

BEFORE THE
PUBLIC UTILITIES COMMISSION
STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA RANGE I, LLC AND DAKOTA
RANGE II, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT
A WIND ENERGY FACILITY

SD PUC DOCKET EL 18-____

PREFILED TESTIMONY OF DAVID PHILLIPS
ON BEHALF OF DAKOTA RANGE I, LLC AND DAKOTA RANGE II, LLC

January 24, 2018

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 **Q. Please state your name, employer, and business address.**

4 A. My name is David Phillips and I am employed by Apex Clean Energy, Inc. (“Apex”). My
5 business address is 246 E. High Street, Charlottesville, VA 22902.

6

7 **Q. What is your position with Apex?**

8 A. I am the Vice President of Environmental for Apex.

9

10 **Q. Briefly describe your relevant experience and educational background.**

11 A. I am responsible for managing environmental compliance across Apex’s portfolio of wind
12 and solar projects, including providing overall guidance on wildlife and environmental issues
13 to the development, construction, and asset management teams. In that role, I proactively
14 identify and address permit risk issues to ensure that projects are developed, constructed, and
15 operated in compliance with State and Federal regulations. I am an established technical
16 expert for resolution of environmental conflicts through permitting, studies, and agency
17 interaction for industrial development projects. I have substantial experience with the
18 National Environmental Policy Act (“NEPA”), Endangered Species Act, Bald and Golden
19 Eagle Protection Act, Migratory Bird Treaty Act, Clean Water Act, National Historic
20 Preservation Act (“NHPA”), National Pollution Discharge Elimination System, and other
21 relevant local, State, and Federal environmental regulations applicable to development,
22 construction and operation of utility scale power generation and transmission projects.
23 Likewise, I have significant experience managing and working with diverse interdisciplinary
24 teams (legal, financing, development, land, engineering, construction, biological, social,
25 cultural, construction) to accomplish permitting, construction, and operational compliance
26 objectives.

27

28 I have a B.S. in Environmental Science-Biology/Forestry from Stephen F. Austin State
29 University, and a M.S. in Wildlife Ecology/Statistics from the University of Maine. I am a
30 Certified Wildlife Biologist with The Wildlife Society, a board member of the American
31 Wind Wildlife Institute, and a member of the American Wind Energy Association Siting

1 Committee and Wildlife Subcommittee, the Raptor Research Foundation, and The Wildlife
2 Society's Renewable Energy Working Group. A copy of my curriculum vitae is provided as
3 Exhibit 1.

4
5 **Q. What is your role with respect to the Dakota Range Wind Project ("Project")?**

6 A. I am responsible for the Project's compliance with local, State and Federal environmental
7 regulations. My role includes overseeing coordination with environmental agencies such as
8 the United States Fish and Wildlife Service ("USFWS"), the South Dakota Game, Fish, and
9 Parks ("SDGFP"), the United States Army Corps of Engineers ("USACE"), the State
10 Historic Preservation Office ("SHPO"). In addition, I oversee the selection of and work of
11 environmental consultants completing environmental studies and surveys for the Project that
12 are used to inform siting of project facilities and to avoid or minimize risk to sensitive
13 resources or resources protected by regulation.

14
15 **Q. In the event you are not available to testify at a public hearing, is there another
16 individual qualified to discuss the information in your testimony?**

17 A. Yes, Mr. Ryan Henning, a Senior Permitting Manager for Apex, is qualified to discuss the
18 information in my testimony. Mr. Henning is an experienced environmental project manager
19 for utility scale wind and solar, transmission lines, and energy projects. With respect to the
20 Project, Mr. Henning has been involved in overseeing environmental studies and surveys,
21 ensuring compliance with local, State, and Federal environmental regulations, environmental
22 permitting efforts, and environmental agency coordination. Detailed information regarding
23 Mr. Henning's professional experience and educational background is provided in his
24 curriculum vitae, which is provided as Exhibit 2.

25
26 **Q. What is the purpose of your testimony?**

27 A. The purpose of my testimony is to provide information concerning existing environmental
28 conditions in the Project Area, potential impacts of the Project on the existing environment,
29 and how the Project will avoid, minimize, or mitigate potential impacts. In addition, I
30 describe the environmental survey work conducted on behalf of Dakota Range I, LLC and

1 Dakota Range II, LLC (“Dakota Range”) to analyze the Project Area, as well as the
2 associated consultations with local, State, and Federal agencies.

3
4 **Q. Please identify the portions of the Energy Facility Permit Application (“Application”)**
5 **that you are sponsoring for the record.**

6 A. I am sponsoring, in whole or in part, the following portions of the Application:

- 7 • Section 1.0: Introduction
- 8 • Section 2.0: Project Development Summary
- 9 • Section 3.0: Facility Permit Application
- 10 • Section 4.0: Completeness Checklist
- 11 • Section 11.0: Environmental Information
- 12 • Section 12.0: Effect on Physical Environment
- 13 • Section 13.0: Effect on Hydrology
- 14 • Section 14.0: Effect on Terrestrial Ecosystems
- 15 • Section 15.0: Effect on Aquatic Ecosystems
- 16 • Section 16.0: Land Use (Sections 16.1, 16.2, 16.5, and 16.6)
- 17 • Section 18.0: Water Quality
- 18 • Section 19.0: Air Quality
- 19 • Section 21.0: Community Impact
- 20 • Section 26.0: Information Concerning Wind Energy Facilities
- 21 • Section 27.0: Additional Information in Application
- 22 • Appendix A: Figures
- 23 • Appendix B: Agency Coordination
- 24 • Appendix C: DASK/POSK Habitat Survey
- 25 • Appendix D: 2016 Raptor Nest Survey
- 26 • Appendix E: 2017 Raptor Nest Survey
- 27 • Appendix F: Avian Use Survey
- 28 • Appendix G: 2016 Grouse Lek Survey
- 29 • Appendix H: 2017 Grouse Lek Survey
- 30 • Appendix M: Level I Cultural Resources Report
- 31 • Appendix N: Cultural Resource Monitoring and Management Plan
- 32 • Appendix O: Architectural Survey Report

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II. ENVIRONMENTAL STUDIES CONDUCTED

Q. What was the overall approach to environmental analysis of the Project site?

A. Apex initially completed landscape level site characterization and assessment studies to identify potentially sensitive habitats or resources and ensure the Project was generally sited within an area suitable for wind development as it pertains in particularly to protected birds, bats, plants, aquatic habitats, and known cultural resources. These assessments were reviewed with the appropriate agencies and field study plans were agreed upon with each agency. The surveys and studies were designed to comply with applicable regulations and guidelines, including the USFWS Land-Based Wind Energy Guidelines (“WEG”), USFWS Eagle Conservation Plan Guidance, state cultural resource protection laws and relevant water resource protection regulations (e.g., Clean Water Act). The results of these efforts were incorporated into the Project design to avoid or minimize impacts to protected or sensitive resources during Project construction and operations and confirm appropriate environmental permitting requirements, if any.

Q. Discuss the environmental surveys and/or studies conducted for the Project.

A. The environmental studies and field surveys conducted for the Project, the dates of those studies/surveys, and the status of each are provided in the table below (see also Section 2.0 of the Application).

Environmental Studies and Surveys for the Dakota Range Project		
Study	Dates	Status
Microwave beam path study	November 2015	Complete
Raptor nest surveys	April 2016; April 2017	Complete
Avian use surveys	December 2015 – May 2017 (winter and spring)	Complete
Grouse lek surveys	April-May 2016; April-May 2017	Complete
Dakota skipper/Poweshiek skipperling habitat survey	June 2016; June 2017	Complete
Level I cultural resources records search	June 2017	Complete

Environmental Studies and Surveys for the Dakota Range Project		
Level III intensive cultural resources survey of High Probability Areas within Project disturbance footprint (in accordance with the Cultural Resources Monitoring and Management Plan)	December 2017	Field survey complete; analysis results pending
Additional cultural resources survey for sensitive tribal resources in coordination with the Sisseton-Wahpeton Oyate	Initiated in December 2017	Ongoing
Historical/Architectural Survey	November 2017	Complete
Wetland and Stream Delineation	September 2017	Complete

1
2 In addition to these environmental studies, sound and shadow flicker analyses were
3 completed, and those analyses are discussed in the Direct Testimony of Mr. Robert O’Neal.

4
5 **Q. Is there any environmental study work yet to be completed for the Project?**

6 A. Dakota Range is in the process of coordinating with the Sisseton-Wahpeton Oyate (“SWO”)
7 regarding potential tribal resources within the Project Area, and plans to complete additional
8 field review and coordination in the spring of 2018 to inform micrositing of project facilities.
9 In addition, while the Level III intensive cultural resource survey has been completed, the
10 survey results are in the process of being analyzed and the associated report prepared.
11 Geotechnical soil borings will also be completed at each planned turbine location prior to
12 construction, which may influence foundation design and/or turbine siting.

13
14 **Q. Does the remaining environmental study work need to be completed in order to
15 determine whether the Project complies with State siting requirements?**

16 A. No, the remaining study work is not anticipated to affect the environmental analysis set forth
17 in the Application, or the conclusion that the Project will meet all applicable State permitting
18 requirements. Additionally, the Project has been designed (and will operate in a manner) so
19 that remaining study work will not affect the Project’s ability to comply with other local or
20 Federal permitting requirements.

21

1 **III. ENVIRONMENTAL SITE ANALYSIS OVERVIEW**

2
3 **Q. Could you please provide a general overview of the Project site from a land use**
4 **perspective?**

5 A. Land use within the Project Area is predominantly agricultural, consisting of a mix of
6 cropland, rangeland, and pastureland. Associated farmsteads and rural residences are
7 scattered throughout the Project Area. Wetlands, ponds, and other waterbodies are also
8 present within the Project Area, as are small areas with trees and shrubs, primarily associated
9 with planted shelterbelts near residences. Six wetland easement parcels, eight grassland
10 easement parcels, and one combined wetland/grassland conservation easement parcel
11 managed by the USFWS as part of the Waubay National Wildlife Refuge Complex are
12 within the Project Area. Four privately owned parcels leased to the SDGFP for public
13 hunting access (known as Walk-In Areas) are also located in the Project Area. For additional
14 details, see Sections 11.0, 14.1, 14.2, 16.1, and 16.2.

15
16 **Q. What steps will Dakota Range take to avoid, minimize, and/or mitigate impacts to the**
17 **existing land uses?**

18 A. The Project layout was designed to ensure that planned ground disturbance and facilities
19 were consistent with land use regulations governing each affected parcel. Within the
20 approximately 44,500-acre Project Area, it is estimated that up to 647 acres of land would be
21 temporarily impacted during construction of the Project. During the life of the Project, only
22 approximately 65 acres would be impacted, which constitutes less than 0.2 percent of the
23 total land within the Project Area. The table below provides a breakdown of impacts for
24 Project infrastructure (see also Table 11-1 in the Application).

25

Summary of Dakota Range Ground Disturbance Impacts				
Project Component	Construction Impacts (Temporary)		Operational Impacts (Long-Term)	
	Dimensions	Total Acreage	Dimensions	Total Acreage
Turbines	150-foot radius	117 acres	25-foot radius	4 acres
Access roads	50-foot wide	140 acres	16-foot wide	45 acres
Crane paths	50-foot wide	210 acres	N/A	N/A

Summary of Dakota Range Ground Disturbance Impacts				
Collector lines	30-foot wide	160 acres	10-foot by 5-foot junction box	0.03 acre
Collector substation	10 acres	10 acres	10 acres	10 acres
Met towers	50-foot by 50-foot area	0.3 acres	42-foot by 42-foot area	0.3 acres
O&M facility	5 acres	5 acres	5 acres	5 acres
Laydown/staging/ batch plant areas	10 acres	10 acres	N/A	N/A
	Total:	647 acres	Total:	65 acres

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The proposed Project is compatible with the existing agricultural land uses in areas surrounding the Project facilities. Agricultural uses will continue within the Project Area during construction and operation of the Project. Untilled areas temporarily disturbed due to construction will be re-vegetated with vegetation types matching the surrounding landscape or with appropriate vegetation approved by the landowner for their anticipated land use (e.g., grazing).

As discussed in more detail later in my testimony, the Project has been designed to minimize impacts to wetlands and streams, trees and shrubs, and sensitive wildlife resources. No Project facilities will be placed on USFWS Wetland and Grassland Easements, and only five turbines and associated infrastructure will be located on three of the Walk-In Area parcels. In all areas proposed for ground disturbance, Dakota Range will coordinate with the landowners to minimize impacts to the extent practicable so as to maintain opportunities to continue current land uses.

