorado butterfly plant	*Gaura neomexicana coloradensis*	Threatened	Wet meadows and riparian areas.	Unlikely- the Project is outside designated Critical Habitat.
Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened	Along riparian edges, gravel bars, old oxbows, high flow channels, and wet meadows along perennial steams. It typically occurs in stable wetland and seep areas.	Unlikely due to lack of adequate habitat.

6.15 Cumulative Impacts

Potential direct and indirect impacts were analyzed in this application. The environmental impacts evaluation of the Project indicates that, although the construction and operation impacts would not result in significant or adverse resource impacts, minor impacts could occur to some resources; therefore, a cumulative impacts assessment was completed to determine if the minor impacts of the Project could, along with other actions in the area of site influence under the jurisdiction of the Industrial Siting Division, contribute to a significant or adverse cumulative impact. The cumulative impacts analysis is organized by resource.

6.15.1 Approach to Cumulative Impacts Analysis

The ISA lacks guidance that defines or details requisite cumulative impact analysis methodology. Therefore, the Council on Environmental Quality (CEQ) was queried to identify cumulative impact methodology and guidance (CEQ, 1997).

Based on a review of CEQ guidance, the following factors were considered for the Project.

- The direct and indirect impacts of the Proposed project
- Which resources, ecosystems, and human communities are affected
- Which impacts to these resources are important from a cumulative perspective

Based on additional CEQ guidance, cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions. Cumulative impacts would occur if incremental impacts of the Project, added to the environmental impacts of past, present, and reasonably foreseeable future actions, would result in adverse impacts to regional resources. Cumulative impacts could only occur for those resources that are affected by the Project and by other actions whose impacts occur within the same timeframe.

6.15.2 Geographic Scope of Cumulative Analysis

Cumulative environmental impacts, as defined in the ISA Rules and Regulations, means the combined impacts upon the environment to the social or economic conditions resulting from construction and operation of the proposed industrial facility and from construction and operation of other ongoing or proposed developments in the area of site influence.

Proposed developments to be included in cumulative impacts include those developments that are actively planning and have public information available or may be actively seeking a permit under the Wyoming ISA. Therefore, the geographic scope of cumulative impacts analysis is generally based on the area of site influence of each resource. For some resources, that area is limited to the Project area, for others such as scenic resources, that area extends beyond the Project's boundaries. Note cumulative impacts presented here are limited to those environmental resources evaluated in this section. Socioeconomic impacts, both direct and cumulative, are presented separately in Section 5.

6.15.3 Timeframe

Potential impacts from the construction of the Project will be relatively long-term, occurring over the 74-month construction period. However, impacts to soils, air quality, vegetation, and noxious weeds may extend several months beyond the initial construction period until re-vegetation is accomplished. Potential impacts associated with operation of the proposed Project would continue for approximately 25 years.

6.15.4 Past, Present, and Reasonably Foreseeable Actions

It is important to note that the entire Project area is privately held land. Therefore, the actions within the Project boundaries that could cumulatively add to impacts would primarily be those actions taken by private landowners. In evaluating the cumulative impacts of other projects at and around the Project, relevant historical events in the region were considered, and present and reasonably foreseeable future actions under the jurisdiction of the ISA.

Some of the past, present, and reasonably foreseeable activities affecting Platte and Goshen Counties land resources include the following, none of which are under the jurisdiction of the ISA:

- Operation and maintenance of Laramie River Station power plant
- Pipeline construction
- Electric transmission line construction
- Rodeo events in Cheyenne and Wheatland

6.15.5 Cumulative Impacts

Construction of the Project along with the other listed projects has the potential to contribute to cumulative impacts, especially if the schedules are concurrent.

6.15.5.1 Air Quality

Air quality in the cumulative impact area is generally good, and the area is not in violation of any National Ambient Air Quality Standards (NAAQS). No simultaneous project construction activities would incrementally increase local impacts to air quality from fugitive dust emissions from construction. Operation

6.15.5.2 Noise

The area for potential cumulative noise impacts is the Project area boundary and extending 1-mile buffer. Existing sound disturbances within the Project area are limited to those associated with ranching activities, very limited recreation, aircraft flights, and traffic on I-25. Other projects are too

far away to cumulatively influence sound levels in the area of site influence. Noise generated by onsite construction activities will not reach the nearest populated areas, and thus will have no cumulative impact on typical background levels. Operational noise will not substantially contribute to nearby residential areas and no cumulative effect would occur to the residents in the area of site influence.

6.15.5.3 Cultural Resources

The Project layout has been designed to avoid impacts to known cultural resources listed on the NRHP. Pre-construction surveys will ensure that yet unidentified register-eligible resources will be avoided. Therefore, implementation of this Project would not contribute to any regional cumulative impacts to cultural resources.

6.15.5.4 Surface and Ground Water

There will be localized disturbance of soils associated with construction of facilities at turbine sites and access roads and along the transmission line. These impacts will be minimized by measures designed to guard against soil erosion that could impact downstream waterways. Agricultural activity such as planting, harvesting, and use of dirt roads is part of the ongoing baselines of activities potentially contributing to soil erosion. No other foreseeable action will contribute to cumulative impacts on soil resources or geologic hazards within the Project area. Cumulative impacts are not expected to be significant.

Water will be obtained from sources that either have an existing senior water right or through new sources that will not adversely impact the North Platte River. Additionally, construction activities are not anticipated to result in discharge into surface waters. Existing and future development, livestock grazing, and transportation corridors all contribute to cumulative impacts on surface water through some level of increased sedimentation.

After the Project is operational, minimal quantities of water will be needed. Implementation of mitigation measures to control runoff during construction and operation of the Project will prevent significant impacts to surface waters from erosion and sedimentation. In addition, implementation of BMPs for handling, storage, and use of hazardous materials and adherence to applicable permits during construction and operation of the Project will prevent significant cumulative impacts on surface and ground water resources. Due to the negligible impacts associated with this Project, water quality and quantity impacts are not expected to contribute to any significant impacts on a cumulative scale.

6.15.5.5 Land Use and Recreation

Appropriate planning and evaluation to address cumulative impacts is conducted by the State of Wyoming through the Industrial Siting Application to ensure that the proposed Project is compatible with ongoing activities and land uses. The Projects' contributions to cumulative impacts on land use will be small or negligible unless a significant permanent, uncompensated loss of the current productive use of a site occurs or if future uses are precluded. Land in the Project area is used as rangeland for livestock grazing and cropland. The Project is generally compatible with the aforementioned uses, which will be only slightly affected in the immediate vicinity of Project infrastructure.

The Project will be constructed and operated in accordance with county land use and building requirements; therefore, the Project will cause no significant cumulative impacts that are detrimental to established uses of the surrounding area. The minimal incremental increase in visitation and use of regional recreational areas during construction of the Project is not anticipated

to impact recreational use cumulatively. The small number of workers at the Project area at any one time is not likely to increase cumulative impacts to land use and recreation.

6.15.5.6 Wetlands and Waters of the United States

The location of the major project features of wind energy projects may be adjusted to avoid or significantly reduce potential impacts to jurisdictional waters of the United States and wetlands. All drainage crossings will be permitted as appropriate with the USACE, and be designed to ensure minimal impacts. No significant adverse impacts to wetland and water bodies are anticipated from construction or operation of the Project. Therefore, implementation of the Project will not significantly impact jurisdictional waters of the United States and will not contribute significantly to cumulative impacts to these jurisdictional features.

6.15.5.7 Scenic Quality

The Project setting is relatively free of large-scale industrial development. Linear infrastructure such as pipelines and transmission lines cross the area, but no other wind energy projects or large developments exist. Therefore, the Project's impacts will primarily be direct impacts. Projects considered for cumulative analysis do not have the capacity for substantial contribution to scenic quality impacts. Future transmission lines passing through or near the Project will contribute to scenic quality impacts, but those impacts are not expected to be beyond those of the Project itself. As a consequence, these projects will not combine with the turbines proposed as part of the Project to create cumulative impacts on views that are more substantial than the impacts created by the proposed Project alone.

6.15.5.8 Wildlife

Similar to scenic quality, few projects in the area have recently or are expected to have substantial impacts on wildlife. The primary factor contributing to the impacts on wildlife has been and will continue to be land use. Land use is not expected to change over the life of the Project; therefore, substantial changes to wildlife inhabiting and using the Project area is not expected to change. The Project will permanently reduce existing habitat by a small amount relative to the surrounding landscape, the effect of which will vary among species. Future projects in this region may lead to additional cumulative impacts to wildlife, but none of the projects considered are expected to pose a significant cumulative impact to wildlife. Post-construction monitoring will lead to better understanding of direct and indirect, as well as cumulative wildlife impacts, to better develop and implement mitigation strategies and measures to further reduce cumulative wildlife impacts.

6.15.5.9 Aquatic Systems

The Project is located outside of perennial streams and impacts are expected to be minor. Construction of linear infrastructure projects has the potential to add cumulatively to the number of drainage crossings, and therefore downstream aquatic systems. Due to the anticipated negligible impacts to aquatic resources associated with this Project during construction and operation, water quality and quantity impacts are not expected to contribute to any significant impacts to aquatic resources on a cumulative scale with the few other projects with potential to impact aquatic systems.

Section 7
Controls, Mitigation, and Monitoring

7.0 Controls, Mitigation, and Monitoring Measures

A number of specific mitigation measures will be implemented to alleviate impacts related to construction and operation of Wyoming Wind & Power, LLC's (WW&P's) Wyoming Wind Farm Project (Project). These measures are described in the following sections.

7.1 Controls

The following control measures, in combination with setback distances, significantly reduce the likelihood of the public coming within a hazardous distance from turbine blades and electrical equipment. The Project will be designed, constructed, and operated to adequately restrict public access and minimize impacts.

7.1.1 Avoidance

WW&P developed a site assessment of known and identified environmental constraints across the entire Project site and used this information in a spatial context to determine Project size and to site facilities. The process of identifying constraints and modifying facility plans to accommodate those constraints was an iterative process that resulted in a number of layout revisions over the course of months. The Project incorporated environmental constraints and located wind turbines and appurtenant infrastructure during the preliminary design to avoid impacts to raptor nests, and visually sensitive or aesthetically important areas. The resulting site plan considers environmental and land use constraints and uses areas that are most appropriate for Project development.

7.1.2 Prevention

Primary among the means of preventing hazards described herein will be adherence to appropriate design and construction protocols such as the International Electrotechnical Commission (IEC) 61400-1, the IEC's International Standard on wind turbines (IEC, 1999). This will ensure that the load assumptions, design, construction standards, and safety features are in accordance with industry norms and benefit from the experience of many manufacturers and operators.

A second important form of prevention is the establishment of a skilled workforce and implementation of effective facility-wide maintenance, monitoring, compliance, and security programs. This includes the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) / Spill Prevention Control and Countermeasure SPCC Plan, Emergency Response Plan, and Fire Protection and Prevention Plan, and consultation with appropriate regulatory agencies such as the Federal Aviation Administration (FAA) and National Telecommunications and Information Administration (NTIA).

7.1.3 Exclusion

Every hazard identified herein decreases as a function of distance. In many cases, therefore, it has been possible to reduce or eliminate hazards to persons and facilities by prohibiting or controlling their presence in the area of site influence. Where multiple hazard areas overlap, the largest distance governs. The Project area will have controlled access, and access to the facilities will be limited to persons who are knowledgeable of safety measures and potential risks.

7.1.4 Restrict Public Access

The Project and appurtenant facilities will be located on private fee lands. Public access will be limited to that granted by the landowners. Each turbine tower will have a locked entry door at ground level and an internal access ladder with safety platforms for access to the nacelle, to prevent unauthorized individuals from climbing the tower. Step-up transformers, if part of the final design, will be located within locked cabinets at the base of each tower. Additionally, WW&P will restrict public access to any related or supporting facilities that could pose a potential safety threat (i.e., substations). The substations will be located within a fenced area with a locked gate.

7.1.5 Health and Safety Standards

WW&P has adopted an Environmental, Health, and Safety (EHS) Plan from its parent company, ThinkTank Holdings, which outlines overall expectations for EHS performance within the company and on the Project site for all employees, contractors, and subcontractors. While this plan is not currently specific to wind energy development, construction, operation, and decommissioning, WW&P is currently drafting additions to the EHS Plan that reflect industry best practices for health and safety.

The current EHS Plan outlines an Injury and Illness Prevention program, an Unlawful Harassment and Equal Employment Opportunity program, and a Vehicle Policy. The EHS Plan outlines protocols relating to compliance, communication, hazard assessment and correction, accident investigations, training, and recordkeeping and is enforced by a program administrator. .

7.2 Mitigation Measures

Adequate safety devices, company operational policies, and testing procedures will be in place to assure safe construction and operation of the Project. In addition, a broad array of measures has been proposed to mitigate the potential hazards associated with the Project and the exposure of persons, animals, and facilities in the area of site influence. These measures can generally be classified as avoidance, prevention, and exclusionary actions.

7.2.1 Failure of Machinery and/or Structures

Mitigation or prevention of impacts from mechanical failure of the Project's components will be achieved by a combination of planning and controlled site access. By following industry guidelines and turbine certification processes, the most safe, reliable, and state-of-the-art facilities will be constructed. Wind turbine generators (WTGs) are equipped with multiple safety systems as standard equipment. For example, rotor speed is controlled by a redundant pitch control system and a backup disk brake system. Critical components have multiple temperature sensors and a control system to shut down the WTG and take it off-line if an overheating condition is detected. Lightning protection is standard on the WTGs, and a specially engineered lightning protection and grounding systems will be installed for the Project.

7.2.1.1 Safety Setbacks

The turbines have been sited at locations that are a minimum of 1.1 times the tip height from public roads. The nearest turbine to any public road will be no closer than a setback of 1.1 times the tip height, which meets or exceeds the county requirement of 1.1 times the tower height. Additional county requirements establish greater setback distances from Interstate 25 (I-25) and select state highways, all of which will be met or exceeded. Furthermore, the operations team will perform an annual anchor bolt testing to further minimize this risk.

7.2.1.2 Blade Throw

During construction, WW&P will follow the manufacturers' recommended handling instructions and procedures to prevent damage to towers or blades that could lead to failure. In addition, certification of the wind turbine to the requirements of IEC 61400-1 will ensure that the static, dynamic, and defined-life fatigue stresses in the blade will not be exceeded under the combined load cases expected at the Project site. The standard includes safety factors for normal, abnormal, fatigue, and construction loads. This certification, together with regular periodic inspections, will give a high level of assurance against blade failure in operation.

Nonetheless, a potential hazard could occur if a rotor blade breaks and parts are thrown off. This is referred to as blade throw and could occur as a result of rotor overspeed, although such an occurrence is extremely rare and happens mostly with older and smaller turbines. Material fatigue can also cause a blade to break. While persons, animals, and facilities within the blade throw hazard zone could theoretically be at risk of being struck, the Project will take all available design and maintenance measures practical to ensure the WTG is operating safely. Blade throw risk will be minimal due to the distance of WTGs from residences and public roads, and the rarity of it occurring.

The potential for blade fragment throw is similar to ice throw concern (see below). Lightning strikes causing blade failure have been documented. Acts of vandalism such as gunshots also could conceivably damage rotor blades, causing a blade fragment to be thrown. Persons, animals, and facilities within the blade fragment throw hazard zone could theoretically be at risk of being struck. Blade fragment throw risk will be minimal due to the distance of WTGs from residences and public roads and the rarity of its occurrence. The distances presented for ice throw provide a reasonable approximation of the hazard zone for blade fragment throw as well

7.2.1.3 Ice Throw

Under the correct conditions, ice may accumulate on the tower, nacelle, or blades. If the blades are rotating, fragments can break free and be thrown. The distance ice may be thrown depends on the rotational speed of the blade, mass of the ice, wind speed and direction, aerodynamic properties of the ice fragment, and air density (among other variables). Given these variables, it is inherently difficult to determine an appropriate distance to set back a turbine to protect against ice throw. Nonetheless, some estimates can be made and, combined with observational data, effective setbacks can be recommended. Mathematical equations and statistical calculations indicate the probability of an ice throw incident is very low. When combined with the rural nature of the Project site, and the fact that ice throw greater than 120 meters(389 feet) has not been documented, no substantive public risk exists.

7.2.1.4 Wind Turbine Tower Collapse

Tower collapse is extremely unlikely because the towers and foundations will be designed in accordance with the Wyoming State Building code (which has adopted the provisions of the International Building Code [IBC]) and the seismic provisions contained in this code that apply to the Project site location. The towers and associated foundations will be located outside of areas prone to flooding and designed to withstand a 3-second, 130-mph gust per IEC standards. The Project will employ a modern turbine design, including a safety system ensuring that the WTG is shut down immediately at the onset of mechanical disorders such as nacelle vibration, overspeed, grid electrical disorders, or loss of grid power. Turbine towers will incorporate structural designs capable of withstanding large seismic events, high winds, and flooding. Because all turbine structures will employ current IEC construction standards, the potential hazards associated with tower collapse are minimal.

In the extremely unlikely event of a turbine tower collapse, the potential risk to the public would be negligible because the Project will be constructed on property with controlled access across private land, and no turbine will be constructed within a 1.1 tip height from the nearest public road.

7.2.2 Air Quality

The following mitigation measures will be followed to reduce dust and air emissions from the Project's construction-related activities:

- Construction-related dust disturbance will be controlled by periodic application of water or other dust suppressants to all disturbed areas along the active construction right-of-way (ROW) and access roads.
- Vehicles and other equipment will be maintained and kept in good repair to minimize emission of exhaust gases.
- As part of site orientation, the balance of plant (BOP) contractor will present guidelines for minimizing engine idling. This will be a part of the orientation given to all contracted workers.
- Any stationary sources associated with construction activities requiring Wyoming Department of Environmental Quality-Air Quality Division (WDEQ–AQD) permits will be controlled in accordance with relevant regulations and permit conditions.

7.2.3 Noise

Although no impacts to residents are anticipated, the following mitigation measures will be implemented to reduce noise and the potential for annoyance from the Project's construction-related activities:

- WW&P has incorporated a minimum setback of 0.25 mile from all residences.
- Construction and hauling equipment will be maintained adequately and equipped with appropriate mufflers.
- Noisy construction activities, such as blasting or pile driving, will be limited to daylight hours if feasible.
- Stationary construction equipment (air compressors/concrete batch plant/generators) will be located away from residences to minimize noise impacts.

7.2.4 Erosion Control

Erosion control measures and reporting measures will be prescribed in the Wyoming Pollutant Discharge Elimination System (WYPDES) construction stormwater permit, and administered through construction specifications and BOP contractor implementation, and will include monitoring site-specific erosion control measures for effectiveness to minimize the impacts to soils during and after construction. Additional proposed mitigation measures and best management practices (BMPs) are discussed in Section 7.2.8, *Surface Water and Groundwater*.

Plans for alleviating soil loss could include but are not limited to the following:

- An erosion control plan that addresses excavation, grading, and placement of erosion control measures during and after construction. On completion of the construction activities, all work areas, except any permanent access roads, will be regraded so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion. Revegetation will also be implemented for all

areas temporarily disturbed by construction of the facility in conformance with landowner agreements.

- Construction zones and areas to be disturbed will be well-defined, limited in extent, and managed by onsite inspectors and construction managers.
- Erosion control measures will be periodically inspected, and as required after precipitation events. Erosion control measures will be repaired or replaced as necessary.
- Where necessary, berms and other water-channeling measures will be used to direct stormwater runoff away from sensitive areas or to appropriate detention ponds.
- Barriers and other measures, including hay bales, silt fences, and straw mulches, will be used to minimize and control soil erosion.
- Side slopes created by grading will not exceed the soil strength limits, as prescribed by the final road design and turbine layout engineering design. Potentially unstable areas will be identified and avoided.
- Mitigation for potential rapid erosion and gullying will include installing erosion protection structures in areas identified as potentially subject to rapid erosion, installing properly sized culverts at drainage crossings, and avoiding placing structures or roads in areas that are susceptible to rapid erosion or gullying.
- The seismic site class, according to the IBC, will be determined during subsequent geotechnical investigations. Structures and turbine foundations will be designed to withstand anticipated seismic loads.

7.2.5 Cultural Resources

The following mitigation measures will be followed to reduce cultural resources impacts from the Project's construction-related activities:

- Known cultural resource locations eligible or unevaluated for listing on the National Register of Historic Places (NRHP) shall be avoided by marking them on construction drawings as "no entry" areas and by flagging them in the field.
- Because the Project will be built over several years, the Project will perform a Class III pedestrian survey in advance of each construction season, likely the year before, for all work areas with expected construction activity in the coming year. The survey results will be shared with the State Historic Preservation Office (SHPO) to identify and avoid register-eligible resources.
- If, during micrositing and final site design, Project features are required to be located outside of an area inventoried for cultural resources, additional surveys shall be completed to ensure avoidance of unevaluated or eligible sites.

7.2.6 Topsoil and Vegetation

WW&P and its contractors will exercise care to preserve the natural landscape and will conduct construction operations to prevent any unnecessary damage to, or destruction of, natural vegetation. Interim and Final Reclamation Plans developed for the Project will detail the existing site conditions, including topography, vegetative cover, climate, and land uses. These plans will be submitted to the Industrial Siting Division (ISD) for review prior to construction, and will contain the baseline by which future reclamation and restoration efforts will be measured. These plans will be

developed once the final design has been determined; however, general approaches and procedures are presented below.

WDEQ-Land Quality Division (LQD) practices, though not directly applicable to the Project, can provide best practices guidance. The practices support topsoil handling and revegetation techniques oriented towards ensuring that activities preserve the integrity of the topsoil by minimizing the mixing of productive topsoil with the less productive subsoil during grading, trenching, and backfilling, minimizing risk of contamination, and ensuring that effective revegetation is completed. Where appropriate in temporarily disturbed areas, WW&P will incorporate methods to preserve topsoil by placing topsoil in a discrete row or pile along the edge of the disturbed area. Topsoil will be kept segregated from subsoil excavated from the trench or temporarily cleared area. Topsoil segregation will facilitate revegetation of these areas by preserving the more fertile topsoil and native seed bank.

Following completion of construction activities, all work areas, except any permanent access roads, will be regraded so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion. The methods described below are recommended for all areas of temporary ground disturbances throughout the Project area.

About one-third of the Project area is in cultivated crops, and temporarily disturbed areas are expected to return to cultivation following construction. For the remaining grassland and shrublands, a Project-specific seed mixture will be developed in consultation with the Platte County Resource District. WW&P will use this seed mixture to revegetate all temporarily disturbed areas inside the Project boundary, with the exception that each respective landowner will have the final authority on the implemented seed mixture. It is expected the seed mixture will be appropriate for the primary land use of ranching activities.

Re-seeding and mulching will be accomplished using commercially accepted practices as appropriate for the soil and terrain being restored. Temporary and permanent seeding should be done during the appropriate seasons and moisture regimes, following the onset of winter and spring seasonal rains. Disturbed, unseeded ground may require chemical or mechanical weed control in May or June, before weeds have a chance to go to seed.

Erosion control measures may be installed after seeding and may include filter bags, sediment fences, silt curtains, sediment traps, or other similar devices or impervious materials. Erosion control measures will be implemented until soils are stabilized by a vegetation growth from seed planting.

The following mitigation measures will be followed to reduce impacts to native vegetation from construction-related activities:

- WW&P and its contractors will exercise care to preserve the natural landscape and shall conduct construction operations (including all construction-related activities and WW&P's designated access roads/trails and staging areas) to prevent any unnecessary damage to, or destruction of, natural vegetation features.
- Disturbed soil surfaces will be stabilized with the appropriate native seed mixture as soon as practicable after construction. Areas of soil disturbance will be seeded with the referenced seed mixture or as agreed with the landowner.
- Landscape fabric, cellulose, straw mulch, or other suitable erosion control materials will be used according to manufacturer/supplier specifications for application to ensure adequate temporary erosion control.

While ground-disturbing activities inherently increase the risk of weed introduction, these risks can best be mitigated through timely revegetation. All temporarily disturbed areas not used for Project infrastructure during construction will be reseeded in accordance with the plan described above. Upon completion of construction, all staging and laydown areas will be rehabilitated.

To limit infestations and new populations of unwanted vegetation, the disturbed sites will be monitored and any colonizing noxious weeds will be controlled using mechanical or chemical methods. Overall, impacts to native vegetation communities will be minimized through BMPs.

7.2.7 Surface Water and Ground Water

Under the WYPDES, construction stormwater permitting is required for projects that will disturb more than 5 acres. The Project will require a WYPDES Notice of Intent (NOI) to be prepared for a general construction permit for stormwater discharges, as well as a SWPPP for the construction phase. The construction SWPPP will focus on sedimentation and erosion controls during construction, and will set forth a schedule for regular inspections of appropriate controls at the construction site.

Construction activities shall be performed using methods that prevent entrance or accidental spillage of solid matter, contaminant debris, and other objectionable pollutants and wastes into flowing streams or dry watercourses, lakes, and underground water sources. Such pollutants and wastes include refuse, garbage, cement, concrete, sanitary waste, industrial waste, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution. These prevention activities will be detailed in the Project SWPPP.

The following mitigation measures will be followed to reduce impacts on surface water and groundwater resources from the Project's construction-related activities:

- Construction activities shall be performed using methods that prevent entrance or accidental spillage of solid matter, contaminant debris, and other objectionable pollutants and wastes into flowing streams or dry watercourses, lakes, and underground water sources. These prevention activities will be detailed in the Project SWPPP.
- Borrow pits, if required, shall be excavated so that water will not collect and stand therein. Before being abandoned, the sides of borrow pits will be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent, undisturbed terrain into the pit or borrow area, giving a natural appearance.
- Any remnant soil waste piles will be shaped to provide a natural appearance.
- Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on streams or watercourses will not be performed without prior approval by landowner. A dewatering permit will be obtained from the WYDEQ or Wyoming State Engineer's Office (WSEO) if needed.
- Excavated material or other construction materials will not be stockpiled or deposited on or near stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by storm runoff or can, in any way, encroach upon the actual water body itself.
- Turbidity control methods such as settling ponds, gravel filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods shall be used to treat wastewaters from construction operations before they enter streams, watercourses, or other surface waters. Any such wastewaters discharged into surface waters shall be essentially free of settleable material.

7.2.8 Land Use and Recreation

The following mitigation measures will be followed to reduce land use and recreation impacts from construction and operation-related activities:

- Hunting, where permitted by the landowner, may be restricted during construction for worker safety, and may continue on private lands during Project operations as per the landowner lease agreements.
- To the extent feasible, the contractor will limit movement of crews, vehicles, and equipment on access roads to minimize damage to property and disruption of normal land use and recreation activities.
- The contractor will maintain all fences and gates during the construction period. Any fence or gate damaged during construction will be repaired immediately by the contractor.
- The contractor will eliminate, at the earliest opportunity, all construction ruts that are hazardous to agricultural or ranching operations and/or movement of vehicles and equipment. Such ruts will be leveled, filled, and graded or otherwise eliminated in an approved manner. Damage to ditches, tile drains, culverts, terraces, local roads, and other similar land use features will be corrected, as necessary, by the contractor. The land and facilities shall be restored as nearly as practicable to their original condition, and in accordance with the reclamation plan and landowner lease terms.

7.2.9 Wetlands and Other Waters of the United States

Micrositing appurtenant linear features during the final design phase will avoid, prevent, or minimize potential impacts to wetlands and water bodies. The Project shall be constructed in compliance with the Clean Water Act (CWA), where applicable.

Project layout will be designed to avoid or minimize impacts to waters of the United States by locating facilities outside of delineated waters of the United States ordinary high water mark, where practicable. It is anticipated coverage under Nationwide Permit 51 – Land-Based Renewable Energy Generation Facilities will be sought. That permit requires pre-construction notification of the local U.S. Army Corps of Engineers (USACE) regulatory office before dredge or fill activities may occur. A formal waters of the United States survey will be completed prior to construction. All streams and drainages that are jurisdictional under the CWA will be mapped and evaluated.

BMPs such as culverts shall be used to minimize adverse effects to waters of the United States from road and power collection line construction.

Section 401 state water quality certification regulatory requirements may apply to the Project because of the discharges of dredged or fill materials into jurisdictional waters of the United States. A Section 401 water quality certification may be required to demonstrate that any Project construction activities (e.g., discharge of dredged or fill materials) will not violate the state's water quality standards or result in adverse long-term or short-term impacts on water quality.

A WYPDES NOI shall be prepared for a general construction permit for stormwater discharges. In addition to the NOI, a SWPPP shall be prepared for the construction phase at the Project site. The construction SWPPP will focus on sedimentation and erosion controls during construction and will set forth a schedule for regular inspections of appropriate controls at the construction site.

7.2.10 Visual Resources

The following mitigation measures will be followed to reduce visual resources impacts from construction-related activities:

- WW&P and its contractors will exercise care to preserve the natural landscape and will perform construction operations to prevent any unnecessary damage to, or destruction of, natural features.
- Construction routes not required for operations and maintenance access will be restored as closely as possible to the original condition, pending landowner consent. The surfaces of such construction trails will be scarified as needed to provide a condition that will facilitate natural revegetation, provide proper drainage, and prevent erosion. Additionally, access road edges will be reclaimed where possible, but remain compacted to allow for maintenance crane access.

7.2.11 Wildlife Resources

The following Wyoming Game & Fish Department (WGFD)-recommended measures were followed in the planning and siting of the Project to minimize wildlife impacts:

- The Project is not within greater sage grouse core area, nor are there any known greater sage grouse leks within 2 miles of the Project boundary.
- Review of the statewide wind energy/wildlife conflict map shows the Chugwater parcel is entirely within the “Minimal Environmental Conflicts” area. The majority of the Antelope Gap parcel is also in that area, with only a small portion falling within the “Sensitive” area.
- The Project is within habitats/areas already affected by other forms of development. The majority of lands impacted by the Project are currently in either row crop agriculture (wheat) or are grazed.
- The nearest wildlife habitat management area is Grayrocks Wildlife Habitat Management Area, located north of the Antelope Gap parcel, along the Grayrocks Reservoir. The nearest Project facility will be more than 4 miles from this management area.
- The nearest National Wildlife Refuge, the North Platte National Wildlife Refuge, is located approximately 30 miles east of the Project just over the state line in Nebraska.
- There are no documented locations of federally listed species within the footprint of the Project, nor is there suitable habitat. Water depletions will be minor and are not expected to affect species downstream in the Platte River system.
- Any construction/development activities within 2 miles of the perimeter of occupied plains and Columbian sharp-tailed grouse leks will be suspended from April 1 to July 15.
- Turbines and all related aboveground infrastructure, including roads, will occur outside a 0.25-mile (no surface occupancy) distance from the perimeter of any plains sharp-tailed grouse lek.
- A portion of the Project lies within big game crucial winter ranges. In those areas, construction activity will be suspended from November 15 to April 30.
- WGFD’s WISDOM database indicates no major big game migration corridors are present within the Project area.
- To the extent practicable, roads and fences will not bisect or run immediately adjacent to any natural water feature, to avoid preventing wildlife from reaching adjacent habitat.

- To the extent practicable, herptile habitats, such as fallen trees, prairie dog colonies, and potential basking rocks, will be left intact.
- No Species of Greatest Conservation Need (SGCN) amphibians or reptiles were found during baseline surveys. Opportunistic reptile and amphibian observations will be recorded during waters of the United States surveys.
- Developers and their contractors will be instructed to follow posted speed limits to reduce collisions with wildlife.
- Where feasible, power lines collecting electricity from turbines will be underground. Recommendations of the Avian Power Line Interaction Committee (APLIC) (1994, 2006) will be followed for any required aboveground lines, transformers, or conductors.
- Within wind generation project area boundaries, overhead power or collector line crossings of naturally occurring perennial streams, lakes, reservoirs, riparian corridors, and large wetlands will be avoided where feasible.
- If guyed meteorological towers are constructed, bird diverters will be attached to guy wires per manufacturer specifications.
- The Project will not directly impact perennial water bodies.

Two years of baseline data have been collected at the Antelope Gap parcel, and 1 year has been collected at the Chugwater parcel. WW&P, in consultation with WGFD, has committed to complete a full 2 years of study at the Chugwater parcel before turbines are installed. WW&P will share the survey reports and data with WGFD to determine if additional measures are recommended to further minimize wildlife impacts.

WW&P has been in consultation with the U.S. Fish and Wildlife Service (USFWS) with respect to potential impacts to eagles, and has incorporated the agency's input into survey design and data evaluation. WW&P will continue to collect data on eagle nesting and use, and will consult with the USFWS on the results.

7.3 Monitoring Programs

WW&P, in cooperation with WGFD and the private landowner, will develop a Conservation Plan to study and monitor wildlife and habitat conditions. To the extent practical, the Plan will incorporate WGFD's guidance on protocols and target species. WW&P will work with landowners to ensure access will be sufficient to execute the Plan. WW&P commits to have the Plan finalized prior to commercial operation.

7.3.1 Avian and Bat Fatality Monitoring

In addition to the wildlife mitigation and avoidance measures described above, WW&P's monitoring study will estimate the annual number of avian and bat fatalities attributable to wind turbine collisions for the first 3 years of operation. This information will be used to determine whether estimated fatality levels for the Project are high, moderate, or low compared to other regional wind energy facilities. The proposed monitoring study will conform to industry standards in the western United States.

7.3.2 Raptor Nest Monitoring

WW&P will complete raptor nest surveys to identify new nests and determine annual status of nests within 1 mile of the Project area for 1 year of operation where landowner access is obtained.

Surveys will be completed from late April through early July, and will be focused within the 1-mile-buffer around active construction.

7.3.3 Technical Advisory Committee Review

A Technical Advisory Committee (TAC) will review the monitoring protocols, assess study results, and prepare recommendations for WW&P for the first 3 years of operation. The TAC will be composed of representatives from WGFD resource specialists, and representatives designated by WW&P.

7.3.4 Employee Orientation Program

Construction workforce members will attend a new employee orientation program, in which they will be provided information to enhance wildlife awareness, minimize impacts to wildlife, and understand their role in compliance with WW&P permit conditions and commitments. Additionally, personnel will be instructed on what to do when encountering dead or injured wildlife during construction.

7.4 Worker, Environmental, and Facility Controls

There are no specific health and safety standards related to the siting or operation of wind energy facilities. Nonetheless, in an effort to prevent personal injury and/or property or environmental damage, conditions or actions that may put workers, the environment, or the facility at risk have been identified. WW&P has taken measures to minimize the potential for an incident to occur, and will implement plans to address incidents if they do occur. Careful planning and design of the facility and its components are in place to protect both workers and the general public during construction and operation of the facility.

