2.303(1) Completed Application Form

The application form is attached as **Appendix A:** *Application Form* including a legal description of the Project property.

2.301(2) Additional Information, as Required by the Director

To be determined.

2.303(3) Certification of Deed Research of Mineral Owners and Notification to Mineral Owners of Surface Development

The certification of deed research and notification to mineral owners, including certified mail receipts are attached as **Appendix B:** *Certification of Deed Research and Notification to Mineral Owners***.**

2.3.03(4) Information Describing the Applicant

2.303(4)(a) The Names, Address, Including Email and Fax Number, Organizational Form and Business of the Applicant and, if Different, the Owner of the Project

Applicant:

Front Range-Midway Solar Project, LLC
Dave Iadarola, Project Developer
diadarola@tradewindenergy.com
16105 W 113th Street
Lenexa, KS 66219
Fax: (913) 888-0390
Organization Type: a Delaware limited liability company
Business: wind and solar project development

Owner: Front Range-Midway Solar Project, LLC
9070 and 9310 Rancho Colorado Boulevard
Fountain, CO 81008

2.303(4)(b) The Names, Address, and Qualifications, Including those Areas of Expertise and Experience with Projects Directly Related or Similar to that Proposed in the Application Package, of Individuals who are or will be Responsible for Constructing and Operating the Project

The Front Range-Midway Solar Project (Project) is in a development and approval stage. As such, an engineering procurement and construction contractor would be determined at a later date, prior to construction. This information would be provided to the county prior to obtaining a building permit. The Project has enclosed a request for a condition of approval pursuant to Section 2.303 of Appendix B to the EPC Land Development Code (LDC) a waiver of the requirement that the Project 1041 application provide the information requested in criteria 2.303(4)(b) at the time of this application.

2.303(4)(c) Written Authorization of the Application Package by the Project Owner, if Different than the Applicant

Not applicable. Front Range-Midway Solar, LLC would be the Project owner.

2.303(4)(d) Documentation of the Applicants Financial and Technical Capability to Develop and Operate the Project, including a Description of the Applicant's Experience Developing and Operating Similar Projects

The Front Range-Midway Solar Project, LLC (Project Company) is a fully owned subsidiary of Tradewind Energy, Inc. (TWE). TWE was founded in 2002 in Lenexa, Kansas and has since established itself as a

leading wind and solar company with projects in over 20 states throughout the U.S. TWE owns over 6 gigawatts (GW) of wind development assets and 5 GW of solar development assets. TWE's business model develops projects and then transfers those projects to another entity which would construct, own, and operate the Project. TWE has partnered with Enel Green Power North America, Inc. (EGP-NA) on over 3 GW of renewable energy projects throughout the U.S., and EGP-NA is anticipated to be the owner and operator for the Project. EGP-NA is a worldwide leader in renewable energy generation and has constructed projects in 22 U.S. states, and two Canadian provinces. These projects include wind, solar, geothermal, and hydropower technologies. EGP-NA is a subsidiary of Enel which is a publicly traded company.

2.303(4)(e) Written Qualifications of Report Preparers

CORE Consultants, Inc. – CORE is a Colorado company providing environmental permitting, natural and cultural resource management, construction compliance monitoring, GIS, civil engineering, and land surveying services to the renewable energy, electric transmission and land development industries. CORE has played a critical role in the development of over 15,000 MW of renewable energy projects and hundreds of miles of electric transmission lines throughout the U.S. CORE provides comprehensive services for all aspects of development, from greenfielding and micrositing, through construction management and operational compliance.

Terracon Consultants, Inc. – Terracon provided a range of environmental consulting services for the Project. Terracon is a 100 percent employee-owned consulting engineering firm providing quality services to a diverse portfolio of private and public clients. Since 1965, Terracon has evolved into a successful multi-discipline firm specializing in environmental, geotechnical, facilities, and construction materials testing. Evaluating, identifying, and designing programs to minimize the impact of human activity on natural and cultural resources is the key to Terracon's natural/cultural resources program. Conservation of wildlife habitat, preserving archaeologically-significant sites, and protection of vegetation are the guiding concerns in considering opportunities and constraints in developing innovation solutions for environmentally sensitive areas. Terracon's national resources professionals include biologists, wetland specialists, ecologists, archaeologists, and architectural historians with many years of experience in dealing with local, state, and federal agencies in the areas of permitting and regulatory compliance.