Q. Discuss the existing geological and soil resources, seismic risks, and subsidence potential in the Project Area.

A. The geological and soil resources present within the Project Area are compatible with Project development. No developed or potential economic mineral resources are known to occur within the Project Area. The risk for subsidence within the Project Area is considered negligible, as the Pierre Shale bedrock is not known to exhibit karst topography or contain layers or members susceptible to dissolution by water. In addition, no historic underground

1 mining operations that could lead to subsidence potential exist within the Project Area. The
2 risk of seismic activity in the vicinity of the Project Area is low. For additional details
3 regarding geologic resources within the Project Area, see Section 12.1 of the Application.
4

5 The soils in the Project Area are generally conducive to crop production. Soils in the Project
6 Area are not highly susceptible to erosion, and slopes range from 0 to 40 percent, with the
7 majority of slopes at 1 to 6 percent. For additional details regarding soil characteristics
8 within the Project Area, see Section 12.2 of the Application.
9

10 **Q. What steps will Dakota Range take to avoid, minimize, and/or mitigate potential**
11 **impacts to geologic and soil resources?**

12 A. As discussed in Section 12.1.2 of the Application, the geological conditions, including
13 geologic formations, seismic risk, and subsidence potential, within the Project Area are not
14 anticipated to impact construction or operation of the Project. Prior to construction,
15 geotechnical borings and site-specific geophysical surveys will be performed, and
16 engineering design will provide any required modifications to roadway and foundation
17 subgrades to account for specific site conditions, as necessary.
18

19 As discussed in Section 12.2.2 of the Application, to minimize soil impacts, the Project
20 layout has been designed to limit construction cut and fill work and construction in steep
21 slope areas. For example, the current layout has sited access roads to avoid steep slopes as
22 much as possible, and the underground collector lines similarly avoid crossing steep ravines
23 whenever feasible.
24

25 Measures to reduce the potential for soil erosion, compaction, and sedimentation will be
26 implemented during construction. The Project will obtain coverage under the General Permit
27 for Storm Water Discharges Associated with Construction Activities issued by the South
28 Dakota Department of Energy and Natural Resources (“SDDENR”). A condition of this
29 permit is the development and implementation of a Storm Water Pollution Prevention Plan
30 (“SWPPP”), which prescribes Best Management Practices (“BMPs”) to control erosion and
31 sedimentation. The BMPs may include use of silt fences, straw wattles, erosion control

1 blankets, temporary storm water sedimentation ponds, re-vegetation, or other features and
2 methods designed to control storm water runoff and mitigate erosion and sedimentation.
3 Additional BMPs may include noxious weed control, segregating topsoil from subsurface
4 materials, reseeding of disturbed areas, the use of construction equipment appropriately sized
5 to the scope and scale of the Project, ensuring access road grades fit closely with the natural
6 terrain, proper on-site disposal of soil cuttings from turbine foundation construction, and
7 maintaining proper drainage.

8
9 **Q. Discuss the hydrologic resources, including surface and underground resources, present**
10 **within the Project Area.**

11 A. Sections 13.1, 13.2, 13.3, and 14.2 of the Application describe the following types of
12 hydrologic resources within the Project Area:

- 13 • Hydrogeology Resources: The groundwater system underlying the parts of South
14 Dakota that are east of the Missouri River, including the Project Area, is nearly
15 exclusively based on glacial outwash aquifers. Glacial drift and alluvium aquifers in
16 South Dakota vary in depth from 0 to 400 feet, with a range of yield from 3 to 50
17 gallons per minute.
- 18 • Watersheds: The majority of the Project Area is located within the Big Sioux
19 watershed, part of the Missouri River Basin surface water drainage system. Drainage
20 from the Project Area is to the southwest into the Big Sioux River via the Indian
21 River, Soo Creek, Mahoney Creek, Mud Creek, and their tributaries. The
22 northeastern portion of the Project Area is located within the Minnesota River
23 watershed, and drainage is to the east into the Minnesota River via the South Fork
24 Whetstone River and its tributaries.
- 25 • Wetlands and Waterbodies: Dakota Range completed a wetland and waterbody
26 delineation in accordance with USACE-approved methodology to identify wetlands
27 and streams warranting avoidance. Based on the delineation, 122 wetlands consisting
28 of 567 acres are present in the area surveyed and 80 waterbodies (60 constructed
29 (cattle) ponds, 10 stream reaches, and 10 impoundments) consisting of 107 acres are
30 present in the area surveyed.

- 1 • Existing and Planned Water Uses: The Grant-Roberts Water District supplies rural
2 water to the Project Area and maintains a network of distribution lines within the
3 Project Area. Private wells that supply water for domestic and irrigation purposes are
4 also located throughout the Project Area. Perennial streams within the Project Area,
5 including the Big Sioux River, Indian River, Soo Creek, Mahoney Creek, Mud Creek,
6 and their tributaries provide habitat for fish and wildlife and support recreational
7 activities, such as fishing.
- 8 • Floodplains: Within the Project Area, narrow floodplains exist along major streams,
9 including Indian River, Soo Creek, and Mud Creek, as well as along several unnamed
10 tributaries to these streams. According to the Federal Emergency Management
11 Agency-mapped floodplain zones, all floodplains within the Project Area are mapped
12 as Zone A, indicating no base flood elevations have been determined.
- 13 • National Park Service Nationwide Rivers Inventory (“NRI”): There are no NRI-
14 listed rivers within the Project Area. The nearest NRI-listed rivers are the South Fork
15 of the Yellow Bank River, located approximately 12 miles southeast of the Project
16 Area, and the North Fork of the Whetstone River, located approximately 12 miles
17 north of the Project Area.
- 18 • Impaired Waters: The section of the Big Sioux River that extends through the Project
19 Area is listed as impaired on South Dakota’s 2016 303(d) list for exceedance of
20 *Escherichia coli* (*E. coli*) and dissolved oxygen standards. This section of the Big
21 Sioux is classified for the following beneficial uses: warmwater semipermanent fish
22 life propagation; limited contact recreation; fish and wildlife propagation, recreation,
23 and stock watering; and irrigation. An unnamed tributary in Grant County that
24 extends through the Project Area is also on the 303(d) list and classified for the
25 following beneficial uses: warmwater marginal fish life propagation; limited contact
26 recreation; fish and wildlife propagation, recreation, and stock watering; and
27 irrigation.

28
29 **Q. What measures will Dakota Range employ to avoid, minimize, and/or mitigate potential**
30 **impacts to hydrologic resources?**

1 A. As discussed further in Sections 13.1, 13.2, 13.3, and 14.2 of the Application, Dakota Range
2 will implement the following measures to avoid or minimize impacts to hydrologic resources
3 within the Project Area:

- 4 • Hydrogeology Resources: Groundwater dewatering is not anticipated to be a major
5 concern within the Project Area, because wind turbines are generally placed at higher
6 elevation where the water table tends to be deeper. Should groundwater be
7 encountered that must be dewatered, the necessary permits would be obtained and
8 associated requirements implemented. In addition, the duration of dewatering would
9 be limited to the extent possible. Dewatered groundwater would be properly handled
10 to allow sediments to settle out and be removed before the water is discharged, to
11 reduce soil erosion and sedimentation of surface waters
- 12 • Watersheds: The Project has been designed to avoid impacts on surface water
13 resources to the extent practicable. Therefore, the Project is not expected to cause
14 significant changes in runoff patterns or volume of runoff, nor is it expected to have
15 adverse impacts on existing hydrology. Appropriate storm water BMPs will be
16 implemented during the construction and operation of the Project to control erosion
17 and reduce potential for sediment runoff from exposed soils during precipitation
18 events.
- 19 • Wetlands and Waterbodies: A detailed inventory and mapping of wetlands and
20 waterbodies was generated by a qualified contractor using appropriate field methods.
21 The data was used to inform siting to avoid and minimize impacts to the maximum
22 extent practicable. The Project has been designed to limit permanent wetland impacts
23 to five areas, consisting of minor impacts associated with access road crossings of
24 emergent wetlands. During construction, short-term, small scale, temporary
25 disturbance will occur within 37 wetlands, due to installation of access roads and
26 collector lines, but each will be restored to their natural contours after construction is
27 complete. No permanent or temporary wetland impacts will result from turbine
28 foundations, substations, permanent met towers, construction laydown or O&M areas.
29 Boring will be used for the installation of collector lines under two perennial surface
30 water features (both sections of Indian River), thus avoiding impacts. Any portion of
31 a collector line crossing an ephemeral or intermittent ditch would be crossed via

1 open-cut method or via boring, where appropriate, with the disturbed area restored to
2 pre-construction conditions following installation. Impacts to wetlands and
3 waterbodies are anticipated to be minor and would be authorized under the USACE
4 Nationwide Permit 12 for utility lines and associated facilities with no
5 preconstruction notification requirements to the USACE.

- 6 • Existing and Planned Water Uses: The proposed Project facilities would not have
7 impacts on either municipal or private water uses in the Project Area. The Project is
8 not anticipated to require major dewatering; therefore, interruption of groundwater
9 availability caused by dewatering is unlikely, and no adverse impacts to drinking
10 waters of the State are anticipated. The Project will comply with all applicable permit
11 requirements for water rights and the protection of groundwater quality. The Project
12 will have no impact on surface water availability or use for communities, agriculture,
13 recreation, fish, or wildlife.
- 14 • Floodplains: Based on the current layout, the underground collector system and some
15 of the existing roads to be upgraded for the Project would cross floodplains associated
16 with Indian River, Soo Creek, and several tributaries. The underground collection
17 system may temporarily impact flood storage areas during construction where the
18 collection system is trenched through these floodplain areas; however, these impacts
19 would be short-term, and existing contours and drainage patterns are expected to be
20 restored within 24 hours of trenching. Where floodplain crossings cannot be avoided
21 for construction of access roads, appropriately designed culverts or low water
22 crossings would be placed to maintain the free flow of water. Construction or fill
23 within floodplains would be designed in accordance with Codington or Grant County
24 floodplain development regulations.
- 25 • National Park Service NRI: Due to the lack of NRI-listed rivers within the Project
26 Area, construction and operation of the Project will not impact to these resources.
- 27 • Impaired Waters: SDDENR indicated that because of the beneficial use
28 classifications of the Big Sioux River and the unnamed tributary in Grant County,
29 special construction measures may be necessary to prevent exceedance of the 30-day
30 average total suspended solids (“TSS”) standard of 90 milligrams per liter (mg/L) for
31 the Big Sioux and 150 mg/L for the unnamed tributary (see letter from SDDENR

1 dated July 26, 2017, in Appendix B of the Application). Any special construction
2 measures necessary to prevent exceedance of the TSS standards for the Big Sioux
3 River and the unnamed tributary in Grant County would be identified in the SWPPP
4 prepared in connection with the General Permit for Storm Water Discharges
5 Associated with Construction Activities issued by the SDDENR.
6

7 **Q. Are aquatic ecosystems present in the Project site and, if so, what measures will Dakota**
8 **Range employ to avoid, minimize, and/or mitigate potential impacts?**

9 A. As discussed above, wetlands and waterbodies are present within the Project Area, but
10 impacts have been avoided and minimized to the extent practicable. The primary potential
11 for impact to aquatic ecosystems would be from increased sedimentation or increased TSS
12 due to soil erosion during Project construction; however, this risk is managed via
13 implementation of the SWPPP required prior to construction. Based on discussions with the
14 USFWS and SDGFP, no federally- or state-listed aquatic species will be impacted by the
15 Project.
16

17 **Q. What vegetation is present within the Project Area, and how will impacts be avoided,**
18 **minimized, or mitigated?**

19 A. As discussed in Section 14.1, the majority of the Project Area is in agricultural use, and,
20 therefore, vegetation is predominantly cultivated crops and grassland for grazing (pasture).
21 Trees within the Project Area are found mainly around housing sites, windbreaks, and along
22 some of the streams. As recommended by the USWFS and SDGFP, Dakota Range
23 completed an analysis to identify potential native grasslands within the Project Area. In field
24 investigations completed in June 2016 and June 2017 (see DASK/POSK Habitat Survey, in
25 Appendix C of the Application), most of the grassland areas were found to be dominated by
26 cool-season invasive grasses, such as bluegrass and smooth brome. Fifteen listed species of
27 noxious weeds have the potential to occur and are regulated within Codington and/or Grant
28 Counties.
29

30 The Project facilities have been sited to avoid treed areas and native grasslands and
31 shelterbelts to the extent practicable. In areas where impacts cannot be avoided, temporary

1 impacts would be minimized through construction BMPs and landowner coordination. To
2 avoid the spread of noxious weeds, the Project will use appropriate seed mixes in non-
3 cultivated areas to restore vegetation in temporarily disturbed areas. If listed noxious weed
4 infestations are found in non-cultivated disturbed areas after construction activities are
5 completed, each area will be evaluated and addressed separately, in coordination with
6 landowner input.

7
8 **Q. Are any federally-listed species, federally-designated critical habitat, or state-listed**
9 **species present within the Project site?**

10 A. The federally-endangered Poweshiek skipperling, the federally-threatened Dakota skipper
11 and northern long-eared bat, and the state-endangered peregrine falcon were determined in
12 early screening and agency coordination to have potential to occur within the Project Area.
13 There is no federally-designated critical habitat within the Project Area.

14
15 **Q. Is the Project anticipated to impact federally-listed species, federally-designated critical**
16 **habitat, or state-listed species?**

17 A. No. Between June 12-14, 2016 and June 16-19, 2017, Dakota Range completed field
18 evaluations of 2,952 acres of untilled grassland within the Project Area. No suitable habitat
19 for the Poweshiek skipperling was identified in the Project Area and one approximately 5-
20 acre area of potential Dakota skipper habitat was identified just outside the northeast corner
21 of the Project Area. This area of suitable habitat has been completely avoided through
22 Project design with the nearest planned ground disturbance approximately 0.7 miles away.
23 Due to the lack of suitable habitat and avoidance of potential habitat, impacts to these species
24 are not anticipated. For additional detail, see Sections 14.3.1.2 and 14.3.2.1 of the
25 Application.

26
27 The Project Area contains very few trees or areas of open water that would provide suitable
28 habitat for the northern long-eared bat; therefore, the USFWS agreed that the period of risk to
29 bats, including the listed northern long-eared bat, is primarily during fall migration. To
30 minimize potential impacts to the northern long-eared bat, turbines and access roads have
31 been sited to avoid wooded draws and shelterbelts (potential northern long-eared bat habitat)

1 to the extent possible, and minimal tree removal is expected. If tree removal is necessary,
2 removal will occur between August 1 and May 31 to minimize potential impacts to roosting
3 northern long-eared bats, as well as other tree-roosting bats. In addition, risk of collision will
4 be reduced by feathering the turbines to manufacturer's cut in speed from sunset to sunrise
5 during the bat active period (Apr 15-Oct 15) to avoid potential impacts to bats flying and/or
6 migrating through the Project Area. For additional detail, see Sections 14.3.1.2 and 14.3.2.1
7 of the Application.

8
9 With respect to State-listed species, only one peregrine falcon was observed during 221 hours
10 of systematic avian study, suggesting that use of the Project by this species and associated
11 risk of impact is very low. For additional detail, see Sections 14.3.1.3 and 14.3.2.2 of the
12 Application.