7.4.1 Occupational Hazards

Construction and operations workers at any facility are subject to risk of injury or fatality from physical hazards. While such occupational hazards can be minimized when workers adhere to safety standards and use appropriate protective equipment, fatalities and injuries from on-the-job accidents can still occur. Occupational health and safety are regulated at the federal level through Occupational Safety and Health Administration (OSHA) (29 USC 651 *et seq*.). Wyoming has additional laws and regulations that build on the federal law. WW&P firmly believes that workplace accidents and injuries are preventable, and that a zero injury and illness culture at every worksite is a fundamental aspect of EHS excellence. WW&P's EHS will present overall expectations for EHS performance on the Project site for all employees and contractors.

Some of the occupational hazards associated with wind energy projects are similar to those of the heavy construction and electric power industries, while others are unique to wind energy projects (e.g., heights, high winds, energized systems, and rotating/spinning equipment). In particular, the hazards of installing and repairing turbines can be similar to those of building and maintaining bridges and other tall structures.

The WTG manufacturer will provide an O&M manual that will include system safe operating limits and descriptions, startup and shutdown procedures, alarm response actions, and an emergency procedures plan.

WW&P and its subcontractors will comply with all applicable local, state, and federal safety, health, and environmental laws, ordinances, regulations, and standards. Some of the main laws, ordinances, regulations, and standards designed to protect human health and safety that will be reflected in the design, construction, and operation of the Project include:

- Occupational Safety and Health Act of 1970 (29 USC 651, *et seq*.) and 29 CFR 1910, Occupational Safety and Health Standards;
- Americans with Disabilities Act (ADA) for accessibility at the O&M Building;
- Uniform Fire Code Standards;
- Uniform Building Code;
- National Fire Protection Association (NFPA), which provides design standards for the requirements of fire protection systems;
- National Institute for Occupational Safety and Health (NIOSH), which requires that safety equipment carry markings, numbers, or certificates of approval for stated standards;
- National Electric Safety Code;
- American Concrete Institute Standards;
- American Institute of Steel Construction Standards;
- American Society for Testing and Materials; and
- National Electric Code.

7.4.2 Public Safety

Warning signs will be posted along the access roads to inform the public of construction activities and prohibit the public from entering the site. For areas where public safety risks could exist and site personnel would not be available to control public access (such as excavated foundation holes and electrical collection system trenches), warning signs and temporary fences will be erected. Fencing will be installed around material storage, staging, and/or laydown areas as needed. Other areas determined to be hazardous, or where issues of security or theft are of concern, will be fenced. Temporary fencing around unfinished turbine bases, excavations, and other hazards will typically be a high-visibility plastic mesh. Security guards, cameras, and/or additional fencing will be used if necessary to protect public health and safety and Project facilities.

7.4.3 Traffic Management

The potential for traffic issues will be highest during construction, when deliveries of equipment and materials, as well as worker traffic, will occur. A traffic study has been completed that details the number and nature of vehicle trips to, within, and from the Project area. WW&P will work with the Wyoming Department of Transportation (WYDOT) to ensure the execution of a well-coordinated transportation plan that minimizes risks and inconvenience to the public. The plan will focus on traffic and circulation primarily within and in the immediate vicinity of the Project area. It will be designed to minimize potential hazards from increased truck traffic and worker traffic and to minimize impacts to traffic flow in the vicinity of the Project. Where applicable and appropriate, WW&P expects to enter into road use and repair agreements with Platte and Goshen counties, and will ensure the agreements are largely finalized prior to use by construction vehicles.

In terms of access traffic, the Project will operate continuously (24 hours per day, 7 days per week) using an automated system. It will employ an estimated 31 full-time workers, not all of whom will be on the same work schedule; therefore, high-use traffic to and from the site will be minimal.

7.4.4 Electromagnetic Fields

Electromagnetic fields (EMFs) are associated with electric transmission and are not specific to wind power projects. EMFs are only considered a possible issue when associated with the siting of high-voltage (more than 115 kilovolts [kV]) overhead transmission lines in close proximity to residences. EMFs are generally not an issue related to wind turbines, which have low voltage drop-cables (575 to 690 V) contained within steel towers, and a low voltage (34.5 kV), predominately underground collection system. In addition, the closest residence is located approximately 0.25 miles from a WTG.

For this Project, EMF exposure is very low because the Project transmission lines pass over and through undeveloped land with the exception of passing rural residences. The transmission line will be sited in accordance with landowner leases granting the ROW, and will be as far as practical from nearby residences or areas where people are present for extended periods.

Exposure of individuals working at the facility to EMFs generated by the Project will be minimal because of the low voltage. Distribution lines (34.5 kV) for the Project will be underground and cross areas that are not inhabited or used on a regular basis, so that regular long-term exposure of individuals to EMFs will not occur. Therefore, impacts from Project EMFs are less than significant.

7.4.5 Mechanical Failure

The wind turbines used for the Project will meet international engineering design and manufacturing safety standards. This includes tower, blade, and generator design. There is an international quality control assurance program for turbines, along with a number of relevant safety and design standards. The lead organization for development of international standards for wind turbine generating systems is the IEC, and the most broadly applied standard covering machinery and structures is IEC 61400-1: *Wind Turbine Generator Systems – Part 1: Safety Requirements* (IEC Edition 2, 1999). In the United States, the American Wind Energy Association (AWEA) is the designated organization for participation on IEC committees.

Independent agencies are retained by wind turbine manufacturers to certify that the design and construction of a given turbine/tower assembly conform to accepted standards in terms of design load assumptions, construction materials and methods, control systems, and safety measures. This is a generalized type of certification provided at the manufacturers' expense. Once a specific system make and model are selected, the user then customarily funds a second independent certification attesting to the applicability of the system design and construction to the site-specific conditions. In addition, foundation design and commissioning checks address potential failure from extreme events such as earthquakes or extreme wind loadings, as well as frequency tuning of the different parts of the structure to avoid failure from dynamic resonance.

7.4.5.1 Turbine Certification

Because wind has been a central source of power in Europe for decades, European manufacturers have been required to meet rigid standards verifying their design criteria, operational characteristics, supervision of construction, transportation, erection, commissioning, testing, and servicing. In Europe, Germanischer Lloyd (GL), Det Norske Veritas (DNV), Wind Test GmbH, and Risø (Denmark) are independent testing laboratories that administer regulations for the design, approval, and certification of wind energy conversion systems. There are no well-established testing agencies in the United States that offer the amount of experience, scrutiny, and expertise as the European

agencies. For these reasons, the Project will implement turbine technology that, at a minimum, complies with the European standards.

Wind turbines designed to European standards have proven to be the most reliable wind energy systems over the past two decades. In Europe, certification pursuant to these standards is mandatory for both permitting and financing. Partly because of these verification programs, lenders in Europe view wind energy equipment in the same way lenders in the United States might view the purchase of heavy construction equipment.

The Project will implement only turbines that have achieved this type of certification by a reputable and experienced third-party verification institute such as GL, DNV, WindTest, or Risø, and that demonstrate a minimum design life of at least 20 years.

7.4.5.2 Braking System

The electrically actuated individual blade pitch systems act as the main braking system for the WTG. Braking under normal operating conditions is accomplished by feathering the blades out of the wind. Any single-feathered rotor blade is designed to slow the rotor, and each rotor blade has its own backup battery bank to provide power to the electric drive in the event of a grid line loss. Three independent backup battery packs or spring units are provided to power each individual blade pitch system to feather the blades and shut down the machine in the event of a grid line outage or other fault. Having all three blades outfitted with independent pitch systems provides redundancy of individual blade aerodynamic braking capability.

The WTG is also equipped with a mechanical brake located at the output (high-speed) shaft of the gearbox. This brake is only applied immediately on certain emergency stops. The brake also prevents rotation of the machinery, as required by certain service activities.

7.4.5.3 Turbine Control

The WTGs can be controlled automatically or manually from either the control panel located inside the nacelle or from a personal computer located in a control box at the bottom of the tower. Control signals also can be sent from a remote computer via a supervisory control and data acquisition (SCADA) system, with local lockout capability provided at the turbine controller.

Using the tower-top control panel, the machine can be stopped, started, and turned out of the wind. Service switches at the tower top prevent service personnel at the bottom of the tower from operating certain turbine systems while service personnel are in the nacelle. To override any machine operation, stop buttons located in the tower base and in the nacelle can be activated to stop the turbine in the event of an emergency.

Section 8
References

8.0 References

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Appendix A
Site Plan

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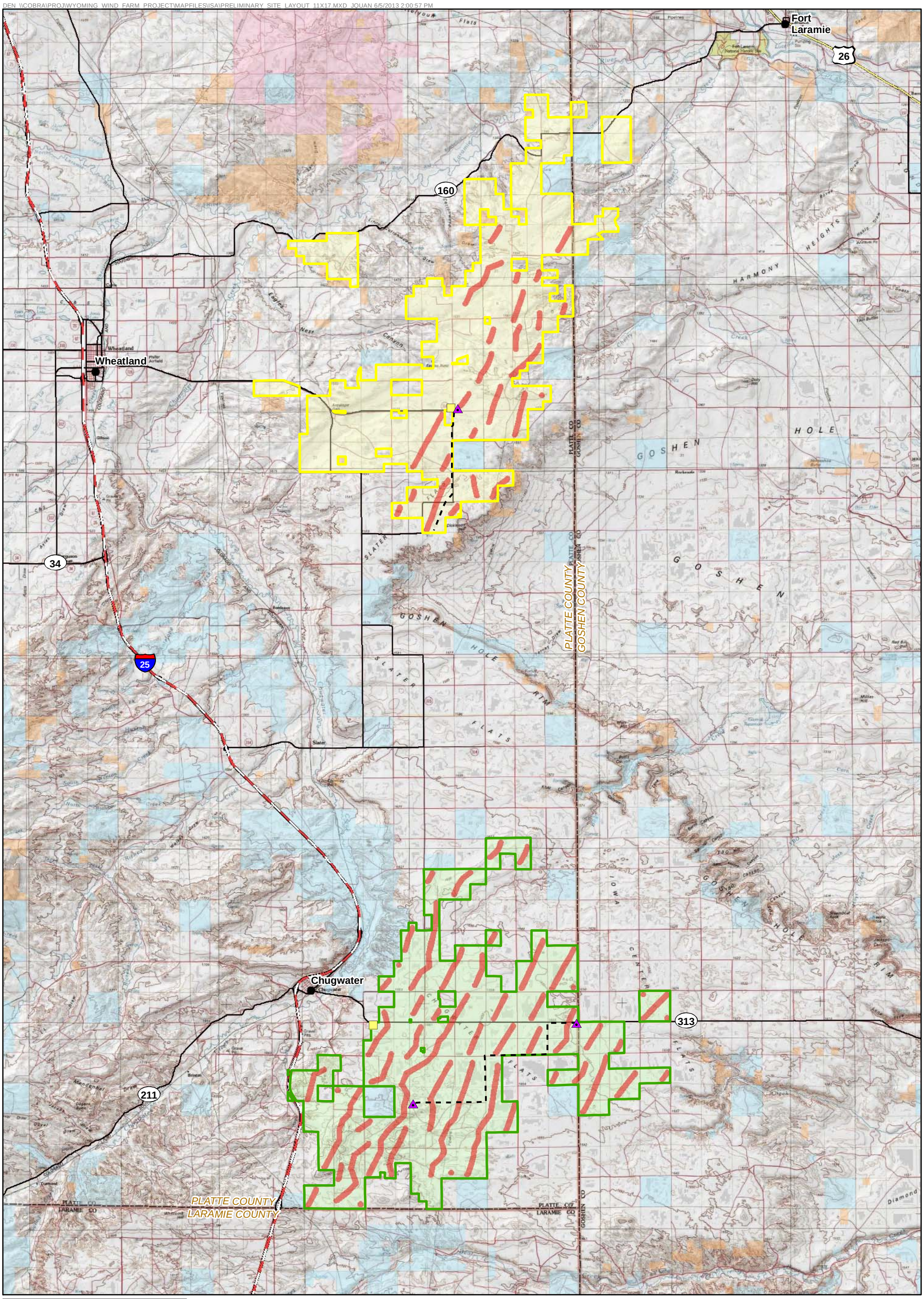

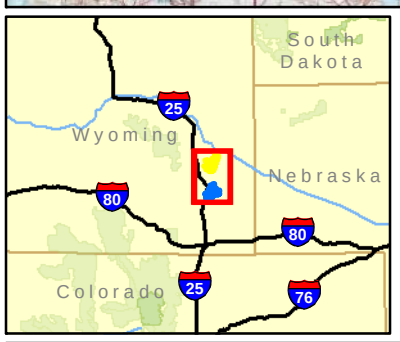

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line

Surface Management

- Bureau of Land Management
- Department of Defense
- Private
- State

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Appendix A
Preliminary Site Layout
Wyoming Wind Farm
Platte and Goshen Counties, WY

Wyoming Wind & Power
CH2MHILL

EXHIBIT 3

Project Area

ANTELOPE GAP WIND ENERGY ASSOCIATION PROJECT AREA LEGAL DESCRIPTION, GROUPED AND DESCRIBED BY TOWNSHIP

Township 23 North, Range 65 West, of the 6th P.M., Platte County, Wyoming
Section 6: N1/2, SW1/4
Section 7: NW1/4NW1/4

Township 23 North, Range 66 West, of the 6th P.M., Platte County, Wyoming
Section 1: All
Section 2: S1/2, NE1/4, N1/2NW1/4
Section 3: SE1/4
Section 10: N1/2
Section 11: W1/2SE1/4, N1/2

Section 12: W1/2NW1/4, EXCEPT a tract of land as described in instrument recorded April 1, 1963 in Book 118 at Page 162 situated in the W1/2NW1/4 of Section 12, Township 23 North, Range 66 West of the 6th P.M. more particularly described as follows:
Commencing at the Southeast corner of said W1/2 NW1/4; thence North 45°40'04" West for a distance of 289.64 feet to the point of beginning of said tract of land to be described; thence West for a distance of 220.00 feet; thence North for a distance of 325.00 feet; thence East for a distance of 220.00 feet; thence South for a distance of 325.00 feet to the point of beginning.

Section 33: N1/2S1/2, S1/2SW1/4, SW1/4SE1/4
Section 34: E1/2NW1/4, SW1/4NW1/4, N1/2SW1/4

Township 24 North, Range 65 West, of the 6th P.M., Platte County, Wyoming
Section 4: S1/2, N1/2NW1/4, SW1/4NW1/4
Section 5: All
Section 6: Lots 1, 2, 3, and 4; S1/2NW1/4; SW1/4; S1/2SE1/4; NE1/4
Section 7: SW1/4, and that part of the N1/2NW1/4, more particularly described as follows:
Parcel 1:
Beginning at a true point of beginning and which point lies on the North boundary of Section 7, and which point lies North 88°49'36" East 1205.26 feet from the Northwest corner of Section 7, said bearing considered as base bearing with all other bearings relative thereto; thence from this point of beginning North 88°49'36" East 350 feet; thence South 1.110.15 feet; thence South 88°49'36" West 350 feet to a point which is the SE corner of a tract of land conveyed to Darrel W. Martin and Hattie Ann Martin in Corrective warranty Deed recorded in Book 320, Page 782 (hereinafter referred to as 320/782); thence North along the East boundary of said 320/782 tract of land a distance of 1110.15 feet to the true point of beginning.
Parcel 2:

<u>Township 24 North, Range 65 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
That part of the NW1/4NE1/4 and the NE1/4NW1/4 Section 7, Township 24 North, Range 65 West of the 6th P.M., Platte County, Wyoming, more particularly described as follows:
Beginning at a true point of beginning and which point is located on the North boundary of Section 7 and which point is located North 88°49'36'" East 1555.26 feet from the NW corner of Section 7 to a point on the NE corner of a tract of land conveyed to Virgil R. Askren and Marlene Askren in Warranty Deed recorded in Book 303, Page 134, (hereinafter referred to as 303/134); said NE bearing considered as base bearing with all other bearings relative thereto; thence from this true point of beginning South 1110.15 feet along the East boundary of 303/134; thence North 88°49'36" East 1.528.76 feet; thence North 00°19'08 West 1.1.10.1.5 feet to a point on the North boundary of Section 7; thence along said North boundary South 88°49'36" West 1522.58 feet to the point of beginning.
Parcel 3:
That part of the NW1/4NE1/4 and NE1/4NW1/4 Section 7, Township 24 North, Range 65 West of the 6th P.M., Platte County, Wyoming, more particularly described as follows:
Beginning at a true point of beginning and which point is located North 88°49'36" East 3077.84 feet along the North boundary of Section 7; thence South 00°19'08" East 1110.15 feet from the NW corner of Section 7 and which point is the SE corner of a tract of land conveyed to Virgil R. Askren and Marlene Askren in Warranty Deed recorded in Book 306, Page 436 (hereinafter referred to as 306/436); said North 88°49'36" East bearing considered base bearing with all other bearings relative thereto; thence from this true point of beginning South 00°19'08" East 100.45 feet; thence South 88°49'36" West l879.32 feet; thence North 100.57 feet to the SE corner of tract of land conveyed to Darrel W. Martin and Hattie Ann Martin in Corrective Warranty Deed recorded in Book 320, Page 782; thence North 88°49'36" East 1878.76 feet along the South boundary of a tract of land conveyed to Virgil R. Askren and Marlene Askren in Warranty Deed recorded in Book 3031 Page 134; and 306/436 to the true point of beginning.

Section 7: E1/2, NW1/4, Less those lands specifically described and set for in the following deeds:

a) That corrective warranty deed executed and delivered by Jack McQuesten (McQuisten) and Kitty McQuisten, Husband and Wife to Darrel W. Martin and Hattie Ann Martin, Husband and Wife, dated October 31, 1996 and recorded on the 1st day of November, 1996 at Book 320 Page 782 of the records of the County Clerk of Platte County, Wyoming, and

b) That warranty deed executed and delivered by Jack McQuisten to Virgil R. Askren and Marlene Askren, Husband and Wife, dated the 17th day of August, 1993 and recorded on the 17th day of August, 1993 at Book 303 Page 134 of the records of the County Clerk of Platte County, Wyoming.

Section 8: All
Section 9: NW1/4
Section 17: N1/2, N1/2SW1/4, SW1/4SW1/4
Section 18: All
Section 19: Lots 3 and 4; E1/2SW1/4; SE1/4 (S1/2); N1/2
Section 20: S1/2, S1/2N1/2

<u>Township 24 North, Range 65 West, of the 6th P.M., Platte County, Wyoming (Cont'd):</u>
Section 21: NW1/4SW1/4, SW1/4NW1/4
Section 29: W1/2
Section 30: All of Section 30, Township 24 North, Range 65 West of the 6th P.M., Platte County, Wyoming, EXCEPT a tract of land situated in the S1/2SW1/4 thereof described as follows:

Beginning at the SW corner of Section 30; thence N 89°47' E along the South boundary of said Section 30, with the South boundary being the basis of bearing for all bearings herein, a distance of 1150.0 feet to the TRUE PIONT OF BEGINNING. From this TRUE POINT OF BEGINNING thence N 89°47' E a distance of 104.0 feet; thence N 00°13' W a distance of 345.0 feet; thence S 89°47' W a distance of 175.0 feet; thence S 00°13' E a distance of 110.0 feet; thence N 89°47' E a distance of 71.0 feet; thence S 00°13' E a distance of 235.0 feet to the TRUE PIONT OF BEGINNING. Said tract containing 1.0 acres, more or less.

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming</u>
Section 1: Lots 1, 2, 3 and 4; S½N½; S½
Section 2: Lots 2, 3, and 4; S½NW¼; S1/2; SE1/2NE1/4
Section 3: Lot 1, S1/2NE1/4, SE1/4

Section 11: SE1/4SW1/4, E½ EXCEPTING THEREFROM that portion conveyed in Warranty Deed dated July 27, 1998, recorded July 31, 1998 in Book 333, Page 196, Platte County, Wyoming Records, from Darrel A. Vaughn and Amy Vaughn, husband and wife, to Susan A. Schomburg.

Section 12: S1/2SW1/4 and that part of the N1/2SW1/4 more particularly described as follows:

Commencing at the W1/4 corner of said Section 12; thence S. 00 ° 08 '10" W., along the west line of said SW1/4, a distance of 1236.71 feet to the True Point of Beginning; thence continuing S. 00°08'10" W., along said west line, 82.70 feet to the SW corner of the N1/2SW1/4 of said Section 12; thence N. 89°15'41" E., 2633.49 feet to the SE corner of said N1/2SW1/4; thence North, along the east line of said N1/2SW1/4, 82.70 feet; thence S. 89°15'41" W., 2633.30 feet to the True Point of Beginning, containing 5.00 acres, more or less.

N½SW¼ LESS that portion conveyed in Warranty Deed dated May 4, 1987, recorded May 4, 1987 in Book 267, Page 459, Platte County, Wyoming Records, from Willard J. Weber and Mary Weber, husband and wife, to Paul D. Bratt, Sr., and Cora M. Bratt, husband and wife.

Section 13: SW1/4, W1/2E1/2; NW1/4, EXCEPT that part more particularly described as follows:

Beginning at the W1/4 corner of said Section 13, with the west boundary of said NW1/4 being considered base bearing - North - with all other bearings relative thereto; thence, from this POINT OF BEGINNING, N. 88°00'29" E., 2631.23 feet along an existing fence line, to a point of intersection with a northerly-running fence; thence along said northerly-running fence N. 00°08'50" E., 1390.13 feet; thence S. 70°44'49" W., 1923.54 feet; thence South 590.84 feet;

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
thence S. 88°00'29" W., 818.20 feet to said west boundary of NW1/4; thence, along said west boundary of NW1/4, South 229.06 feet to the Point of Beginning.

Section 14: S½SW¼; NW¼NW¼, E½SE¼NW¼, NE¼NE¼SW¼, S½N½SW¼, E½ EXCEPTING THEREFROM that portion conveyed to the United States of America by General Warranty Deed dated February 5, 1963, recorded March 21, 1963 in Book 118, Page 136, Platte County, Wyoming Records.

Section 15: SW1/4, NE¼SE¼, SW¼SE¼, NW¼SE¼, SE¼SE¼ LESS that portion conveyed in Warranty Deed dated August 23, 1994, recorded April 30, 1996 in Book 317, Page 706, Platte County, Wyoming Records, from Willard J. Weber and Mary P. Weber, husband and wife, to Lyndon J. Miller and Joanne M. Miller, husband and wife. ALSO EXCEPTING THEREFROM that portion conveyed in Quitclaim Deed dated March 11, 2005, recorded March 11, 2005 in Book 395, Page 740, Platte County, Wyoming Records, from Willard J. Weber, to Lyndon J. Miller and Joanne M. Miller, husband and wife.

Section 16: SE1/4

Section 17: That strip of land lying and being East of the Rim Rock as the same is now in place along the Eastern portion of the E½SE¼ of Section 17 and the NE¼NE¼ of Section 20.

Section 19: That part of the E1/2SW1/4 of Section 19, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming, being more particularly described as follows:
Beginning at the SW corner of said E1/2SW1/4 and considering the West line thereof to bear N 00°13' W, with all bearings herein being relative thereto; thence N 00°13' W, along said West line, a distance of 2,643.1 feet to the NW corner of said E1/2SW1/4; thence N 89°48' E, along the North line of said E1/2SW1/4, a distance of 79.8 feet to a fence line; thence Southerly along said fence line by the following 8 bearings and distances: (1) S 01°55' W, a distance of 294.97 feet; (2) S 00°35' W, a distance of 476.44 feet; (3) S 00°59' W, a distance of 1,600.7 feet; (4) S 88°21' E, a distance of 74.8 feet; (5) S 25°16' E, a distance of 76.3 feet; (6) S 24°54' W, a distance of 48.4 feet; (7) S 27°37' W, a distance of 92.8 feet; (8) S 03°06' W, a distance of 74.5 feet to the South line of said E1/2SW1/4; thence West, along said South line, a distance of 67.9 feet to the Point of Beginning.

That part of the N½SE¼ and SE¼SE¼ of Section 19 and the N½NW¼ of Section 29, more particularly described as follows:

Beginning at the E¼ Corner of Section 19, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming; thence South on section line, 229.80 feet to the northeasterly right of way line of F.A.S. #19 (4); thence following said right of way line N42°18'W, 2480.0 feet; thence on a 2°0' curve to the left 460.0 feet to the north line of the N½SE¼ of Section 19; thence East on said north line 1975.0 feet to the Point of Beginning. And beginning at the N¼ Corner of Section 29, Township 24 North, Range 66 West; thence South, 342.0 feet to the North right of way line of F.A.S. #19 (4); thence Westerly on said right of way line on a 2°0' curve to

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
the right 267.0 feet; thence N88°8'W, 1125.0 feet; thence on a 4°0' curve to the right 860.0 feet to the north line of said Section 29; thence East on said north line of said Section 29, 2190.0 feet to the Point of Beginning.

Section 19: E1/2SWl/4, SE1/4, Except that part of the SE1/4 more particularly described as follows: Beginning at the El/4 corner of Section 19; thence South on section line 2298.0 feet to the Northeasterly Right of Way line of F.A.S. No. 19 (4); thence following said Right of Way line N42°18'W, 2480.0 feet; thence on a 2°00' curve to the left 460.0 feet to the North line of the N1/2SE1/4 of said Section 19; thence East on said North line 1975.0 feet to the point of beginning; Except that portion conveyed to Susan H. Nesson in Warranty Deed dated July 23, 1999, recorded July 23,1999 in Book 341,Page 163, and by Quit Claim Deed dated April 3, 2000, recorded April 5, 2000 in Book 347, Page126 and by Quit Claim Deed dated December 27, 2000, recorded December 27, 2000 in Book 353, Page 123; and Except that portion conveyed to David J. Johnson and Cynthia G. Johnson, husband and wife as tenants by the entirety by Warranty Deed dated June 28, 2001, recorded June 28, 2001 in Book 357, Page 335, Platte County, Wyoming Records.

Section 20: S½NE¼, SE¼SW¼, SE¼

-and-

That strip of land lying and being East of the Rim Rock as the same is now in place along the Eastern portion of the E½SE¼ of Section 17 and the NE¼NE¼ of Section 20.

Section 21: All
Section 22: S1/2
Section 23: All
Section 24: All
Section 25: All
Section 26: S½, NW¼, W½NE¼
Section 27: E1/2, S1/2NW1/4, SW1/4 LESS the following described parcel of land:

Beginning at the SW corner of said Section 27; thence North, along the West line of said section 27, a distance of 1550.0 feet; thence North 89°25'15" East, 900.0 feet; thence South 40°31'18" East, 1539.01 feet; thence South 370.0 feet to the South line of the SW1/4 of said section 27; thence South 89°25'15" West, along said South line 1900.0 feet to the point of beginning, said exception containing 54.061 acres, more or less, and N1/2NW1/4 LESS the following described parcel of land: Beginning at a point on the northboundary line of said section 27, and which point lies N. 89°33' East a distance of 1,237.5 feet from the NW corner of said section 27; thence using said north boundary as base bearing N. 89°33' East a distance of 907.5 feet along said north boundary; thence S. 00 ° 27' East a distance of 480.0 feet; thence S. 89°33' West a distance of 907.5 feet; thence N. 00°27' West a distance of 480.0 feet to the point of beginning, this exception containing 10.00 acres more or less.

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
Section 27: That part of the SW¼ of said Section 27 more particularly described as follows: Beginning at the Southwest Corner of said Section 27; thence North along the west line of said Section 27, a distance of 1550.0 feet; thence N89°25'15"E, 900.0 feet; thence S40°31'18"E, 1539.01 feet; thence South, 370.0 feet to the south line of the SW¼ of said Section 27; thence S89°25'15"W, along said south line 1900.0 feet to the Point of Beginning.

Section 28: S1/2SW1/4, E½, NE¼NW¼, NE¼SW¼

Section 29: The E1/2 of Section 29, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming, EXCEPT that portion more particularly described as follows:
That part of the N1/2NE1/4 of Section 29, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming, more particularly described as follows:
Beginning at a true point of beginning which point is located at the N1/4 corner of Section 29, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming; thence from this true point of beginning N 89°44' E a distance of 2640 feet to the NE corner of said Section 29; thence S 00°59' W 3.9 feet to a point on the centerline of F.A.S. No. 35, said point being on a 2°00' curve to the left; thence a distance of 324 feet along said curve; thence S 79°59' W a distance of 2032.9 feet to the point of beginning of a 2°00' curve to the right; thence along said curve a distance of 320 feet to a point on the West boundary of the NE1/4 of said Section 20; thence North 419.7 feet along the West boundary of the NE1/4 of said Section 29 to the true point of beginning, containing 12.78 acres, more or less.

Section 29: That part of the W1/2NW1/4 and NW1/4SW1/4 more particularly described as follows: Beginning at the NW corner of Section 29; Thence S14°54'E 398.6 feet; Thence S16°17'E 669.4 feet; Thence S8°33'E 315 feet; Thence S6°37'W 1234.8 feet; Thence S14°45'W 770 Feet; Thence North 3310.45 feet along the West Section line of said Section 29 to the point of beginning; Except that portion conveyed to Daniel P. Szymanski and Linda D. Szymanski, husband and wife, as tenants by the entirety by Warranty Deed dated April 3, 1998, recorded April 3, 1998 in Book 330, Page 650, Platte County, Wyoming Records.

Section 29: That part of the SW1/4NW1/4 more particularly described as follows:
Beginning at the west quarter corner of said Section 29 and considering the west line of the NW1/4 thereof to bear North 00°14'32" West, with all bearings herein being relative thereto; thence North 00°14'32" West, along said west line, a distance of 1,313.61 feet to the northwest corner of the SW1/4NW1/4 of said Section 29; thence North 89°45'00" East, along the north line of said SW1/4NW1/4, a distance of 333.17 feet; thence South 08°47'32" East, a distance of 25.92 feet; thence South 06°22'28" West, a distance of 1,234.80 feet; thence South 14°30'28": West, a distance of 64.51 feet to the south line of said SW1/4NW1/4; thence North 89°55'32" West, a distance of 178.76 feet to the Point of Beginning.

Section 29: That part of the N½NE¼ of Section 29, T24N, R66W, of the 6th P.M., Platte County, Wyoming, being the tract described in Book 240, on Page 330 less that portion of the tract split off and described in Book 272, on Page 772 in the Platte County Clerk's office. The remaining portion of the Tract described in Book 240, on Page 330 is further described as follows:

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
Beginning at the North Quarter (N¼) Corner of Section 29, T24N, R66W; thence N89°46'E, along the north boundary of the NE¼ of Section 29, for a distance of 754.5 feet to the TRUE POINT OF BEGINNING for this description;

1) Thence continuing N89°46'E, along the north boundary of the NE¼ of Section 29, for a distance of 640.00 feet to the Northwest Corner of the tract described in Book 272, on Page 772;

2)' Thence South, along the west line of the tract described in Book 272, on Page 772, for a distance of 197.17 feet to a point on the centerline of the Highway F.A.S. No. 35;

3) Thence S79°59'W along the centerline of Highway F.A.S. No. 35, for a distance of 649.9 feet to the Southwest Corner of the tract described in Book 240, on Page 330;

4) Thence North, along the West line of the tract described in Book 240, on Page 330, for a distance of 307.60 feet to the TRUE POINT OF BEGINNING.

The above-described tract contains 3.71 acres, more or less, and includes the right-of-way for Highway F.A.S . No. 35 (Antelope Gap Road) long the southerly boundary of the tract.

Section 29: That part of the N½SE¼ and SE¼SE¼ of Section 19 and the N½NW¼ of Section 29, more particularly described as follows:

Beginning at the E¼ Corner of Section 19, Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming; thence South on section line, 229.80 feet to the northeasterly right of way line of F.A.S. #19 (4); thence following said right of way line N42°18'W, 2480.0 feet; thence on a 2°0' curve to the left 460.0 feet to the north line of the N½SE¼ of Section 19; thence East on said north line 1975.0 feet to the Point of Beginning. And beginning at the N¼ Corner of Section 29, Township 24 North, Range 66 West; thence South, 342.0 feet to the North right of way line of F.A.S. #19 (4); thence Westerly on said right of way line on a 2°0' curve to the right 267.0 feet; thence N88°8'W, 1125.0 feet; thence on a 4°0' curve to the right 860.0 feet to the north line of said Section 29; thence East on said north line of said Section 29, 2190.0 feet to the Point of Beginning.

Section 29: W1/2, EXCEPT those portions more particularly described as follows:
Beginning at the NW corner of Section 29, T. 24N., R. 66W., of the 6th P .M., Platte County, Wyoming; thence from the point of beginning S. 14°54' E., 398.6 feet; thence S. 16°17' E., 669.4 feet; thence S. 8°33' E., 315 feet; thence S. 6°37' W" 1234.8 feet; thence S. 14°54' W., 67.89 feet; thence N. 89°41' W., 178.76 feet; thence North 2630.5 feet along the West boundary of said Section 29 to the point of beginning.

-And-

<u>Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
Beginning at the North quarter corner of Section 29; thence South 342.0 feet to the North Right

of Way line of F.A.S. No. 19 (4); thence westerly on said right of way line on a 2°-00' curve to the right 267.0 feet, thence North 88°-08' West, 1125.0 feet; thence on a 4°-00' curve to the right 860.0 feet to the North line of said Section 29; thence East on said North line of said Section 29, 2190.0 feet to the point; of beginning.

That part of the Northeast Quarter (NE1/4). Northeast Quarter (NE1/4) Section 29, T24N R66W, of the 6th P.M., Platte County, Wyoming, lying South of the centerline of the "Antelope Gap" Rd./Wyoming Highway 316, as shown on Exhibit "A" - Part 2 attached hereto and made a part hereof containing 36.9 acres more or less, and being further described as follows:
Beginning at the Northeast Comer Section 29, T24N R66W; thence S00°18'00"E, along the East line of the Northeast Quarter (NE1/4) Northeast Quarter (NE1/4) Section 29, for a distance of 3.16 feet, to a point on the centerline of the "Antelope Gap" Rd. / Wyoming Highway 316, which point is the TRUE POINT OF BEGINNING; thence along the following courses numbered 1 through 5;
1. S00°18'00"E, along the East line of the Northeast Quarter (NE1/4) Northeast Quarter (NE1/4) Section 29, for a distance of 1314.81 feet, to the Southeast (SE) Comer of the Northeast Quarter (NE1/4) Northeast Quarter (NE1/4) Section 29;
2. S89°44'08"W, along the South line of the Northeast Quarter (NE1/4) Northeast Quarter (NE1/4) Section 29, for a distance of 1319.03 feet, to the Southwest (SW) Corner of the Northeast Quarter (NE1/4) Northeast Quarter (NE1/4.) Section 29;
3. N00°15'22"W, along the West line of the Northeast Quarter (NE1/4.) Northeast Quarter (NE1/4) Section 29, for a distance of 1106.13 feet more or less, to a point on the centerline of the "Antelope Gap" Rd. / Wyoming Highway 316;
4. N79°59'31"E, along the centerline of the "Antelope Gap" Rd. / Wyoming Highway 316, for a distance of l019.07 feet;
5. Northeast along a curve with an included angle of 06°19'07", arc length of 315.92 feet, radius of 2864.79 feet, and chord that bears N83°09'04"E a distance of 315.76 feet, to the TRUE POINT OF BEGINNING.