13
14 **Q. Discuss the analysis conducted of eagle use of the Project Area.**

15 A. In April 2016 and April 2017, Dakota Range completed aerial raptor nest surveys for the
16 Project Area plus a ten-mile buffer for eagles in accordance with agency recommendations.
17 During the April 2016 survey, three occupied bald eagle nests were recorded within the
18 survey area, but all outside the Project Area. During the April 2017 survey, five occupied
19 bald eagle nests were recorded, all outside the Project Area. The nearest known occupied
20 bald eagle nest is approximately 1.8 miles west of the Project boundary, and the distance
21 between the closest occupied bald eagle nest to a proposed turbine location is more than 3.7
22 miles.

23
24 Eagle use point-count surveys were completed during winter and spring from December
25 2015 through May 2017 in accordance with agency recommendations. No golden eagles
26 were observed, and two bald eagles were observed in 221 hours of study. For further detail
27 regarding the surveys, see Section 14.3.1.4.1 and Appendices D, E, and F.

28
29 **Q. Is the Project anticipated to impact bald and golden eagles?**

30 A. No. The survey results indicate very low use of the Project Area by eagles and no impact is
31 anticipated. However, operations staff will be trained to recognize eagles. If observed, risk

1 will be evaluated to determine if the risk profile is changing over time and if any
2 management action is necessary to minimize risk. Thus, impacts are not anticipated to bald
3 or golden eagles during construction or operations.
4

5 **Q. What measures will Dakota Range implement to avoid, minimize, or mitigate impacts**
6 **to wildlife species?**

7 A. In coordination with the USFWS and the SDGFP, Dakota Range completed various wildlife
8 surveys in accordance with Tier 3 of the WEG and Stage 2 of the Eagle Conservation Plan
9 Guidance, including raptor nest surveys, eagle/avian use surveys, and prairie grouse lek
10 surveys. Dakota Range reviewed the results of site-specific studies with the USFWS and
11 SDGFP, and the following impact minimization and avoidance measures were agreed upon
12 as appropriate to avoid or minimize potential negative biological impacts during construction
13 and operation of the Project (see also Section 14.3.2.5 of the Application):

- 14 • Minimize ground disturbance/clearing of native grasslands;
- 15 • Avoid potentially suitable Dakota skipper habitat;
- 16 • Avoid siting turbines in wetland/waterbodies;
- 17 • Avoid siting turbines within 0.3 mile of active or potential grouse leks and follow
18 construction timing recommendations within 2 miles;
- 19 • Feather blades to manufacturer's cut-in speed from sunset to sunrise during the bat active
20 period (April 15 – October 15);
- 21 • Avoid tree removal from June 1 through July 31 to minimize risk of impact to northern
22 long-eared bat maternal roosts and other tree roosting habitat;
- 23 • Train staff to recognize whooping cranes and eagles, and if observed, evaluate risk and
24 respond appropriately; and
- 25 • Monitor direct impacts during operations in year 1 to assess low risk conclusions.

26
27 **Q. Is the Project anticipated to impact existing water or air quality?**

28 A. No, as discussed in Sections 18.0 and 19.0 of the Application, no material impacts on
29 existing water or air quality are anticipated.
30

1 **Q. With respect to cultural resources, what steps has Dakota Range taken to identify**
2 **cultural resources within the Project site?**

3 A. In June 2017, a Level I Cultural Resources Records Search (see Appendix M of the
4 Application) was completed for the Project in accordance with SHPO survey guidelines. The
5 records search was completed to provide an inventory of previously recorded cultural
6 resources within the Project Area and a 1-mile buffer. The records search indicated that 41
7 known sites were located within the Project Area, of which 40 have been determined eligible
8 for listing in the National Register of Historic Places (“NRHP”), with the remaining site
9 determined not eligible for listing. All of the eligible sites previously recorded within the
10 Project Area are Native American cairns, stone circles, or alignments, and may also be
11 traditional cultural properties.

12
13 Ninety-two historic/architectural resources have been previously inventoried, including 43
14 within the Project Area and an additional 49 within the 1-mile buffer. These resources
15 include 73 structures, 16 bridges, and 3 cemeteries. One structure (located outside of the
16 Project Area), a farmstead, is listed in the NRHP and two other structures (one within and
17 one outside of the Project Area) have been determined eligible for an NRHP listing.

18
19 In coordination with the SHPO, a Cultural Resources Monitoring and Management Plan
20 (“CRMMP”) (see Appendix N of the Application) was developed to avoid or minimize
21 potential impacts to cultural resources during design and construction of Project facilities and
22 to comply with the South Dakota Public Utilities Commission’s Energy Facility Permit
23 requirements. The CRMMP identifies the methodology for completing Level III intensive
24 cultural resources surveys and historical/architectural surveys for the Project. The CRMMP
25 also identifies the proposed management plan for archeological or architectural resources that
26 are identified during the surveys and provides a plan for unanticipated discovery of sensitive
27 cultural resources, should any be unearthed during construction.

28
29 In accordance with the CRMMP, Level III intensive cultural resource surveys were
30 completed in December 2017, in areas of potential ground disturbance determined to have
31 high probability of sensitive cultural resources (i.e., High Probability Areas [“HPAs”]).

1 HPAs consist of areas most likely to contain intact archaeological sites in the region and are
2 primarily found on uncultivated and undisturbed land areas and around water sources such as
3 rivers, streams, and lakes. The analysis results are pending; however, based on preliminary
4 results, no cultural resources were identified that would require turbine location
5 modifications.

6
7 In accordance with the CRMMP, an historical/architectural survey (see Appendix O of the
8 Application) was also completed for the Project in November 2017. The architectural survey
9 consisted of windshield reconnaissance within the Project Area and 1-mile buffer (indirect or
10 visual area of potential effects [“APE”]) to document all resources 45-years-of-age or older
11 that have not been recorded in previous surveys or have been previously recorded but have
12 undetermined NRHP-eligibility status. The results of the survey indicate a low concentration
13 of NRHP-eligible architectural resources. No historic architectural resources were identified
14 within the proposed Project footprint, or direct APE. Within the visual APE, there are three
15 structures recommended eligible for listing on the NRHP; however, the Project will have no
16 adverse effect on the resources.

17
18 For additional detail regarding Dakota Range’s cultural resources analysis, see Section 21.5
19 of the Application.

20
21 **Q. Please discuss further Dakota Range’s consultation regarding potential tribal resources**
22 **within the Project Area.**

23 A. As discussed in Section 27.2 of the Application, Dakota Range has voluntarily engaged in
24 ongoing coordination with the SWO. Apex initially met with the SWO to discuss the Project
25 and company intentions, and sought input on measures to identify and avoid impact to
26 resources that would be considered important to tribes with connection to the region. The
27 SWO requested that they be included in field surveys and in decisions regarding tribal
28 resources found, thus allowing the SWO opportunities to review finds and participate in
29 eligibility recommendations and avoidance plans for sensitive tribal resources.

1 **Q. What steps will Dakota Range take to avoid, minimize, and/or mitigate impacts to**
2 **cultural and tribal resources?**

3 A. The Project has been designed to avoid direct impacts to previously identified NRHP-eligible
4 or unevaluated cultural and architectural/historical resources based on adherence to
5 recommendations from the SHPO and SWO. In the event cultural or tribal resources are
6 identified or unearthed during construction, the CRMMP outlines the proposed management
7 plan that will be implemented, which includes notification of the SHPO and SWO and
8 implementation of measures to avoid impacts to sensitive resources prior to resuming
9 construction. In accordance with the Siting Guidelines for Wind Power Projects in South
10 Dakota 8(c), and informal consultation completed between Dakota Range and the SWO,
11 disruption of sensitive resources that are identified as important to Native Americans will be
12 avoided by marking them with orange snow fencing and ensuring facilities are set back in
13 accordance with recommendations from the SWO, or as practicable and consistent with
14 applicable State and Federal regulations.

15
16 Both SHPO and the SWO have agreed that the measures outlined in the CRMMP are
17 appropriate to avoid negative impacts to landmarks and cultural resources of historic,
18 religious, archaeological, scenic, natural, or other cultural significance.

19
20 **IV. AGENCY COORDINATION**

21
22 **Q. Discuss Dakota Range's coordination with Federal, State, and local agencies regarding**
23 **the Project.**

24 A. Throughout Project planning and development, Dakota Range has coordinated with various
25 Federal, State, Tribal, and local agencies to identify potential concerns regarding the
26 proposed Project. Copies of agency correspondence and meeting summaries are included in
27 Appendix B to the Application. In addition, a summary of Dakota Range's agency
28 consultation efforts is provided in Section 27.2 of the Application.

29
30 **Q. Will the Project require a federal environmental assessment or environmental impact**
31 **statement pursuant to NEPA?**

1 A. No. No federal nexus that would require Project-specific review under NEPA will occur as a
2 result of development, construction or operation of the Project.

3

4 **V. CONCLUSION**

5

6 **Q. Based on the analysis Dakota Range has conducted of the Project Area, has the Project**
7 **been sited so as to minimize environmental impacts?**

8 A. Yes. By utilizing the results of surveys and studies conducted, and incorporating the input of
9 agencies and other stakeholders, the Project has been designed to avoid or minimize potential
10 negative impacts to the environment. Further, Dakota Range will implement the BMPs and
11 other measures discussed above and in the Application during construction and operation of
12 the Project. As a result, the Project is not anticipated to have any long-term negative impacts
13 on environmental resources in or around the Project Area.

14

15 **Q. Does this conclude your testimony?**

16 A. Yes.

17

18 Dated this 24 day of January, 2018.

19

20 David Phillips

21 David Phillips

David Phillips

Vice President of Environmental, Apex Clean Energy

Education

M.S., Wildlife Ecology/Statistics, University of Maine, 1994

B.S., Environmental Science-Biology/Forestry, Stephen F. Austin State University, 1991

Professional Registrations

Certified Wildlife Biologist - The Wildlife Society

American Wind Wildlife Institute - Board member

American Wind Energy Association, Siting Committee - Wildlife Subcommittee Member

Raptor Research Foundation - Member

The Wildlife Society - Renewable Energy Working Group member (Certified Wildlife Biologist)

Relevant Experience

Mr. Phillips is the Vice President of Environmental for Apex Clean Energy. He is responsible for managing environmental compliance across Apex's portfolio of wind and solar projects, providing overall guidance on wildlife and environmental issues to the development, construction, asset management teams and proactively identifying and addressing permit risk issues to ensure that projects are developed, constructed, and operated in compliance with state and federal regulations. A significant portion of his responsibilities at Apex involve Eagle Act (BGEPA) and Migratory Bird Treaty Act (MBTA) compliance and permitting and addressing federally listed bat species HCP/NEPA processes. Mr. Phillips is an established technical expert for resolution of environmental conflicts through permitting, studies, and agency interaction for industrial development projects. His demonstrated success with NEPA, Endangered Species Act, BGEPA, MBTA, Clean Water Act, National Historic Preservation Act, National Pollution Discharge Elimination System, and other relevant local, state, and federal environmental regulations applicable to development, construction and operation of utility scale power generation and transmission projects is substantial, as is his experience managing and working with diverse interdisciplinary teams (legal, financing, development, land, engineering, construction, biological, social, cultural, construction) to accomplish permitting, construction and operational compliance objectives.

PROFESSIONAL EXPERIENCE

Apex Clean Energy, Inc. - 4/13-present. Charlottesville, VA, **Vice President, Environmental** - Responsible for growing and managing the environmental team at Apex, overseeing permitting, studies, and environmental compliance across Apex's fleet of wind and solar projects. Currently leading multiple bat technical assistance letter and Habitat Conservation Plan/Incidental Take Permitting processes and overseeing take authorization efforts for bald and golden eagles for projects in multiple regions of the U.S, managing NEPA analyses on multiple federal actions, and leading agency coordination processes on a variety of development pursuits. Job responsibilities: 1) ensure that Apex makes informed acquisition decisions with regard to environmental risk, 2) ensure regulatory compliance for development, construction and operational assets through agency interaction, permitting and reporting, 3) develop and maintain relationships with key regulatory staff and consultants, 4) stay current on policy and regulatory issues affecting renewable energy development and operations, and 5) build Apex's environmental team by selecting, leading, and managing staff and program priorities.

CH2M HILL, Inc. - 4/08-4/13. Englewood, CO

Senior Project Manager/Biologist - Led teams to execute state, county and federal permitting, developed and implemented construction compliance programs, and completed

site evaluations and due diligence reviews for a wide variety of industrial pursuits (e.g., utility scale power generation, oil and gas, mining, site reclamation) with an emphasis on renewable energy projects.

- Coordinated client-agency interaction, public involvement, permitting, and technical reporting.
- Interacted extensively with federal agencies (USFWS, BLM, EPA, ACOE, and Western Area Power Administration), state resource agencies, county planning departments, and technical and legal teams.
- Provided technical expertise to clients on resource issues (biological, cultural, wetlands, SWPP, etc.).
- Prepared permit applications, particularly Eagle Conservation Plans, Bird and Bat Conservation Strategies, and federal/state Endangered Species Act compliance documents.
- Provided leadership and technical expertise on ecological assessments, due diligence reviews, study design and implementation, and development of conclusions and recommendations for agency submittals.
- Met client needs through knowledge of the regulatory environment and delivery of high quality work.

TRC Environmental Corporation – 4/07-4/08. Laramie, WY

Senior Project Manager/Wildlife Biologist – Senior role leading natural resource program of the Laramie office.

- Managed NEPA-regulated development projects (wind, pipeline, oil/gas, mining), permitting projects, compliance oriented wildlife-monitoring projects, baseline studies/surveys, and wetland assessments.
- Conducted agency interaction, EIS/EA implementation, and associated technical reporting.
- Provided strong, client-oriented service, generating deliverables in a professional and timely manner.
- Managed field studies and surveys with multiple field crews; hired, mentored, and trained junior staff.

Hayden-Wing Associates, LLC – 8/05-4/07. Laramie, WY

Senior Wildlife Biologist - Combination technical/middle management position coordinating field projects, supervising employees, writing technical reports and environmental portions of EIS, EA, and BA documents.

- Coordinated project activities with clients and state and federal agencies.
- Managed development and execution of field studies and surveys using multiple field crews.
- Hired, trained, and ensured quality work of seasonal and permanent technical employees.
- Designed and conducted aerial and ground surveys of threatened, endangered, and sensitive species.
- Prepared proposals, cost estimates, contracts, and invoices.
- Job required extensive use of GPS and ARCGIS 9.2.

Maine Department of Inland Fisheries and Wildlife – 8/04-8/05. Augusta, ME

Wildlife Biologist II - Planning and policy level position performing administrative, coordination and technical functions in support of a wide range of programs for the Wildlife Division of Maine Department of Inland Fisheries and Wildlife.

- Coordinated and developed proposals for funding of land acquisition projects.
- Served as Chair of Land Acquisition Committee and as departmental liaison to the Land for Maine's Future Board, Maine Outdoor Heritage Fund, Rabies Working Group, Vector Borne Disease Working Group, and Maine Dept. of Agriculture.
- Facilitated interagency meetings, and interacted extensively with the public, nongovernmental organizations, and state & federal personnel to accomplish regional planning goals.
- Administered policy development and permitting of wildlife rehabilitators.
- Reviewed special permits for wildlife possession and importation.
- Provided input to department on wildlife disease issues, and assisted with special projects as needed.
-

Holderness School - 2002-2004. Holderness, NH

Biology Professor - Taught AP Biology and Biology, coached soccer and snowboarding, supervised residence halls/dormitories.

Eaglebrook School - 1997-2002. Deerfield, MA

Ecology/Biology Teacher - Extensive development of outdoor-based natural science curriculum - Grades 7-9.

Institute for Wildlife Studies - 2/95-9/96. Avalon, CA

Wildlife Biologist - Oversaw operation of field office for nonprofit wildlife research organization investigating pesticide influence on reproductive biology of bald eagles reintroduced to Catalina Island.

- Selected, trained, and supervised seasonal field personnel.
 - Coordinated field activities, data collection and analyses, acquisition and hatch release of young.
 - Prepared annual reports and research presentations.
 - Interacted with public, media, USFWS, CA Dept. of Fish & Game, and natural resource professionals.
 - Used bownet, floating-fish snares, radio-telemetry, solar powered video-monitoring systems, motor boats, 4WD, and firearms; sampled blood and constructed hatch towers.
 - Accomplished research objectives efficiently under challenging field conditions.
 - **Ancillary responsibilities:** Survey for peregrine falcons; band red-tailed hawk and American kestrel nestlings; capture/band loggerhead shrikes; conduct wildlife rehabilitation; harvest feral pigs and goats, guide hunters, and collect biological data for eradication program to restore endemic island vegetation.
- March - August 1998** - Rehired to purchase equipment, develop data collection protocol, and train field technician for a 3-year study of bald eagles along the Hudson River Corridor of NY designed to assess critical habitat, contaminant levels, and reproductive performance in resident bald eagles.

Bighorn Institute - 9/94-2/95. Palm Desert, CA

Biologist - Worked for nonprofit organization dedicated to research and conservation of wild sheep.

- Assisted with biological sampling of captive bighorn for disease research, cared for/evaluated health of captive herd, maintained log of activities, assisted with writing scientific reports and correspondence for membership and fundraising. Collected observation and telemetry data for wild sheep and served as key participant in capture (netgun from helicopter), radiocollaring, and aerial surveys of wild sheep.

University of Maine - 1/92-8/94. Baxter State Park, ME

Graduate Research Assistant - Oversaw telemetry study of American marten comparing social organization, survival, habitat selection, and population density between trapped and logged areas and a forest preserve.

- Managed field activities, data collection, and supervised field and data-entry personnel.
- Live-trapped and radio-collared marten, conducted ground and aerial telemetry.
- Designed research plan, compiled and analyzed data, prepared manuscripts for publication.
- Interacted daily with park resource managers, and the general public.

SPECIALIZED TRAINING / PROFESSIONAL DEVELOPMENT

- **24-hr HAZWOPER Certified:** 8-hour refresher course February 2013
- **Avian Radar:** Applications, limitations, risk calculation and alerting. Detect Inc. January 2011
- **Project Delivery Systems Training:** 2-day course for CH2M HILL Project Managers. Oct. 2008
- **FERC Regulatory Overview and Guidance and Environmental Compliance Seminars:** Sep. 2008
- **Wetland Delineation and Management Training:** 4-day course taught by Richard Chin. Aug. 2007
- **NEPA Training:** How to Manage the NEPA Process and Write Effective NEPA Documents. 4-day course taught by the Shipley Group. Salt Lake City, UT. June 2007
- **Phase 1 ESA Training:** Environmental Assessment Association. Aug. 2007
- **ESRI GIS:** Understanding Map Projections & Coordinate Systems (6/06); Cartographic Design (8/06)
- Mountain Plover Partner Meeting: Rocky Mt. Bird Observatory, Ft. Collins, CO. Feb. 2007
- **Wildlife Capture and Chemical Immobilization:** 2-days, Terry Kreeger, WGFD, Laramie, WY. (8/06).
- **Mexican Spotted Owl Inventory Certification Course:** Canon City, CO. May 2006
- 2nd International Chronic Wasting Disease Symposium: Madison, WI. July 2005
- USDA, APHIS, Animal Care conference on exotic wildlife and disease issues: Bethesda, MD. May 2005
- 2005 Rabies Management Team meeting: Riverdale, MD, Mar. 2005

- **Chronic Wasting Disease Sampling:** 1 day course, MDIFW, Oct. 2005
- **Chemical Immobilization of Wildlife:** 1-day course, Institute for Wildlife Studies. May 1997

CERTIFICATIONS and RECENT PERMITS

- **Certified Wildlife Biologist** - The Wildlife Society.
- **Qualified Eagle Surveyor** - Meet 2012 and 2013 USFWS ECP Guidance requirements.
- **USACE Wetland Delineation Course** - Certificate of course completion (2007).
- Meet ACOE Wetland Delineation Certification program requirements.
- Certified by USFWS to supervise/conduct surveys for black-footed ferrets & Mexican spotted owls and trained to survey for mountain plover.
- Chemical Immobilization - Certificate of course completion. Sept. 2006
- Subpermittee - Federal Fish and Wildlife Permit #MB707809 - 2004-2007
- Permanent Teacher Certification, NY State - Biology, General Science.

TECHNICAL SKILLS

NEPA: Formal training, professional experience, and proven success managing BLM, WAPA, and FERC projects.

ESA, HCP, ITP, ECP, BBCS and TAL processes: Demonstrated proficiency and success, including Section 7 involvements on project involving BLM, WAPA, FERC, EPA and USACE and leading Section 10 HCPs on private land projects.

ARC GIS: Competent collecting, managing, and analyzing spatial data, and producing professional quality maps.

GPS: Fully proficient utilizing handheld GPS units for spatial data collection in the field. Physically fit and capable of functioning safely and efficiently in field and office settings.

PUBLIC OUTREACH/COMMUNITY INVOLVEMENT

- Ski Patrol Candidate Volunteer - Gore Mountain Ski Area, 2017
- Volunteer ski racing coach - Snowy Range Ski Area (Laramie, WY) - 2010/2011
- Snowy Range Academy - volunteer wildlife and ecology presentations for grades K-7, 2005-2012
- Chronic Wasting Disease - Informative talk to Hunter Safety Coordinators, Bryant Pond, ME, June 2005
- Rabies and Nuisance Wildlife, talk given to ACO's, Augusta, ME, May 2005
- Weekly campfire talks and slide shows on raptor ecology, Catalina Island, May-Sep. 1996
- Slide presentations on eagle ecology - Avalon Lion's Club, June 1995. Avalon Rotary Club, Aug. 1996.

PUBLICATIONS

Payer, D., D. Harrison, and D. Phillips. 2004. **Territoriality and home-range fidelity of American martens in relation to timber harvesting and trapping.** Pages 99 -114 in D.J. Harrison, A.K. Fuller, and G.J. Proulx eds. *Martens and fishers (Martes) in human altered environments - an international perspective.*

Krohn, W., Hoving, C., Harrison, D., Phillips, D., Frost, H. 2004. **Martes foot-loading and snowfall patterns in eastern North America: implications to broad-scale distributions and interactions of mesocarnivores.** Pages 115-132 in D.J. Harrison, A.K. Fuller, and G.J. Proulx eds. *Martens and fishers (Martes) in human altered environments.*

Phillips, D.M., D.J. Harrison, and D.C. Payer. 1998. **Seasonal changes in home-range area and fidelity of martens.** *J. Mammal.* 79:180-190.

Chapin, T.G., D.J. Harrison, and D.M. Phillips. 1997. **Seasonal habitat selection by marten in an untrapped forest preserve.** *J. Wildl. Manage.* 61(3):707-713.

Chapin, T.C., D.M. Phillips, D.H. Harrison, and E.C. York. 1997. **Seasonal selection of habitats by resting martens in Maine.** Pages 166-181 in G. Proulx, H.N. Bryant, and P.M. Woodard, eds. *Martes: taxonomy, ecology, techniques, and management.* Provincial Museum of Alberta, Edmonton, Alberta, Canada.

Hodgman, T.P., D.J. Harrison, D.M. Phillips, and K.D. Elowe. 1997. **Survival of martens in an untrapped forest preserve in Maine.** Pages 86-89 in G. Proulx, H.N. Bryant, and P.M. Woodard, eds. *Martes: taxonomy, ecology, techniques, and management.* Provincial Museum of Alberta, Edmonton, Alberta, Canada.

Phillips, D. 1994. **Social and spatial characteristics, and dispersal of marten in a forest preserve and industrial forest.** M.S. Thesis, Univ. Maine Dept. Wildl. Ecol. 95 pp.

Phillips, D., T. Chapin, and K. Elowe. 1993. **The American marten.** *Maine Fish and Wildlife* 35(2):2-4.

CONTRACT REPORTS

2005 - present. Contributing writer, primary author, and senior technical reviewer of multiple EIS, EA, and BA, ECP, and BBCS documents submitted to federal agencies, and of various permit applications, technical memorandums, reports, and study plans submitted to federal and state agencies and industrial clients.

Phillips, D. **Status and Movements of Bald Eagles of the Hudson River Corridor - Nesting Season Summary Report, 1998.** Prepared for: New York Department of Environmental Conservation, Project C003835. 21pp.

Phillips, D. and D. Garcelon. 1996. **Research and management of bald eagles on Santa Catalina Island, California, 1996.** Submitted to Damage Assessment Office, U.S. Fish & Wildl. Serv., Sacramento, CA. 18pp.

Phillips, D.M. 1996. **Summary of the 1996 survey and banding effort for loggerhead shrikes on Santa Catalina Island, California.** Submitted to Natural Resources Office, U.S. Navy, San Diego, CA. 6pp.

Chapin, T.G., D.J. Harrison, D.D. Katnik, D.M. Phillips, and E.C. York. 1996. **Influence of landscape pattern, forest type, and forest structure on use of habitat by marten in Maine.** Submitted to the National Council of the Paper Industry for Air and Stream Improvement. New York, N.Y. 87pp.

Phillips, D.M. and D.K. Garcelon. 1995. **Bald eagle productivity, contaminant relations, and nesting behavior on Santa Catalina Island, CA, 1995.** Submitted to the Damage Assessment Office, U.S.F.W. S., Sacramento, CA. 26pp.

RESEARCH PRESENTATIONS

Sex-specific incubation behavior of bald eagles on Santa Catalina Island, CA. Abstracted presentation: Joint Meeting of the American Ornithologists' Union and the Raptor Research Foundation. Boise, ID. Aug. 1996.

Seasonal changes in density, range area and range fidelity of marten in a forest preserve. Abstracted presentation: 2nd International *Martes* Symposium. Edmonton, Alberta. 12-16 Aug. 1995.

Density, home range, and spatial overlap of martens in an industrial forest and a forest preserve. Abstracted presentation: Northeast Fish and Wildlife Conference. Burlington, VT. 3 May 1994.

The role of Maine and New Hampshire in recovery of the eastern timber wolf: A preliminary assessment.

Poster: Northeast Fish and Wildlife Conference. Burlington, VT. 2-4 May 1994.