Section 30: SE1/4, S1/2SW1/4, NE1/4SW1/4, S1/2NE1/4, E1/2NW1/4, NE1/4; Except that portion conveyed to Daniel P. Szymanski and Linda D. Szymanski, husband and wife, as tenants by the entirety by Warranty Deed dated April 3, 1998, recorded April 3, 1998 in Book 330, Page 650, and in Notice of Contract dated November 24, 1998, recorded November 30, 1998 in Book 335, Page 839, and in Warranty Deed dated November 27, 2000, recorded November 27, 2000 in Book 352, Page 447, and Except that portion conveyed to Mildred C. Johnson, Lee D. Johnson and Evelyn P. Johnson, as joint tenants with right of survivorship in Quit Claim Deed dated July 27, 2001, recorded August 13, 2001 in Book 358, Page 390, Platte County, Wyoming Records.

Section 30: That part of the E1/2NW of Section 30 Township 24 North, Range 66 West of the 6th P.M., Platte County, Wyoming, being more particularly described as follows:
Beginning at the NW corner of said E1/2NW1/4 (W1/16 corner) and considering the West line thereof to bear S 00°22' E, with all bearings herein being relative thereto; thence S 00°22' E, along said West line, a distance of 1,319.1 feet to the NW1/16 corner of said Section 30; thence

Township 24 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd):
continuing S 00°22' E, along said West line, a distance of 639.2 feet to intersect with a fence line bearing N 01°36' E; thence N 01°36' E, along said fence line, a distance of 855.8 feet; thence N 02°57' W, along said fence line, a distance of 111.5 feet; thence N 02°10' E, along said fence line, a distance of 992.4 feet to a point on the North line of the E1/2NW1/4 of said Section 30; thence West, along said North line, a distance of 67.9 feet to the Point of Beginning.

Section 30: SE1/4NW1/4 and NE1/4NW1/4, except that part of the E1/2NW1/4 of Section 30, being more particularly described as follows:
Beginning at the NW corner of said E1/2NW1/4 (W1/16 corner) and considering the West line thereof to bear S 00°22' E, with all bearings herein being relative thereto; thence S 00°22' E, along said West line, a distance of 1,319.1 feet to the NW1/16 corner of said Section 30; thence continuing S 00°22' E, along said West line, a distance of 639.2 feet to intersect with a fence line bearing N 01°36' E; thence N 01°36' E, along said fence line, a distance of 855.8 feet; thence N 02°57' W, along said fence line, a distance of 111.5 feet; thence N 02°10' E, along said fence line, a distance of 992.4 feet to a point on the North line of the E1/2NW1/4 of said Section 30; thence West, along said North line, a distance of 67.9 feet to the Point of Beginning.
That part of the NW1/4NE1/4, more particularly described as follows:
Beginning at the northeast corner of said Section 30 and considering the north line of the NE1/4 thereof to bear West, with all bearings herein being relative thereto; thence West, along said north line, a distance of 2,073.55 feet to the TRUE POINT OF BEGINNING, thence South 02°20' East, a distance of 769.24 feet; thence South 53 ° 12' East, a distance of 912.96 feet to the NE1/16 corner of said Section 30; thence South 89"55' West, a distance of l,316.70 feet to the CN1/16 corner of said Section 30; thence North 00°16'26" West a distance of 1,317.29 feet; to the N1/4 corner of said Section 30; thence East, a distance of 560.62 feet to the TRUE POINT OF BEGINNING.

Section 31: All
Section 32: E1/2, NW1/4, W2SW4, SE1/4SW1/4
Section 33: W1/2, SW1/4SE1/4, N1/2NE1/4, N1/2SE1/4
Section 34: E1/2, N1/2SW1/4, NW1/4
Section 35: S1/2, W1/2NW1/4, N1/2, EXCEPT that part conveyed in Warranty Deed recorded August 13, 2007 in Book 422 at Page 239.

Township 24 North, Range 67 West, of the 6th P.M., Platte County, Wyoming
Section 23: NE1/4
Section 24: NW1/4; NE1/4 EXCEPT that part of the N1/2NE1/4 contained in deed recorded August 31, 1998 in Book 333 at Page 872.

Township 25 North, Range 65 West, of the 6th P.M., Platte County, Wyoming
Section 4: Lot 1, SE1/4NE1/4, S1/2, W1/2NW1/4
Section 5: N1/2NE1/4, SE1/4NE1/4, SE1/4
Section 8: N1/2NE1/4, SE1/4
Section 9: W1/2, NE1/4, N1/2SE1/4, SW1/4SE1/4

<u>Township 25 North, Range 65 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
Section 17: All
Section 18: SW1/4
Section 19: NW1/4, W1/2NE, NE1/4SW1/4, SE1/4
Section 20: E1/2, NW1/4, SE1/4SW1/4
Section 21: N1/2, SW1/4

-and-

That part of the SE1/4 more particularly described as follows: Beginning at the NE corner of the SE1/4 of Section 21, Township 25 North, Range 65 West of the 6th P.M., Platte County, Wyoming; thence West on the North boundary of said SE1/4 1166 feet; thence South 11°15' West 528 feet; thence South 57°20' West 444 feet; thence South 29°05' West 125 feet; thence South 73°30' West 978 feet more or less to the West boundary line of said SE1/4; thence South along said West boundary line 1,494 feet more or less to the SW corner of said SE1/4; thence East 2640 feet to the SE corner of said Section 21; thence North 2,640 feet more or less to the point of beginning, containing 129 acres more or less.

Section 28: W1/2, E½ EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

That part of the NE¼ more particularly described as follows: Beginning at the NE comer of Section 28, Township 25 North, Range 65 West of the 6th P.M., Platte County, Wyoming; thence West 2640 feet more or less to the NW corner of the NE¼ of said Section 28; thence South on the West boundary line of said NE¼, 931 feet; thence South 88°56' East 2468 feet; thence South 575 feet; thence East 172 feet more or less to the East boundary line of said Section 28; thence North 1,554 feet more or less to the point of beginning, containing 63 acres more or less.

Less that part of the SE¼SE¼ of Section 28, Township 25 North, Range 65 West of the 6th P.M., Platte County, Wyoming being more particularly described as follows: Commencing at the southeast comer of said Section 28 and considering the South line of the SE¼ thereof to bear West, with all bearings herein being relative thereto; thence West, along the South line of said SE¼, a distance of 862.59 feet to the TRUE POINT OF BEGINNING; thence North, a distance of 296.47 feet; thence West, a distance of 328.00 feet; thence South, a distance of 296.47 feet to the South line of the SE¼ of said Section 28; Thence East, along said South line, a distance of 328.00 feet to the TRUE POINT OF BEGINNING.

Section 28: That part of the NE1/4 more particularly described as follows: Beginning at the NE corner of Section 28, Township 25 North, Range 65 West of the 6th P.M., Platte County, Wyoming; thence West 2640 feet more or less to the NW corner of the NE1/4 of said Section 28; thence South on the West boundary line of said NE1/4, 931 feet; thence South 88°56' East 2468 feet; thence South 575 feet; thence East 172 feet more or less to the East boundary line of said Section 28; thence North 1,554 feet more or less to the point of beginning, containing 63 acres more or less.

<u>Township 25 North, Range 65 West, of the 6th P.M., Platte County, Wyoming (Cont'd)</u>:
Section 28: That part of the SE¼SE¼ more particularly described as follows:

Commencing at the southeast corner of said Section 28 and considering the South line of the SE¼ thereof to bear West, with all bearings herein being relative thereto; thence West, along the South line of said SE¼, a distance of 862.59 feet to the True Point of Beginning; thence North, a distance of 296.47 feet; thence West, a distance of 328.00 feet; thence South, a distance of 296.47 feet to the South line of the SE¼ of said Section 28; thence East, along said South line, a distance of 328.00 feet to the True Point of Beginning.

Section 29: All

Section 30: SE1/4 and the N1/2, less the following described easement:
Beginning at the East 1/4 corner of Section 30; thence S 88°36'41" W, along the south line of the N1/2 of Section 30, for a distance of 15.0 feet to the TRUE POINT OF BEGINNING: (1) thence N 00°05'41" E, parallel with and 15 feet west from the east line of Section 30, for a distance of 1461.95 feet; thence along an existing trail road through the following courses numbered (2) through (6); (2) thence S 87°31'52" W, for a distance of 1162.91 feet; (3) thence N 00°02'37" E, for a distance of 729.36 feet; (4) thence N 61°48'12" W, for a distance of 153.30 feet; (5) thence N 13°40'54" E, for a distance of 404.53 feet; (6) thence N 27°00' E, for a distance of 41.57 feet to a point on the straight line between the Northwest corner and the Northeast corner of Section 30, which point falls S 87°59'42" W a distance of 1199.59 feet from the Northeast Corner of Section 30.

Section 31: SE1/4, S1/2NE1/4

-and-

N2/3 of N1/2NE1/4 less that portion conveyed to David V. Weber and Rose Irene Weber, more particularly described as follows:
A tract of land beginning at the NE1/4 corner of said Section 31 thence South on the East boundary of said Section 31 a distance of 886.37 feet to the true point of beginning; thence West 709.00 feet; thence North 111.00 feet; thence West 400.00 feet; thence North 400.00 feet; thence East 430.00 feet; thence North 120.00 feet; thence East 679.00 feet more or less to a point on the East boundary line of the said Section 31; thence South on the East boundary line to the true point of beginning.

A tract of land beginning at the NE1/4 corner of said Section 31 thence South on the East boundary of said Section 31 a distance of 886.37 feet to the true point of beginning; thence West 709.00 feet; thence North 111.00 feet; thence West 400.00 feet; thence North 400.00 feet; thence East 430.00 feet; thence North 120.00 feet; thence East 679.00 feet more or less to a point on the East Boundary line of the said Section 31; thence South on the East Boundary line to the true point of beginning.

Township 25 North, Range 65 West, of the 6th P.M., Platte County, Wyoming (Cont'd):
Section 32: S1/2; NE1/4; N1/2N1/2NW1/4; S1/2S1/2NW1/4
Section 33: N1/2N1/2, SW1/4

Township 25 North, Range 65 West, of the 6th P.M., Goshen County, Wyoming
Section 2: Lots 6 and 7; W1/2SE1/4; SW1/4
Section 3: NW1/4
Section 11: Lots 1, 2, 3, and 4; W1/2E1/2; W1/2
Section 22: SE1/4SE1/4

Section 23: All of the SW1/4, EXCEPT that part thereof described approximately as follows: Commencing at the South Quarter Corner of said Section 23, proceed thence West along the South line of said Section a distance of 396 feet, thence N 5°W, a distance of 850 feet, thence N 40°E, a distance of 1,103 feet to the center line of said Section, thence South along said center line a distance of 1,600 feet to the point of beginning.
Section 26: All of the N1/2NW1/4 lying and situated North of the County Road right-of-way, EXCEPT that part thereof described approximately as follows: Commencing at the North Quarter Corner of said Section 26; proceed thence South along the center line of said Section, a distance of 568 feet, then N 49° W, a distance of 427 feet, thence N 5° W, a distance of 132 feet to the North line of said Section, thence East along said North line, a distance of 400 feet to the point of beginning.

Section 27: W1/2; NE1/4 EXCEPT that part thereof described approximately as follows: Commencing at the East Quarter Corner of said Section 27, proceed thence N 43° W, a distance of 770 feet, thence N 56°W, a distance of 568 feet to the South line of the County Road right-of-way, thence Northwesterly along the South line of said right-of-way to the East line of Section 27, thence South along said East line, a distance of 1,230 feet to the point of beginning.

Section 31: S1/3N1/2NE1/4 and a part of the W1/2, more particularly described as follows:
Beginning at the Southwest Corner of Section 31, T25N, R65W, (1) thence N 00°07'18" W along the West line of Section 31, for a distance of 4443.07 feet to an existing fence corner; thence Easterly generally following the existing fence along the following courses numbered (2) through (4); (2) thence S 89°47'58" E, for a distance of 1780.26 feet; (3) thence S 81°27'46" E, for a distance of 594.30 feet; (4) thence N 82°58'16" E, for a distance of 322.59 feet to the Northwest Corner of the South one-third (1/3) of the N1/2NE1/4 of Section 31; (5) thence S 00°14'55" W, along the East line of the W1/2 of Section 31, for a distance of 4384.14 feet to the South Quarter Corner of Section 31; (6) thence S 89°54'52" W, along the South line of Section 31, for a distance of 2659.68 feet to the point of beginning. All plane bearings herein are relative to astronomic north as determined by solar observation at the Southwest Corner of Section 31, T25N, R65W.

Township 25 North, Range 66 West, of the 6th P.M., Platte County, Wyoming
Section 13: SE1/4
Section 24: E1/2

Township 25 North, Range 66 West, of the 6th P.M., Platte County, Wyoming (Cont'd):
Section 29: S1/2N1/2, SW1/4, SW1/4SE1/4, N1/2SE1/4
Section 30: S1/2
Section 31: N1/2NE1/4, NE1/4NW1/4
Section 32: NW1/4, S1/2NE1/4, NW1/4NE1/4, N1/2S1/2, SE1/4SE1/4
Section 35: SE1/4SW1/4, SW1/4SE1/4
Section 36: SE1/4, SE1/4NE1/4

Township 25 North, Range 67 West, of the 6th P.M., Platte County, Wyoming
Section 25: NE1/4SE1/4

Township 26 North, Range 65 West, of the 6th P.M., Platte County, Wyoming
Section 32: S1/2SE1/4
Section 33: SW1/4SW1/4

WEST CHUGWATER GROUP LEGAL DESCRIPTIONS

GROUPED BY LANDOWNER AND TOWNSHIP

B&B Farm Partnership

Parcel 1:
Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 26: S1/2
Section 34: The SE1/4 of Section 34, Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming; EXCEPTING THEREFROM that portion of the SW1/4SE1/4 of Section 34, T.21N., R.66W. of the 6th P.M., Wyoming more particularly described as follows:
Beginning at the South quarter corner of Section 34, T. 21N., R.66W.; thence running North 0°09' East a distance of 450 feet; thence running on a line parallel to the South boundary of said Section 34, South 89°51' East a distance of 270 feet; thence South 0°09' West a distance of 450 feet to a point on the South boundary of said Section 34; thence on the South boundary of said Section 34, N.89°51'W. a distance of 270 feet to the point of beginning.

Parcel 2:
Township 20 North, Range 65 West of the 6th P.M., Goshen County, Wyoming:
Section 11: S1/2
Section 12: S1/2
Section 14: N1/2

Triple Heartland, LLC

Township Twenty-one (21) North, Range Sixty-five (65) West of the 6th P.M., Platte County, Wyoming:
Section 6: W1/2

Frank Burhans, aka Frank R. Burhans, and his wife Wanda Burhans

Township Twenty-one (21)North, Range Sixty-five (65) West of the 6th P.M., Platte County, Wyoming:
Section 5: W1/2
Section 6: NE1/4

Harold Denney, a/k/a Harold E. Denney, and Charlette Denney, a/k/a Charlette A. Denney, husband and wife, as tenants by the entireties with rights of survivorship

Township Twenty (20) North, Range Sixty-five (65) West of the 6th P.M., Platte County, Wyoming:
Section 7: SW1/4
Section 18: W1/2; SE1/4
Section 19: NE1/4

Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming:
Section 12: S1/2; NE1/4

Becky L. Forsman, Warren C. Glaede, Jr., and Marcia L. McGourty

Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 27: SE1/4

Owen W. Goertz

Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming;
Section 28: SE1/4
Section 34: N1/2, LESS and EXCEPT parcel conveyed in Deed recorded January 13, 1975 in Book 177 at Page 278.

Donald C. Guidice and Karen L. Guidice, husband and wife, as tenants by the entirety

Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming:
Section 29: The South Half of the South Half (S1/2S1/2)
Section 31: The South Half, South Half of the North Half (S1/2, S1/2N1/2)
Section 32: The Southeast Quarter (SE1/4); North Half of the North Half (N1/2N1/2); Southwest Quarter, South Half of the North Half (SW1/4, S1/2N1/2)

Harding and Kirkbride Livestock Co., a Wyoming corporation

Township Twenty (20) North, Range Sixty-five (65) West of the 6th P.M., Platte County, Wyoming:
Section 19: NW1/4

Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming:
Section 7: W1/2SW1/4: NE1/4; E1/2SW1/4; SE1/4
Section 8: W1/2NW1/4
Section 13: All
Section 14: S1/2
Section 15: SE1/4
Section 18: Lots 3 and 4, E1/2SW1/4; Lots 1 and 2; E1/2NW1/4
Section 19: NW1/4
Section 22: NE1/4; S1/2
Section 23: All
Section 24: S1/2; N1/2
Section 25: All
Section 26: N1/2; S1/2, EXCEPT parcel conveyed in Deed recorded October 2, 2007 in Book 424 at Page 65.
Section 27: N1/2; SE1/4
Section 34: NE1/4; NE1/4SE1/4
Section 35: W1/2

Township Twenty (20) North, Range Sixty-seven (67) West of the 6th P.M., Platte County, Wyoming:
Section 12: NE1/4SE1/4; S1/2SE1/4; E1/2NW1/4SE1/4
Section 13: NE, EXCEPT parcel conveyed in Deed recorded April 5, 1977 in Book 199 at Page 1.

Robert L. Hellbaum and Diane R. Hellbaum, husband and wife, as tenants by the entirety, and Hellbaum Farms, Inc.

Parcel 1: (owned by Robert L. Hellbaum and Diane R. Hellbaum)
Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 15: SW1/4SE1/4
Section 22: E1/2; E1/2W1/2
Section 27: NE1/4; NW1/4

Parcel 2: (owned by Hellbaum Farms, Inc.)
Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 27: W1/2SW1/4; E1/2SW1/4

Robert M. Mullock and Peggy A. Mullock, Trustees, of the Robert and Peggy Mullock Revocable Trust, dated November 17, 2007

Township Twenty (20) North, Range Sixty-five (65) West of the 6th P.M., Platte County, Wyoming:
Section 7: NW1/4

N M Ranch Co. and Gordon A. Rhoades and Michelle R. Rhoades, husband and wife

Parcel 1: (N M Ranch Co.)
Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming:
Section 10: All
Section 11: All
Section 12: NW1/4
Section 14: N1/2
Section 15: N1/2

Parcel 2: (Gordon & Michelle Rhoades)
Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming:
Section 3: SE1/4, LESS and EXCEPT parcel conveyed in Deed recorded July 31, 2008 in Book 432 at Page 14.

William G. Teter and Darla D. Teter, Trustees and their successors in Trust under the William Gene Teter Living Trust, and Darla D. Teter and William G. Teter, Trustees and their successors in Trust under the Darla Dea Teter Living Trust

All of Section Nine (9), Township Twenty (20) North, Range Sixty-six (66) West of the 6th P.M., Platte County, Wyoming

Tri-County Grain Company, a Wyoming corporation

Township 21 North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 11: All
Section 12: N1/2: SW1/4
Section 14: NW1/4; E1/2SW1/4
Section 23: W1/2
Section 26: NW1/4

Ruth M. Vaughn, Trustee of the Ruth M. Vaughn Revocable Trust dated June 30, 1999, D. Dean Vaughn, Trustee of the D. Dean Vaughn Revocable Trust dated June 30, 1999, and Darrel A. Vaughn, a/k/a Darrell Allen Vaughn

Parcel 1: (Darrel Allen Vaughn)
Township Twenty (20) North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 4: E1/2NW1/4; SW1/4SW1/4

Parcel 2: (Ruth M. Vaughn Revocable Trust dated June 30, 1999)
Township Twenty (20) North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 4: SE1/4; E1/2SW1/4; NW1/4SW1/4; W1/2NE1/4
Section 15: SW1/4
Section 17: All
Section 18: SE1/4
Section 19: NE1/4; N1/2SE1/4; S1/2SE1/4
Section 20: All
Section 21: All
Section 22: NW1/4
Section 28: All, EXCEPT the West 800.00 feet of the South 1000.00 feet of the SE1/4 and excepting a tract of land located in the S1/2 and described in a Quitclaim Deed recorded at Book 132, Page 23 of the records of the Platte County Clerk and Ex-Officio Register of Deeds.
Section 29: N1/2; N1/2S1/2
Section 30: NE1/4; N1/2SE1/4

Parcel 3: (D. Dean Vaughn Revocable Trust dated June 30, 1999)
Township Twenty (20) North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 3: N1/2; SW1/4
Section 4: E1/2NE1/4
Township Twenty one(21) North, Range 66 West of the 6th P.M., Platte County, Wyoming:
Section 33: SE1/4
Section 34: SW1/4

Appendix B
Resource Figures

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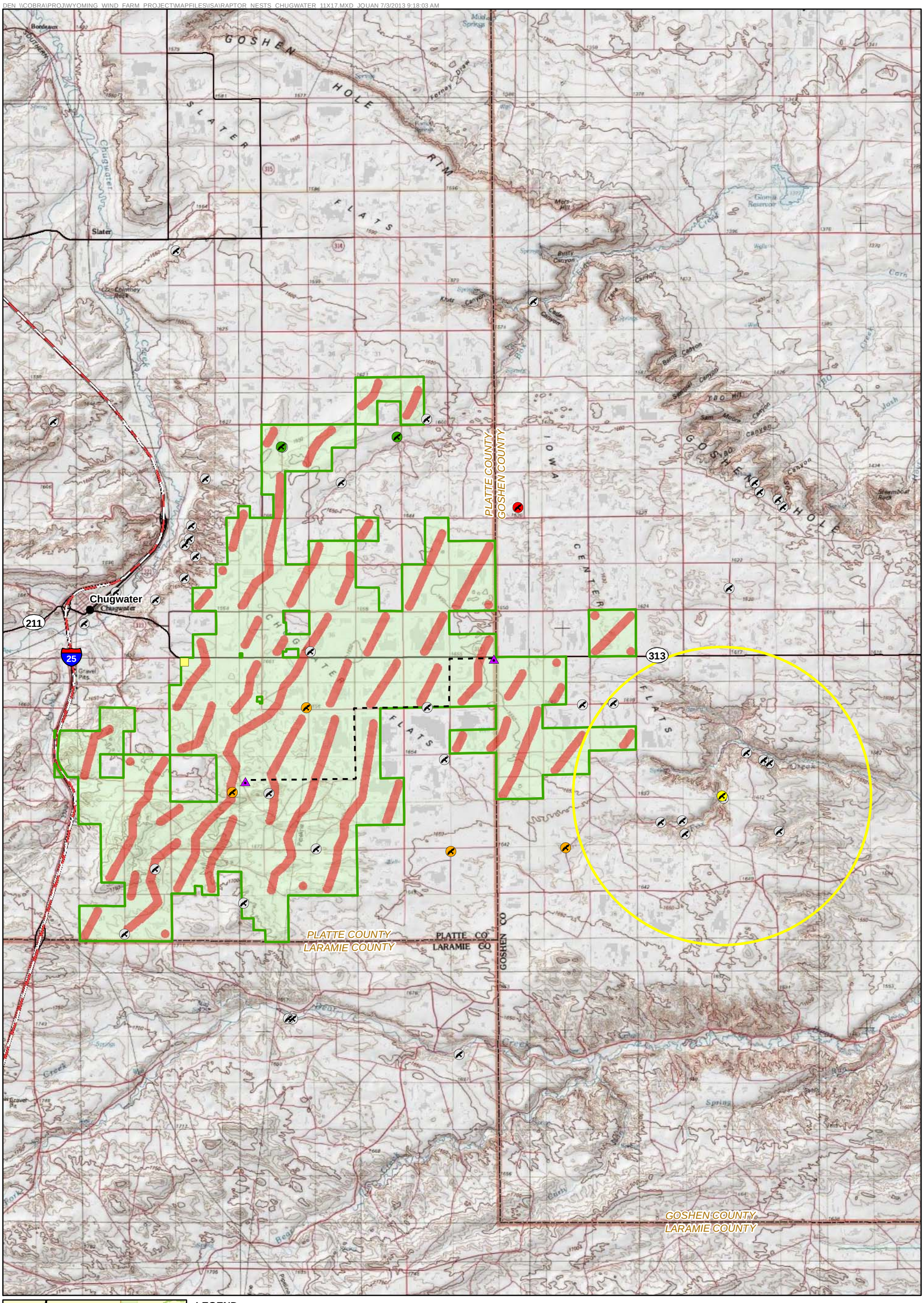

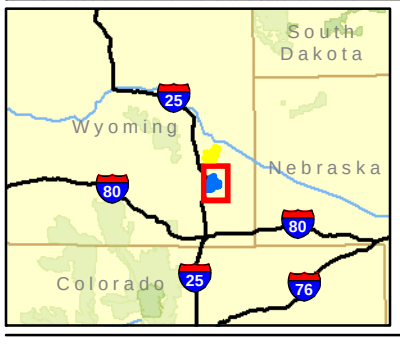

LEGEND

- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line

2013 Raptor Nests

- Ferruginous hawk
- Golden eagle
- Great-horned owl
- Red-tailed hawk
- Other
- 3.2 mile Territory per 2011 USFWS Guidance

N

0 1 2
Miles

Raptor Nests - Chugwater

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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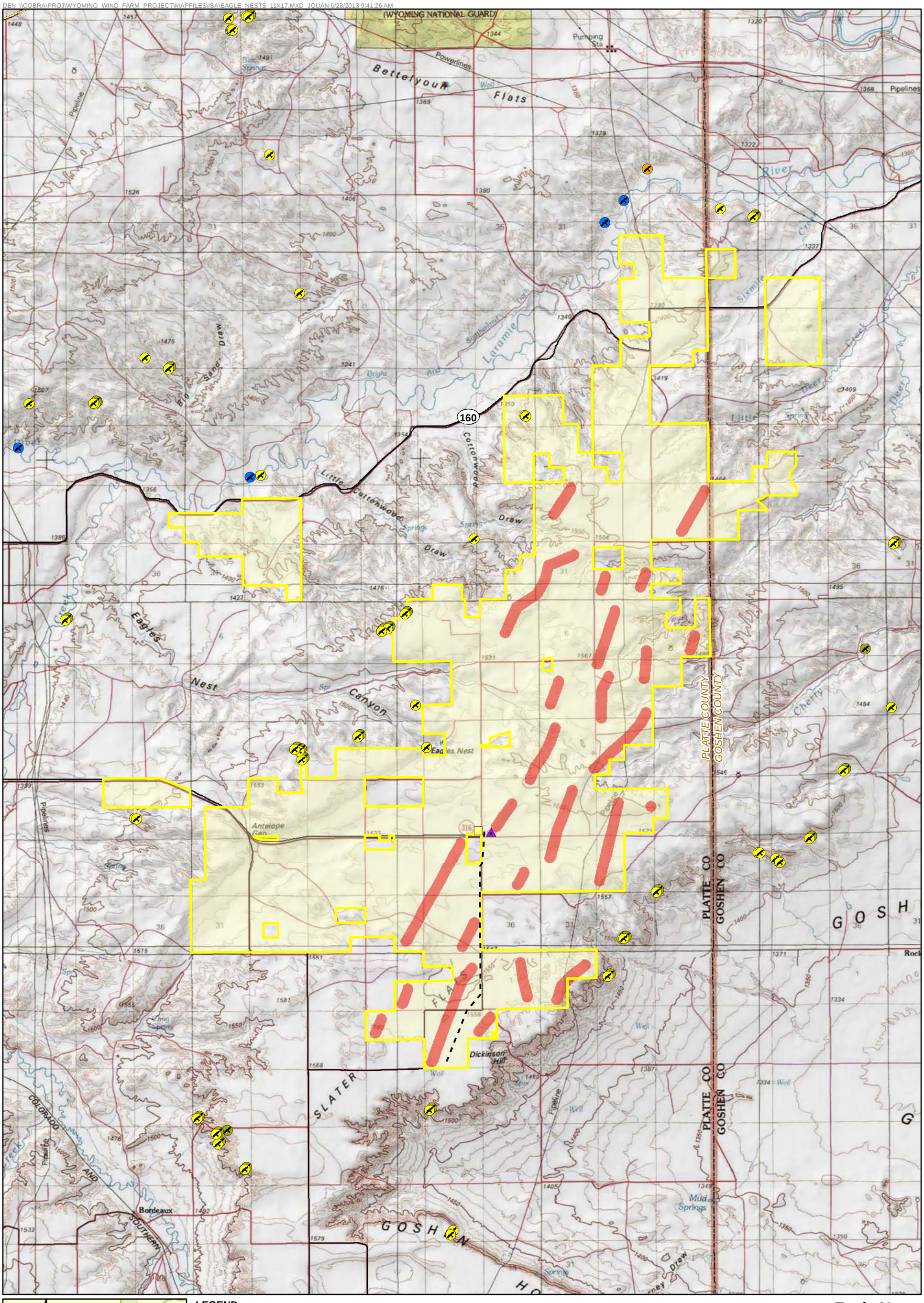

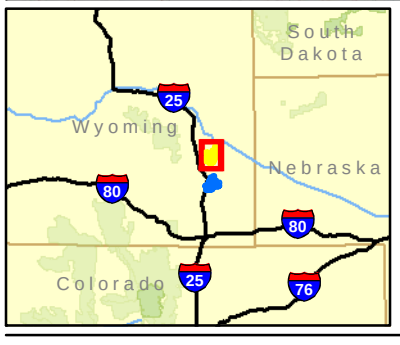

LEGEND

- Antelope Gap Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- 2012 Bald Eagle Roost

2012 Eagle Nests

- Bald Eagle
- Golden Eagle

2011 Eagle Nests

- Bald Eagle
- Golden Eagle

N

0 0.75 1.5
Miles

Eagle Nests

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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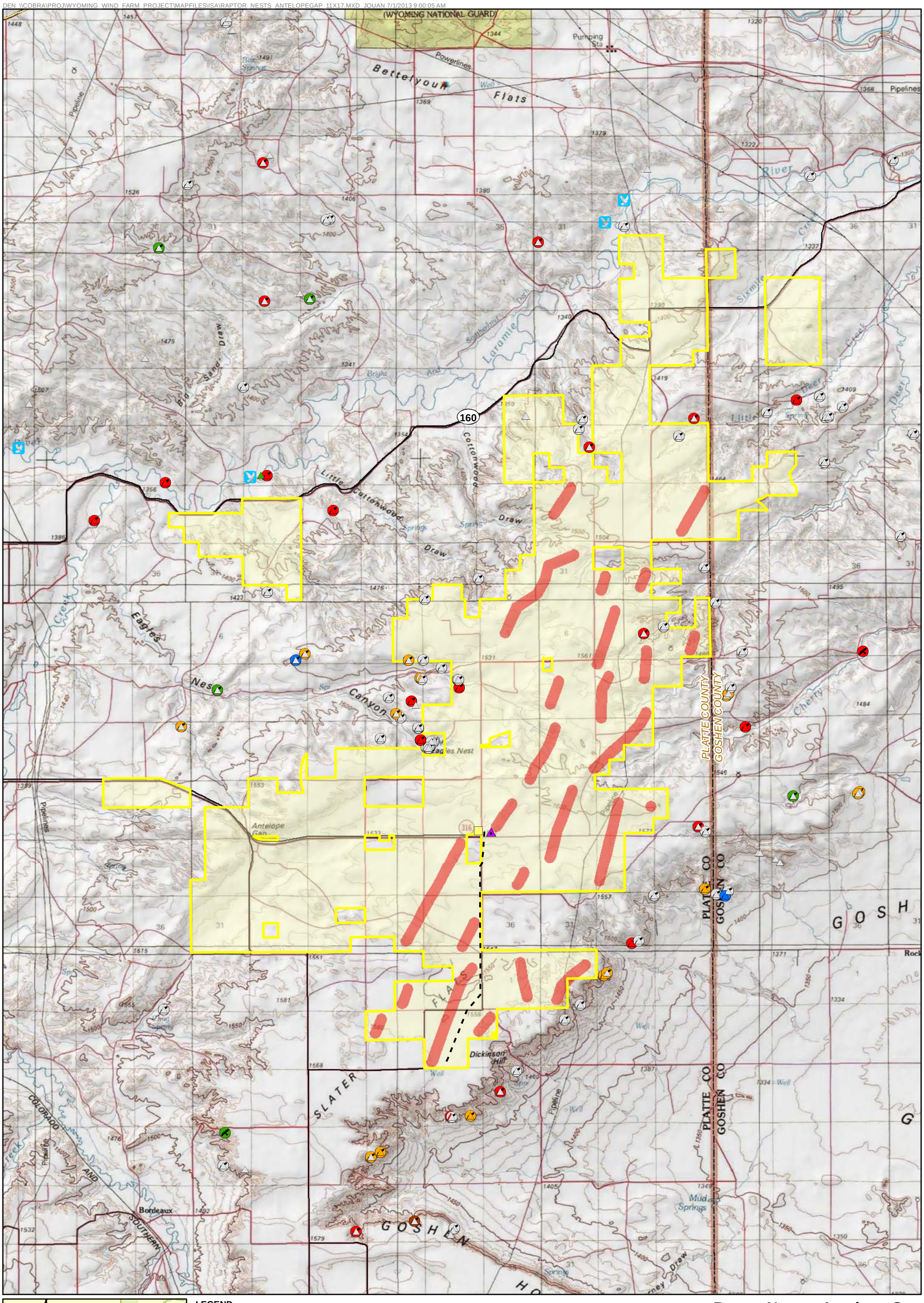

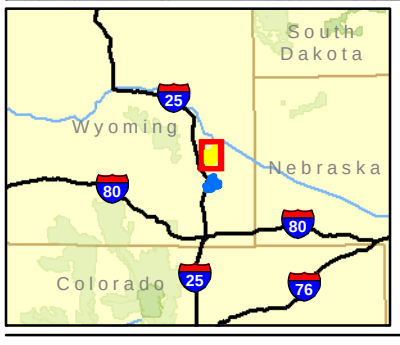

LEGEND

- Antelope Gap Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- 2012 Bald Eagle Winter Roost