Representative Project Involvements

- Oversaw environmental compliance from development through commercialization of over 2 GW of renewable power projects, and for over 1.5 GW of operating assets, as Director and VP of Environmental at Apex Clean Energy (2013-present).
- Alta East Wind Energy Project - December 2012 – April 2013: Managed preparation of Eagle Conservation Plan and Environmental Assessment (EA) for golden eagle Programmatic Take Permit application for Terra-en Power's 300-MW wind energy project in Kern County, California. The project is regulated by BLM and Kern County (<http://pcd.kerndsa.com/planning/environmental-documents/250-alta-east-wind-project>) under NEPA and California Environmental Quality Act (CEQA); however, the eagle EA is a stand-alone document with USFWS as the lead agency. BLM is requiring USFWS approval of an Eagle Conservation Plan prior to issuing construction notice to proceed and requiring an approved take permit prior to authorizing operation on BLM lands.
- Alta South Wind Energy Project – Terra-Gen Power – March 2012 – April 2013: Developed California ESA application for Incidental Take Permit for State-listed Bakersfield cactus and desert tortoise for Terra Gen Power's 37 turbine, 111-MW facility on private lands in Kern County, California.
- Hidden Hills Solar Energy Generation Station Project – BrightSource – May 2012 – April 2013: Lead biologist for permitting of 500-MW concentrated solar project in Inyo County, California undergoing California Energy Commission (CEC) and BLM permitting processes. Brought onto project team late in permitting process as technical expert to address issues of concern to the client regarding potential misconceptions on avian impacts and desert tortoise mitigation requirements. Led technical studies, modeling, and presentation of materials to illustrate potential impacts to avian species from convective heat and radiant flux associated with this relatively new solar energy generation technology. Provided expert testimony at CEC hearing in January 2013. Project information and CEC Staff Analysis available here: <http://www.energy.ca.gov/sitingcases/hiddenhills/>
- Rio Mesa Solar Energy Generation Station Project – BrightSource – August 2012-March 2013: Provided technical expertise on avian impact analyses and rebuttal of CEC Staff Assessment of project impacts.
- Ivanpah Solar Energy Generation Project – BrightSource - September 2012-April 2013: Developed cutting edge Avian Monitoring and Adaptive Management Strategy to assess avian impacts during operations of the first BLM regulated concentrated solar facility. Led strategic coordination with USFWS, BLM, California Department of Fish and Wildlife (CDFW), CEC, BrightSource Energy, Solar Partners and NRG.
- Alta East Wind Project – Terra-Gen Power – March 2010 – April 2013: Lead biologist on joint BLM NEPA and Kern County CEQA permitting. Oversee strategic agency interaction as it relates to developing and implementing requisite environmental studies for planned 300-MW wind project. Primary author of ABPP/BBCS, ECP, California Condor Avoidance and Mitigation Plan, Biological Assessment (BA) for the federally-listed California condor, desert tortoise and Bakersfield cactus, and other critical path items which are available for review in the Final Environmental Impact Statement (EIS) published in early March 2013 and available online: http://www.blm.gov/ca/st/en/fo/ridgecrest/alta_east_wind_project.html
- Quaking Aspen Wind Energy Project – EDF Renewables (February 2011 – April 2013): Managed NEPA EIS process for EDF's proposed 150-MW wind energy project located on lands administered by the BLM in Sweetwater County, Wyoming. Drafted Plan of Development, and coordinated scoping, public involvement, baseline data collection and analyses processes and preparation of the draft EIS. Critical issues include aesthetic impacts, biological resource issues, MBTA compliance, risk of golden eagle take, cultural resource impacts, and public perception.
- Emma and Will Windpower Projects - Wyoming Wind and Power (November 2010-April 2013): Managed permitting and baseline environmental studies for a proposed 900-MW private land wind energy project near Wheatland and Chugwater, Wyoming. Developed and implemented

comprehensive 3-year biological resource study program in coordination with USFWS and Wyoming Game and Fish Department (WGFD) to specifically address state and federal regulatory requirements for wind project development. Wyoming Industrial Siting Permit application submitted in July 2013 and available here: http://deq.state.wy.us/isd/downloads/WW&P-ISA%20Permit%20Application-FINAL_PrintOnly.pdf

- Sand Hills Wind Energy Project - Avian Protection Plan – Shell Wind Energy (Fall 2010 to April 2013): Provided technical leadership for golden eagle impact assessment and ECP preparation for Shell Wind Energy’s 50-MW project in Albany County, Wyoming. The ECP was prepared in response to BLM IM 2010-156 as part of the BLM and Western Area Power Administration (Western) Environmental Assessment. Also provided technical leadership for formal conferencing under Section 7 of the ESA for the mountain plover, a species that was proposed for listing by the USFWS as federally threatened. Completed data review and preparation of ECP and Advanced Conservation Practices for both species to develop biologically appropriate measures for the project through strategic coordination with the USFWS, BLM, and Western. Additional services included general BCS development, Wildlife Monitoring Plan development, and strategic agency communication and coordination.
- Alta Wind Project, Phases VII and IX – Terra-Gen Power – March 2012 – April 2013: Developed and implemented construction compliance system to meet environmental compliance requirements under the CEQA Final Environmental Impact Report (EIR) and Incidental Take Permit issued by CDFW for Bakersfield cactus and desert tortoise. Supervised and trained staff, developed environmental training program and communications and reporting systems to enable onsite staff to interface effectively with construction contractors and meet compliance objectives.
- Imperial Solar Energy Center West- (March 2011- April 2013): Led development and implementation of Avian Protection Plan, Burrowing Owl Mitigation and Monitoring Plan, and Fatality Monitoring Plan for CSOLAR Development Corporation’s 230-MW photovoltaic solar energy project in Imperial County, California. Project required installation of 230-kV transmission lines across BLM lands and therefore involved a joint CEQA Environmental Impact Report (EIR) and BLM EA, with Imperial County functioning as the local lead agency. BLM right of way was authorized and follow on work involved extensive coordination with USFWS on avian protection planning. Special emphasis was placed on developing and implementing effective take avoidance measures for burrowing owls.
- Tesoro Refining and Marketing – Eagle Non-purposeful Take Permit Application - January 2012: Provided technical expertise and managed preparation of permit application for non-purposeful take of a bald eagle nest located within 660 feet of a Crude Railcar Unloading Facility planned for construction during the 2012 nesting season on Tesoro’s Anacortes, Washington refinery property located on March Point in Skagit County.
- AWEA Technical Advisor – Jan-February 2012. Served as technical advisor for AWEA’s sage-grouse task force for development of AWEA response to BLM sage-grouse policy IM 2012-043 and 044, and recommended Conservation Measures in preliminary priority and general habitats.
- Tule Wind Energy Project – Iberdrola Renewables – December 2011- January 2012: Led team to develop nesting Bird Monitoring, Management, and Reporting Plan required per BLM and County Final Impact Statement and Environmental Impact Report for the Tule Wind Project, located in an unincorporated portion of San Diego County approximately 70 miles east of San Diego. The project is located on lands administered by the U. S. BLM, the Ewiiapaayp Indian Reservation, Manzanita and Campo Indian Reservations (access only), and the California State Lands Commission, as well as private lands. The project is planned for construction during spring and summer 2012.
- Laurel Hill Wind Energy Project – Duke Energy Renewables – November 2011 – January 2012: Completed golden eagle risk assessment for Duke Energy’s Laurel Hill Wind Energy Project located on private and state lands within Jackson and MacIntyre Townships of Lycoming County, Pennsylvania. Risk assessment included technical review of raptor migration studies completed for the project in 2005 and 2006, review of existing data and literature, a qualitative assessment of risk,

and recommendations for protective measures to avoid minimize or mitigate potential risks to golden eagles associated with construction and operations of the project.

- Confidential Client – Oil Shale Development project – March 2012 – April 2013: Served as wildlife technical lead on large scale oil shale development planned for Uintah County, Utah. The planned development is mainly on private land; however, requisite pipeline and road crossings of BLM land create challenging compliance issues, especially related to evolving greater sage-grouse policy on federal lands and MBTA/BGEPA compliance. Led review of existing data, provided technical guidance and assisting client-agency interaction, developed and led implementation of studies for special-status species to ensure adequate baseline data for NEPA compliance and development of effective impact avoidance and mitigation measures.
- Wind Project Avian and Bat Protection Plans –Terra Gen Power (June 2010 to April 2013): Led development of BBCSs for multiple private land and BLM wind energy generation projects in Kern County, California. BBCSs prepared include a corporate Plan to address all projects in development, construction, and operation and project-specific Plans for both private land and BLM NEPA regulated projects. BBCSs for BLM projects are designed to specifically address BLM and FWS expectations per the requirements of the BLM Instructional Memorandum 2010-156 requiring an approved “Avian and Bat Protection Plan” to address golden eagle impact risk issues and ensure acceptable avoidance and mitigation for the species. Processes involved technical expertise and strategic negotiation with USFWS and BLM with a client oriented focus. Recently prepared an ECP for the Alta East wind project which is currently being considered by USFWS for a Programmatic Take Permit..
- Black Hills Power & Light Co. – November 2011- August 2012: Served as senior technical consultant for Wyoming Industrial Siting Permit process and for USEPA Air Quality Permitting for Black Hills Power’s proposed natural gas combustion turbine generation facility consisting of five 40-megawatt natural gas combustion turbine generators and associated infrastructure. Responsible for design and implementation of wildlife and plant survey activities for ESA Section 7 consultation process, avian surveys to ensure MBTA and BGEPA compliance, and assessment of environmental impacts.
- East Helena Smelter RCRA Site, Montana Environmental Trust Group (November 2011- April 2013): Senior wildlife technical lead on wetland functional assessment necessary for agency decision making, coordination, and baseline data requirements to complete NEPA analysis and permitting of potential South Plant Hydraulic Controls project. Completed desktop review and onsite habitat evaluations in accordance with the Montana Department of Transportation Montana Wetland Assessment Method Parts 14 A, B, and C, covering wildlife habitats and species designated as federally listed, proposed, threatened, and endangered and rated S1, S2, or S3 by the Montana Natural Heritage Program. Developing plan for Migratory Bird Act Compliance during site reclamation.
- Sevier Dry Lake Exploratory Testing Project, Peak Minerals, Inc (Fall 2011): Prepared Wildlife and Plant Inventory Plan and Wildlife Mitigation and Monitoring Plan for potash mining exploration project located in Millard County, Utah and involving lands administered by the BLM Filmore Field Office. The inventory and monitoring plans were drafted in compliance with requirements of the Exploratory Testing EA (DOI-BLM-UT-W02002011-0115 EA) and Leasing Proposal EA (DOI-BLM-UT-W020-2010-014-EA) and designed to address federally listed and BLM-sensitive species, USFWS Birds of Conservation Concern, big game, and other sensitive/special status avian and mammal species warranting consideration.
- Confidential Wind Overpower Project (2011): Oversaw baseline studies and providing biological technical leadership for a 20-MW wind energy overpower project located in San Geronio County and Desert Hot Springs, California. Process involved strategic interaction with California Department of Fish and Game (CDFG) and USFWS to identify data needs for impact assessment and mitigation in accordance with state regulations and a programmatic Habitat Conservation Plan in place for the project. Led preparation of an Avian and Bat Protection Plan to address MBTA and BGEPA concerns raised by the USFWS.

- Vasco Wind Repowering Project, NextEra Wind Energy (2011): Drafted Avian Protection Plan (APP) for the Vasco Winds Repowering Project (Altamont Pass) in Contra Costa County, California to address potential avian and bat impacts resulting from the operation of the Project. The goal of this APP is to meet the intent of the MBTA, BGEPA, ESA, and the California Endangered Species Act (CESA) by implementing the provisions and conditions of a 2010 Settlement Agreement a settlement agreement among NextEra Energy Resources, the Audubon Society, the State of California Attorney General's Office, local chapters of the Audubon Society, Californians for Renewable Energy, and others, thereby reducing and managing risk to avian and bat species.
- Alta Oak Creek Mojave Wind Energy Project, Phases 1-5 - Terra-Gen Power (January 2010 - March 2011): Managed construction compliance by assisting client with adherence to mitigation measures as defined in federal, state, and county level permits during construction of an eight phase, 800-MW wind energy generation project near Tehachapi, California. Compliance measures included oversight of two CH2M HILL onsite Compliance Specialists, preparation and delivery of training materials for construction teams, wildlife and botanical survey and monitoring commitments, and cultural and paleontological mitigation programs and management plans, and oversight of environmental subcontractors. Role required extensive staffing and scheduling, coordinating CH2M HILL employees and subcontractors, and effective client communication to respond to immediate and long-term planning issues. Effectively mentored mid-level project manager to assume responsibilities in spring 2011 for remaining construction compliance associated with the final two phases of construction.
- Alta Wind Energy Center - Terra-Gen Power (March 2010 - June 2011): Senior technical lead coordinating preparation of California Incidental Take Permits, federal Habitat Conservation Plan, and Biological Assessment for state/federal listed species (Bakersfield cactus, desert tortoise, southwest willow flycatcher, California condor), and leading preparation of Avian and Bat Protection Planning for five confidential wind energy projects in the development stages located near Tehachapi in Kern County, California.
- Confidential Wind Project (June 2011-April 2013): Oversaw biological resource studies required for siting energy facilities under the Oregon Department of Energy siting statutes and leading strategic agency coordination with USFWS related to eagle act compliance for a proposed 150-MW wind energy project located in Sherman and Wasco Counties, Oregon. Process involved strategic interaction with Oregon Department of Fish and Wildlife and USFWS to identify data needs for impact assessment and mitigation. Serving as eagle technical specialist with regard to study design, defensible impact/risk assessment, take estimation and programmatic take permitting.
- Mountain Air Windpower Project - Duke Energy (Fall 2010): Due Diligence review of wind projects located near Mt. Home, Idaho, during consideration for acquisition. Review consisted of a cursory evaluation of development and operational risk issues related to permitting and environmental issues. Managed informal consultation with the USFWS per requisite ESA Review Procedures for NPDES Construction General Permitting under U.S. Environmental Protection Agency permitting authority. Managed setup and implementation of baseline avian and slickspot peppergrass (federally threatened plant species) studies, wetland delineations for subsequent permitting with the U.S. Army Corps of Engineers, and cultural resource assessments to ensure no impact to cultural resources.
- Alpine Solar Project - NRG (March 2011): provided professional testimony for an appeal of a California Environmental Quality Act (CEQA) mitigated negative declaration granted to a 96 MW photovoltaic solar energy project in Los Angeles County, California. Process included technical review of biological resource studies and preparation with NRG legal counsel for testimony to address opposition by a local conservation organization.
- Imperial Solar Energy Center South- (2011): Managed preparation of Avian Protection Plan, Burrowing Owl Mitigation and Monitoring Plan, and Fatality Monitoring Plans for CSOLAR Development Corporation's 200 MW concentrated photovoltaic solar energy projects in Imperial County, California. Projects involves installation of 230-kV transmission lines across BLM lands and therefore involves a joint CEQA EIR and BLM EA, with Imperial County functioning as the local lead

agency. BLM right of way has been authorized for Phase 1 (200 MW), and project is currently under construction.

- Critical Issues Analysis (May 2011): Managing assessment of critical issues for confidential client in Albany and Carbon Counties, Wyoming, including, but not limited to complete raptor nest assessment for project area and region.
- Confidential Wind Project (2010-11): Overseeing baseline studies and providing technical leadership on Los Angeles County Conditional Use Permit, CEQA EIR preparation, and related agency consultation for confidential wind project in early development stages.
- Confidential Solar Project (2011): providing technical leadership for agency interaction and development of biological resource study design for proposed solar project near Barstow, California in San Bernadino County. Process involves strategic negotiation to address golden eagle impact assessment and potential permitting issues.
- Wind Project Site Assessment (Fall 2010): Managed baseline environmental studies and agency consultation for confidential wind project in Laramie County, Wyoming.
- Wind Project Due Diligence (Fall 2010): Due Diligence review of wind project under consideration for acquisition by Confidential Client in Carbon County, Wyoming. Thorough evaluation of development and operational risk issues related to permitting and environmental issues.
- Sand Hills Wind Energy Project - Shell Wind Energy (September 2009 to November 2011): Managed preparation of Plan of Development and Environmental Assessment for Shell Wind Energy's 50-MW wind project in Albany County, Wyoming. BLM is the lead federal agency with Western Area Power Administration as the cooperating agency. Managed cultural and environmental resource reviews and preparation of relevant monitoring and environmental protection programs during construction and operation, such as wildlife monitoring, revegetation, and reclamation plans. Also managing county and local permitting processes.
- Reno Junction Wind Energy Project - Third Planet Windpower (Spring 2010): Managed development of Wyoming Industrial Siting Act (ISA) Permit Application for Third Planet's proposed 150-MW wind energy generation project and 5-mile transmission line in Campbell County, Wyoming. Assisted client with requisite agency consultation and negotiation (USFWS, WGFD, Wyoming Department of Environmental Quality (WDEQ), Wyoming State Historic Preservation Office (WSHPO), communication with local officials, and public involvement activities.
- Confidential Solar Project, Confidential Client (Fall 2010): Senior review for initial site assessment of proposed solar energy facility near Desert Center in Riverside County, California.
- Alpine Solar Project; Confidential Client; California (Summer 2010): Senior environmental review for initial site assessment and of proposed solar energy facility in Los Angeles and Kern County, California.
- Resolute 1 Wind Energy Project - Clipper Windpower (Spring 2010): - managed coordination with WGFD, WDEQ, WSHPO, and local officials for State and County level permitting of Clipper's proposed 150-MW wind project in Converse County, Wyoming. Leading strategic negotiations with USFWS Wyoming Ecological Services Field Office to proactively address operational risk issues relevant to wind farm development (impacts to federally listed species, MBTA, BGEPA).
- Confidential Solar Project; Kern County, California (Spring 2010 to Present). Senior review and guidance on biological risk assessment and impact mitigation for during development and permitting phase of a large scale solar energy facility in Kern County, California.
- Operational Risk Management - Avian Risk Issues, Confidential Client (2009-Apr 2013): Worked with confidential wind energy generation client to proactively address operational risk issues related to MBTA and BGEPA compliance at two wind project sites. Assisted with agency consultation and

consideration of options for impact mitigation to USFWS trust species and their habitats. Provided technical and policy-oriented guidance to the client and legal counsel, and to the third party consultant that is responsible for preparing project-specific ABPPs and completing field studies.

- Top of the World Wind Energy Project – Duke Energy (Fall 2008-Fall 2010): managed preparation of state ISA Permit Application for Duke Energy’s 200-MW wind energy generation project and 6-mile transmission line in Converse County, Wyoming. Managed baseline environmental studies to evaluate biological, cultural, and wetland/waterbody resources impacts. Provided oversight of construction activities outlined in the SWPPP, SPCC plan, and ISA Permit and to ensure compliance with Section 404 of the CWA, ESA, and MBTA and other agency directives. ISA permit application available online: http://deq.state.wy.us/isd/downloads/TOTW_ISA_Permit_Application_09-21-09.pdf.
- Dunlap Ranch Wind Energy Project – PacifiCorp Energy (Summer 2009 - Present): executed permitting and environmental studies for state Industrial Siting Permit Application process for PacifiCorp Energy’s proposed wind energy generation project and 15-mile transmission line located on private and state lands in Carbon County, Wyoming. Managed execution of environmental compliance audits to provide oversight of construction activities outlined in the SWPPP, SPCC plan, ISA Permit, and County Conditional Use Permits and to ensure compliance with cultural and avian nest buffers, Section 404 of the CWA, ESA, and MBTA. ISA permit application available online: http://deq.state.wy.us/isd/downloads/Dunlap_ISA_FINAL.pdf
- Campbell Hill Wind Energy Project – Duke Energy (Summer 2008-Fall 2009): managed state Industrial Siting Permit Application and environmental subcontractors for Duke Energy’s 99-MW Wind Project and 11-mile transmission line in Converse County, Wyoming. Developed written environmental compliance plan and assisted with preparation of reports to regulatory agencies. Assisted development of Wildlife Mitigation and Monitoring Program to address impact concerns to sensitive environmental resources specifically focused on avoiding, minimizing, and measuring impacts to nesting raptors. Provided oversight of construction activities outlined in the SWPPP, SPCC plan, and ISA Permit and to ensure compliance with Section 404 of the CWA, ESA, and MBTA and other agency directives. ISA Permit Application available online: http://deq.state.wy.us/isd/downloads/Campbell_Hill_All_Combined_Final_010709.pdf.
- Limon Wind Energy Project – Iberdrola Renewables (Fall 2008 – Apr 2013): managed preparation of county Use by Special Review permit application, and Western Area Power Administration NEPA Analysis and baseline wildlife monitoring program for Iberdrola’s proposed 100-MW wind project in Lincoln County, Colorado.
- High Plains McFadden Ridge Wind Energy Project – PacifiCorp Energy (Summer 2009 – Spring 2010): executed environmental compliance audits to provide oversight of construction activities outlined in the SWPPP, SPCC plan, ISA Permit, County Conditional Use Permits and to ensure compliance with cultural and avian nest buffers, Section 404 of the CWA, ESA, and MBTA.
- Williams Echo Springs Gas Plant Industrial Siting Permit (Fall 2008): team member for State Industrial Siting Permit Application for a gas plant expansion project near Wamsutter, Wyoming. ISA Permit Application available online: http://deq.state.wy.us/isd/downloads/Williams_ISA_FINAL.pdf.
- Fatal Flaw Analyses (2009): completed fatal flaw analyses for two potential wind project areas near Clovis, New Mexico for Confidential Client, evaluating environmental, cultural, and Federal Aviation Administration concerns.
- Fatal Flaw Analyses (2009): completed fatal flaw analyses for potential wind project areas in Converse and Natrona Counties, Wyoming for Confidential Client, evaluating resource and permitting concerns and challenges or limitations for development.

- Fatal Flaw Analyses (2009): completed fatal flaw analyses for three potential wind project areas in eastern Colorado for Confidential Client, evaluating resource and permitting concerns and challenges or limitations for development.
- Environmental Constraints Analyses (2009): completed constraints/fatal flaw analyses for three potential project areas in Laramie County Wyoming for Confidential Client.
- Fatal Flaw Analyses (2009): completed fatal flaw analyses for potential wind project areas in Carbon and Albany Counties, Wyoming for Confidential Client, evaluating resource and permitting concerns and challenges or limitations for development.
- Critical Environmental Issues Analyses (2008): completed Critical Issues Analyses for two potential project areas in Colorado for Confidential Client and designed wildlife monitoring program in coordination with state and federal agencies.
- White Mountain Wind Project EA (Fall 2007- Spring 2008): managed early stages of BLM EA, and planned and implemented preconstruction wildlife monitoring program for Teton Wind Energy, LLC's proposed 130-turbine wind project in Sweetwater County, Wyoming. Project details are available online: <http://www.blm.gov/wy/st/en/info/NEPA/rsfodocs/whitemtnwind.html>
- Albany County Predator Control Project (2007): prepared literature review and designed research program to evaluate the potential influence of predator control for livestock protection on wildlife population dynamics in Albany County, Wyoming.
- BNSF Railway Biological Assessment, Biological Evaluation, & Management Indicator Species Analyses (2007): contributing writer to documents required for 31-mi rail project on Forest Service and BLM administered lands.
- Jonah Bridger to Opal Natural Gas Project EA - Teppco (now Enterprise) (2005-2006): coordinated wildlife surveys and habitat mapping and completed the biological resource impact assessment and BA for Jonah Gas Gathering Company's 80-mi pipeline intersecting three BLM Field Offices in western Wyoming.
- Continental Divide-Creston EIS (2005-2006): served as NEPA IDT-wildlife lead, interacting with industry and BLM, planning and implementing resource assessments, and preparing NEPA documents (Ch.3&4, and BA) for conglomerate of natural gas companies developing gas resources in south central Wyoming.
- Creston Blue Gap EIS (2005): key participant in initial planning phases of EIS prior to project being combined with the adjacent Continental Divide EIS. Worked with BP, Anadarko, Devon Energy, and BLM to proactively identify and address biological resource issues associated with a large-scale gas field development.
- Waterfowl Assessment, Duck Valley, Idaho (2005): Executed study of potential impact of water development projects to migrating waterfowl on the Shoshoni Paiute Indian reservation. Utilized aerial and ground surveys to quantify baseline use and evaluate potential impacts resulting from the proposed action.

LINEAR PROJECTS

- Tehachapi Renewable Transmission Project, Southern California Edison, (Fall 2011). Oversaw preparation of the biological resources portion of a Supplemental Environmental Impact Report (EIR) evaluating potential impacts associated with installation and maintenance of lighting and aviation markers required by the FAA that were not considered in the final EIS or EIR for the project. The final

Project Modification Report is subject to evaluation by the California Energy Commission, U.S.D.A. Forest Service, USFWS, and FAA.

- Milford Wind Corridor Project – First Wind (Fall 2008): team member for preparation of Plans of Development and EAs for First Wind’s geotechnical work, 300-MW wind project, and 80-mile transmission line involving BLM and private lands near Milford, Utah.
- TEMAX and TIME III Pipeline Projects – Spectra Energy (Summer 2008): Team member in preparation of FERC Environmental Report for Texas Eastern Transmission, LP’s (Spectra Energy Corp.’s) planned installation and upgrade of natural gas pipelines and compression facilities through six counties in southern Pennsylvania.
- White River Hub Natural Gas Pipeline Project EA – Questar Pipeline (2007): coordinated FERC Environmental Report/EA preparation for FERC/BLM NEPA analysis of Questar Pipeline Company’s 8-mi natural gas pipeline and compressor project in northwest Colorado. Managed execution and completion of resource reports, wildlife/plant/cultural surveys, Plan of Development, permitting, and maintenance of project website. Environmental reports and draft EA are available online: <http://www.whiteriverhubproject.com/documents.htm>. Project information is at <http://www.whiteriverhub.com/>
- FMC-349 Storage Area Development Project – FMC Corporation (2007): prepared EA for water lines, road construction, and injection/extraction wells associated with an FMC Corporation sodium mine. Responsible for NEPA documentation, and exception requests required for implementation of projects.
- Coordinated wildlife, plant, wetland, and habitat mapping surveys for major gas development and pipeline projects in the Powder River Basins of Wyoming and Montana, the Great Divide and Green River Basins of Wyoming, and the Piceance Basin of Colorado for clients such as Fidelity, Petro-Canada, Anadarko, Devon, ConocoPhillips, Questar, BP, and FMC Corporation (2005-2006).

RYAN W. HENNING

Apex Clean Energy

PROFESSIONAL EXPERIENCE

Ryan Henning is a Sr. Permitting Manager with established technical expertise for the resolution of environmental conflicts through permitting, plant and wildlife studies, and strategic agency interaction of the development, construction, and operations of utility scale wind and solar, transmission lines, and energy projects. Ryan became proficient in Bird and Bat Conservation Planning and Eagle Conservation Plan development along with implementing projects that were compatible with the Land-based Wind Energy Guidelines, Eagle Conservation Plan Guidance and APLIC Guidelines while working on solar and wind projects at RES Americas. His demonstrated success with NEPA, CEQA, ISA, ESA, BGEPA, MBTA CWA, NHPA, NPDES, and other local, state, and federal regulations is substantial, as is his experience directing field studies, impact analysis and mitigation solutions on special status wildlife. Mr. Henning has prepared and managed numerous environmental reports, permit applications, feasibility studies, permitting and mitigation strategies, and environmental compliance monitoring programs for a variety energy projects in South Dakota, Nevada, Texas, Arizona, California, Wisconsin, Washington, Colorado, North Dakota, Wyoming, Oregon, Alaska, Ohio, and Canada.

Apex Clean Energy, Highlands Ranch, CO

Sr. Permitting Manager 2017 - Present

Sr. Permitting Manager for a 12,000 megawatt (MW) pipeline of wind and solar energy projects located throughout the United States. Utilize vast experience with environmental permitting and regulations affecting energy infrastructure and development projects to translate applicable regulatory requirements into strategic and cost-effective compliance approaches and solutions.

Newalta Environmental Services, Inc., Denver, CO

Sr. Project Manager - 2013 - 2017

Sr. Project Manager for a leading environmental waste service provider that serves markets in both Canada and the United States. Provided permitting, project and construction management support to all fixed, modular, and onsite capital projects and operations in the U.S. Heavy Oil and Oilfield Business Units. Key responsibilities included execution of the entire project lifecycle and fully accountable to Newalta Executive Management for project activities and results, including assigned project budgets, subcontractor administration, company safety standards, construction and project management procedures, and regulatory compliance.

Renewable Energy Systems Americas Inc., Broomfield, CO

Sr. Permitting Specialist - 2010 - 2013

Sr. Permitting Specialist for a leading international renewable energy company. Primarily responsible for providing regulatory permitting strategy, solutions, mitigation, implementation, and compliance on a 12,500 MW pipeline of solar and wind energy facilities and 800 MWs of operational facilities. Other responsibilities included managing communications and negotiations with government officials, special interest groups and the general public; managing environmental studies; and routing, siting and permitting new transmission line and energy facilities throughout the Western U.S. and Eastern Canada.