2012 Raptor Nests

- Canada Goose
- Common Raven
- Ferruginous Hawk
- Great horned owl
- Osprey
- Prairie Falcon
- Red-tailed Hawk
- Unknown Raptor

2011 Raptor Nests

- Ferruginous Hawk
- Great horned owl
- Prairie Falcon
- Red-tailed Hawk
- Unknown Raptor

N

0 0.75 1.5
Miles

Raptor Nests - Antelope Gap

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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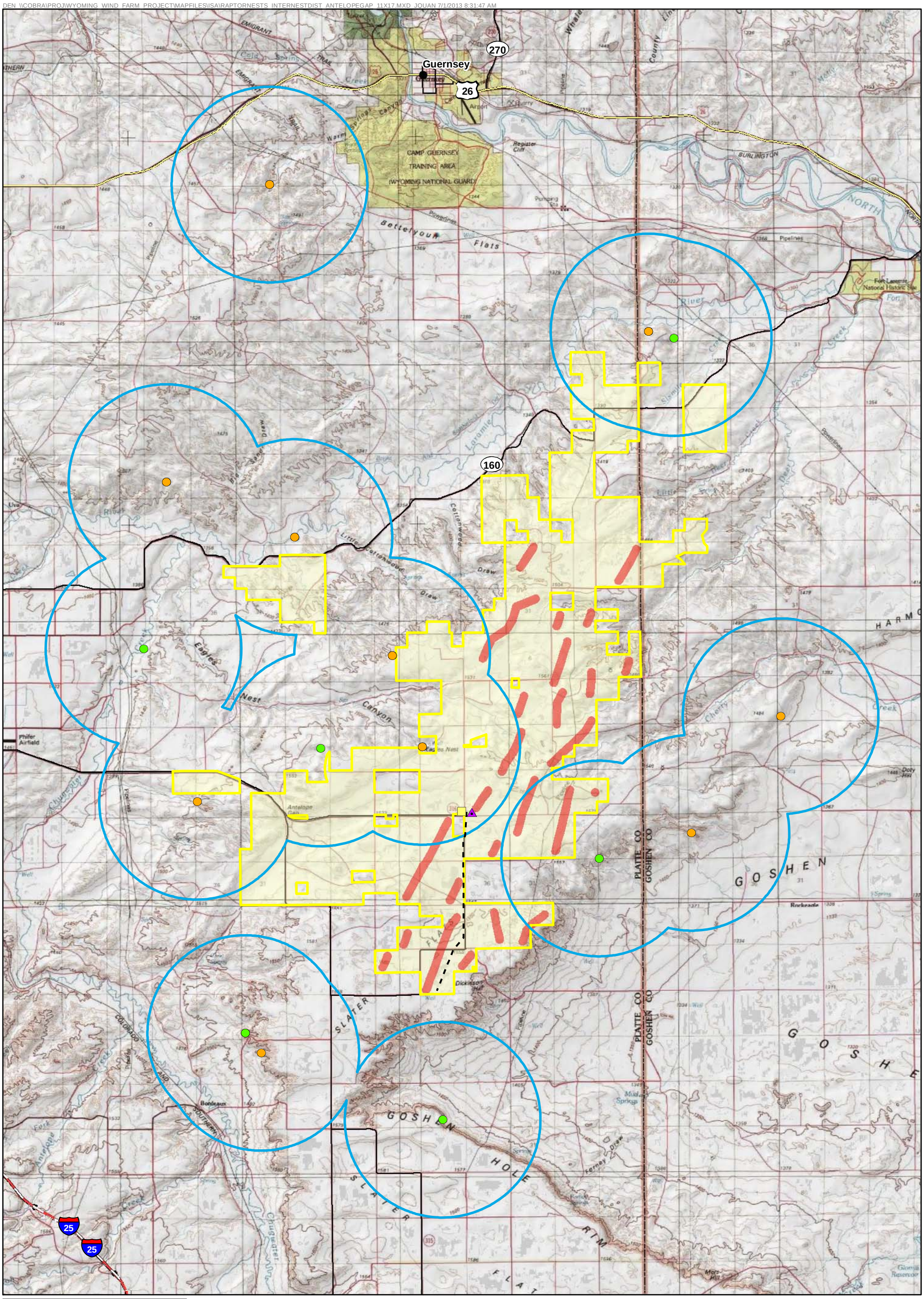

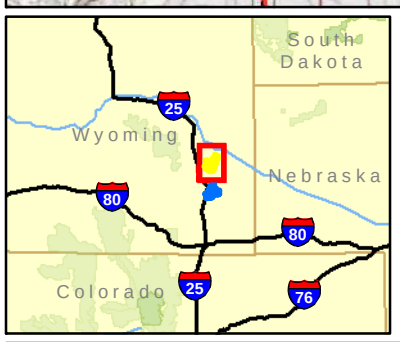

LEGEND

- Antelope Gap Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Occupied Golden Eagle Nest - 2011
- Occupied Golden Eagle Nest - 2012
- Golden Eagle 2012 - 1/2 the Average Inter-Nest Distance

N

0 1 2
Miles

Eagle Inter-Nest Distances
Antelope Gap Parcel
Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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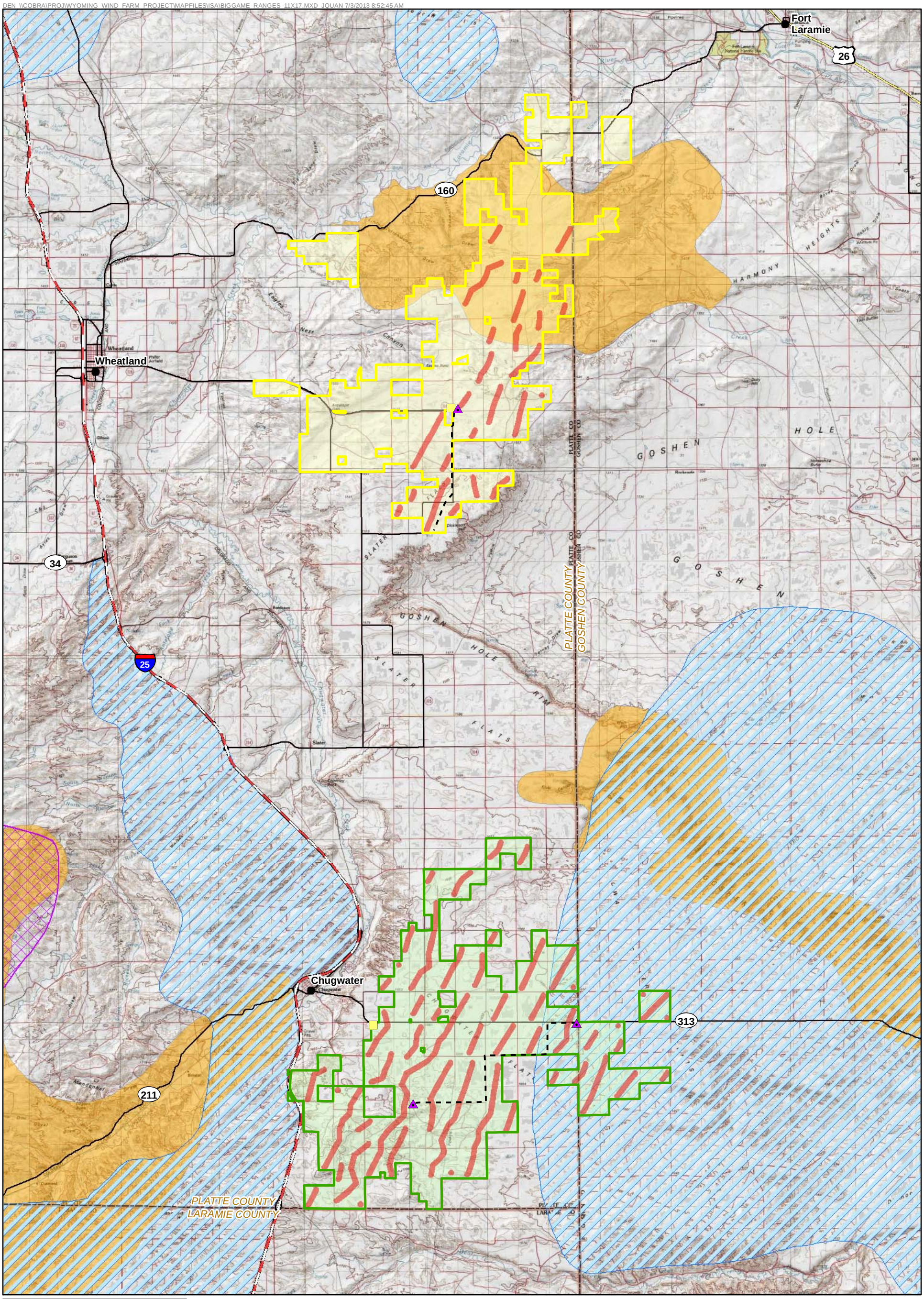

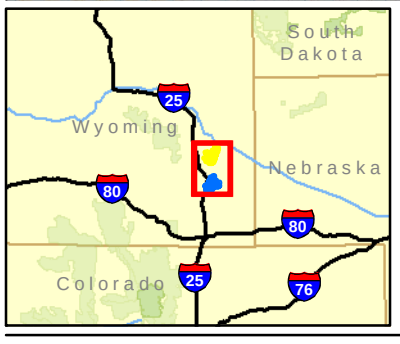

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Mule Deer Crucial Range
- Elk Crucial Range
- Pronghorn Crucial Range

N

0 1 2
Miles

Source: Wyoming Game and Fish Department, 2012

Crucial Big Game Ranges

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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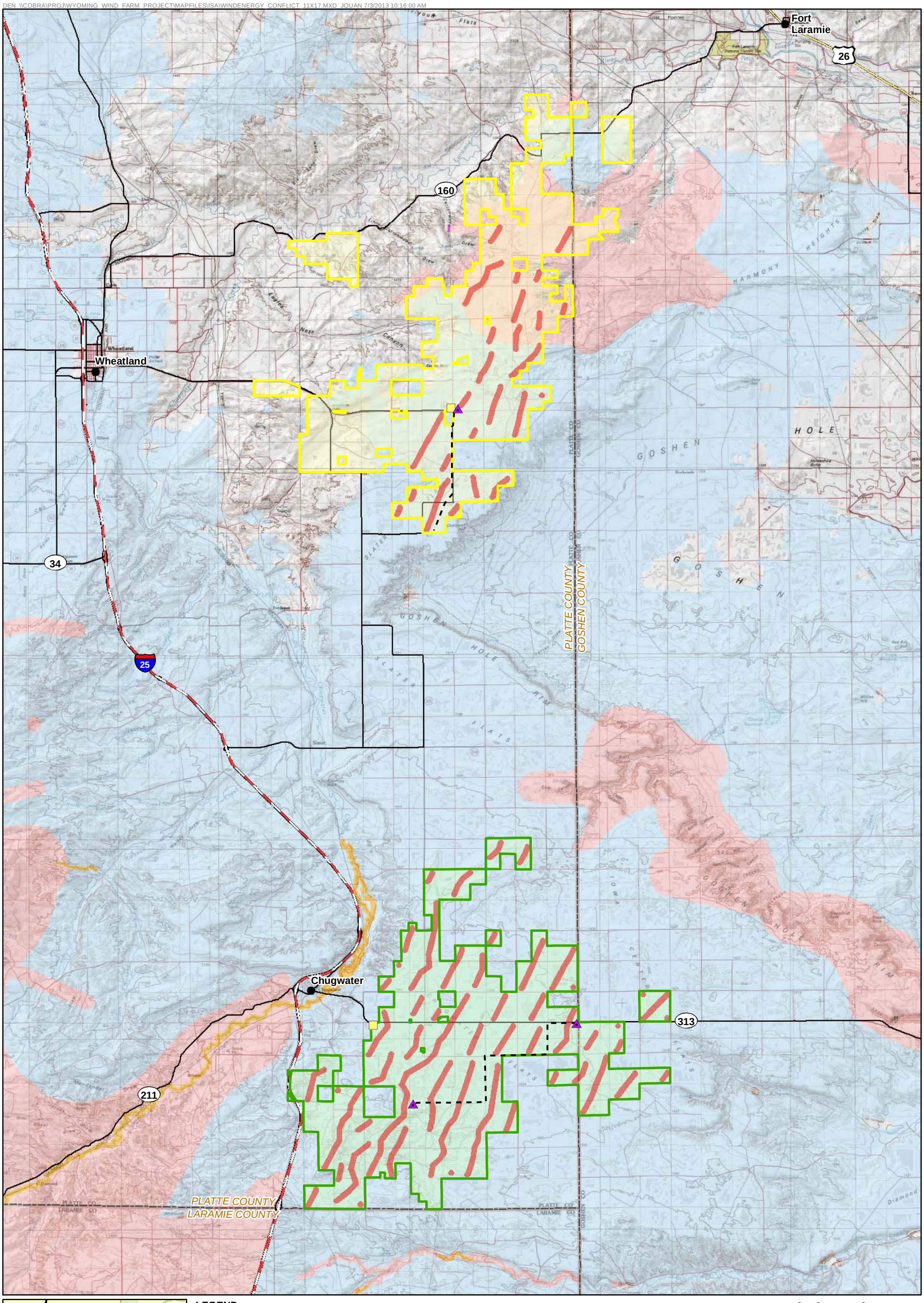

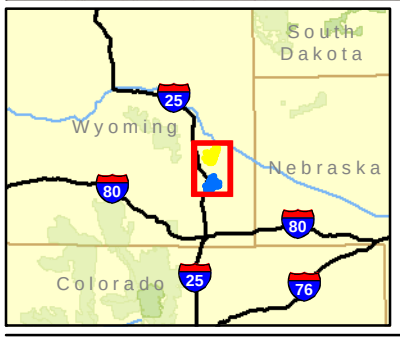

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line

Wind Development Environmental Conflicts

- Minimal Environmental Conflicts
- Excluded
- High Sensitive
- Sensitive

Data provided by Wyoming Game and Fish Department

N

0 1 2
Miles

Wind Development Environmental Conflicts

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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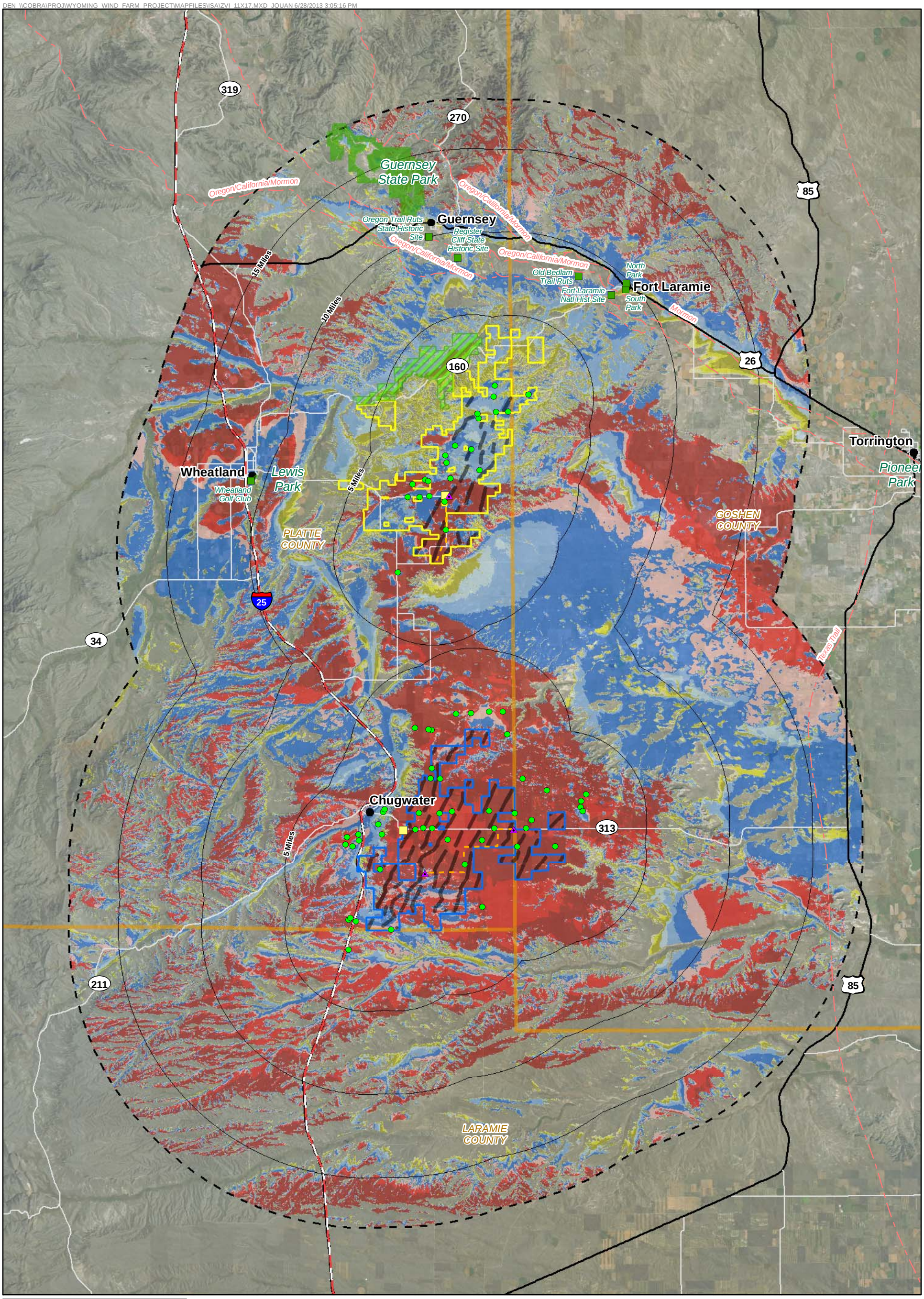

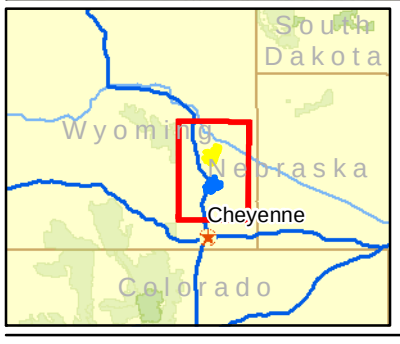

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Recreational Area
- Residences
- Historical Trail
- Grayrocks Wildlife Habitat Management Area
- Park
- 18-mile Buffer
- Turbine Array

# of Turbines Visible

- 1 - 2
- 3 - 6
- 7 - 15
- 16 - 30
- 31 - 60
- 61 - 120
- 121 - 180
- 181 - 240
- 241 - 315

Source: National Hydrography Dataset, 2013

N

0 2.5 5 Miles

Zone of Visual Influence

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

CH2MHILL

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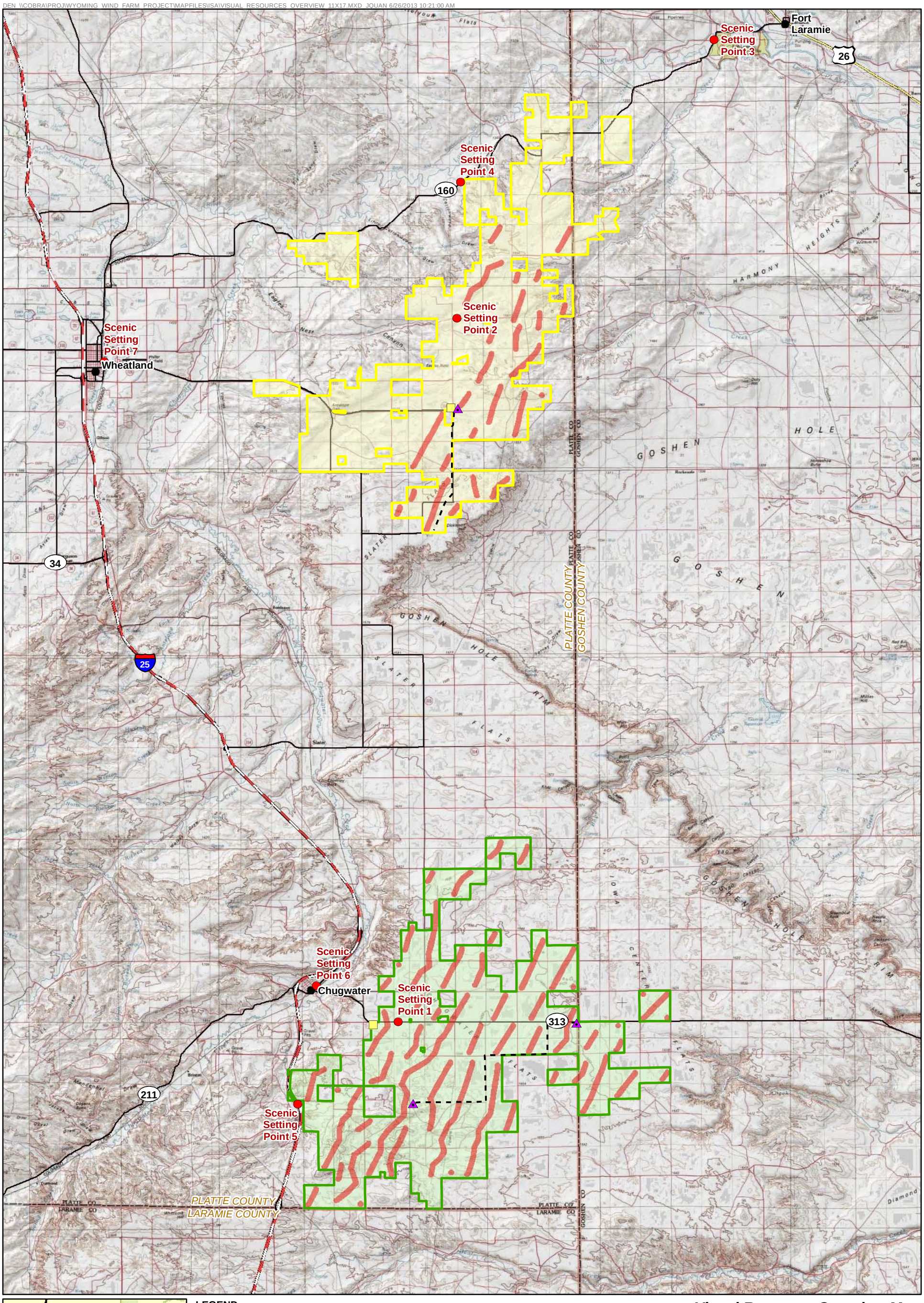

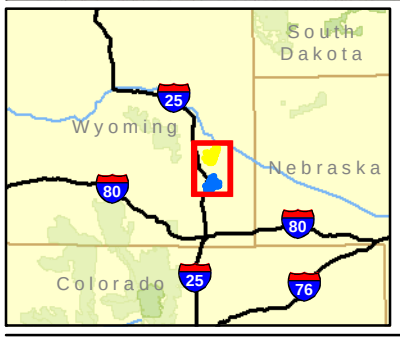

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Scenic Setting Point

N

0 1 2
Miles

Visual Resource Overview Map

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

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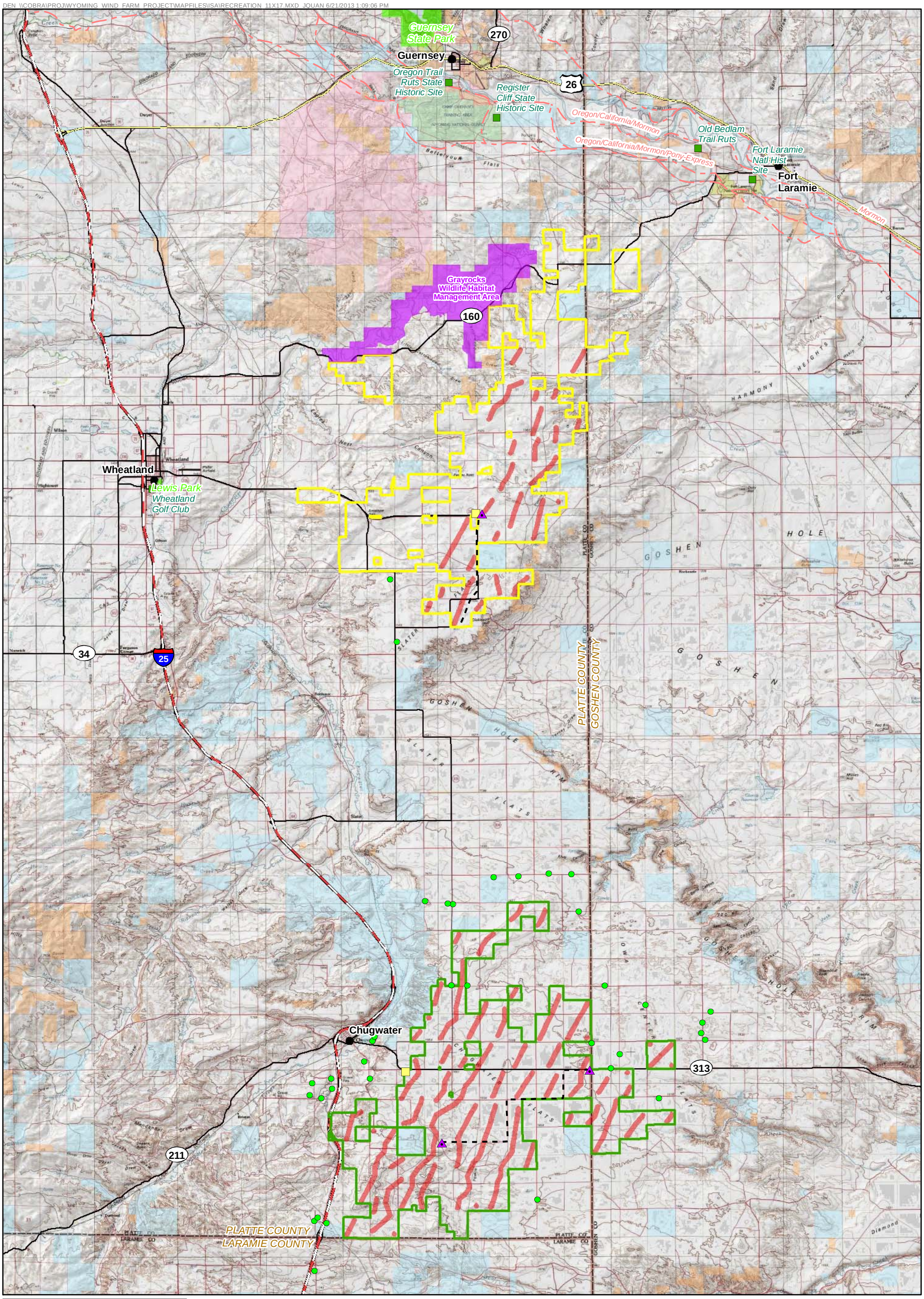

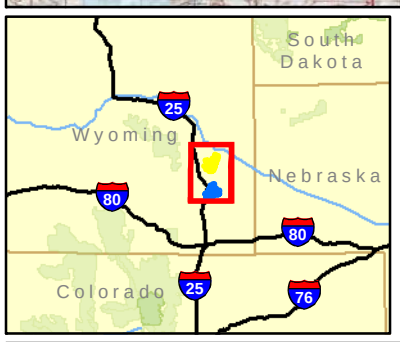

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Residence within 2 miles
- Recreational Area/Historic Site
- Historical Trail
- Park
- Grayrocks Wildlife Habitat Management Area

Surface Management

- Bureau of Land Management
- Department of Defense
- Private
- State

N

0 2 4
Miles

Recreation

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

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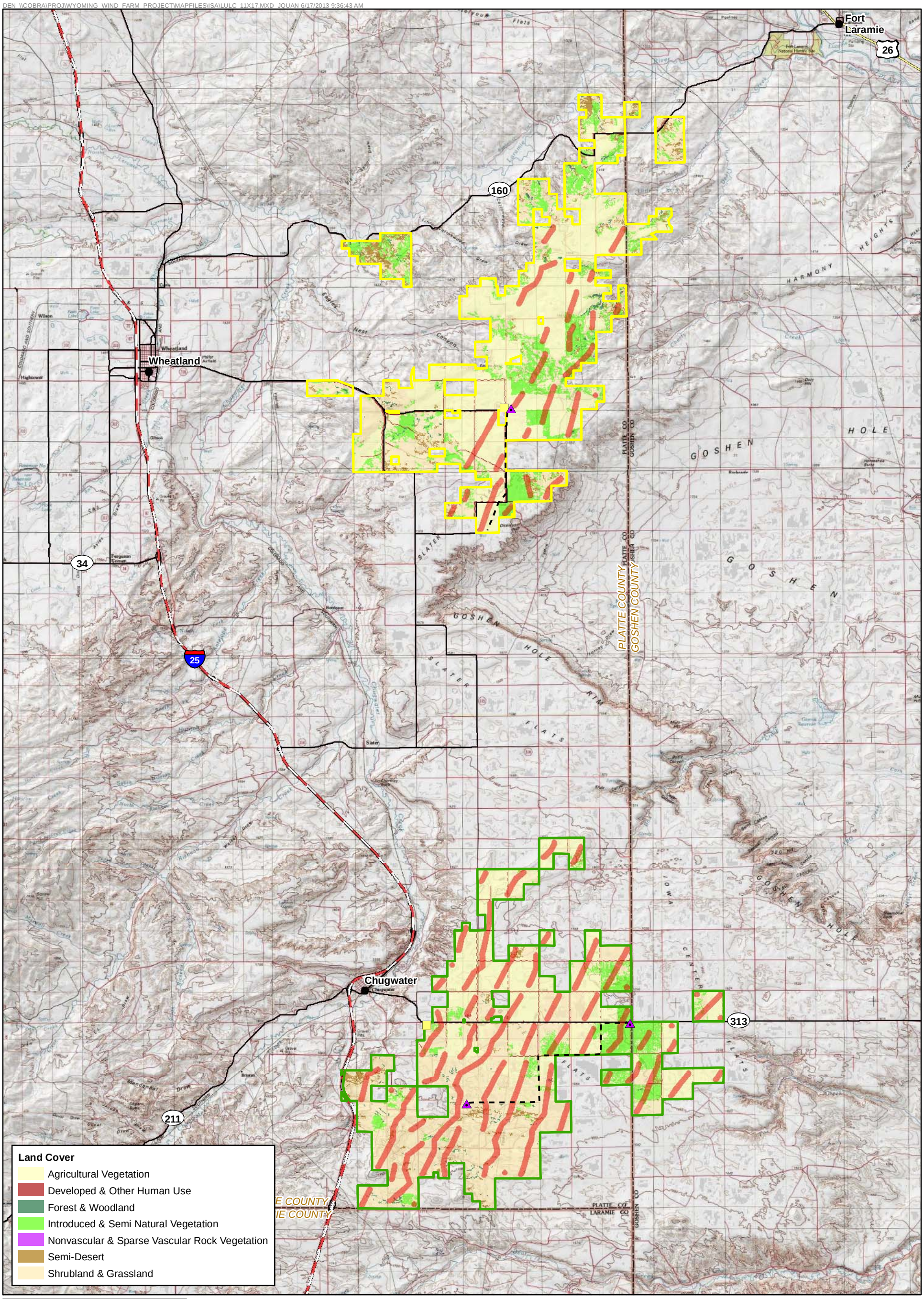

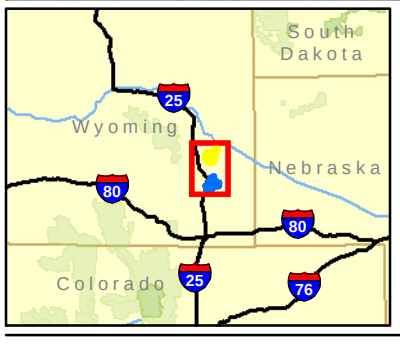

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line

Source: National Gap Analysis Program (GAP), 2010

N

0 1 2
Miles

Land Cover
Wyoming Wind Farm
Platte and Goshen Counties, WY

Wyoming Wind & Power

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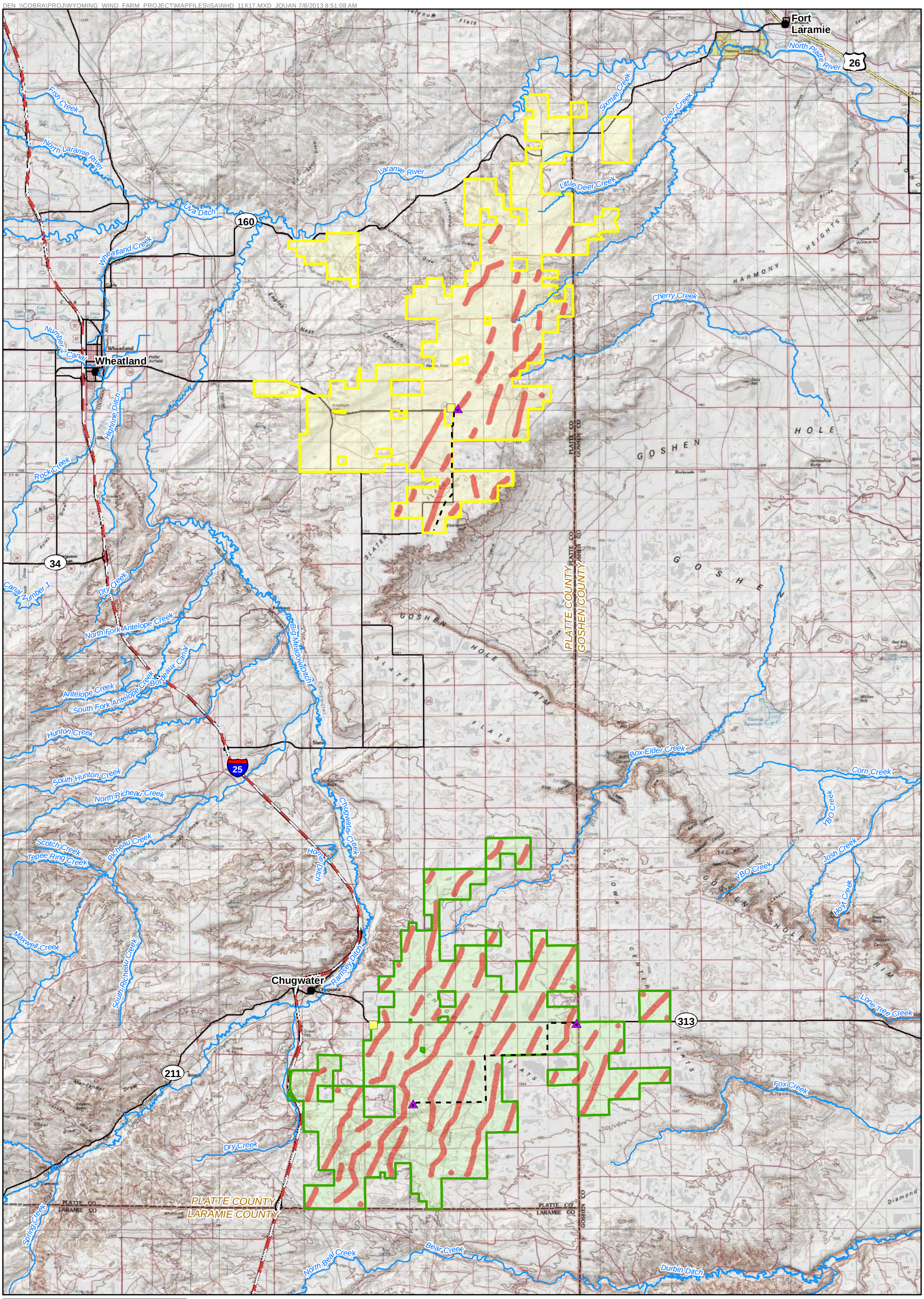

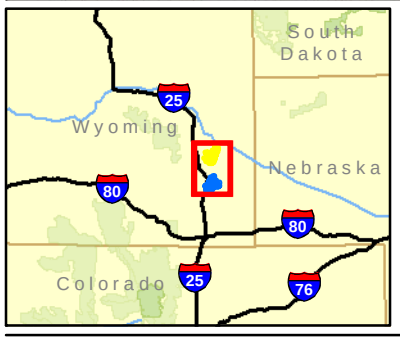

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Surface Water

Source: National Hydrography Dataset, 2013

N

0 1 2
Miles

Surface Water

Wyoming Wind Farm

Platte and Goshen Counties, WY

Wyoming Wind & Power

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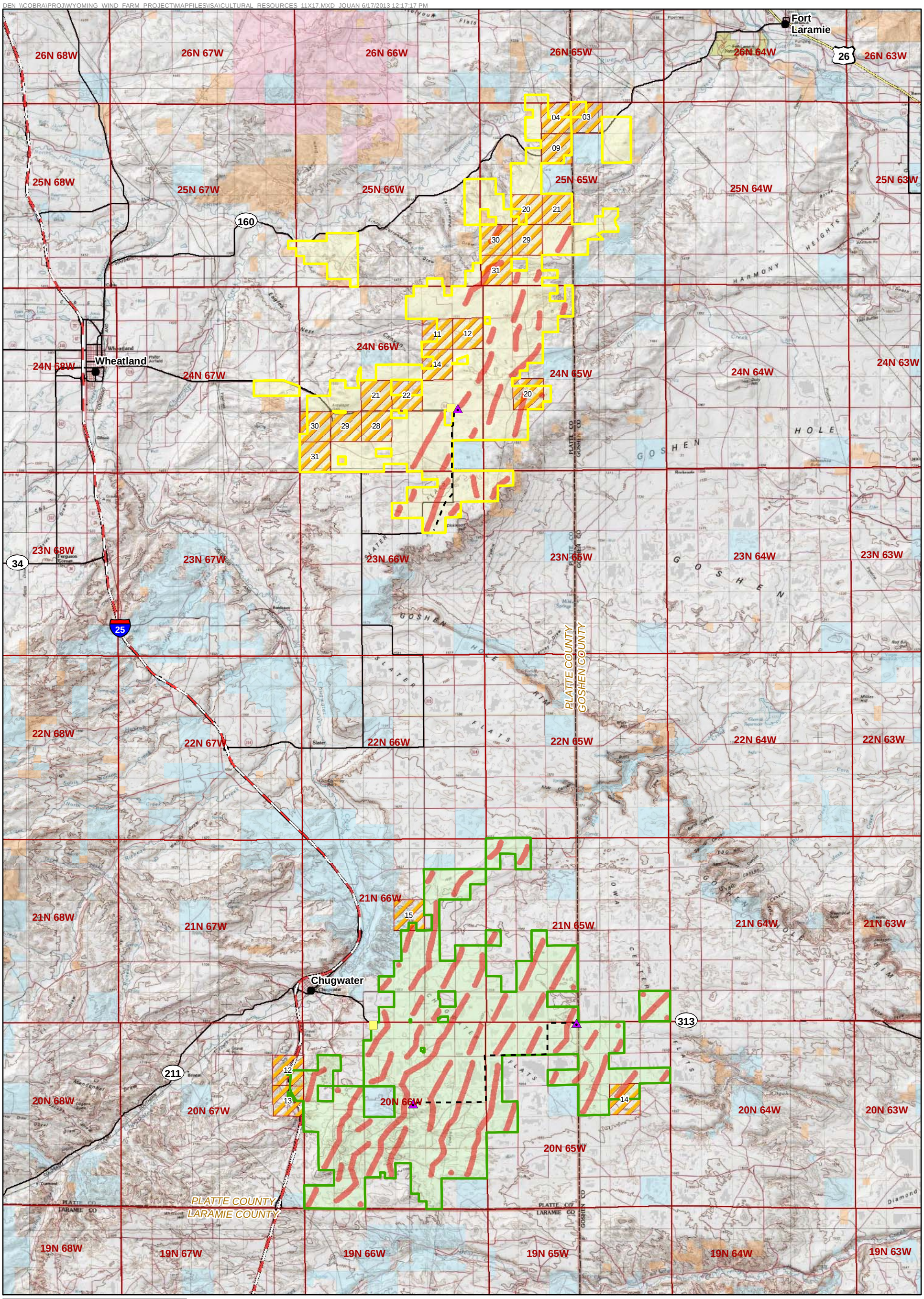

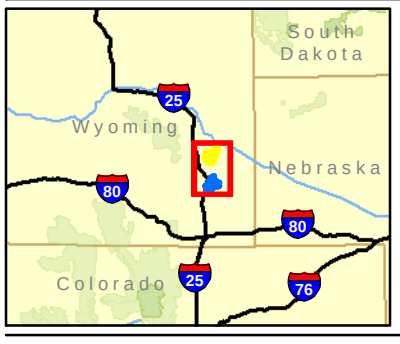

LEGEND

- Antelope Gap Parcel
- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- WYCRO Database Record*

Surface Management

- Bureau of Land Management
- Department of Defense
- Private
- State

Source: WYCRO Database accessed 2013
*Sections highlighted indicate the presence of one or more recorded cultural resources within that section.

N

0 0.9 1.8
Miles

Cultural Resources
Wyoming Wind Farm
Platte and Goshen Counties, WY

Wyoming Wind & Power

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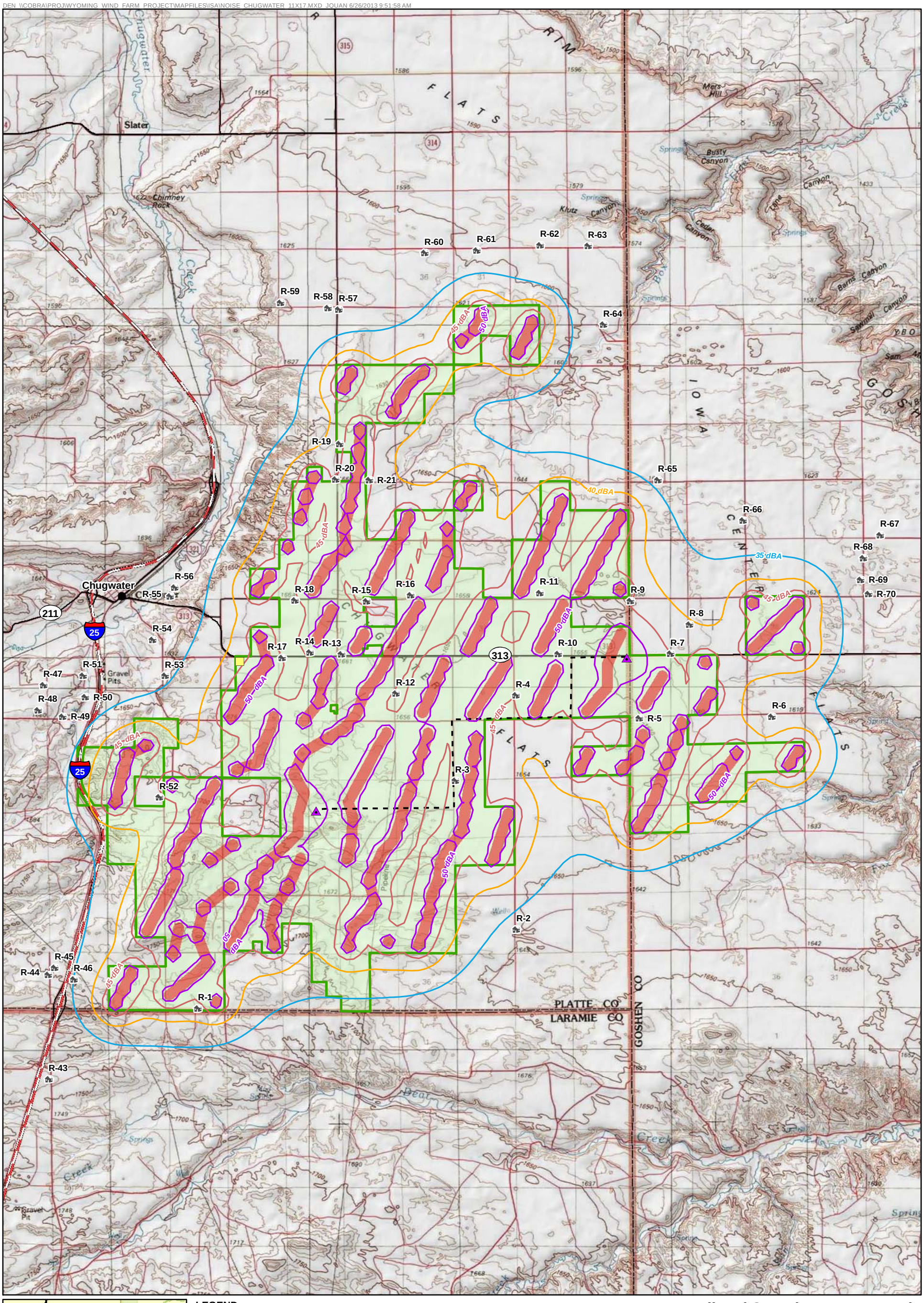

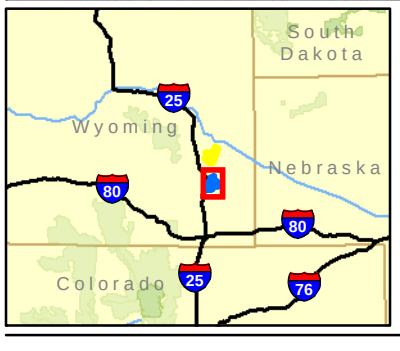

LEGEND

- Chugwater Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Residence

Predicted Sound Pressure Levels (dBA)

- 35
- 40
- 45
- 50

Note: Preliminary turbine locations were used to estimate project noise levels.
Those turbines are within the arrays shown, but specific locations of the turbines are not indicated.

N

0 1 2
Miles

Predicted Sound Pressure Levels
Chugwater Parcel
Wyoming Wind Farm
Platte and Goshen Counties, WY

Wyoming Wind & Power

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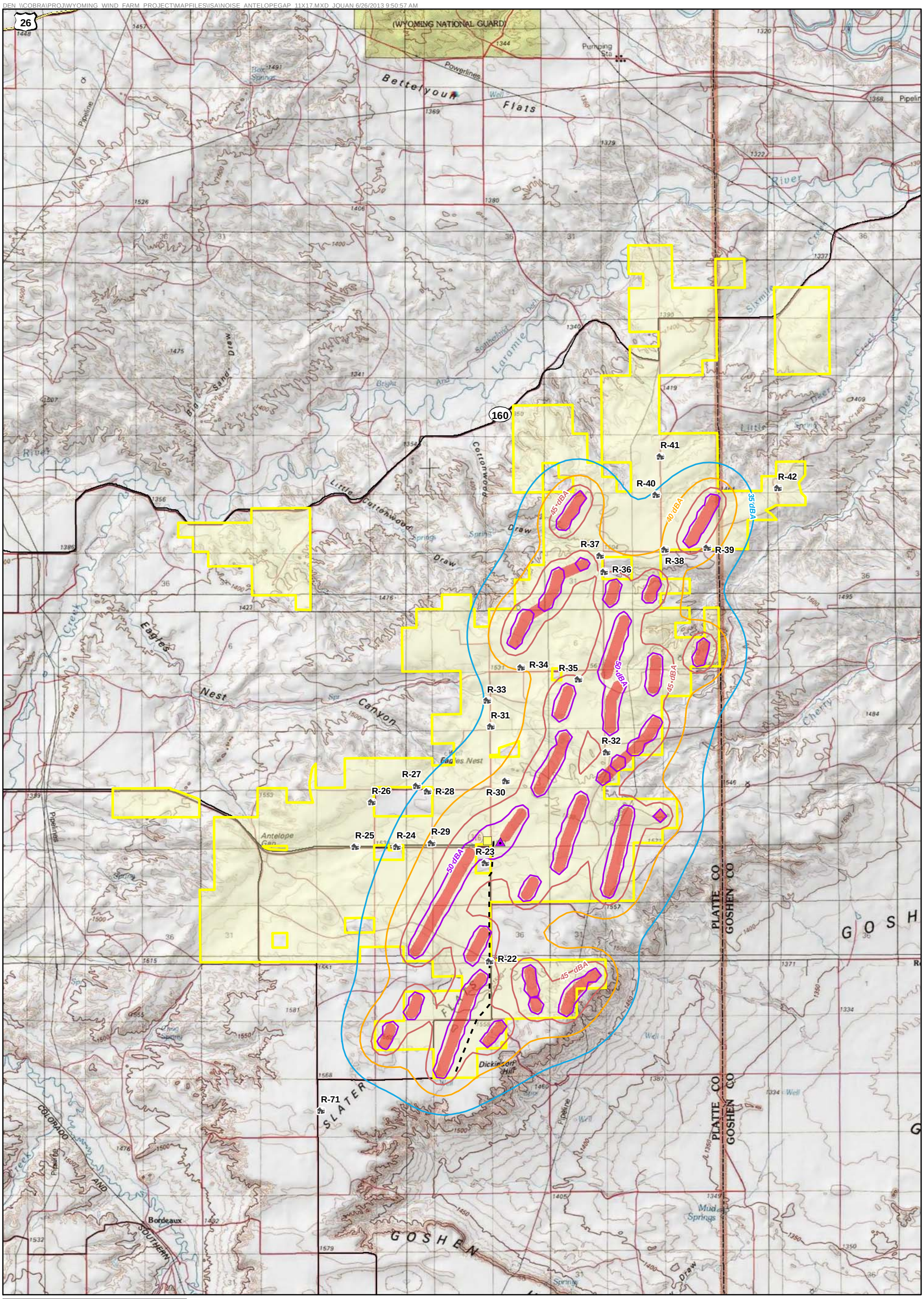

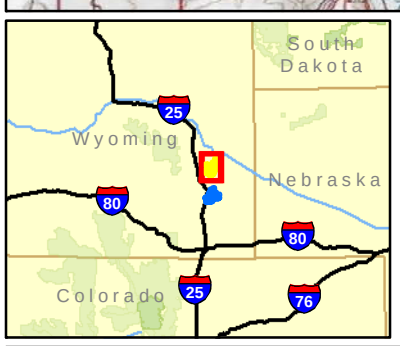

LEGEND

- Antelope Gap Parcel
- Turbine Array
- Operation and Maintenance Facility
- Substation
- Project Transmission Line
- Residence

Predicted Sound Pressure Levels (dBA)

- 35
- 40
- 45
- 50

Note: Preliminary turbine locations were used to estimate project noise levels.
Those turbines are within the arrays shown, but specific locations of the turbines are not indicated.

N

0 1 2
Miles

Predicted Sound Pressure Levels
Antelope Gap Parcel
Wyoming Wind Farm
Platte and Goshen Counties, WY

Wyoming Wind & Power

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Appendix C
Impact Assistance Calculation

History of State Sales and Use Tax Given to Platte County Governments

		State Share Given			State Share Given to Muni's			Total
Serial	Month	Sales	Use	Total	Sales	Use	Total	
1	July 04	7,484	1,006	8,490	76,540	29,572	106,112	114,602
2	Aug 04	9,481	1,288	10,769	126,088	28,636	154,724	165,493
3	Sep 04	9,563	1,154	10,717	100,909	28,723	129,632	140,349
4	Oct O4	9,469	1,191	10,660	96,427	29,819	126,246	136,906
5	Nov 04	9,574	1,269	10,843	104,307	30,659	134,966	145,809
6	Dec 04	8,867	1,258	10,125	94,727	29,887	124,614	134,739
7	Jan 05	8,355	1,109	9,464	93,715	31,143	124,858	134,322
8	Feb 05	8,790	1,075	9,865	94,205	36,021	130,226	140,091
9	Mar 05	9,463	1,213	10,676	91,382	29,963	121,345	132,021
10	Apr 05	7,937	1,198	9,135	77,148	31,091	108,239	117,374
11	May 05	8,803	1,538	10,341	80,140	39,061	119,201	129,542
12	Jun 05	9,067	1,396	10,463	102,846	39,873	142,719	153,182
13	Jul 05	8,826	1,360	10,186	96,074	44,865	140,939	151,125
14	Aug 05	12,632	1,481	14,113	136,870	34,461	171,331	185,444
15	Sep 05	9,888	1,376	11,264	100,837	50,105	150,942	162,206
16	Oct 05	10,916	1,405	12,321	106,337	23,262	129,599	141,920
17	Nov 05	9,938	1,368	11,306	87,478	22,741	110,219	121,525
18	Dec 05	9,563	13,997	23,560	102,555	39,937	142,492	166,052
19	Jan 06	9,787	1,215	11,002	103,496	19,923	123,419	134,421
20	Feb 06	10,354	1,401	11,755	91,248	47,984	139,232	150,987
21	Mar 06	11,278	1,292	12,570	91,615	24,474	116,089	128,659
22	Apr 06	8,183	1,272	9,455	83,819	34,300	118,119	127,574
23	May 06	11,122	1,975	13,097	119,474	55,846	175,320	188,417
24	Jun 06	10,816	1,769	12,585	109,269	25,092	134,361	146,946
25	Jul 06	10,093	1,490	11,583	110,964	53,931	164,895	176,478
26	Aug 06	13,627	1,993	15,620	115,320	41,412	156,732	172,352
27	Sep 06	11,189	1,703	12,892	109,699	27,343	137,042	149,934
28	Oct 06	11,142	1,902	13,044	108,665	34,029	142,694	155,738
29	Nov 06	12,830	2,162	14,992	99,297	26,456	125,753	140,745
30	Dec 06	10,324	1,843	12,167	84,141	31,822	115,963	128,130
31	Jan 07	11,386	1,669	13,055	98,803	31,456	130,259	143,314
32	Feb 07	10,828	1,817	12,645	81,393	29,036	110,429	123,074
33	Mar 07	10,294	1,589	11,883	92,490	41,896	134,386	146,269
34	Apr 07	9,693	1,453	11,146	114,966	31,953	146,919	158,065
35	May 07	11,388	1,856	13,244	98,275	59,511	157,786	171,030
36	June 07	9,788	1,602	11,390	105,523	59,456	164,979	176,369
37	July 07	11,474	2,114	13,588	180,834	30,102	210,936	224,524
38	Aug 07	13,025	2,222	15,247	125,067	57,679	182,746	197,993
39	Sept 07	11,891	1,256	13,147	115,138	31,463	146,601	159,748
40	Oct 07	12,785	3,145	15,930	120,330	39,902	160,232	176,162
41	Nov 07	12,082	1,593	13,675	97,872	27,114	124,986	138,661
42	Dec 07	10,766	1,877	12,643	100,660	48,769	149,429	162,072
43	Jan 08	11,392	1,718	13,110	86,632	30,864	117,496	130,606
44	Feb 08	11,804	2,113	13,917	100,603	23,129	123,732	137,649
45	Mar 08	10,642	1,724	12,366	137,990	51,336	189,326	201,692
46	Apr 08	10,536	1,433	11,969	90,649	44,282	134,931	146,900
47	May 08	11,511	1,930	13,441	97,910	47,466	145,376	158,817
48	Jun 08	11,133	1,662	12,795	102,344	49,060	151,404	164,199
49	Jul 08	10,965	1,522	12,487	119,844	46,289	166,133	178,620
50	Aug 08	14,612	2,100	16,712	115,032	30,244	145,276	161,988
51	Sept 08	14,123	1,889	16,012	124,444	35,137	159,581	175,593

		State Share Given			State Share Given to Muni's			Total
Serial	Month	Sales	Use	Total	Sales	Use	Total	
52	Oct 08	14,052	1,856	15,908	132,797	32,845	165,642	181,550
53	Nov 08	12,312	1,900	14,212	78,308	39,632	117,940	132,152
54	Dec 08	11,859	1,842	13,701	92,942	28,934	121,876	135,577
55	Jan 09	11,288	1,706	12,994	91,649	36,883	128,532	141,526
56	Feb 09	13,358	1,930	15,288	88,381	26,022	114,403	129,691
57	Mar 09	10,727	2,230	12,957	95,209	51,592	146,801	159,758
58	Apr 09	10,488	2,030	12,518	85,657	95,640	181,297	193,815
59	May 09	8,875	1,573	10,448	83,454	68,097	151,551	161,999
60	June 09	9,626	1,453	11,079	93,900	63,087	156,987	168,066
61	July 09	10,466	2,048	12,514	164,829	47,476	212,305	224,819
62	Aug 09	10,582	1,413	11,995	108,504	38,743	147,247	159,242
63	Sep 09	10,278	1,687	11,965	111,221	35,587	146,808	158,773
64	Oct 09	9,847	1,539	11,386	92,519	**(21,602)**	70,917	82,303
65	Nov 09	10,918	1,469	12,387	94,265	33,945	128,210	140,597
66	Dec 09	10,218	1,403	11,621	85,633	26,943	112,576	124,197
67	Jan 10	8,669	1,524	10,193	78,122	27,065	105,187	115,380
68	Feb 10	9,804	840	10,644	109,700	37,288	146,988	157,632
69	Mar 10	9,670	1,361	11,031	92,011	44,282	136,293	147,324
70	Apr 10	9,095	1,434	10,529	82,061	41,063	123,124	133,653
71	May 10	9,369	1,543	10,912	82,824	83,669	166,493	177,405
72	Jun 10	10,208	1,637	11,845	108,461	64,139	172,600	184,445
73	Jul 10	9,475	1,927	11,402	107,012	38,053	145,065	156,467
74	Aug 10	12,167	1,666	13,833	122,754	44,317	167,071	180,904
75	Sep 10	10,233	1,584	11,817	93,028	26,511	119,539	131,356
76	Oct 10	11,802	2,389	14,191	100,914	23,019	123,933	138,124
77	Nov 10	11,943	1,766	13,709	114,074	39,396	153,470	167,179
78	Dec 10	9,692	1,388	11,080	94,663	35,063	129,726	140,806
79	Jan 11	11,547	1,885	13,432	120,027	50,009	170,036	183,468
80	Feb 11	10,135	1,611	11,746	95,953	43,289	139,242	150,988
81	Mar 11	10,361	1,552	11,913	104,971	41,620	146,591	158,504
82	Apr 11	9,158	1,469	10,627	98,670	85,531	184,201	194,828
83	May 11	10,809	1,771	12,580	122,353	90,301	212,654	225,234
84	Jun 11	11,083	1,701	12,784	121,561	43,368	164,929	177,713
85	Jul 11	8,480	1,561	10,041	112,380	49,268	161,648	171,689
86	Aug 11	12,487	1,768	14,255	155,967	36,843	192,810	207,065
87	Sept 11	11,292	1,670	12,962	121,067	34,551	155,618	168,580
88	Oct 11	10,767	1,650	12,417	121,631	39239	160,870	173,287
89	Nov 11	11,622	1,863	13,485	119,484	38,628	158,112	171,597
90	Dec 11	9,774	1,587	11,361	**98,598**	44,966	143,564	154,925
91	Jan 12	11,111	1,532	12,643	115,743	40,689	156,432	169,075
92	Feb 12	11,354	1,562	12,916	**123,341**	101,126	224,467	237,383
93	Mar 12	9,313	1,564	10,877	**97,414**	124,410	221,824	232,701
94	Apr 12	10,152	1,553	11,705	127,138	56,175	183,313	195,018
95	May 12	10,091	1,760	11,851	126,813	47,265	174,078	185,929
96	Jun 12	9,291	1,676	10,967	119,282	90,062	209,344	220,311
97	July 12	10,116	1,561	11,677	134,685	60,652	195,337	207,014
98	Aug 12	12,131	1,966	14,097	139,039	38,947	177,986	192,083
99	Sep 12	10,295	1,483	11,778	119,923	52,104	172,027	183,805
100	Oct 12	10,804	1,588	12,392	124,308	46,000	170,308	182,700
101	Nov 12	11,287	1,609	12,896	126,191	47,477	173,668	186,564
102	Dec 12	**9,292**	1,715	11,007	127,043	30,027	157,070	168,077
103	Jan 13	10,590	1,521	12,111	118,599	41,926	160,525	172,636

		State Share Given			State Share Given to Muni's			Total
Serial	Month	Sales	Use	Total	Sales	Use	Total	
104	Feb 13	9,482	1,464	10,946	105,363	57,075	162,438	173,384
105	Mar 13	9,045	1,296	10,341	101,386	28,427	129,813	140,154
106	Apr 13	9,876	1,497	11,373	116,496	38,553	155,049	166,422
							Base period amount:	181,590

Forecast of Impact Assistance Payments

Serial	Month	*SLR*	BasePeriod	**Impact Assistance**
107	May 2013	*182,899*	181,590	***1,309***
108	June 2013	*183,305*	181,590	***1,715***
109	Jul 2013	*183,712*	181,590	***2,122***
110	Aug 2013	*184,118*	181,590	***2,528***
111	Sep 2013	*184,525*	181,590	***2,935***
112	Oct 2013	*184,931*	181,590	***3,341***
113	Nov 2013	*185,338*	181,590	***3,748***
114	Dec 2013	*185,744*	181,590	***4,154***
115	Jan 2014	*186,150*	181,590	***4,561***
116	Feb 2014	*186,557*	181,590	***4,967***
117	Mar 2014	*186,963*	181,590	***5,373***
118	Apr 2014	*187,370*	181,590	***5,780***

3,544 Forecast average monthly impact assistance

42,533 Forecast yearly impact assistance

1.024 Forecast growth rate in sales & use tax

Appendix D
Public Involvement Materials

Appendix D-1
Project 2-Page Handout

Wyoming Wind Farm

Project Description

Wyoming Wind and Power, LLC (WW&P) proposes to construct a wind energy facility in Platte and Goshen Counties. The Project will consist of up to 300 wind turbine generators in a single phase. The Project area consists of two areas, one near Wheatland and one near Chugwater. There will be substations serving each of these areas. The Project will also consist of transformers, underground and overhead collector lines, operations and maintenance buildings, turbine access roads, and permanent meteorological towers.

The Project is proposed to deliver power to the electrical grid through the Wyoming-Colorado Intertie Transmission Project. WW&P is subscribed to 100 percent of this 345 kilovolt transmission line that will connect the Laramie River Station power plant substation to the Pawnee substation near Brush in northern Colorado. This transmission line is a third-party project of a public/private partnership between LS Power and the Wyoming Infrastructure Authority, and is not part of the wind energy project.

The wind energy facility will be located on privately-owned fee lands totaling over 75 landowners. No state lands or federally-managed lands are proposed to be used for the Project.

Project Schedule

Construction of the Project will commence upon receipt of all permits and is planned to begin in the fourth quarter of 2013. The first stage of the facility is expected to be completed, commissioned, and operational by the fourth quarter of 2016. Construction is expected to be continuous, with the exception of winter months, through complete build-out in the end of 2019.

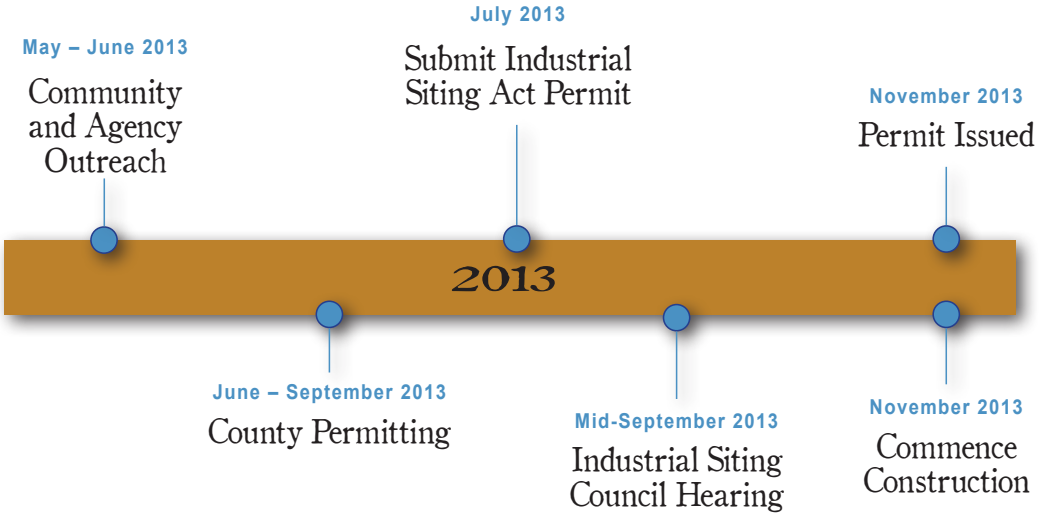
Local Economic Benefits

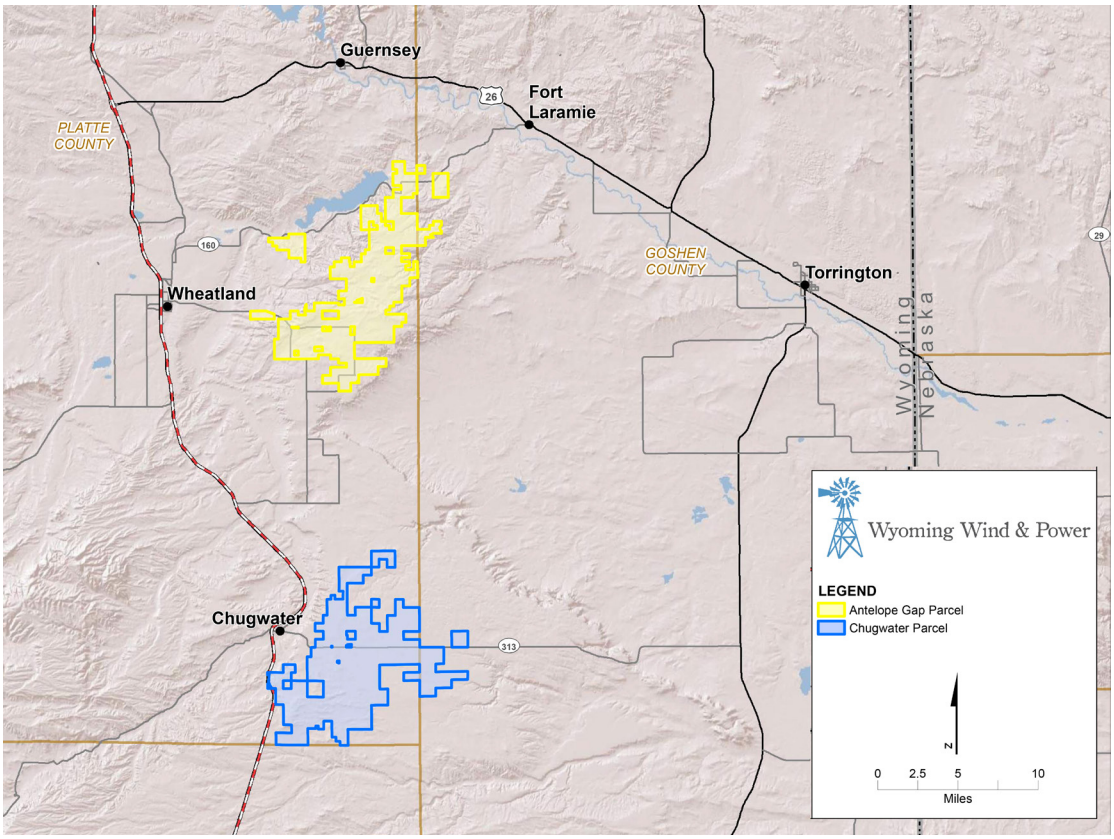
Development of the Project carries significant economic benefits, including creation of new jobs, increased ad valorem taxes, and new dollars supporting the local economy. The Project will generate distinct and positive economic impacts during both construction and operation phases. Specifically, development and construction will result in a short-term surge in economic spending activity, while operation will produce long-term economic benefits to local communities. Both sources of regional economic stimuli will result in increased output, income, and employment, primarily in Platte County.

Environmental Benefits

Wind power is a renewable and non-polluting source of electricity. It is clean energy that produces no emissions, which means it does not contribute to acid rain and snow, global climate change, smog, mercury contamination, water withdrawal, or particulate-related health effects. The Project will contribute to the power purchaser's overall renewable electrical generation yet will not create direct pollutant emissions during operation. In addition, unlike most other electrical generation sources, wind turbines do not consume water or require additional fuel sources. Lastly, construction and operation of the Project is a non-extractive source of electrical generation leaving the majority of the surrounding land available for multiple uses.

Permitting Timeline





Appendix D-2
Public Open House Newspaper Notice

Public Open House

Wyoming Wind and Power, LLC, a Wyoming company, is developing a 900 MW wind energy project in both Platte and Goshen Counties, consisting of up to 300 wind turbines near Wheatland and Chugwater. The company is inviting the public to attend a free informational meeting and Open House to learn more about this exciting energy project.