CH2M HILL Inc., Englewood, CO

Sr. Project Manager/Client Service Manager - 2006 - 2010

Sr. Project Manager and Client Service Manager for industrial clients associated with a \$5+ billion international engineering consulting company. Key responsibilities included providing environmental permitting expertise and client service development for renewable energy projects within Site Planning & Permitting business practice.

ARCADIS, Denver, CO & Sacramento, CA

Certified Project Manager/Senior Biologist – 1995 - 2006

Certified Project Manager for industrial and government clients associated with a \$1+ billion international engineering consulting company. Provided impact assessment and permitting support on over 50 major projects to both private sector and various local, state, and federal agencies including the Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Forest Service, Federal Energy Regulatory Commission, Office of Surface Mining, U.S. Army Corps of Engineers.

North American Coal Corp – Indian Head Mine, Beulah, ND

Environmental Scientist I, II, & III – 1988 - 1994

Environmental Scientist for a leading North American lignite coal mining company. Responsible for mine permitting and revisions, environmental compliance, and reclamation plan implementation at a 4,750-acre surface lignite coal mine. Additional responsibilities included assisting in daily operational mine management activities and supervision of reclamation workforce of eight full-time employees.

EDUCATION

California State University, Sacramento, Sacramento, CA
M.S., Biological Conservation, 2007

University of North Dakota, Grand Forks, ND
B.S., Biological Science, 1994

PROJECT EXPERIENCE

Wind

Silver Mountain Wind Energy Project, Huerfano County, Colorado. Team member on the development of the proposed 60 MW wind energy project in Huerfano County. Oversaw the avian, bat, and archaeological surveys, consultation with USFWS and CDOW, along with preparation of the Huerfano County 1041 permit application.

Rock Creek Wind Energy Project, Gilliam County, Oregon. Team member on the development and submittal of the Oregon EFSC permit for the proposed 393 MW Rock Creek Wind Power Facility in Gilliam County, Oregon.

Greenwich Wind Energy Project, Northern Ontario. Based on higher than predicted bat fatalities across numerous wind energy projects in Ontario and Saskatchewan, the Minister of Natural Resources required additional monitoring and mitigation measures for operating wind energy facilities. Responsible to initiate consultation with high-level regulatory officials, elected public officials, and local residents which resulted in an amended Bird and Bat Monitoring and Operational Plan for the Greenwich Wind Energy project.

Cedar Point Wind Energy Project, Limon, Colorado. After construction activities were initiated, RES Americas engaged a consultant to conduct a spring avian survey of the Cedar Point site. The survey identified a number of new raptor nests and identified the existence of a mating golden eagle pair in a formerly inactive large stick nest. Responsible for initiating consultation with USFWS and CDOW to develop a voluntary avian impact and monitoring mitigation measure plan.

Keechi Wind Energy Project, Jack County, Texas. Responsible for the agency consultation and initiation of avian and bat surveys and species-specific whooping crane, black-capped vireo, and golden cheeked warbler habitat and risk assessments. Based on survey results, agencies required the development of an Avian and Bat Protection Plan with specific focus on whooping cranes.

Granite Mountain Wind Energy Project, San Bernardino County, California. Team member on the development of the Draft and Final EIS/EIR for the 84MW Granite Mountain Wind Energy Project. The proposed project required development of an Avian Bat and Protection Plan along with an Eagle Conservation Plan and Incidental Take Permit Application.

Long Draw Wind Energy Project, Holbrook, Arizona. Team member on the development of the 200MW wind energy project near Holbrook, AZ. Oversaw the avian, bat, and archaeological surveys, USFWS and AGFD consultations, along with preparation of CUP application and testimony at the Board of County Supervisors Hearing.

Black Mountain Wind Energy Project, Imperial County, California. Obtained five meteorological anemometer mast tower permits for the proposed Black Mountain Wind project located in Imperial County in southeastern California near the Arizona border. Oversaw the avian, bat, and archaeological surveys required for the anemometer permit applications.

Cedar Point Wind Expansion Project, Limon, Colorado. Obtained five meteorological anemometer mast tower permits for the proposed 250MW Cedar Point Expansion project. Oversaw the avian, bat, and archaeological surveys and USFWS and CDOW consultations.

White Mountain Wind Energy Project, Sweetwater County, Wyoming. Completed due diligence review of the proposed acquisition of the White Mountain Wind Energy Project in Sweetwater County, Wyoming. The proposed 400MW project encompassed 8,527 acres of private fee lands, 240 acres owned by the State of Wyoming, and 4,398 acres of public lands managed by the BLM.

Dunlap Wind Energy Power Project, Carbon County, Wyoming. Managed the successful ISA permit prepared for the Dunlap 300-MW wind farm project. The ISA application focused on the findings of the project's socioeconomic impact analysis on the influx of temporary construction workers and impacts to local housing stock. Developed a detailed pronghorn telemetry research program to study the effects of wind energy construction and operation on the species. Also, successfully obtained the Carbon County Conditional

Use Permit. Provided expert testimony at the Industrial Siting Council and Public Service Commission public hearings.

Seven Mile Hill Wind Energy Project, Carbon County, Medicine Bow, Wyoming. Managed the successful ISA permit prepared for the Seven Mile Hill 118.5-MW wind farm near Medicine Bow. The application focused on the findings of the project's socioeconomic impact analysis, including temporary and permanent workforce impacts to housing stocks and transportation. Also prepared and developed an avian monitoring protocol with the Wyoming Game and Fish and Department. The ISA application analyses compared the socioeconomic and environmental baseline conditions of the area to the area primarily affected and prepared impact analyses of the influx of temporary construction workers. Provided expert testimony at the ISC public hearing conducted in Saratoga. Also, successfully obtained the Carbon County Conditional Use Permit from the Planning and Zoning Commission.

Glenrock - Rolling Hills Wind Energy Project, Converse County, Wyoming. Managed the successful ISA permit prepared for the Glenrock-Rolling Hills 237-MW wind farm project. The ISA application focused on the findings of the project's socioeconomic impact analysis on the influx of temporary construction workers and impacts to local housing stock. Obtained a Special Use Permit from the USFWS Migratory Bird Office for the removal of golden eagle nest platforms located on the reclaimed mine site. Provided expert testimony at the ISC public hearing conducted in Glenrock.

High Plains – McFadden Ridge Wind Energy Facility, McFadden, Wyoming. Managed the successful ISA permit prepared for the High Plains – McFadden Ridge 187.5-MW wind farm project near McFadden. The ISA application focused on the findings of the project's visual and noise impacts. In addition, extensive socioeconomic analyses including IMPLAN modeling detailed socioeconomic findings in Albany and Carbon counties. Provided expert testimony at the ISC public hearing conducted in Glenrock. Also, successfully obtained the Carbon County Conditional Use Permit from the Planning and Zoning Commission.

Reno Junction Wind Energy Project, Campbell County, Wyoming. Managed the successful ISA permit obtained for the 150MW wind farm near Savageton, WY. The application focused on the findings of the project's socioeconomic impact analysis, along with potential impacts to both eligible and unevaluated NHRP cultural resources. The ISA application analyses compared the socioeconomic and environmental baseline conditions of the area to the area primarily affected and prepared impact analyses of the influx of temporary construction workers in a remote region of Campbell County. Provided expert testimony at the ISC public hearing conducted in Wright.

Simpson Ridge Wind Energy Project, Carbon County, Wyoming. Managed the ISA permit preparation for the planned 300-MW Simpson Ridge wind energy project west of Medicine Bow. The application focused on avian, raptor, bat, and greater sage-grouse impacts within designated Core Area Habitat along with detailed cumulative analyses related to multiple industrial projects within Carbon County. Also, successfully obtained the Carbon County Conditional Use Permit from the Planning and Zoning Commission.

Solar

Moapa Solar Energy Center Project, Moapa River Indian Reservation, Moapa, Nevada. Team member for the DEIS and FEIS of the 200MW PV solar project on 850 acres of land entirely located on the Moapa River Indian Reservation and the corridors for the transmission interconnection and access road located on the Reservation and on Federal lands managed by the BLM. The EIS provided a framework for the BIA and the BLM to make determinations and take respective Federal actions. The Federal action for the BIA was to approve or deny a lease and any associated ROW for the proposed solar project and associated facilities on tribal lands and for the BLM to grant, grant with modifications or deny the ROW application for proposed transmission lines and access road on Federal lands managed by the BLM and within a utility corridor on the Reservation. The EPA reviewed and commented on environmental impacts of the project and the Moapa Band to make decisions under their Tribal Environmental Policy Ordinance. The U.S. Fish and Wildlife Service completed Section 7 ESA consultation along with review for compliance with the MBTA. Lastly, the National Park Service reviewed the Project for potential impacts to nearby national historic trails.

Quail Run Solar PV Project, Florence, Arizona. Obtained a Conditional Use Permit and other local government permits for a 6MW photovoltaic solar farm near Florence, Arizona. The project was fast-tracked by the planning department and the CUP was obtained in 47 days. RES Americas developed the project and subsequently sold the project to another solar development company.

RES Solar Chino Valley PV Project, Chino Valley, Arizona. Obtained a Conditional Use Permit for a 20 MW photovoltaic solar farm in Chino Valley, AZ. RES Americas developed the project and subsequently sold the project to another solar development company.

Golden Sands Solar PV Project, Gila Bend, Arizona. Completed a Comprehensive Plan Amendment for the project site to allow solar development on a 960-acre parcel of Arizona State Lands. Initiated and completed all of the environmental studies necessary to complete the Arizona State auction process.

Areva Solar, Asset Divestiture Due Diligence, Arizona and California. Part of the due diligence team that evaluated the direct purchase of seven solar projects in Arizona and California. After the due diligence process was completed, RES Americas purchased two of the seven projects.

Conventional Generation

WyGen II Power Project, Gillette, Wyoming. Managed the successfully obtained ISA Section 107 Waiver of Permit Application for the 100-MW base-load coal-fired power plant located east of Gillette. The application focused on the findings of the project's socioeconomic impact analysis on an influx of temporary construction workers and impacts to local housing stock. The analysis found housing to be extremely tight in the six-county area surrounding Gillette in Northeast Wyoming. Provided expert testimony at the Industrial Siting Council (ISC) public hearing conducted in Gillette.

WyGen III Power Plant, Gillette, Wyoming. Managed the successful ISA permit obtained for the 100-MW pulverized coal thermal power plant east of Gillette. The application focused on the findings of the project's socioeconomic impact analysis on an influx of temporary construction workers and impacts to local housing stock. The socioeconomic and environmental analyses focused on the impacts of the project appurtenant facilities on the 200-acre project site. Provided expert testimony at the ISC public hearing conducted in Gillette.

Griffith Energy Project EIS, Arizona. Lead Biological Resource Task Manager and Assistant Project Manager for the Griffith Energy Project EIS, a 600-MW natural gas-fired, combined-cycle technology merchant power project near Kingman, Arizona. Project issues involved construction of a 5-mile natural gas pipeline and 32 miles of transmission line through BLM Category I and III desert tortoise habitat. Additional responsibilities included development of the first of its kind Reclamation Operation Maintenance Plan - Cactus Transplant and Salvage Plan for both the 3.8-mile natural gas pipeline and 32-mile transmission line.

Goldendale Power LLC, Washington. Lead Biological Resource Task Manager for the Goldendale Power Project, a 180-megawatt (MW) gas-fired, combined-cycle, combustion-turbine power generation project adjacent to the Columbia River. Completed the Washington State Environmental Policy Act (SEPA) Environmental Checklist analysis for biological resources. In addition, prepared the wetland delineation for project impacts to wetlands and waters of the U.S., Section 404 permitting, and preparation of the BA for Section 7 ESA compliance. Project biological issues included anadromous fish entrainment and falcon nest avoidance and seasonal mitigation measure development. Additional responsibilities included performing a raptor survey of appurtenant linear facilities and development of a site restoration plan.

Adelanto Energy Project, California. Lead Biological Resource Task Manager and Assistant Project Manager for a mitigated Negative Declaration for the Adelanto Energy Project - a proposed 45-MW natural gas fired simple-cycle power facility. Project Components included a 115-kilovolt (kV) transmission line and natural gas pipeline. Project issues involved construction of the line through BLM Category III desert tortoise habitat. In addition, prepared BA for Section 7 ESA compliance, and the draft 2081 CESA consistency determination for the California Department of Fish and Game.

Blythe Energy Project, Phase I, California. Lead Biological Resource Task Manager for the preparation of the Application for Certification submitted to the California Energy Commission for the construction and operation of a Blythe Energy is the owner of the, a 520- MW natural gas fired electric-generating facility situated within the City of Blythe, California. Primary responsibilities included Section 7 Consultation and

preparation of the Biological Assessment, development of the Biological Resource Mitigation Implementation Plan, and obtaining the Section 404 and 401 permits and CDFG Streambed Alteration Agreement for the horizontal directional drill of the 32-inch natural gas pipeline under the Colorado River.

Blythe Energy Project, Phase II, California. Lead Biological Resource Task Manager for the preparation of the Application for Site Certificate submitted to the California Energy Commission for the construction and operation of a 360-MW single-cycle natural gas-fired merchant power plant. The power plant was proposed to be located entirely within the approved Blythe Energy Project I site boundary.

Summit/Westward Energy Project, Oregon. Lead Biological Resource Task Manager and primary regulatory support for the Application for Site Certificate submitted to the Oregon Office of Energy Project on the 520-MW combustion turbine project located in Columbia County, approximately 4.5 miles north of Clatskanie, Oregon. Project issues included developing noise and conceptual restoration plan to offset impacts to the endangered Columbian white-tailed deer. Additional responsibilities included comprehensive wetland delineation and mapping on 63-acre project site, Section 7 consultation and preparation of Biological Assessment, development of wetland mitigation plan and habitat mitigation plan, and final mitigation planning and implementation for wetland impacts within the 100-year floodplain of the Columbia River.