Tuesday, May 28
5:00 - 8:00pm
First State Bank Conference Center
1405 16th Street
Wheatland, Wyoming

Wyoming Wind and Power

Appendix D-3
Public Open House Display Posters

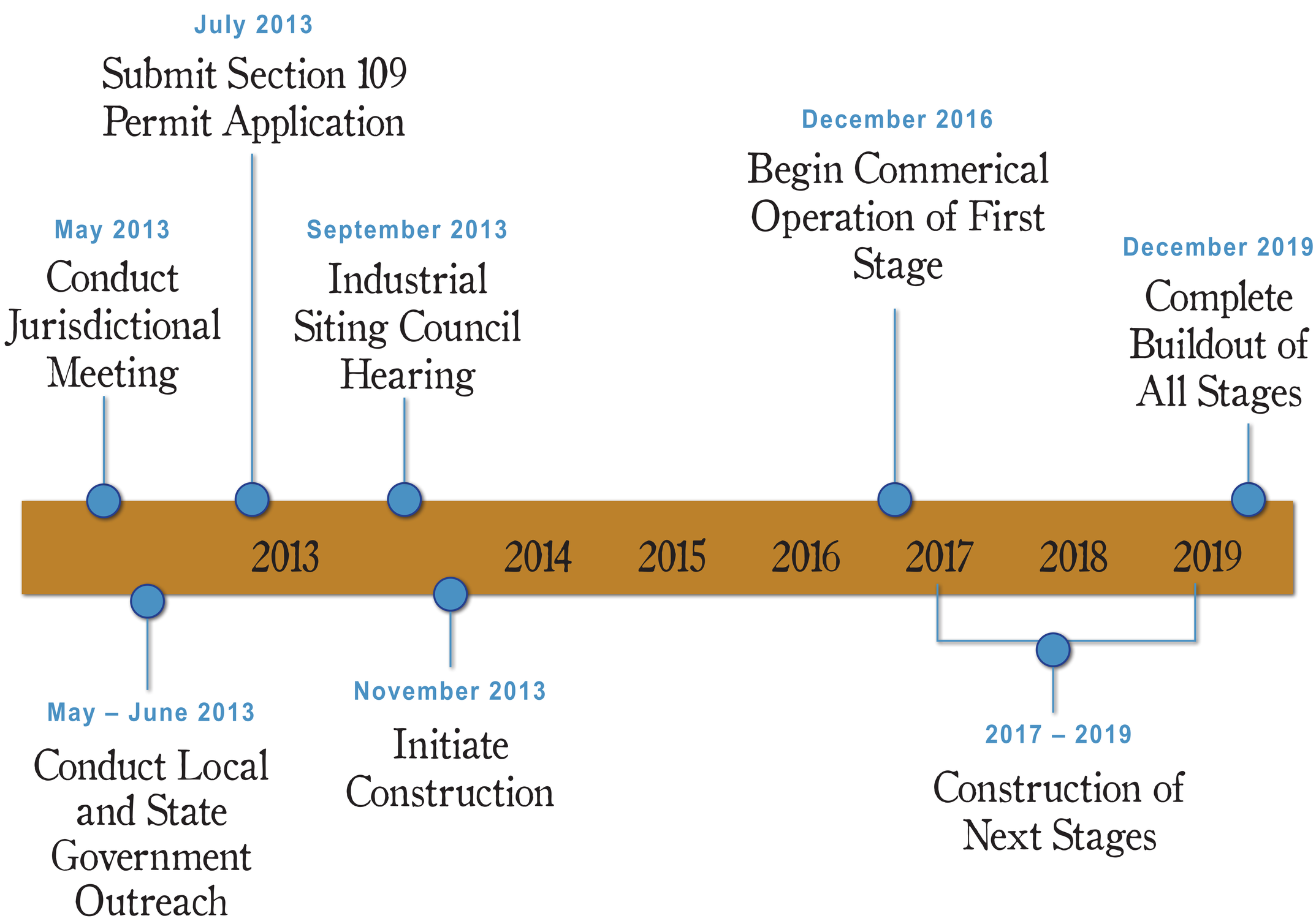
About the Project

- 900-Megawatt (MW) production capacity
- The Project will use up to 300 wind turbine generators (WTGs). Facilities and related infrastructure will include WTGs mounted on tubular towers, transformers, and electric and fiber optic communications cables.
- WTGs consist of three main structures: steel tubular tower, nacelle, and rotor blades. The WTGs will be grouped in strings, interconnected with an underground power collection system connected to a centrally located substation for delivery to the electrical grid.
- Some of the WTGs will include installed aviation warning lights. The number of WTGs with lights and the lighting pattern of the WTGs will be determined in consultation with the FAA.
- The facility will contain a system that collects energy from each WTG, and delivers it to a Project substation. Output from the Project substation will be delivered to the grid.
- New gravel access roads will be constructed to access WTG and substation locations and along the length of turbine strings. Access roads will be designed under the direction of a professionally licensed engineer and constructed to meet turbine and transformer equipment load requirements.

Courtesy of Vestas Wind Systems

Project Timeline

Pending receipt of required permits, construction will begin in November 2013, with the first stage of the Project coming online in late 2016. With the exception of annual winter weather shutdowns from December to March, construction is expected to be continuous through complete build-out, ending December 2019.



Project Site

The site was selected for the following reasons:

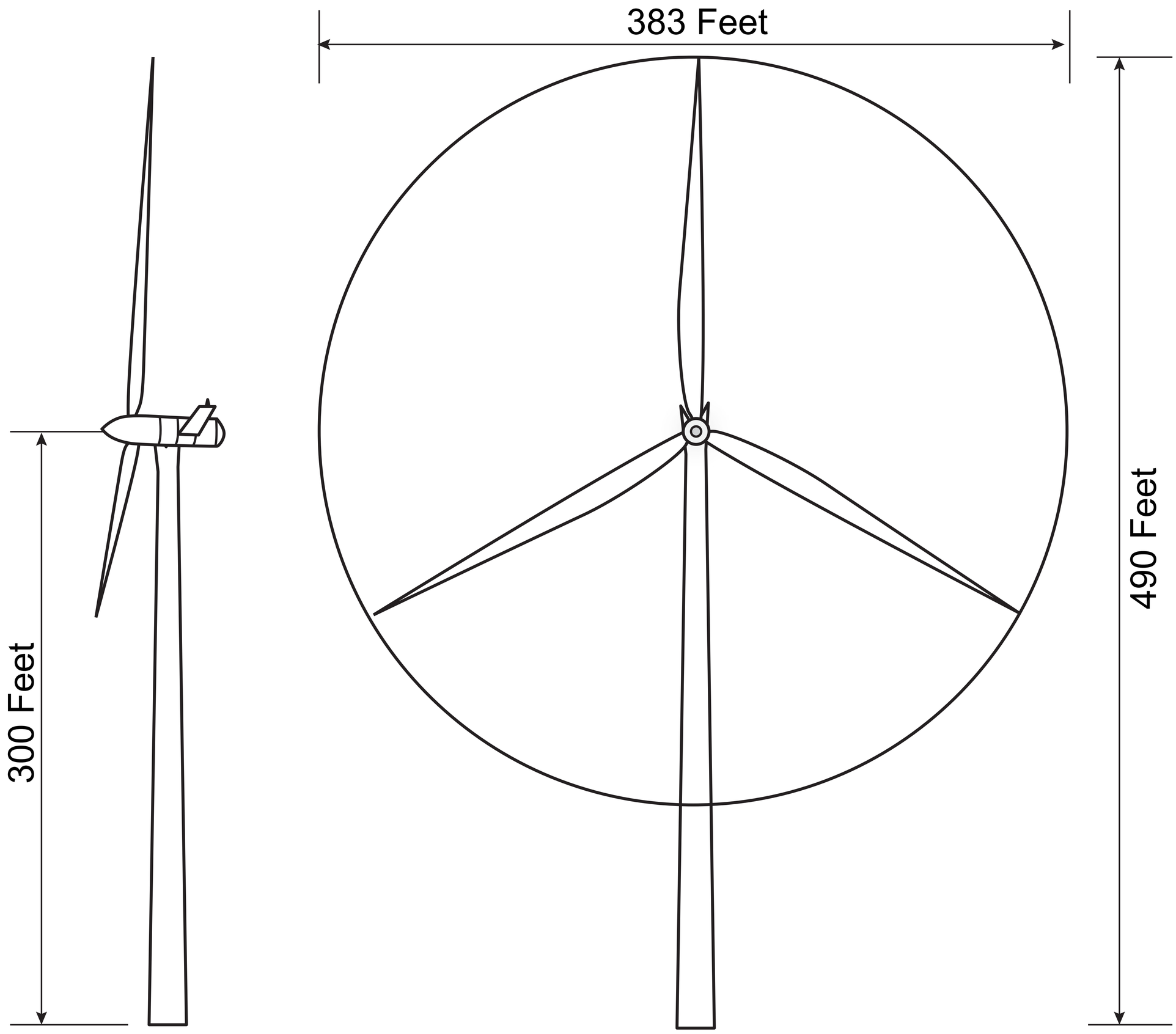
1. Large contiguous area
2. Proven wind resource
3. Private landowners willing to lease
4. Few environmental concerns
5. Compatible land uses (ranching and grazing)
6. Transportation access for wind turbine component delivery
7. Proximity to proposed transmission infrastructure

Project Benefits to the Community

- Additional *ad valorem* taxes
- Increased demand for and expenditure on local goods and services
- Potential allocation and distribution of Impact Assistance Fund payments over the construction period
- Land lease revenues for local landowners
- Increased business for the local service industry
- Negligible impacts to local government and municipal services
- Creation of jobs and stable employment
- Increased sales and use tax revenues from temporary and permanent employees purchasing goods and services during construction and operation of the Project
- State sales tax revenues from the wind energy production equipment
- State wind energy generation tax revenues

Wind Turbine

The maximum size turbine being considered has a 383-foot (117 meters) rotor diameter and a 300-foot (91.5 meter) hub height.



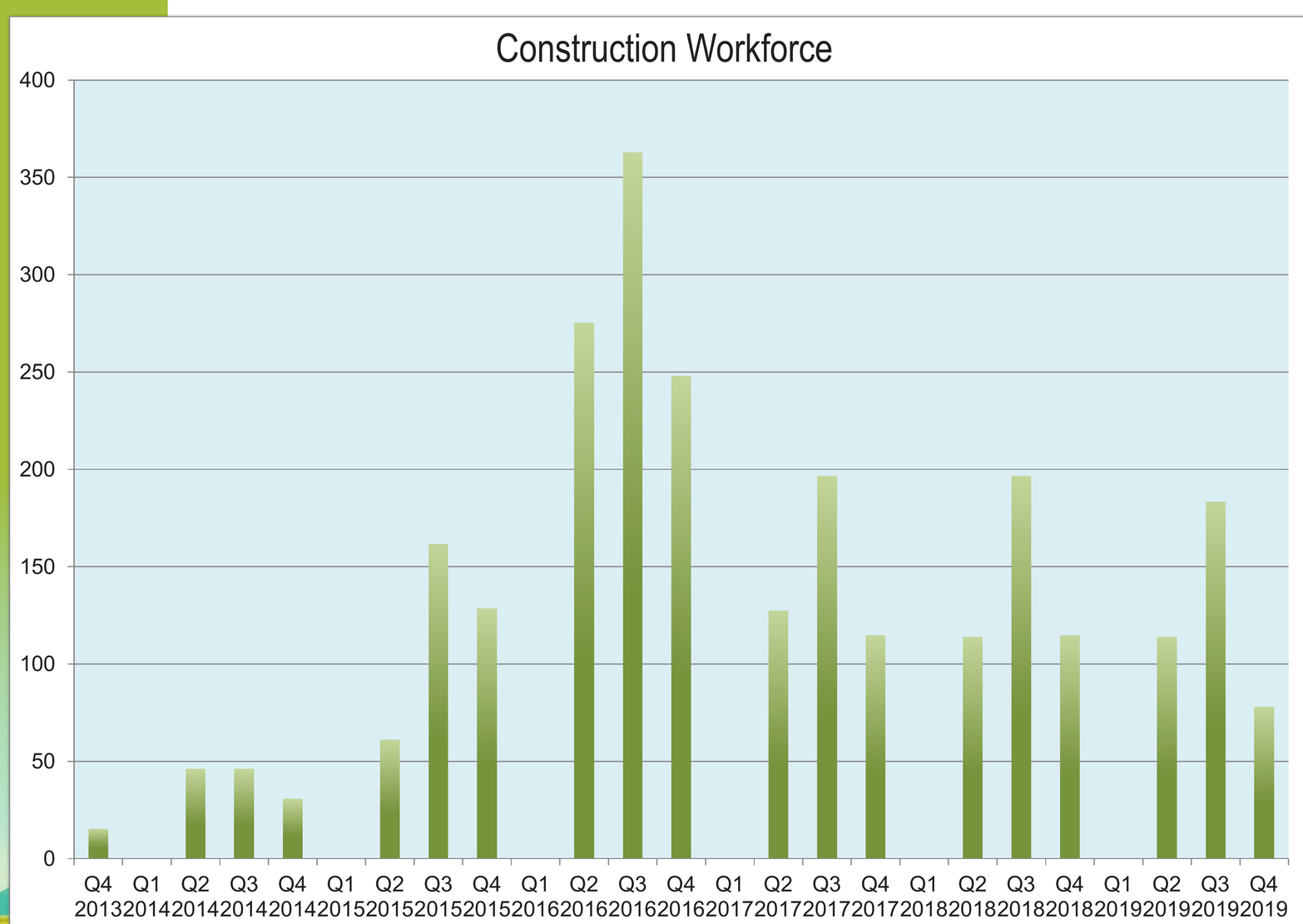
Construction and Operation Workforce

Construction Workforce

Construction at the site is expected to start in November 2013 and will be suspended annually each winter from December through March. For those quarters with active construction, the average workforce is estimated at 138 for the 74-month construction duration. The peak is estimated at 363 on-site workers in the third quarter of 2016.

Major construction activities include:

- Construction Management
- Road Construction
- Foundation Excavation
- Foundation Construction
- Concrete Supply
- Concrete Pumping
- Electrical Collection Construction
- Offload Turbine
- Erect Turbines
- Tower Wiring
- Install Substation
- Security
- Turbine Supplier Staff



Operations Workforce

It is estimated that there will be a need for 31 additional permanent positions at the Wyoming Wind Farm.

Appendix D-4
Public Open House Sign-In Sheet

Wyoming Wind & Power

Wyoming Wind Project Public Meeting - May 28, 2013
First State Bank Conference Center, 5-8 pm
Wheatland, Wyoming
Sign-in Sheet - Please Print Clearly

Name	Representing	Title	Address

Appendix D-5
Public Open House Comment Form

Wyoming Wind & Power

Wyoming Wind Project
Comment Form

If you wish to submit comments for the Wyoming Wind Project, please feel free to use this form or provide other correspondence. Comments may be submitted at the public meeting or mailed to the following address:

Ryan Fitzpatrick
Vice President, Business Development
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007

To submit comments via email: ryan@wwandp.com

Please Print Clearly

Name: _____ Date: _____

Title: _____ Organization that You Represent: _____ Self ☐

Mailing Address: _____ City: _____ State: ____ Zip: _____

E-mail Address: _____ Telephone: _____

Comments: *(Please use back if additional space is needed)*

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Appendix D-6
Public Open House Attendance Wheatland May 28, 2013

Wyoming Wind & Power

Wyoming Wind Farm Public Meeting - May 28, 2013
First State Bank Conference Center, 5-8 pm
Wheatland, Wyoming
Sign-in Sheet - Please Print Clearly

Name	Representing	Phone Number	Address
Bob Bauer	self	3	Y 82201
Randy Woodward	R&R	3	Hand.
John L. Baker	self	4	
[illegible] Bauer		3	
Adam Louis	P.C. Record-Times		
Jon Kirkbride		6	
Herschel Pruitt	Frontier Farm		
Rob + Diane Hellbaum	self		
Tony Weber	self	3	
John + Kathy Datcon	Self		
DAN BRECHT	PCED	3	NY 82201
Troy & Toni Cochran	self	3	
jim Blevins	self	3	

Wyoming Wind & Power

Wyoming Wind Farm Public Meeting - May 28, 2013
First State Bank Conference Center, 5-8 pm
Wheatland, Wyoming
Sign-in Sheet - Please Print Clearly

Name	Representing	Phone Number	Address
Roy & Jerald Hett	Self	130	28 Red Fox Rd
Allen + Judy Rhoads	Self	30	
Mike Wilson	R&R	30	
Jack Johnson		30	
Tom Goswick	ME	97	
Adam Vogt	Star-Tribune	30	
Luke Fsch	DEQ ISD		
Arland Childers	self		
DAVID WEBER	Self	3	
Mitch Frank	NPS Fort Laramie	N	82212
Ruth Vaughn	Self	4	82210
Cathy Heilbaum	Self	3	
Craig E Baker	Self	3	

Wyoming Wind & Power

Wyoming Wind Farm Public Meeting - May 28, 2013
First State Bank Conference Center, 5-8 pm
Wheatland, Wyoming
Sign-in Sheet - Please Print Clearly

Name	Representing	Phone Number	Address
Glendaryn Laffitte	Self	3	
Jouanette Wardell	Self	2	
D. Dean Vaughn	"	3	
BRUCE HELLBAUM	TRI-COUNTY GRAIN CO.	3	
Dixie, Don, Ken Kenney	Self	2	
Don & Karen Buidice	Self	3	
Thane Ashenhurst	"	3	
Larry Ashenhurst	"	3	d
Amy Miller	Bard Ranch Co.	3	
James T. Fowler	Self	3	1
Russell Baker	Self	3	
Braden Graves	Weber Kochran Ranch	3	

Appendix D-7

Casper Star Tribune Newspaper Article May 29, 2013

Wyoming company plans new wind farm

Project would be one of state's largest

By ADAM VOGE
Star-Tribune energy reporter

WHEATLAND — An otherwise quiet Wyoming company rolled out early details of a planned wind farm destined to be one of the state's largest. The public got its first chance to comment on the project near Wheatland and Chugwater on Tuesday night.

Wyoming Wind and Power, based in Cheyenne, will build a 300-turbine, 900-megawatt wind farm on private land in eastern Platte County and western Goshen County. The facility — moving forward under the name Wyoming Wind Farm — will begin first production in 2016 with full operations scheduled by December 2019.

Interested citizens filed into a conference center in Wheatland to attend a company open house Tuesday. Company officials and associated contractors used the event as an opportunity to show why Wyoming Wind Farm is suitable to the area.

"There's just a great wind resource here," said Ryan Fitzpatrick, company vice president of business development. "It just makes sense."

The wind farm is split into two main parcels — Antelope Gap and Chugwater.

The Antelope Gap property is about five miles east of Wheatland and about six miles south of Guernsey. The Chugwater section is about two miles east and south of the town of Chugwater. The vast majority of the project will be in Platte County.

According to company information presented Tuesday, the sites were chosen for a litany of reasons, including contiguity of land owned by more than 75 cooperating landowners, proven wind resources in the area and access to transportation infrastructure needed to receive parts for the project's turbines.

Power generated at the farm will be transported via the planned Wyoming-Colorado

Please see WIND, A2

WIND

Continued from page A1

Intertie, a transmission line that runs about 180 miles from a substation at Laramie River Power Station in Wheatland to near Brush, Colo.

The line is a joint venture between the Wyoming Infrastructure Authority and LS Power and could be operable by 2017. Wyoming Wind and Power is licensed to access all 900 megawatts of the line's capacity.

When completely built, Wyoming Wind Farm will use that transmission capacity to become one of the state's largest projects.

No single Wyoming wind project operating in 2012 included more than 125 towers, but plans for several larger projects are in motion. The 1,000-turbine, 2,500-megawatt Chokecherry and Sierra Madre project south of Rawlins and the 2,000-megawatt Pathfinder-Zephyr project near Chugwater both could begin operations late this decade or early next.

Wyoming Wind and Power plans to file for a series of state and local applications this summer and fall and begin construction in November. About 140 workers will be needed to build the facility during normal work, with about 360 needed at peak construction.

The facility will also generate about 30 full-time positions during normal operations.

Platte County's economic development director said the positions won't make a huge impact, but will still benefit the county.

"I'm really excited about this," Dan Brecht said. "I really believe that wind energy development in this part of Wyoming is a no-brainer."

■ Reach energy reporter Adam Voge at 307-266-0561, or at adam.voge@trib.com. Read his blog at http://trib.com/news/opinion/blogs/boom or follow him on Twitter @vogeCST.

Appendix D-8

Wyoming Tribune Eagle Newspaper Article May 31, 2013

WYOMING TRIBUNE-EAGLE

Friday, May 31, 2013

Company plans large wind farm near Wheatland

THE 300-TURBINE WIND FARM IS EXPECTED TO BEGIN PRODUCING ENERGY IN 2016.

By Adam Voge
Casper Star-Tribune

WHEATLAND – An otherwise quiet Wyoming company rolled out early details this week of a planned wind farm destined to be one of the state's largest.

The public got its first chance to comment on the project near Wheatland and Chugwater on Tuesday night.

Wyoming Wind and Power, based in Cheyenne, plans to build a 300-turbine, 900-megawatt wind farm on private land in eastern Platte County and western Goshen County. The facility – moving forward under the name Wyoming Wind Farm – will begin first production in 2016, with full operations scheduled by December 2019.

Interested residents filed into a conference center in Wheatland to attend a company open house Tuesday. Company officials and associated contractors used the event as an opportunity to show why Wyoming Wind Farm is suitable to the area.

"This really is just a great

Ryan Fitzpatrick, company vice president of business development. "It just makes sense."

The wind farm is split into two main parcels: Antelope Gap and Chugwater.

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According to company information presented Tuesday, the sites were chosen for a litany of reasons, including contiguity of land owned by more than 75 cooperating landowners, proven wind resources in the area and access to transportation infrastructure needed to receive parts for the project's turbines.

Power generated at the farm will be transported via the planned Wyoming-Colorado Intertie, a transmission line that runs about 180 miles from a substation at Laramie River Power Station in Wheatland to near Brush, Colo.

The line is a joint venture between the Wyoming Infrastructure Authority and LS Power and could be operable by 2017. Wyoming Wind and Power is licensed to ac-

the line's capacity.

When completely built, Wyoming Wind Farm will use that transmission capacity to become one of the state's largest projects.

No single Wyoming wind project operating in 2012 included more than 125 towers, but plans for several larger projects are in motion. The 1,000-turbine, 2,500-megawatt Chokecherry and Sierra Madre project south of Rawlins and the 2,000-megawatt Pathfinder-Zephyr project near Chugwater both could begin operations late this decade or early next.

Wyoming Wind and Power plans to file a series of state and local applications this summer and fall and begin construction in November. About 140 workers will be needed to build the facility during normal work, with about 360 needed at peak construction.

The facility will also generate about 30 full-time positions during normal operations.

Platte County's economic development director said the positions won't make a huge impact but will still benefit the county.

"I'm really excited about this," Dan Brecht said. "I really believe that wind energy development in this part of Wyoming is

Appendix D-9

Platte County Record Times Newspaper Article June 5, 2013

Wyoming Wind and Power plans local wind farm

Construction scheduled later this year

By Adam Louis
Editor

WHEATLAND – A Wyoming company looks to make use of the prevalent wind sweeping through Platte County.

Officials from Wyoming Wind and Power (WWP) met with locals last Tuesday at the First State Bank Conference Center to present their plans to build 300 wind turbines in Platte and Goshen counties in two separate areas – near Wheatland (Antelope Gap Parcel) and near Chugwater (Chugwater Parcel). This project is dubbed the Wyoming Wind Farm.

According to information from WWP, the 900-megawatt project will connect to a two-state grid known as the Wyoming-Colorado Intertie Transmission Project. WWP will use a 345-kilovolt transmission line to connect the Laramie River Station to a substation near Brush, Colo. The turbines will be totally located on privately owned lands; WWP will collaborate with more than 75 landowners.

WWP outlined tentative schedule for the project spanning six years from May to December 2019. The schedule indicates the WPP is currently conducting outreach in the area and throughout the state and will submit a Section 109 report, which would comply with the Industrial Development Information and Siting Act.

Construction is slated for November of this year and would run through December 2016, suspending operations each December through March. WWP estimates the workforce will consist of 138 employees during the 74-month duration with a peak of 363 workers on site during the third quarter of the final year. As for Wyoming Wind Farm's operations, WWP states there will be a need for 31 additional permanent positions.

In addition to adding jobs to the local market, WWP touts other area economic benefits, including a spike in spending activity during construction and development, the long-term benefit of the wind farm's operations and increased property value.

WWP encouraged last week's open house attendees to submit comments concerning the Wyoming Wind Farm to Ryan Fitzpatrick, the vice president of business development, at 6215 Clear Creek Parkway, Suite 6, Cheyenne, WY, 82007 or email him at ryan@wyomingwind.com.

A second wind-related undertaking known as the Zephyr Power Transmission Project is currently underway in Chugwater. Duke-American Transmission Company (DATC) is working on an 850-mile, 3,000-megawatt-capacity direct current transmission line that would run from the Chugwater area to south of Las Vegas. The line is designed to carry wind power from the Pathfinder Renewable Wind Project to communities in the southwest states. DATC has targeted the year 2020 for its inservice date; the company is continuing stakeholder outreach at this point and will soon begin the permitting process on the state and federal levels.

For more information about Wyoming Wind Farm, visit www.wyomingwindandpower.com. The Associated Press contributed to this report.

Appendix D-10
Local Government Officials Notification May 20, 2013

Wyoming Wind & Power

May 20, 2013

Subject: Wyoming Wind Farm - Industrial Siting Permit Application

Dear Local Government Official:

Wyoming Wind and Power, LLC (WW&P) has begun the regulatory process to commence the Wyoming Wind Farm (the Project). When completed, the Project will be comprised of a wind energy facility near Wheatland, and encompass private lands in both Platte and Goshen Counties. The Project is subject to review pursuant to the Wyoming Industrial Development Information and Siting Act (ISA), Wyo. Stat. §§ 35-12-101 *et seq*. As such, this letter is to introduce your agency or government to the Project, inform you of upcoming public meetings, and to solicit feedback regarding the Project.

Founded in 2008 by Jackson entrepreneur, Scott Blum, WW&P is a Wyoming limited liability company headquartered in Cheyenne and wholly owned by ThinkTank Holdings, LLC. WW&P was founded in the vision of responsibly harvesting Wyoming's vast wind resources to provide benefits to the State and its citizens. With offices in Wyoming, California, and Colorado, ThinkTank owns a wide variety of businesses including WW&P and Visa Black Card. Every employee under the ThinkTank umbrella shares resources and works closely to create synergies through the company's varying industries. For additional information, please visit www.wyomingwind.com and www.thinktank.com.

WW&P proposes to construct a wind energy facility in Platte and Goshen Counties. The Project will consist of up to 300 wind turbine generators in a single phase. The Project area consists of two parcels of property, one near Wheatland and one near Chugwater (Figure 1). There will be substations serving each of these areas. The Project will also consist of transformers, underground and overhead collector lines, operations and maintenance buildings, turbine access roads, and permanent meteorological towers.

The Project is proposed to deliver power to the electrical grid through the Wyoming-Colorado Intertie Transmission Project. WW&P is subscribed to 100 percent of this 345 kilovolt transmission line that will connect the Laramie River Station power plant substation to the Pawnee substation near Brush in northern Colorado. This transmission line is a third-party project of a public/private partnership between LS Power and the Wyoming Infrastructure Authority, and is not part of the Project.

ISA Statute and Cost

A meeting was held with the Wyoming Department of Environmental Quality Industrial Siting Division (ISD) on May 14, 2013. As the Project proposes to install over 30 wind turbines, pursuant to W.S. § 35-12-102(a)(vii)(E)(I), the Project qualifies as an Industrial Facility subject to ISA review on that basis alone, regardless of project cost. Nonetheless, WW&P asserts the Project will exceed the current jurisdictional threshold of $190.8 million. On these factors, the ISD staff determined that the Project meets statutory requirements of a jurisdictional project.

Components
The Project will use up to 300 wind turbine generators (WTGs). Facilities and related infrastructure will include WTGs mounted on tubular towers, transformers, and electric and fiber optic communications cable. Some electrical collector cables may be installed above ground where doing so would minimize environmental impact or be necessary because of terrain and infrastructure crossings (e.g., roads, railroad). Access roads, meteorological towers, a SCADA system, and an operations and maintenance building also will be constructed. Substations will be constructed to collect and deliver the electricity.

Project Schedule
Permitting is currently underway for the project. WW&P intends to submit the ISA permit application on July 1, 2013, with a public hearing anticipated in mid- to late-September. Construction of the Project will commence upon receipt of all permits and is planned to begin in the fourth quarter of 2013. The first stage of the facility is expected to be completed, commissioned, and operational by the fourth quarter of 2016. With the exception of annual winter weather shut-downs from December to March, construction is expected to be continuous through complete build out in the end of 2019. Project stages will be commissioned and come online as they are completed within that timeframe.

Land Use
The wind energy facility will be located on privately-owned fee lands owned by over 75 landowners. No state lands or federally-managed lands are proposed to be used for the Project. The Project site can support the proposed use through Special Use Permits issued by the county. Large, contiguous areas of ranching and grazing provide the ideal setting for multiple compatible uses.

Construction and Operations Workforce Requirements
Site preparation and clearing would begin in November 2013. Construction activities and the corresponding workforce will ramp-up over the following several months. The construction workforce is estimated to peak at approximately 400 during the height of construction activities in the second and third quarters of 2016.

During the operations phase, an estimated additional workforce of approximately 31 full-time positions will be needed to fully staff the facility.

Transportation
The Project will generate additional personnel and equipment traffic during both the construction and operations stages. The workforce and delivery vehicles will primarily use Interstate 25 to WY 313, WY 316, and US 26 to access the different parcels. It is expected that new access roads will be constructed from these roads to reach within the Project areas.

All deliveries will be trucked directly to the Project site using semi-tractor trailers. It is anticipated that the truck deliveries to the site will be scheduled during off-peak periods. Transportation routes associated with oversized loads, if necessary, will be finalized with WYDOT.

A study is in progress that will analyze the potential impacts of construction and operation traffic on local roadway systems. The study will evaluate both worker traffic and construction delivery truck traffic. Impacts are expected to be minor with only slight changes in level of use during the peak construction period.

Water Use
Water will be used during the construction period for daily potable uses, dust control, and concrete batch plant requirements. Operational water requirements will be minor and limited to daily potable uses at the Operations and Maintenance Facility. Maximum water use will occur during construction. A preliminary estimate of 52.8 million gallons (162 acre-feet/yr) would be required for the peak construction year of 2016. Therefore, the Project water use is not expected to exceed 800 acre-feet/yr, and a separate Water Yield Analysis and State Engineer's Office Opinion will not be required. The water supply for the Project is currently undetermined, but it is expected water will be purchased from existing permitted sources if practical.

Socioeconomic Impacts
A detailed analysis of social and economic impacts will be submitted as part of the ISA permit application to evaluate the benefits and impacts to the social and economic resources in the area of study and primary area of site influence. To measure potential impacts, the socioeconomic analysis will compare the expected future conditions in the area of study with and without the Project. The counties included in the area of study were determined in consultation with ISD staff and have been defined as Platte, Goshen, Laramie, Albany, Niobrara, Converse, and Natrona Counties.

Both local communities and the state will realize benefits from the Project. Wyoming will gain economic benefits including permanent job creation and tax revenues. Locally, the Project will result in local spending on goods and services, additional local economic activity and tax revenues, and may result in the distribution of Impact Assistance Payments.

Construction of the Project is expected to place only minor demands on water, sewer, roads, electrical lines, or other local infrastructure. Therefore, construction and operation of the Project is not expected to significantly affect the various public and nonpublic facilities and municipal services as a result of immigration of workers for non-basic employment opportunities.

Environmental Resources
WW&P has reviewed data and reports from independent consultants and continues to collect additional environmental information. Initial review indicates there would be no significant environmental impacts as a result of the Project. Baseline resource information will continue to be used to design Project components to avoid or minimize the potential for environmental and natural resource impacts. Additionally, the Governor's Wind Conflict Map, released by the Wyoming Game and Fish Department, identifies the Project location as an area of Minimal Environmental Concern.

Public Involvement Activities
WW&P is in the process of holding meetings and presentations with potentially affected municipalities, counties, state agencies, and other stakeholders. The meetings will be a venue to discuss potential environmental, social, and economic issues and identify mitigation recommendations and solutions to incorporate into the planning and design of the Project. The Project area of study, as identified by ISD staff during the Jurisdictional Meeting, helped determine the locations where public outreach should be focused.

An open house informational meeting is planned to ensure the public has the opportunity to discuss the project and ensure any concerns are identified and addressed. The meeting details are:

Date: Tuesday, May 28
Time: 5:00 PM to 8:00 PM
Location:
First State Bank Conference Center
1405 16th St, Wheatland, WY 82201

Invitation to Participate
WW&P invites you to express your comments and provide feedback so that issues may be considered and addressed directly with your agency or government, and the feedback may be incorporated into the ISA permit application and construction planning process. I hope I will see you at the public meeting so we may discuss the Project. If you cannot attend the meeting, you may provide input by contacting me directly as listed below:

Wyoming Wind Farm
c/o Ryan Fitzpatrick
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007
ryan@wyomingwind.com
(307) 399-1393

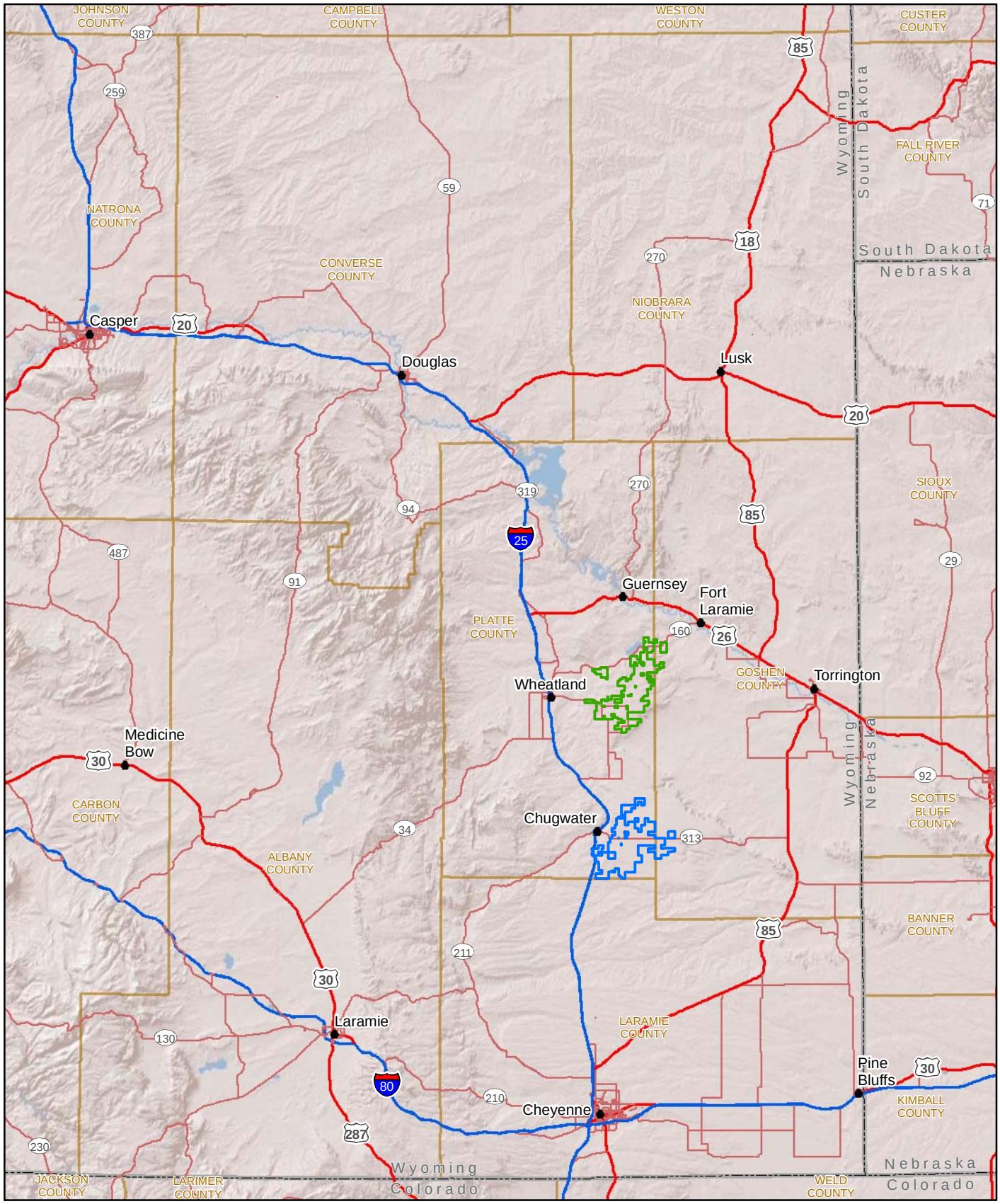
Please be sure to include your name and contact information with your comments so that we may follow-up with you effectively. Likewise, if you prefer to discuss the Project further, I am available to meet in person or via phone at your request.

We look forward to working with you and hearing your thoughts on this Project.

Sincerely,

Ryan Fitzpatrick
Vice President, Business Development
Wyoming Wind & Power

Attachments: 1) Figure 1 - Project Location Map



Legend

- Antelope Gap Parcel
- Chugwater Parcel

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Miles

FIGURE 1
Project Regional Map
Wyoming Wind Farm Project
Platte and Goshen Counties, WY

CH2MHILL

Local Government Officials Notification List

Title	First	Last	Office	Address	City	State	Zip Code	Returned
Ms.	Jackie	Gonzales	Albany County CC	525 Grand Avenue	Laramie	WY	82070	
Ms.	Lucile	Taylor	Converse County CC	107 North 5th Street, Suite 114	Douglas	WY	82633	
Ms.	Cynthia	Sussex	Goshen County CC	PO Box 160	Torrington	WY	82240	
Ms.	Debbye	Lathrop	Laramie County CC	P.O. Box 608	Cheyenne	WY	82001	
Ms.	Renea	Vitto	Natrona County CC	200 North Center, Room 115	Casper	WY	82601	
Ms.	Becky	Freeman	Niobrara County CC	PO Box 420	Lusk	WY	82225	
	Chris	Kanwischer	Platte County CC	P.O. Box 728	Wheatland	WY	82201	
Mayor	Kelly	Krakow	Town of Albin	PO Box 188	Albin	WY	82050	
Mayor	Jerry	Petty	Town of Bar Nunn	4820 N. Wardwell Industrial Ave.	Bar Nunn	WY	82601	
Mayor	Judy	Johnstone	Town of Burns	PO Box 66	Burns	WY	82053	
Mayor	Kenyne	Schlager	City of Casper	200 N. David	Casper	WY	82601	
Mayor	Richard	Kaysen	City of Cheyenne	2101 O'Neil Ave.	Cheyenne	WY	82001	
Mayor	LaDonna	Sands	Town of Chugwater	PO Box 243	Chugwater	WY	82210	
Mayor	Bruce	Jones	City of Douglas	PO Box 1030	Douglas	WY	82633	
Mayor	Buck	King	Town of Edgerton	PO Box 407	Edgerton	WY	82635	
Mayor	Phil	Hinds	Town of Evansville	PO Drawer 158	Evansville	WY	82636	
Mayor	Alexander	Jankewicz	Town of Fort Laramie	PO Box 177	Ft. Laramie	WY	82212	
Mayor	Susan	Juschka	Town of Glendo	PO Box 396	Glendo	WY	82213	
Mayor	Sue	Dills	Town of Glenrock	PO Box 417	Glenrock	WY	82637	
Mayor	Edward	Delgado	Town of Guernsey	PO Box 667	Guernsey	WY	82214	
Mayor	Darrell	Offe	Town of Hartville	PO Box A	Hartville	WY	82215	
Mayor	Mark	Marshall	Town of LaGrange	PO Box 185	LaGrange	WY	82221	
Mayor	Dave	Paulekas	City of Laramie	PO Box C	Laramie	WY	82073	
Mayor	Russell	Walter	Town of Lingle	PO Box 448	Lingle	WY	82223	
Mayor	Leda	Price	Town of Lost Springs	PO Box 116	Lost Springs	WY	82224	
Mayor	Patricia	Smith	Town of Lusk	PO Box 390	Lusk	WY	82225	
Mayor	Richard	Schroeder	Town of Manville	PO Box 107	Manville	WY	82227	
Mayor	Guy	Chapman	Town of Midwest	PO Box 190	Midwest	WY	82643	
Mayor	Marrolyce	Wilson	Town of Mills	PO Box 789	Mills	WY	82644	X
Mayor	Bill	Shain	Town of Pine Bluffs	PO Box 429	Pine Bluffs	WY	82082	
Mayor	Cathy	Leslie	Town of Rock River	PO Box 280	Rock River	WY	82083	
Mayor	Devonie	Mueller	Town of Rolling Hills	38 S. Badger Rd.	Rolling Hills	WY	82637	
Mayor	Mike	Varney	City of Torrington	PO Box 250	Torrington	WY	82240	
Mayor	William	Matthews	Town of VanTassell	PO Box 327	VanTassell	WY	82242	
Mayor	Jean	Dixon	Town of Wheatland	600 9th Street	Wheatland	WY	82201	
Mayor	Norman	Feagler	Town of Yoder	PO Box 158	Yoder	WY	82244	
Dr.	Brian	Recht	Albany County School District #1	1948 Grand Avenue	Laramie	WY	82070	
Mr.	Dan	Espeland	Converse County School District #1	615 Hamilton Street	Douglas	WY	82633	
Mr.	Kirk	Hughes	Converse County School District #2	POB 1300	Glenrock	WY	82637	
Mr.	Ray	Schulte	Goshen County School District #1	626 West 25th Avenue	Torrington	WY	82240	
Dr.	Mark	Stock	Laramie County School District #1	2810 House Avenue	Cheyenne	WY	82001	
Mr.	Jack	Cozort	Laramie County School District #2	POB 489	Pine Bluffs	WY	82082	
Mr.	Joel	Dvorak	Natrona County School District #1	970 North Glenn Road	Casper	WY	82601	
Mr.	Richard	Luchsinger	Niobrara County School District #1	POB 629	Lusk	WY	82225	
Mr.	Dennis	Fischer	Platte County School District #1	1350 Oak Street	Wheatland	WY	82201	
Mr.	Dave	Barker	Platte County School District #2	POB 189	Guernsey	WY	82214	
			Albany County Improvement Projects JPB	210 Custer	Laramie	WY	82070	
			Albany County Hospital District	255 N. 30th Street	Laramie	WY	82070	
Mr.	David	Hill	Central Wyoming Regional Water System JPB	1500 SW Wyoming Blvd	Casper	WY	82604	
			Albany County Weed & Pest	2919 County Shop Road	Laramie	WY	82070	
Ms.	Daly	Edmunds	Audubon Wyoming	115 N. 7th St	Laramie	WY	82072	
			Albany County Tourism Board Joint Powers Board	210 Custer	Laramie	WY	82070	
			Centennial Water & Sewer District	P.O. Box 185	Centennial	WY	82055	
	Chairman		Brees Field Airport Board	555 General Brees Rd	Laramie	WY	82070	
Ms.	Jannie	Jordan	City of Laramie-Albany County Joint Powers Board	POB "C"	Laramie	WY	82073	
			Laramie Downtown Development Authority	1306 Ivinson	Laramie	WY	82070	
			Laramie Plains Civic Center	710 Garfield, Suite 126	Laramie	WY	82070	
Ms.	Carol	Dozier	Laramie and Albany County Hospital District Joint Powers Board	255 North 30th	Laramie	WY	82072	
			Laramie Rivers Conservation District	1050 N. 3rd, Suite B	Laramie	WY	82072	X
			Laramie Valley Irrigation District	1472 N. 5th Street Suite 201	Laramie	WY	82072	
Mr.	Jack	Skinner	Laramie Regional Airport Board	555 General Brees Road	Laramie	WY	82070	
Ms.	Jannie	Jordan	Laramie Wyoming, Albany County Jail/Communications Center JPB	POB "C"	Laramie	WY	82073	
			Nine Mile Water and Sewage District	P.O. Box 970	Laramie	WY	82073	X
			Pioneer Canal-Lake Hattie Irrigation District	P.O. Box 1285	Laramie	WY	82073	
			Predatory Animal Board Albany County	190 Sprague Lane	Laramie	WY	82070	X
			Sage Drive Community Improvement and Service District	4848 Sage Drive	Laramie	WY	82070	
			Seven Mile Water and Sewer District	1472 N. 5th Street	Laramie	WY	82072	
			Sherman Hill Road Improvement & Service District	P.O. Box 1283	Laramie	WY	82073	

			South Knoll Road Improvement District	P.O. Box 385	Laramie	WY	82073	X
			South of Laramie Water and Sewer District	2461 County Shop Road	Laramie	WY	82070	
			Toltec Watershed Improvement District	61 Riverbridge Rd.	Garrett	WY	82058	
Ms.	Jannie	Jordan	Laramie/Albany County Records and Communication Center JPB	POB "C"	Laramie	WY	82073	
	Chairman		Converse County Municipal and County Joint Powers Board	107 North 5th Street, Suit 114	Douglas	WY	82633	
Ms.	Jennifer	Womack	Converse Tourism Promotion Joint Powers Board	POB 1212	Douglas	WY	82633	X
	Chairman		Eastern Wyoming College & Board of Trustees/Converse Cty School District #1	107 North 5th Street, Suit 114	Douglas	WY	82633	
Mr.	Matt	Ashby	Cheyenne and Laramie County Joint Powers Board	2101 O'Neil Ave	Cheyenne	WY	82001	
Mr.	Darin	Rudloff	Cheyenne, Albin, Burns, Pine Bluffs & Laramie County Tourism Promotion JPB	121 West 15th Street	Cheyenne	WY	82001	
			ABA Improvement and Sanitation District	2814 Burris	Casper	WY	82604	
			Amoco Reuse Agreement Joint Powers Board	2435 King Blvd., Suite 300	Casper	WY	82604	
			Bloody Turnip Improvement and Sanitation District	6780 S. Ridgecrest Dr.	Casper	WY	82601	X
			Brandt-Gothberg Improvement and Sanitation District	P.O. Box 1723	Mills	WY	82644	
			Brookhurst Improvement and Sanitation District	898 Appaloosa Lane	Evansville	WY	82636	
			Burd Road Improvement and Sanitation District	P.O. Box 4479	Casper	WY	82604	
			Casper Alcova Irrigation District	P.O. Box 849	Mills	WY	82644	
			Casper Area Economic Development Joint Powers Board	300 S. Wolcott, Suite 300	Casper	WY	82601	
			Casper Downtown Development Authority	159 N. Wolcott, Suite 340	Casper	WY	82601	
			Casper/Natrona County 201 Joint Powers Board #2	200 N. David	Casper	WY	82602	
			Central Wyoming Board of Cooperative Educational Services	P.O. Box 231	Casper	WY	82602	X
			Central Wyoming Regional Water Joint Powers Board	1500 S.W. Wyoming Blvd.	Casper	WY	82604	
Mr.	Glen	Januska	City of Casper, Board of Public Utilities	8500 Airport Pkwy	Casper	WY	82604	
			Clear Fork Improvement and Sanitation District	P.O. Box 488	Casper	WY	82602	
Ms.	Renee	Hahn	County of Natrona - City of Casper Amoco Property Reuse JPB	2435 King Blvd, #249	Casper	WY	82304	
			County of Natrona, Wyoming, Town of Mills, Wyoming	4150 Salt Creek Hwy Casper	Casper	WY	82601	
			East Vista West Water District	P.O. Box 2420	Casper	WY	82602	X
			Hidden Valley Improvement and Sanitation District	5260 Skyline Rd, Alcova Rt.	Casper	WY	82604	
			Indian Springs Improvement and Sanitation District	5434 Okeepa Rd, Alcova Rte	Casper	WY	82604	
			Lakeview Improvement and Sanitation District	P.O. Box 1537	Mills	WY	82644	
Ms.	Dolly	Harrison	Midwest-Edgerton Joint Powers Board	Midwest TownHall Box 190	Midwest		82643	
Ms.	Janet	Brown	Mills Casper Evansville Regional Waste Water Project	200 N David St	Casper	WY	82601	
Ms.	Diane	Goehring	Natrona County - Casper Joint Powers Board	200 N David	Casper	WY	82601	
			Natrona County Conservation District	5880 Enterprise, Suite 100	Casper	WY	82604	
Ms.	Michelle	Maines	Natrona County Detention Facility Joint Powers Board	200 N Center, Rm 115	Casper	WY	82601	
Mr.	Kelly	Eastes	Natrona County Recreation Joint Powers Board	970 Glenn Rd	Casper	WY	82601	
			Natrona County Predatory Animal	P.O. Box 1462	Casper	WY	82601	
Ms.	Kathy	Hennion	Natrona County Travel & Tourism Council	992 N. Poplar	Casper	WY	82601	
Ms.	Liz	Hepp	Natrona County-Vista West/Westgate Joint Powers Board	1725 North Buck Creek Rd	Casper	WY	82604	
			Natrona County Weed & Pest District	P.O. Box 1385	Mills	WY	82644	
Ms.	Dolly	Harrison	Salt Creek Joint Powers Board	Midwest TownHall Box 190	Midwest	WY	82643	
			North Mountain View Improvement and Sanitation	P.O. Box 985	Mills	WY	82644	
			North Platte Water and Sewer	P.O. Box 614	Casper	WY	82602	X
			Park East Ranchettes Improvement and Sanitation District	4410 S. Oak St.	Casper	WY	82601	
			Pioneer Water and Sewer District	P.O. Box 1588	Mills	WY	82644	

			Poison Spider Improvement and Sanitation District	P.O. Box 1207	Mills	WY	82644	X
			Pursel Lands Improvement and Sanitation District	7205 Riverside Dr.	Casper	WY	82604	
			Red Butte Village Improvement and Sanitation District	6557 W. Riverside Terrace	Casper	WY	82604	
Mr.	Ed	Chase	Westland Park Improvement and Service District	6702 Terrace Dr	Casper	WY	82604	
			Sandy Lakes Estate Improvement and Sanitation District	P.O. Box 1133	Evansville	WY	82636	X
			Skyline Ranches Improvement and Sanitation District	4545 South Skyline Road	Casper	WY	82604	
			So. Riverside Acres Improvement and Sanitation District	P.O. Box 1479	Mills	WY	82644	
			Sunlight Improvement and Sanitation District	P.O. Box 50614	Casper	WY	82605	
			Thirty Three Mile Road Improvement and Sanitation District	P.O. Box 3013	Mills	WY	82644	
			Vista West Joint Powers Board	P.O. Box 1438	Mills	WY	82644	
			Vista West Improvement and Sanitation District (Natrona)	P.O. Box 1026	Casper	WY	82602	X
			Wardwell Water and Sewer District	P.O. Box 728	Mills	WY	82644	
			Webb Creek Improvement and Sanitation District	7563 Rocking "R" Rd	Casper	WY	82604	
Mr.	Neil	Holmes	Lusk/Niobrara City/County Planning Board	363 McMaster Rd	Van Castle	WY	82242	
			Westland Park/Red Butte Village Joint Powers Board	P.O. Box 1343	Mills	WY	82644	
	Chairman		Niobrara County, Town of Lusk, Hospital Joint Powers Board	P.O. Box 780	Lusk	WY	82225	
			Wheatland - Guernsey, Impact Joint Powers Board	245 S Wheatland Hwy	Wheatland	WY	82201	
Mr.	Brian	Christensen	Natrona County Community Juvenile Services Joint Powers Board	Hall of Justice, Fourth Floor - 200 N David	Casper	WY	82601	
			Natrona County Detention Facility Joint Powers Board	Natrona County Courthouse - 200 N. Center	Casper	WY	82601	
	Kelly	Eastes	Natrona County Recreation Joint Powers Board	970 N. Glenn Rd	Casper	WY	82601	
			Natrona County Travel and Tourism Council Joint Powers Board	992 N. Poplar St.	Casper	WY	82601	
			Platte County Improvement Projects Joint Powers Board	245 S Wheatland Hwy	Wheatland	WY	82201	
Mr.	Pat	Persson	Wyoming Department of Transportation	3411 South 3rd Street	Laramie	WY	82070	
Mr.	Lowell	Fleenor	Wyoming Department of Transportation	900 Bryan Stock Trail	Casper	WY	82601	
Mr.	Christopher	Petrie	Wyoming Public Service Commission	2515 Warren Avenue Suite 300	Cheyenne	WY	82002	
Mr.	Scott	Talbott	Wyoming Game & Fish Department	5400 Bishop Avenue	Cheyenne	WY	82009	
Mr.	Thomas	Forslund	Wyoming Department of Health	2300 Capitol Avenue, 401 Hathaway Building	Cheyenne	WY	82002	
Dr.	Jim	Rose	Wyoming Department of Education	2300 Capitol Avenue Hathaway Building, 2nd Floor	Cheyenne	WY	82002	
Mr.	Patrick	Tyrrell	Wyoming Office of State Engineer	122 West 25 Street, 4E	Cheyenne	WY	82002	
Mr.	Thomas	Drean	Wyoming Geological Survey	PO Box 1347	Laramie	WY	82073	
Mr.	Jason	Fearneyhough	Wyoming Department of Agriculture	2219 Carey Avenue	Cheyenne	WY	82002	
Mr.	Todd	Parfitt	Wyoming Department of Environmental Quality	122 West 25 Street, 4W	Cheyenne	WY	82002	
Mr.	William	Gern	University of Wyoming	1000 E. University Ave. Dept 3355	Laramie	WY	82071	
Mr.	Ed	Schmidt	Wyoming Department of Revenue	122 West 25 Street, 2E	Cheyenne	WY	82002	
Mr.	Robert	Jensen	Wyoming Business Council	214 West 15 Street	Cheyenne	WY	82002	
Mr.	Brad	Westby	Wyoming Department of Workforce Services	122 West 25 Street, 2E	Cheyenne	WY	82002	
Mr.	Ryan	Lance	Wyoming State Lands & Investments	Herschler 3W, 122 West 25 St.	Cheyenne	WY	82002	
Ms.	Mary	Hopkins	Wyoming State Parks & Cultural Resources	2301 Central Avenue	Cheyenne	WY	82002	
Mr.	Lanny	Applegate	Wyoming Department of Fire Prevention & Electrical Safety	Herschler 1 W, 122 West 25 St.	Cheyenne	WY	82002	
Mr.	Steve	Corsi	Wyoming Department of Family Services	2300 Capitol Avenue, Hathaway Bldg. 3W	Cheyenne	WY	82002	
Mr.	Grant	Black	Wyoming Oil & Gas Conservation Commission	2211 King Boulevard, PO Box 2640	Casper	WY	82602	
Mr.	Steve	Dietrich	Wyoming Department of Environmental Quality	Herschler 2E, 122 West 25 Street	Cheyenne	WY	82002	
Mr.	Kevin	Frederick	Wyoming Department of Environmental Quality	Herschler 4W, 122 West 25 Street	Cheyenne	WY	82002	
Mr.	Alan	Edwards	Wyoming Department of Environmental Quality	Herschler 4W, 122 West 25 Street	Cheyenne	WY	82002	
Ms.	Nancy	Nuttbrock	Wyoming Department of Environmental Quality	Herschler 3W, 122 West 25 Street	Cheyenne	WY	82002	

Appendix D-11
Mineral Rights Owners Notification May 22, 2013

Wyoming Wind & Power

May 22, 2013

Subject: Notice to Mineral Rights Owners of the Proposed Wyoming Wind Farm

Dear Mineral Rights Owner:

Wyoming Wind and Power, LLC (WW&P) has begun the regulatory process to construct the Wyoming Wind Farm (the Project). When completed, the Project will be composed of a wind energy facility near Wheatland and Chugwater, and encompass private lands in both Platte and Goshen Counties. The Project is subject to review pursuant to the Wyoming Industrial Development Information and Siting Act (ISA), Wyo. Stat. §§ 35-12-101 *et seq*. As such, notice must be made to record owners of mineral rights located on or under the land where the proposed facility will be constructed. As a party on record as having a fee, leasehold, or mining claim interest within the project area, you are receiving notice of the Project.

The Project will consist of up to 300 wind turbine generators. The Project area consists of two parcels of property, one near Wheatland and one near Chugwater (**Figure 1**). There will be substations serving each of these areas. The Project will also consist of transformers, underground and overhead collector lines, operations and maintenance buildings, turbine access roads, and permanent meteorological towers.

The Project will involve private lands within parcels listed in **Table 1**. To simplify presentation, any section wholly or partly within the Project area is listed. Refer to Figure 1 for the portions of the sections involved, or contact WW&P for specific lands involved (contact information below).

Table 1
Legal Description of Project Area

Township and Range	Section[1]
Antelope Gap Parcel	
23N 65W	6
23N 66W	1, 2, 3, 11, 12
24N 65W	4, 5, 6, 7, 8, 9, 17, 18, 19, 20, 21, 29, 30
24N 66W	1, 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
24N 67W	23, 24
25N 65W	2, 3, 4, 5, 8, 9, 11, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33
25N 66W	13, 24, 39, 30, 31, 32, 35, 36
25N 67W	25
26N 65W	32, 33
Chugwater Parcel	
20N 65W	2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 18, 19
20N 66W	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35
20N 67W	12, 13
21N 65W	5, 6, 19, 20, 21, 28, 29, 30, 31, 32, 33, 36
21N 66W	11, 12, 14, 15, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36

[1] Project may include all or parts of the listed sections

WW&P is in the process of reaching out to potentially affected parties. An open house informational meeting is planned to provide the opportunity to discuss the project. The meeting details are:

Date: Tuesday, May 28
Time: 5:00 PM to 8:00 PM
Location:
First State Bank Conference Center
1405 16th Street, Wheatland, WY 82201

WW&P intends to submit the ISA permit application on July 1, 2013, with a public hearing anticipated in mid- to late-September. The ISA permit application will be available for download from the Wyoming Department of Environmental Quality – Industrial Siting Division (ISD) shortly after submittal at: http://deq.state.wy.us/isd/isdnews.htm. The application will be available for viewing in hard copy at the County Clerks' Offices, at the ISD office in Cheyenne, and by appointment at WW&P's office in Cheyenne (address below):

Platte County Clerk's Office
800 9th Street
Wheatland, WY 82201
(307) 322-2315

Goshen County Clerk's Office
2125 E A Street #120
Torrington, WY 82240
(307) 532-4051

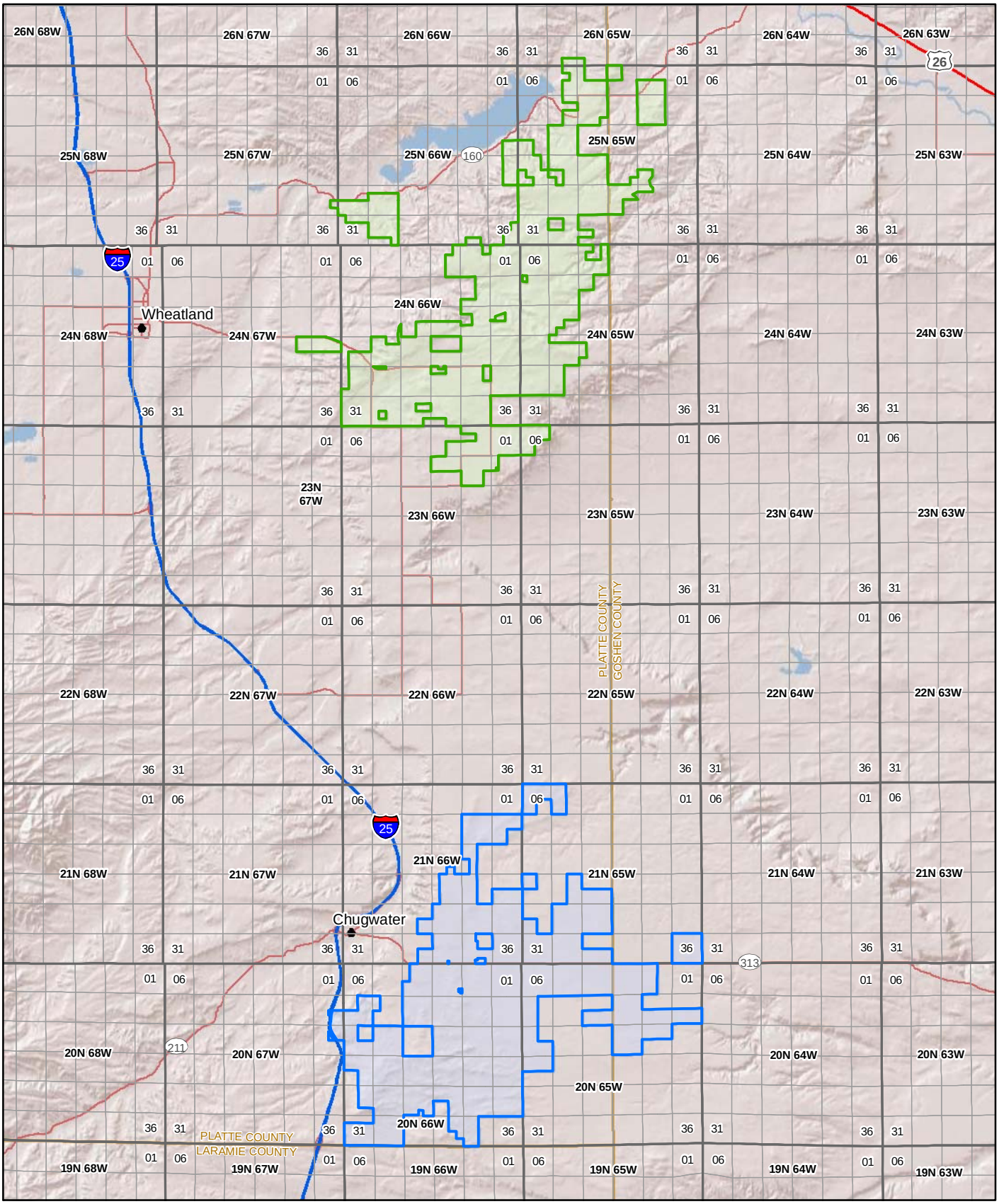
Industrial Siting Division
Herschler Building 4 West
122 West 25th Street
Cheyenne, WY 82002
(307) 777-7369

WW&P invites you to express your comments and provide feedback so that issues may be considered and addressed directly, and the feedback may be incorporated into the ISA permit application and construction planning process. Additional information about the Project may be obtained at the address below:

Wyoming Wind Farm
c/o Ryan Fitzpatrick
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007
ryan@wyomingwind.com
(307) 399-1393

Sincerely,

Ryan Fitzpatrick
Vice President, Business Development
Wyoming Wind & Power, LLC
Attachments: 1) Figure 1 – Mineral Owner Notification Area



Legend

- Antelope Gap Parcel
- Chugwater Parcel
- Township/Range
- Section

N

0 1 2 4
Miles

FIGURE 1
Mineral Owner Notification Area
Wyoming Wind Farm
Platte and Goshen Counties, WY

CH2MHILL

Mineral Ownership/Lease	City, State, ZIP	Returned
David Burke	Wheatland, WY 82201	
Noble Energy Inc.	Houston, TX 77067	
Black Stone Minerals Company	Houston, TX 77002	
Virginia Barrett	Houston, TX 77078	
ExxonMobil Oil Corp.	Ennis, TX 75119	
Sconic Ventures, LLC	Houston, TX 77018	
Joyce Wampler	Bellvue, WA 98004	
Robert & Betty Wilson	Sun City, AZ 85354	
Bill Barrett Corp.	Denver, CO 80202	
Thomas Goswick	Ft. Collins, CO 80524	
Kathy Perkins	Penn Valley, CA 95946	
Gary Olson	San Marcos, CA 92078	
Delphin James Dumont	Lakewood, CO 80215	X
OOGC America, inc.	Wilmington, DE 19801	
John O. Bullington	Houston, TX 77024	
JHW-MRW Master Limited Partnership	Fort Worth, TX 76102	
State of Wyoming - Office of State Lands and Investments	Cheyenne, WY 82001	
Elaine Beavers	Boise, ID 83713	
Richard E. Drake	San Mateo, CA 94402	
Mary Finbiner	Wheatland, WY 82201	
Linda Tauger	Wheatland, WY 82201	
Britoil Ventures Inc.	Houston, TX 77042	
Richard Broeker	New London, WI 54961	
Thomas & Carol Phifer	Gilbert, AZ 85234	
Marjie Klebe	Cheyenne, WY 82009	X
Becky Blue	Grass Valley, CA 95945	
Larry Singer	San Mateo, CA 94403	
Linda Connell	Omaha, NE 68154	
John Flude, Jr.	Darnestown, MD 20878	
Jack Edna	Irvine, CA 92606	
Barbara Glick	Irvine, CA 92606	
Janet Hoare	Neenah, WI 54956	
Marian Brown Warning	East Wentachee, WA	
Gerald Hurst, Jr.	Kalispell, MT 59901	X
Cecile Flude Hardin	Houston, TX 77042	
Glenn Dodd	San Jose, CA 95115	X
Richard Dodd	San Jose, CA 95115	X
Warren Knight, Jr.	Denver, CO	X
GF Energy Investments	Casper, WY 82604	
Carpenter & Sons, Inc.	Casper, WY 82604	
Sophia Singer	Tiburon, CA 94920	
Eli Singer	Tiburon, CA 94920	
Jesse & Viola Walker	Laramie, WY 82072	X
Jane Couch Frank	Sugar Land, TX 77478	
Florence & Earl Winberg	Hughson, CA 95326	
Anita Winberg	Hughson, CA 95326	
TODCO Properties, Inc.	Norman, OK 73069	

Robert Gurney	Torrington, WY 82240	
T.S. Dudley Land Company	Denver, CO 80203	
Dennis Gruntorad	Graph Valley, CA 95945	
Marian House Harms	Grosse Point Farms, MI 48236	
A.J. Ketelsen	Perry, IA 50220	X
Devon Energy Production	Oklahoma City, OK 73102	
Pamela Goertz	Denver, CO 80210	
Russell Baker	Redville, CO 80461	
Darrel Vaughn	Wheatland, WY 82201	X
Jeanette Daly	Granite Canyon, WY 82059	
John Rowan	San Antonio, TX	
Robert Dye	Casper, WY 82604	
Harold Dye	Casper, WY 82604	
Edward Bliss	Cheyenne, WY 82009	X
Jo Ann Wright	Paonia, CO 81428	
Emma Elder Thompson	Modesto, CA 95350	
Kimberly Ray Ketelsen	Milford, IA 51351	X
Colton James Ketelsen	Perry, IA 50220	
Bruce Hellbaum	Wheatland, WY 82201	
Martha Nickels	Vallejo, CA	
Ted Henry Ketelsen	Spirit Lake, IA 51360	
Wallace Weber	Hamilton, MT 59840	X
Eagle Oil & Gas Co.	Wichita Falls, TX 76308	
Wesley Holt	Grove, OK 74344	
Karen & Alvis Marshall	Gillette, WY 82718	
Joni Darby	Laramie, WY 82072	X
Stewart Geological, Inc.	Billings, MT 59102	
Kevin Roush	Cameron Park, CA 95682	
Diane Lara	Cameron Park, CA 95682	
Gladys & A. Gordon Archibald	Newburgh, NY	
Charles & Hannah Foster	Rosewell, GA 30075	
Marubeni Denver Julesberg, LLC	Houston, TX 77056	
Dennis & Teresa Baker	Chugwater, WY 82210	
Ronald Evans	Laguna Niguel, CA 92677	
Wirt A. Yerger, III	Ridgeland, MS 39157	
Susan Flude Moore	Dallas, TX 75225	X
Pamela Holt	Manhattan, KS 66502	
Holly Hellbaum	Wheatland, WY 82201	
Syble Huston	Cheyenne, WY 82001	X
Edwin A. Krohn Marital Life Trust	Ukiah, CA 95482	
Robert Blaney	Lusk, WY 82225	X
Phyllis Burgess	Las Vegas, NV 89145	
Donald Drake	Virginia Beach, VA 23452	
Wyoma Baker	Wheatland, WY 82201	
Lizbeth Darby	Somonauk, IL 60552	
Howard & Doris Pendelton	Eureka, CA	X
Wanda Thompson	North Highlands, CA	
Audry Jarvis	Casper, WY 82609	