High Desert Power Plant, California Provided biological field surveys for BLM regulatory support on the 32-mile natural gas pipeline associated with the construction and operation of a 680- to 720-MW natural gas-fired merchant power plant near the Southern California International Airport, formerly George Air Force Base.

Transmission Lines

Trinity County Public Utility District Direct Interconnection Project, Western Area Power Administration – Sierra Nevada Region. Prepared the biological resources impact analysis including Biological Evaluation/Biological Assessment, and a wetland and water of the United States survey for an EIS that would improve service to the Trinity Public Utilities District. Project issues involved crossing numerous jurisdictional waters of the U.S. including two crossings of the Trinity River, and northern spotted owl designated critical habitat. The project included both the development of a new transmission line and the upgrade of an existing line. The transmission line crosses federal lands managed by the Bureau of Reclamation, Bureau of Land Management and the Forest Service. The EIS satisfied the NEPA requirements of four federal agencies (Western, BOR, BLM, and FS).

Desert Southwest Transmission Line Project EIS/EIR, Riverside and El Centro Counties, California. Assistant Project Manager and Lead Biological Resource Task Manager for the preparation of CEQA and NEPA documentation for the construction of a proposed 118-mile transmission line from Blythe to the Imperial Irrigation District. Prepared and completed biological resource analysis for the EIR/EIS, and the BA for Section 7 Consultation compliance under the Endangered Species Act. Project issues involved construction of the line through both the federally designated Chuckwalla Critical Habitat Unit and BLM Chuckwalla Desert Wildlife Management Area for the desert tortoise and the Coachella Valley fringed-toed lizard designated critical habitat in the Coachella Valley Preserve Refuge.

Imperial Irrigation District New 230kV "BN-BS" Transmission Line Project EIS, California. Lead Biological Resource Task Manager and Assistant Project Manager for the preparation of a joint EIS/EIR for the Imperial Irrigation District and the BLM. The EIS/EIR addressed the environmental issues related to constructing and operating a new approximately 30-mile 230-kV transmission line, and amending the California Desert Conservation Area Plan to allow construction of a new transmission line across BLM lands. Project issues involved construction of the line through the federally designated Chuckwalla Critical Habitat Unit for the desert tortoise.

Cranberry – Conover – Plains 138-kV Transmission Line Project, Wisconsin. Project Manager for the preparation of an Environmental Assessment for the new, 138-kV Cranberry – Conover – Plains transmission line in northern Wisconsin. The new 138-kV line will travel a 12 to 15-mile line between Eagle River and Conover, and convert an additional 73 miles of existing transmission line from 69 kV to 138 kV. The line will cross two separate National Forests in Wisconsin and Michigan. Project issues include rerouting of the transmission line out of a large bog complex, visual resource, and recreation impacts.

Colorado – New Mexico 230-kV Intertie Project EIS, Colorado and New Mexico. Lead Biological Resource Task Manager for the 125-mile, 230-kV transmission line between Walsenberg, Colorado and Gladstone, New Mexico as part of the Northern New Mexico Interface Path 48. The EIS was prepared to satisfy the requirements of the Rural Utility System. Prepared the BA for Section 7 ESA compliance and developed a vegetation management and monitoring plan.

Gardner Park – Central Wisconsin – Morgan Werner West 345-kV Transmission Line Project, Wisconsin. Prepared Certificate of Public Convenience and Necessity for the 50-mile line 345-kV transmission line that linked to the existing Morgan Substation, southwest of Oconto Falls, to the new Werner West substation in the New London area. The Public Service Commission of Wisconsin approved the client CPCN application.

Desert Southwest Transmission Line Project Routing Study, Riverside and Imperial Counties, California. Prepared a Transmission Line Routing Study for a new Double Circuit 230-kV or 500-kV Transmission Line to deliver energy generated at the new Blythe Power Plant. The goal of the Routing Study was to identify and evaluate route options along with the identification and recommendation of a preferred alternative.

Water Related Projects

Program EIR for Regional Water Facilities Master Plan, San Diego, California. Lead Biological Resource Task Manager for the preparation of a Program EIR to assess the environmental effects of implementing the San Diego County Water Authority's Regional Water Facilities Master Plan. The purpose of the Master Plan was to evaluate the ability of the SDCWA to continue to meet its goals for current plans for water supply and facility improvements and to recommend 28 new facilities or improvements to existing facilities needed to meet SDCWA water supply goals through 2030.

Lake Hodges CEQA and NEPA Compliance, San Diego County Water Authority, San Diego, California. Prepared various permits and provided compliance monitoring associated with the development of components of their Emergency Storage Project. The ESP includes a new dam and reservoir at Olivenhain; reoperation of Lake Hodges; and expansion of the San Vicente Reservoir. Other planned facilities include pipelines, pump stations, treatment capacity, and flow control facilities. Greystone was responsible for preparation of environmental documentation and agency coordination to satisfy FERC requirements for a 40 MW conduit exemption; CEQA compliance for the pumped storage hydroelectric project; and ensured document compliance with all required environmental mitigation measures and conditions.

SDCWA and IID Conserved Water Transfer Program, San Diego, California. The IID-SDCWA Transfer comprised 200,000 acre-feet of conserved agriculture water available to the San Diego region annually. The Imperial Irrigation District Water Conservation and Transfer Project Draft Environmental Impact Report/Draft Environmental Impact Statement issued 125 mitigation measures to offset all resource issue impacts. Managed the preparation of the detailed mitigation cost estimates for the 125 mitigation measures relating to the water transfer agreement between the SDCWA/Imperial Irrigation District EIS/EIR.

Vallejo Sanitation Sewer Overflow Environmental Impact Report, Vallejo, California. Prepared the NOP, Initial Study, and baseline biological resource study for the EIR that evaluated three alternative programs to further address non-permitted overflows from the wastewater collection, treatment, and disposal system operated by the District on behalf of the citizens in the Vallejo area.

City of Galt Wastewater Treatment Plant Expansion Project Environmental Impact Report, Galt, California. Prepared the biological resource impact section for the proposed wastewater expansion that included new pipeline construction and expansion of the facility. Relevant issues and duties performed include impact analysis to Skunk Creek and associated sensitive species, mitigation development, wetland and waters of the United States delineation, and a focused raptor survey.

City of Galt Industrial Park Water Storage Reservoir and Booster Pump Station Initial Study/Mitigated Negative Declaration, Galt, California. Prepared the biological resource and sensitive

species analysis. The Project consisted of constructing aboveground storage reservoirs, a control building and pump station, 1.1-mile water pipeline, and other associated site improvements.

Green Valley Community Church Sewer Connection Project and Wastewater Treatment Plant Decommissioning Initial Study/Mitigated Negative Declaration, Placerville, California. Prepared a “waters of the United States” analysis and sensitive species assessment for the decommissioning of the wastewater treatment pond and hook-up to the El Dorado Irrigation Districts’ sewer system.

Weber Dam Seismic Retrofit Construction Project Report, Placerville, California. Prepared an Environmental Project Report for the El Dorado Irrigation District for its proposed reconstruction project for the Weber Dam, a concrete multiple-arch structure constructed in 1924. After the Categorical Exemption was declared, Ryan performed the site-specific analyses of biological resources to verify that no exceptions to the Categorical Exemption existed for the project.

Ketchikan Lakes FERC Relicensing Application, Ketchikan, Alaska. Project Biologist assisting with studies of water quality, salmonid surveys, and intensive stream mapping of aquatic habitat, in Ketchikan Creek and its tributaries for the preparation of the FERC Relicensing Application.

Denver Water Board FERC Relicensing Application, Denver, Colorado. Project Biologist, responsible for baseline vegetation and wildlife data collection, threatened and endangered species investigations, and biological resource impact analysis.

Oil & Gas / Pipeline

Oil Recycling Waste Treatment and Salt Water Disposal Wells, North Dakota, Texas, Ohio. Oversaw environmental permitting, construction and commissioning activities for modular oil recycling waste treatment facilities and salt water disposal wells.

- **Gonzales Waste Treatment Facility, Gonzales, Texas**
- **Gonzales Waste Treatment Facility Salt Water Disposal Well, Gonzales, Texas**
- **PPI Waste Treatment Facility, Stanley, North Dakota**
- **Statoil Waste Treatment Facility, Williston North Dakota**
- **New Town Waste Treatment Facility, New Town, North Dakota**
- **Johnson’s Corner Waste Treatment Facility, Johnson’s Corner, North Dakota**
- **Alexander Waste Treatment Facility, Alexander, North Dakota**
- **New Town Salt Water Disposal Project, New Town, North Dakota**
- **Anadarko ARF Waste Treatment Facility, Ft. Lupton, Colorado**
- **Johnson’s Corner Salt Water Disposal Well, Johnson’s Corner, North Dakota**
- **Christine Waste Treatment Facility, Christine, Texas**
- **Big Lake Waste Treatment Facility, Big Lake Texas**
- **Utica Waste Treatment Facility, Cadiz Ohio**
- **Bakken Waste Treatment Facility, Dickinson, North Dakota**

FERC Reclamation Pipeline Inspections - 6 Western States. Acted as a FERC Certified Pipeline Inspector to conduct and prepare 12 reclamation investigations and reports on natural gas pipeline projects spanning six western states. Investigations detailed streambed and wetland restoration and revegetation success/failures along with site prescriptions to ensure future reclamation success.

Williston-Basin FERC Pipeline Project – Montana to North Dakota. Lead Biological Monitor on a 32-mile natural gas pipeline spanning two western States. The project required compliance with mitigation measures resulting from FERC, USFWS, and USACOE permitting that encompassed numerous threatened and endangered species, and jurisdictional wetlands and waters of the United States.

Frontrunner FERC Environmental Report/Environmental Assessment, Denver, Colorado. Prepared biological resource impact analyses including wetland delineation and detailed wetland and drainage impacts, and baseline wildlife and vegetation studies for a proposed natural gas pipeline in Colorado.

Pathfinder FERC Environmental Report/Environmental Assessment, Wyoming & Colorado. Prepared biological resource impact analysis including baseline threatened and endangered species investigation, comprehensive wetland delineation, and baseline wildlife and vegetation studies for a proposed 110-mile natural gas pipeline between Glenrock, Wyoming and Rockport, Colorado. Also, prepared and implemented a comprehensive reclamation plan for the entire pipeline route.

Construction Compliance Monitoring, Clay Center Pipeline FERC Environmental Report, Clay Center, Nebraska. Prepared biological resource impact analysis including wetland and drainage crossings on a 15-mile pipeline. Also performed continuous environmental construction monitoring to comply with FERC certificate conditions.

Fort St. Vrain – Meade Pipeline FERC Environmental Report, Denver, Colorado. Prepared biological resource impact analyses including wetland delineation and detailing wetland and drainage impacts for a 7.5-mile pipeline. Also performed continuous environmental construction monitoring to comply with FERC certificate conditions.

Other Industrial Development

MHA Nation Clean Fuels Refinery EIS, New Town, North Dakota. Assistant Project Manager and Lead Biological Resource Task Manager for the 10,000-barrel/day refinery EIS located on the Ft. Berthold Indian Reservation in Ward County, North Dakota. Project issues included filling of jurisdictional wetlands, Section 7 ESA consultation, and obtaining a Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit for the process water discharges associated with operation of the proposed refinery.

Jesse Morrow Mountain EIR, County of Fresno, California. Oversaw the preparation of an EIR, CUP, and other agency permit requirements for a proposed Cemex, Inc., RMC hard rock aggregate mining operation along the southern side of Jesse Morrow Mountain. RMC owns approximately 2,200 acres on Jesse Morrow Mountain of which 824 acres along the southern side of the mountain is proposed for mining. The quarry operation during the first 30-year period of mining operations would occur from an elevation of approximately 1,750-feet MSL to about 1,100-feet MSL.

Woolstenhulme Ranch Gravel Mine EIR, Fresno County, California. Provided biological impact analysis for the proposed 635-acre Woolstenhulme Ranch sand and gravel mining project in Merced, California. Relevant issues included Swainson's hawk nesting buffer establishment and monitoring and development of an onsite wetland mitigation bank.

AT&T Fiber Optic Project - Dunnigan to Point Arena, Northern, California. Lead Biological Monitor on a 175-mile fiber optic construction project spanning five counties. The project required compliance with mitigation measures resulting from USFWS, CDFG, and USACOE permitting that encompassed numerous threatened and endangered species, jurisdictional wetlands and streambeds, and several critical habitats and communities.

Spenceville Mine Closure Initial Study/Mitigated Negative Declaration, Nevada County, California. Prepared the biological resource and sensitive species analysis for the closure of the Spenceville Mine in Nevada County. Also prepared a reclamation plan and secured all applicable permits for a nearby ephemeral stream that had been impacted by the abandoned mine.

Live Oak Initial Study and Associated Wetland Studies, Galt, California. Prepared a wetland delineation and mitigation plan for jurisdictional wetlands within the Galt Industrial Park Expansion Area, and completed CEQA compliance documentation for industrial development and a City-sponsored drainage improvement project. The delineation was submitted to the U.S. Army Corps of Engineers for formal verification. Prepared

assessment for potentially occurring threatened and endangered species, and completed analyses of mitigation options were completed concurrent with the delineation review process. In addition, prepared the Pre-Discharge Notification application and off-site mitigation plan to be prepared for submittal to the Army Corps of Engineers; an application for Streambed Alteration Agreement to be prepared for the Department of Fish and Game; and a Water Quality Certification permit application was prepared for submittal to the Regional Water Quality Control Board.

Palomar Transfer Station EIR, Carlsbad, California. As the Project Biologist, prepared an EIR for expansion of the Palomar Transfer Station, a solid waste handling facility in the City of Carlsbad. The Final EIR was approved and certified by the City of Carlsbad.