Wade & Maggie Weber	Stevensville, MT 59870	
Khody Land & Minerals	Oklahoma City, OK 73112	
Sharon Winberg	Hughson, CA 95326	
Jo-Ellen Karambelas	Manhattan Beach, CA 90266	
Robert Kretsinger	Charlottesville, VA 22911	
Connie Siefkes	Sleepy Eye, MN	
Welfelt Interests, LLC	Dallas, TX 75225	
O'Brien Resources, LLC	Shreveport, LA 71106	
Lowry, Inc.	Loveland, CO 80537	X
Shaun Aftonomos	Omaha, NE 68106	
McMahon Energy Partners, LP	Denver, CO 80237	
Jay Weber	Wheatland, WY 82201	
Helen Bayer	Appleton, WI 54911	
Eldon & Josephine Johnston	Phoenix, AZ 85018	X
Christopher Kerry Tashlin	Las Vegas, NV 89129	
ASEN 2 Corporation	Scottsdale, AZ 85251	
Florence Curtis Petrie	Denver, CO	
Charles Wadsworth Howard, III	Idaho Falls, ID 83401	
Frances Weber	Wheatland, WY 82201	X
Valerie Anne Stewart	Lincoln Park, NJ 07035	X
Jerry A. Smith Trust	Arlington, TX 76010	
Rex Goertz	Fort Worth, TX 76135	
Charlotte Marguerite Prough	Escondido, CA 92026	
Agnes Turney	Wheatland, WY 82201	
Sharon Weber	Laramie, WY 82072	
John & Darlene Bliss	Cheyenne, WY 82009	
USA BLM	Cheyenne, WY 82009	
Marathon Oil Company	Houston, TX 77056	
Albert LeMoine, III	Overland Park, KS 66209	
Linda Gilbertson	Meridian, KS 66512	
Rebecca Hellbaum	Lubbock, TX 79416	
LVM Ventures LLC	Houston, TX 77007	
David S. Lemoine	Prarie Village, KS	
Pauline Gale	Scottsdale, AZ 85258	
Ferol A. Hitt	Wheatland, WY 82201	
Milton H. Rosenberg	Milwaukee, WI 53217	
William Zack Phifer	Pasco, WA 99301	
Bryan Tyrrell	Cheyenne, WY 82009	
Kyle Weber	Westminster, CO 80020	
Gerald & Norma Jean Huston	Tucson, AZ 85706	
Robin Jung-Schatz	Dickinson, ND 58601	
Mary Nicola	Guernsey, WY 82214	X
John Edward Howard	Las Vegas, NV 89129	
Rebecca Jane Curtis Nazarenus	Truth or Consequences, NM	
James & Jennie Hunter	Denver, CO	X
GMX Resources, Inc.	Oklahoma City, OK 73114	
W.A. Moncrief, Sr.	Fort Worth, TX 76102	
Dorothy Gosney	Kaycee, WY	X

Donna McClellan	Lakeside, OR 97449	
Carolyn Foster	Lakeside, OR 97449	
Susan Londry	Lakeside, OR 97449	
Gayle Volz	Lakeside, OR 97449	
Robert Edward Brown	Kersey, CO	X
WE Dunham	Mechanicsburg, PA	
Gary Johnson	Checotah, OK 74426	
Roberta McCullough	Mitchell, SD 57301	
William Miller	Canyon City, CO 81212	
Continental Resources, Inc.	Enid, OK 73702	
Bard Ranch Company	Wheatland, WY 82201	
Mary Kathleen Payne	Bainbridge Island, WA 98110	X
James Jay Payne	Bainbridge Island, WA 98110	X
Toucan Oil Trust	Friday Harbor, WA 98250	
Mark Chapman	Sealy, TX 77474	
Melody Matheson	Saratoga, WY 82331	
George S. Dennis	Jackson, MS 39215	
Chesapeake Exploration	Oklahoma City, OK 73154	
Thomas N. Berry & Company	Stillwater, OK 74076	
L-K-E Investments	Wichita Falls, TX 76307	
Francis Merritt	Cheyenne, WY 82003	
Lawrence Welty	Chugwater, WY 82210	
Hope Holdings, LLC	Midland, TX 79702	
Carl Herrin	Jackson, MS 39205	
Patricia Hagen	Henning MN 56551	
Walter Lund	Wyoming, IA 52362	
Eldon Allison	Wheatland, WY 82201	
Alvin & Elizabeth Hope	Abilene, TX 79604	
Lellani Watt Living Trust	Jackson, WY 83001	
Union Central Life Insurance Company	Cincinnati, OH 45240	
Gordon & Michelle Rhoades	Sheridan, WY 82801	
Tofte Energy Partners, LP	Casper, WY 82604	
FX Resources, LLC	Casper, WY 82604	
Joe McMahon Jr.	Englewood, CO 80155	
R.C. & Ethelyn Ferguson	Jackson, WY 83001	
Curtis State Bank	Curtis, NE 69025	
Tiptop Energy Production	Houston, TX 77052	
William Stiles, Jr. Trust	Eureka Springs, AZ 77632	X
Edna & Robert Miller	Cedaridge, CO 81413	
Janice Hitt Carey	Rimrock, AZ 86335	
MBI Oil & Gas LLC	Belfield, ND 58622	
Fay Allison Revocable Trust	Wheatland, WY 82201	
David Wedenmeyer	Chugwater, WY 82210	
Don & Evelyn Wedenmeyer	Chugwater, WY 82210	
Janet Smith Heyl	Houston, TX 77001	X
Guenzel Gas Pertners, LP	Divide, CO 80814	
Hazel & Paul Reed	Jefferson, NY	X
William & Anna Wilson	Wheatland, WY 82201	X

Appendix D-12

Mineral Rights Publication Affidavit: Torrington Telegram May 29, 2013, and June 5, 2013

AFFIDAVIT OF PUBLICATION

THE STATE OF WYOMING
SS
COUNTY OF GOSHEN

I, Heather Sarha, being first duly sworn, Depose that I am a representative of the Torrington Telegram, a legal newspaper Of general circulation in Goshen County, Wyoming and printed and published in the

English language twice a week at Torringtor In said county and state:GOSHEN, WYOMING

That the Torrington Telegram has been Regularly and consecutively published for More than fifty-two weeks prior to the first Publication of the notice hereof;

That the Legal Notice regarding

LE 9696

A copy of which is hereto attached and forms A part of this affidavit, was published in the Torrington Telegram for 2 bi-weekly Issues of the following dates, to-wit:

May 29, June 5, 201

And that the said notice was published in the Regular and entire issue of said Torrington Telegram for said above date, and in the Newspaper proper and not in a supplement Thereof.

Heather Sa

Subscribed in my presence and sworn to before Me at Torrington, Wyo. On this, the Day of 6-5 , 2013.

Jean Good

Jean Good, Notary Public

JEAN GOOD NOTARY PUBLIC My Commission Expires February 8, 2016 GOSHEN COUNTY WYOMING

PUBLIC NOTICE

Notice to Mineral Rights Owners

Wyoming Wind and Power, LLC (WW&P) has begun the regulatory process to construct the Wyoming Wind Farm (the Project). When completed, the Project will be composed of a wind energy facility near Wheatland and Chugwater, and encompass private lands in both Platte and Goshen Counties. The Project is subject to review pursuant to the Wyoming Industrial Development Information and Siting Act (ISA), Wyo. Stat. §§ 35-12-101 et seq.

The Project will consist of up to 300 wind turbine generators. The Project area consists of two parcels of property, one near Wheatland and one near Chugwater. There will be substations serving each of these areas. The Project will also consist of transformers, underground and overhead collector lines, operations and maintenance buildings, turbine access roads, and permanent meteorological towers.

The Project will involve private lands within parcels listed in the table below. To simplify presentation, any section wholly or partly within the Project area is listed. Contact WW&P for specific lands involved (contact information below).

Legal Description of Project Area

Township and Range	Section[1]
Antelope Gap Parcel	
23N 65W	6
23N 66W	1, 2, 3, 11, 12
24N 65W	4, 5, 6, 7, 8, 9, 17, 18, 19, 20, 21, 29, 30
24N 66W	1, 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
24N 67W	23, 24
25N 65W	2, 3, 4, 5, 8, 9, 11, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33
25N 66W	13, 24, 39, 30, 31, 32, 35, 36
25N 67W	25
26N 65W	32, 33
Chugwater Parcel	
20N 65W	2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 18, 19
20N 66W	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35
20N 67W	12, 13
21N 65W	5, 6, 19, 20, 21, 28, 29, 30, 31, 32, 33, 36
21N 66W	11, 12, 14, 15, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36

[1] Project may include all or parts of the listed sections

WW&P intends to submit the ISA permit application on July 1, 2013, with a public hearing anticipated in mid- to late-September. The ISA permit application will be available for download from the Wyoming Department of Environmental Quality – Industrial Siting Division (ISD) shortly after submittal at: http://deq.state.wy.us/isd/isdnews.htm. The application will be available for viewing in hard copy at the County Clerks' Offices, at the ISD office in Cheyenne, and by appointment at WW&P's office in Cheyenne (address below):

Platte County Clerk's Office
800 9th Street
Wheatland, WY 82201
(307) 322-2315

Goshen County Clerk's Office
2125 E A Street #120
Torrington, WY 82240
(307) 532-4051

Industrial Siting Division
Herschler Building 4 West
122 West 25th Street
Cheyenne, WY 82002
(307) 777-7369

WW&P invites you to express your comments and provide feedback so that issues may be considered and addressed directly, and the feedback may be incorporated into the ISA permit application and construction planning process. Additional information about the Project may be obtained at the address below:

Wyoming Wind Farm
c/o Ryan Fitzpatrick
6215 Clear Creek Parkway, Suite 6
Cheyenne, WY 82007
ryan@wyomingwind.com
(307) 399-1393

Public Notice No. 9696 published in the Torrington Telegram May 29 and June 5, 2013.

Appendix D-13
Introductory Letter to Local Governmental Officials
May 3, 2013

Wyoming Wind & Power

May 3, 2013

Tim Millikin
Platte County Commissioner
1000 Glendo Park Road
Glendo, WY 82213

Dear Tim:

My name is Ryan Fitzpatrick, and I'm writing on behalf of Wyoming Wind & Power to introduce myself and to let you know that our company is planning a wind energy project in Platte and Goshen Counties. The project is proposed to comprise up to 300 wind turbines with the capacity to generate 900 megawatts of electricity. The project is subject to review and evaluation under the Wyoming Industrial Siting Act that is administered by the Industrial Siting Council. The company plans to submit an application to the Wyoming Industrial Siting Division this summer with construction anticipated to commence the end of this year. The company has subscribed to 100% of the capacity on the Wyoming-Colorado Intertie transmission project through a federally-approved agreement, and is currently pursuing power marketing opportunities. As such , it is expected the electricity generated by the project will enter the grid and service the Front Range of Colorado.

This is not a formal notice as part of the application process, nor is it a formal meeting request. This letter is intended to simply serve as an introduction to our project and our company prior to all of the formal requirements of the Industrial Siting process. That process will call for a public hearing, as well as public meetings where you and your constituents will have the opportunity to learn more about the project and to voice any comments and concerns.

For a little background on our company, Wyoming Wind & Power, LLC is a wind energy development company founded in 2008 and headquartered in Cheyenne. The company is owned by Jackson, Wyoming based, ThinkTank Holdings, LLC. Since its founding, Wyoming Wind & Power has leased and studied approximately 120,000 private acres in Platte and Goshen Counties to determine the feasibility of a large-scale wind development. More information can be found at www.wyomingwind.com and www.thinktank.com.

I would be happy to meet with you at your convenience, perhaps over lunch, to discuss our project in as much detail as I can provide at this time. Please let me know if you're interested in scheduling a meeting. You can also feel free to contact me at any time at (307) 399-1393 or via email at ryan@wyomingwind.com. I will request, however, that you please keep the project confidential until a formal announcement is made through the Industrial Siting process.

Best regards,

Ryan Fitzpatrick
Vice President, Business Development

Wyoming Wind & Power LLC | 6215 Clear Creek Parkway, Suite 6 Cheyenne, WY 82007 | Tel: 307-996-4977 | Fax: 307-632-3485 | wyomingwindandpower.com

Introductory Letters Distribution List

Name	Town/County	Title	Address	Town	State	Zip
Tim Millikin	Platte County	Commissioner	1000 Glendo Park Road	Glendo	WY	82213
Sandy Kontour	Platte County	Commissioner	501 West Johnson Road	Wheatland	WY	82201
Steve Shockley	Platte County	Commissioner	3652 Highway 34	Wheatland	WY	82201
Jean Dixon	Wheatland	Mayor	600 9th Street	Wheatland	WY	82201
Edward Delgado	Guernsey	Mayor	PO Box 667	Guernsey	WY	82214
LaDonna Sands	Chugwater	Mayor	PO Box 243	Chugwater	WY	82210
Jim Hudelson	Goshen County	Commissioner	4366 Narrows Drive	Torrington	WY	82240
Wally Wolski	Goshen County	Commissioner	3795 Road 42	Yoder	WY	82244
Carl Rupp	Goshen County	Commissioner	133 Pebble Lane	Torrington	WY	82240
Mike Varney	Torrington	Mayor	436 E. 22nd Avenue	Torrington	WY	82240

Appendix E
Letters of Support

Don and Karen Guidice
PO Box 134
Chugwater, WY 82210
307.422.3516 or 307.331.5761

JUN 20 2013

June 18, 2013

Industrial Siting Division
Luke Esch, Administrator
Herschler Building, 4th Floor West
122 West 25th Street
Cheyenne, Wyoming 82002

Dear Mr. Esch:

We would like to express our support for the Wyoming Wind project in Platte County.

We've been working with Ryan Fitzpatrick and Wyoming Wind for several years and appreciate their quick response to questions, being upfront as much as they can be, and their professionalism towards this project. We always felt they were being honest and not trying to create something that would just go away. We feel their commitment to this project is real and look forward to our continued involvement with Wyoming Wind and Power.

We believe Wyoming Wind has the integrity to be a good neighbor to Platte County and sincerely hope the Industrial Siting Committee looks favorably upon this company and Wyoming Wind's industrial siting process.

If you have any questions, we would be happy to visit with you. Our phone number is 307.422.3516.

Karen T Guidice
Don Guidice

Don and Karen Guidice

cc: Ryan Fitzpatrick

Southeast Wyoming
ECONOMIC DEVELOPMENT
District

COUNTIES:
ALBANY
GOSHEN
LARAMIE
PLATTE

June 4, 2013

Luke Esch, Administrator
Industrial Siting Division
Herschler Building 4 West
122 West 25th Street
Cheyenne, WY 82002

Dear Mr. Esch:

I attended the presentation put on by Wyoming Wind and Power in Wheatland, Wyoming on May 28th.

Southeast Wyoming will greatly benefit with this project, by providing jobs and economic development across the region. Towns in Platte County are looking forward to an impact that can benefit their communities with this new business and help with job opportunities, new residents and possibly more businesses created because of this project.

I appreciated Wyoming Wind's helpfulness with information and being upfront with those attending the meeting, providing as much information to the public as they were able.

Southeast Wyoming Economic Development District supports Wyoming Wind and Power's wind farm project and we look forward to helping make this project happen in any way that we can.

If you have any questions, please don't hesitate to call.

Sincerely,

Karen L. Guidice

Karen L. Guidice
Executive Director

P.O. Box 988 / 851 Gilchrist • Wheatland, WY 82201
Voice 307 331 5761 • www.highplainsedd.org • E-mail kareng@highplainsedd.org

Antelope Gap Wind Energy Association, LLC

P.O. Box 515
Wheatland, WY
82201

June 24, 2013

Industrial Siting Division
Luke Esch, Administrator
Herschler Building, 4th Floor West
122 West 25th Street
Cheyenne, WY 82002

Dear Mr. Esch,

In 2008, a group of 44 southeast Wyoming landowners joined forces to form Antelope Gap Wind Energy Association with the goal of leasing their land for wind energy development. In 2010, 37 of these landowners signed an agreement with Wyoming Wind and Power to lease over 34,000 acres for the Wyoming Wind Farm.

Since that time, AGWEA members have worked closely with WW&P personnel, primarily Ryan Fitzpatrick, Vice President of Business Development. Ryan attends our meetings, keeps our members updated via e-mail, and promptly addresses any concerns we have. WW&P has also demonstrated that they want to work with the community as a whole, not just landowners in the project. An example of this was when an adjacent landowner was worried about an anemometer that would be placed close to his property. The landowner contacted Ryan and they worked together to find a solution that satisfied everyone.

Wyoming Wind and Power has demonstrated a strong commitment to the project by making yearly lease payments to landowners, installing anemometers, working with FERC to develop transmission, and working with power purchasers. We've been impressed by their dedication and efforts to move the project forward.

Wind energy development is a particularly good fit for our area because it is open farm and ranch country and is sparsely populated. The extra income generated by wind will allow farmers and ranchers to keep their ag operations and pass them down to future generations. Because our area is located in eastern Platte County, the development will

not affect the population centers of the county and will not interfere with the view shed of the Laramie Range.

Both before and after completion, this project will provide significant revenue to Platte County and the state of Wyoming in the form of jobs, taxes, and other economic development. WW&P has also stated publicly that they intend to purchase what goods and services they can in Platte County which will generate additional income for the entire county.

AGWEA's membership strongly supports the Wyoming Wind Farm as being developed by Wyoming Wind and Power.

Sincerely,

John Watson
Chairman

Toni Cochran
Secretary/Treasurer

Bob Bauer
Board Member

David Weber
Board Member

cc: Ryan Fitzpatrick

Industrial Siting Division
Luke Esch, Administrator
Herschler Building, 4th Floor West
122 West 25th Street
Cheyenne, WY 82002

Dear Mr. Esch & Siting Division,

This letter is to inform you of our support and anticipation for development of the Wyoming Wind Farm project. We have enjoyed working with Ryan Fitzpatrick and his staff as they have walked us through the entire process. Information has been readily available with answers to questions or were supplied promptly. We are anxious to see electricity being generated from wind in our very windy county.

Please know wind is not a new idea to the Bauer's. In 2007 we worked with the Wyoming Business Council and leased an anemometer for one year to measure wind velocity and consistency our property. Our neighbors were excited and anxious for information and the prospect of developing their own property. With all this interest and working with a government employee, the AGWEA group was formed. We, as part of the AGWEA group, are very excited for the Wyoming Wind Farm project to be approved, completed and put into operation.

The Bauer family is in strong support of the Wyoming Wind & Power project. Our working with this company has been most professional. We believe this project will be of benefit to the land owners, the community, the county, and the state of Wyoming.

Thank you for your consideration in permitting this project.

Sincerely,

Bob & Helen Bauer
5 N. Hightower Road
Wheatland, WY 8220

Industrial Siting Division
Luke Esch, Administrator
Herschler Building, 4th Floor West
122 West 25th Street
Cheyenne, Wyoming 82002

Dear Mr. Esch,

In regard to the permitting of the Industrial Siting east of Wheatland for Wyoming Wind and Power Farm, I'm in complete support of this wind farm. In the several years I've been in contact with WW&P they have shown the greatest respect for my farm and myself. They have followed through with all commitments made to me and I fully support their efforts.

Arland Childers
355 Deer Creek Rd.
Wheatland, Wy

PLATTE COUNTY
ECONOMIC DEVELOPMENT

June 5, 2013

Mr. Luke Esch
Industrial Siting Commission
122 W. 25th Street
Cheyenne, Wyoming 82002

Dear Mr. Esch,

Platte County Economic Development is writing this letter to show its support for the proposed Wyoming Wind and Power's proposed 900 megawatt wind farms to be located east of Chugwater and east of Wheatland.

These two sites are both perfect locations for wind development, and the project will provide an economic stimulus for the county not seen since the Laramie River Station was constructed in the late 1970's; providing a variety of jobs of different skill levels, income for the landowners who provide space for the turbines, and badly needed tax revenues for Platte County and the State of Wyoming.

Wyoming Wind and Power has been very cautious as the company moves forward on this project, working hard to collect pertinent and meaningful meteorological, environmental and social data, follow state, federal and local guidelines and work with landowners to keep them appraised of the progress while being careful not to promise things that can't be delivered.

We have been working with Ryan Fitzpatrick for several years now, and we appreciate his willingness to work with us to plan carefully, use local contractors when possible and keep the communities that will be impacted informed of the project. It seems obvious that Wyoming Wind and Power wants to do not only what will benefit the company, but also what will be best for the communities of Platte County.

Sincerely,

Dan Brecht, Director
Platte County Economic Development
P. O. Box 988
851 Gilchrist
Wheatland, Wyoming 82201

Representative **Dan Kirkbride**
ming House of Representatives **House District 04**
P.O. Box 37
Chugwater, WY 82210

mobile (307) 331-2265
email Dan.Kirkbride@wyoleg.gov

Industrial Siting Division
Mr. Luke Esch, Administrator
Herschler Building, 4th Floor West
122 W. 25th St.
Cheyenne, WY 82002
June 19, 2013

Dear Mr. Esch:

I'm writing relative to the Wyoming Wind & Power *Wyoming Wind Farm* project soon to be considered by the Industrial Siting Council.

First let me say that I'm a landowner who could potentially stand to gain financially if the project comes to fruition. Consider that as you will, but I'm writing today as a legislator and former Platte County Commissioner who sees the project as a positive development in the life of his district.

Wyoming Wind & Power first came to the area in 2010 later picking up the pieces of other companies who had dropped their leases. The brought a positive message stating their plans to build and then effectively market local wind resources. Their efforts towards that end have been consistent thus far.

I think an active wind farm would be a boon for this locale. As you know, Platte County has minimal mineral development and industrialization apart from the Missouri Basin Power Project in Wheatland. The prospect of a new industry to strengthen the tax base, provide new jobs and stabilize local agricultural operations is encouraging. Some of the state's first landowner groups sprang up in the Slater/Chugwater communities hoping to capitalize on our local wind resource. The turbine fields are mostly in remote rural settings where few citizens will be negatively affected. Most of them stand to benefit from a stake in the project.

The Chugwater school enrollment has now shrunk to 50 students. Most of the local agricultural operators, like myself, near Social Security status. We need revitalization. I think our county would welcome the new, well run, profitable business that the *Wyoming Wind Farm* promises to be. Thank you for your efforts in reviewing this application.

Kind Regards,

DAN KIRKBRIDE

Rep. Dan Kirkbride
Wyoming House District 04

Appendix F
Housing Commitments

Kizlinski, Matt/DEN

From: Renee McDermid [r4hotels@gmail.com]
Sent: Monday, June 03, 2013 2:32 PM
To: Murphy, Kate/DEN; Holiday Inn Express
Subject: Wyoming Wind and Power

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Good afternoon, Kate,

It has been our pleasure talking with you and discussion the exciting news of Wyoming Wind and Power coming into Goshen County with a turbine wind farm. As small business owners in the Torrington community, we are very happy to be able to work with you as things develop.

The Holiday Inn Express Hotel and Suites in Torrington has 67 nicely furnished guest rooms with 37" flat panel tv's and micro-wave and refrigerators in every room. In addition to providing a hot breakfast every morning, the hotel hosts a manager's reception in the evenings, Monday-Thursday. We also have a small conference room, pool and spa, guest laundry room on site, free wi-fi, and a very friendly and guest-accommodating staff.

Based upon current information concerning this project, our property would be able to dedicate 50 guest rooms to help fill your needs with an anticipated room rate of between $80-$110/night. Of course, as we discussed, we are very willing to work with the companies that will be staying with us on a regular basis to address a more specific number of room nights for a contract and a negotiated rate to help meet their needs.

Please contact me at the number below, or Jana Ross, General Manager, at the hotel, if we can answer any other questions. We are happy to help at any time.

Best Regards,
Renee
--
Renee McDermid
BST Hotels, LLC
303-652-3626
303-746-1581(c)o

Kizlinski, Matt/DEN

From: Quality Inn [qualitycheyenne@gmail.com]
Sent: Friday, June 07, 2013 12:46 PM
To: Murphy, Kate/DEN
Subject: Comfort Inn Cheyenne

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Hi Kate!

Other than our blackout dates in July with Frontier Days we would have at least 10 rooms available for your company. We could set up a corporate rate and also do a direct bill with you to make things easier. We could discuss a rate at a later time if needed.

Thanks,

Amber Golden
Sales Manager
Comfort Inn Cheyenne
307-638-7202

Kizlinski, Matt/DEN

From: Cheyenne Fairfield Inn AGM [Jenny.Parsons@TMIHospitality.com]
Sent: Tuesday, June 04, 2013 1:51 PM
To: Murphy, Kate/DEN
Subject: potential room availabilty 2014-2019

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

The estimated room availability that I could offer will be 10 rooms at $109.00-119.00

Thanks for choosing Fairfield!!

Jenny Parsons - AGM - Cheyenne Fairfield Inn
TMI Hospitality
1415 Stillwater Ave - Cheyenne - WY 82009
Tel 307.637.4070 - Fax 307-637-4070
Email: Jenny.Parsons@tmihospitality.com

Kizlinski, Matt/DEN

From: Heather Dickerson [hdickerson@kinseth.com]
Sent: Friday, June 07, 2013 2:48 PM
To: Murphy, Kate/DEN
Subject: Re: Availablity in 2014-2019

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

June 7, 2013

To All This May Concern:

We appreciate your business and hope to have you all stay with us in the future.
We look forward to providing your crews with great service.

Our hotel provides our guest with studio suites in either 1 or 2 bed options (1 king size or 2 queen size.
Each suite is equipped with a wet bar, microwave oven, in room coffee maker and mini fridge.
The sitting area has a work desk and chair and a sofa which houses a hide a bed (full size mattress).
The bath room area includes a hair dryer and there is also an iron and ironing board.

Amenities of the hotel include a guest coin operated laundry room, indoor pool and hot tub, fitness room, mini market,
Free wireless internet, free breakfast buffet and free parking.

The buffet features daily changes which also includes scrambled eggs, sausage patties, hot oatmeal, cold cereals, yogurt, fruit, etc.

I thank you for your consideration when making your reservations.

Best regards,

Heather Dickerson
Guest Services Manager
Springhill Suites-Cheyenne
307-635-0006 pn
307-635-0008 fax

Kizlinski, Matt/DEN

From: nindvs@aol.com
Sent: Thursday, June 06, 2013 12:54 PM
To: Murphy, Kate/DEN
Subject: Re: Hotel Room Availability 2014-2019

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Kate,
Hi ,
Sorry I am late in getting back to you.
I have 116 sleeping rooms ----------so I could commit 30 rooms a night is all, as I have signed Direct Bill Contracts.
I wish your project was closer to Casper as I told you I am buying a 200 room Hotel right now.
Please call or write if I can assist you in any way.
Thank You!

ROLLING OUT THE RED CARPET FOR MY GUESTS!
Nickie Davis-General Manager/C.E.O.
Douglas Inn & Convention Center
1450 Riverbend Dr.Douglas Wyoming 82633
Work (307)358-9790 x 302
Fax (307)358-6251
Cell (208)512-4294
Email nindvs@aol.com
WYOMING IS THE ENERGY CAPITAL OF THE WORLD!

-----Original Message-----
From: Kate.Murphy <Kate.Murphy@ch2m.com>
To: nindvs <nindvs@aol.com>
Sent: Tue, Jun 4, 2013 11:20 am
Subject: Hotel Room Availability 2014-2019

Miss Davis:

Thank you for taking the time to talk with me on the phone today. As we discussed, if you could send me an email letting me know how many rooms you would be willing to commit to the project we discussed between the years 2014 and 2019, it would be greatly appreciated! Please also let me know if there are particular times you are aware of where these rooms may not be available.

Thanks again so much for your time,

Kate

Kathleen Murphy
Environmental Scientist
Environmental Services

CH2M HILL
9193 South Jamaica Street
Englewood, CO 80112-5946
Office: 720.286.0767
Cell: 215.919.2164
fax: 714.424.2169
www.ch2mhill.com

Kizlinski, Matt/DEN

From: Jasim Khan [wyomingmotel@ymail.com]
Sent: Wednesday, May 29, 2013 8:58 PM
To: Murphy, Kate/DEN
Subject: Re: rooms

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

also if you guys do like a contract to take all the rooms, thats also available to you.
thanks

----- Original Message -----
From: "Kate.Murphy@ch2m.com" <Kate.Murphy@ch2m.com>
To: wyomingmotel@ymail.com
Cc:
Sent: Wednesday, May 29, 2013 7:49 PM
Subject: RE: rooms

Jasim:

Thank you very much for your response. The project I mentioned to you on the phone is expected to start construction in 2014, and is expected to complete construction in 2019. Could you please answer the following questions for me?

1. Of the 26 rooms on your property, how many of those rooms would you be willing to make available for the entire length of the project?

2. are there certain times you are aware of you are typically booked and may not be able to provide all of these rooms?

Thank you again,

Kate

-----Original Message-----
From: Jasim Khan [mailto:wyomingmotel@ymail.com]
Sent: Wednesday, May 29, 2013 7:12 PM
To: Murphy, Kate/DEN
Subject: rooms

hi you guys requested rooms availability, we have 26 Rooms total in the property. and 7 rooms with 2 beds

thanks

Kizlinski, Matt/DEN

From: Suzanne Cozad [suzanne2006@netcommander.com]
Sent: Friday, May 31, 2013 10:58 AM
To: Murphy, Kate/DEN
Subject: rm availability

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Hi Kate,

It was great to visit with you! All 50 of our rooms will be available and we have a great history of which we are very proud of caring for our companies that are long term. If there is anything I can do to help my business cell is available 24/7.

Sincerely,

Suzanne Cozad
Best Western Torchlite
Office # 307/322-4070
Business Cell # 307/331-0220

Kizlinski, Matt/DEN

From: M64057BO - Motel 6 [M64057BO@motel6.com]
Sent: Thursday, May 30, 2013 12:53 PM
To: Murphy, Kate/DEN
Subject: Room availability

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Kate,
For the time span of 2014-2019 we would have 20 rooms available, with the possibility of more.

Beverly Burns, Manager
Motel 6
Wheatland, WY 82201

Kizlinski, Matt/DEN

From: Christine Stephens [sales.twchotels@gmail.com]
Sent: Thursday, June 06, 2013 2:46 PM
To: Murphy, Kate/DEN
Subject: Rooms at the Best Western Plus Frontier Inn

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Good Afternoon!

It was a pleasure speaking with you today. We look forward to your project in the area in 2014 to 2019.

We would be able to offer at least 30 rooms May-September for the duration of your project and at least 50 rooms October through April.

Depending on availability, we might be able to offer more during the year as well. The Best Western Plus has 74 total rooms.

Please let me know if you have any questions.

Christine Stephens
General Manager
Best Western Plus Frontier Inn
8101 Hutchins Drive
Cheyenne, WY 82007

Kizlinski, Matt/DEN

From: Sis Morgan [sismorg@hotmail.com]
Sent: Monday, June 03, 2013 10:18 PM
To: Murphy, Kate/DEN
Subject: Rooms for 2014-2019

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Hello, This is Sis Morgan from the Sagbrush Motel in Guernsey, WY. After talking with you I would be willing to commit 12 rooms for the time needed.
Thank You,
Sis Morgan

Kizlinski, Matt/DEN

From: Jasim Khan [wyomingmotel@ymail.com]
Sent: Wednesday, May 29, 2013 7:12 PM
To: Murphy, Kate/DEN
Subject: rooms

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

hi you guys requested rooms availability, we have 26 Rooms total in the property. and 7 rooms with 2 beds

thanks

Kizlinski, Matt/DEN

From: mshockle@wyoming.com
Sent: Tuesday, June 04, 2013 2:43 PM
To: Murphy, Kate/DEN
Subject: RV Spots

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

Hi,
I am sorry I didn't get this to you yesterday. Please let me know if you need anything else or have other questions.

Mountain View RV Park
77 20th Street
PO Box 86
Wheatland, WY 82201
307-322-4858
www.wheatlandrvpark.com

We could commit 20 spaces to your company. All site are full hook-ups which include water, sewer, electricity, cable t.v. and wireless internet.
We have a facility with bathrooms/showers and coin-operated laundry. We are located just off I-25 at exit 78 on the West side of the interstate. It is very easy
to get to. We are within walking distance of 2 convince stores and a liquor store. We have a bike/walking path next the rv park.

Our rates can vary but we are projecting $400.00 for April – September 2014 and $500.00 for October – March 2014. This is 1 service per camper and based on 2 adults in the camper.
It is $50.00 per person over 2 and if and extra electrical service is needed there will be an additional charge.

Thank you,
Missy Shockley
Mountain View RV Park

Kizlinski, Matt/DEN

From: Jasim Khan [wyomingmotel@ymail.com]
Sent: Wednesday, May 29, 2013 8:57 PM
To: Murphy, Kate/DEN
Subject: Re: rooms

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category

*we can make all 26 room available.
* every year were booked from jan- end of may, but if you guys take the rooms they will be available to you as long as you need them.
thanks

----- Original Message -----
From: "Kate.Murphy@ch2m.com" <Kate.Murphy@ch2m.com>
To: wyomingmotel@ymail.com
Cc:
Sent: Wednesday, May 29, 2013 7:49 PM
Subject: RE: rooms

Jasim:

Thank you very much for your response. The project I mentioned to you on the phone is expected to start construction in 2014, and is expected to complete construction in 2019. Could you please answer the following questions for me?

1. Of the 26 rooms on your property, how many of those rooms would you be willing to make available for the entire length of the project?

2. are there certain times you are aware of you are typically booked and may not be able to provide all of these rooms?

Thank you again,

Kate

-----Original Message-----
From: Jasim Khan [mailto:wyomingmotel@ymail.com]
Sent: Wednesday, May 29, 2013 7:12 PM
To: Murphy, Kate/DEN
Subject: rooms

hi you guys requested rooms availability, we have 26 Rooms total in the property. and 7 rooms with 2 beds

thanks

West Winds Motel

** ***Clean rooms at low daily and weekly rates*****

1756 South Street, Wheatland, WY -82201.
Call;(307) 322-2705 local. Fax ; (307) 322-8148.
Email ; info@westwindsmotel.us , WebURL;www.westwindsmotel.us
Visa,Master,Discover,AmEX (debit or credit),no personal checks.

To,
Ms.Kate Murphy,
CH2M Hill Company

Dear Madam,

Our establishment is committing 18 rooms (more if situation permits) after 06/30/2013 to the Wind-power project that your firm is to undertake in Greater State of Wyoming , and we are willing to work with your company for the entire duration of the said project, on mutually acceptable terms.

Thank you, jay & abby
(Owner/Operator).

CH2MTILL CONSTRUCTION

Attn: KATE MURPHY

Phone: 215-919-2161

Fax: 714-424-2169

YEAR

2014 - MARCH to OCTO.
2015 - " "
2016 - " "
2017 - " "
2018 - " "
2019 - " "

WEEKLY RATE: 37.00 Single - No Tax
42.00 Double - No Tax

ROOMS - ?

Total - 48 Rooms

Rates subject to Signed Contract.
Please feel free to call me on
402-760-2775 or email- Kmomotel6@gmail.com

with any questions.

Thank you. Kumar