West Consultants, Inc. – WEST provided a range of environmental consulting services for the Project. WEST specializes in offering its clients a unique combination of field ecology and statistics to help solve natural resource problems. They have a permanent core of over 140 ecologists, biometricians and support staff with a broad experience in basic and applied ecological studies and the sophisticated analysis of natural resource data. This unique blend of disciplines and their years of experience in both areas allow us to provide original solutions to a wide range of natural resource issues. In particular, WEST has been a leader in impact assessment, monitoring, natural resources research, and permitting of renewable energy development since 1994. They have completed natural resource studies, evaluations, or conservation plans for over 1,700 wind and solar energy projects throughout the U.S. Additionally, WEST has played a leading role in understanding, assessing, and placing into perspective the impacts of renewable projects on wildlife and habitat using scientifically credible and defensible risk assessment, monitoring and research methods. WEST has successfully worked for all stakeholders involved in wind issues, including state and federal agencies, industry, consultants, utilities, and conservation organizations across the U.S. The staff at WEST has also published several wind or solar power-related articles in peer-reviewed scientific journals and books. WEST staff was lead authors on key documents such as "Comprehensive Guide to Studying Wind Energy/Wildlife Interactions" for the National Wind Coordinating Collaborative and were part of the

Federal Advisory Committee that made recommendations to help develop the USFWS Land-Based Wind Energy Guidelines.

Centennial Archeology – CA provided cultural and archeological consulting support to the Project. CA was founded in 1984 and for 30 years has successfully conducted archaeological and historical studies throughout the western United States. International projects have been undertaken in Africa, Asia, and South America. CA specializes in the management and supervision of cultural resource projects of any size. CA maintains on its professional staff the following demonstrated expertise: archaeological and historical (including architectural) site survey and documentation; archaeological and historic site significance evaluation; lithic and ground stone artifact analysis; ceramic artifact analysis; faunal analysis; historic artifact analysis; spatial analysis of archaeological data (GIS); technical report production including both writing and technical editing; graphics design and production; and electronic site mapping (all phases from data collection to final map production).

Westwood Professional Services- Westwood provided engineering support to the Project. Westwood was built on a commitment to support its clients with the best quality surveying and engineering services and products. Embedded in their core services are multi-disciplined teams that specialize in the unique needs of their markets. The expertise of Westwood's solar energy team was established by supporting more than 7 GW of ground mounted, commercial rooftop, and solar and storage projects since 2010. Westwood supports the permitting, design and construction of their client's projects. Westwood's expertise in successfully handling complex projects is recognized across the nation.

2.303(5) Information Describing the Project

2.303(5)(a) Vicinity Map

A Project vicinity map is provided in **Appendix C:** *Vicinity Map*.

2.303(5)(b) Executive Summary, Including Scope and Need

The Project would consist of a 100.2 megawatt (MW) distributed generation photovoltaic (PV) solar facility that would encompass approximately 1,170 acres in El Paso County (EPC), Colorado. The Project is located west of Interstate-25 (I-25) approximately 20 miles south of downtown Colorado Springs on private and county owned lands secured by the Project through direct ownership, lease and easement agreements. The Project is bounded on the west by county lands and by dispersed residential development to the northwest and southwest, by rangeland to the north, by a gravel pit to the east, and by the Midway Waste Management Landfill to the south (**Appendix C**). Other facilities in the near vicinity include the Pikes Peak International Raceway approximately 1.5 miles to the north and the Fort Carson Military Reservation approximately one mile to the west.

The purpose of the Project is to construct, operate, and maintain a 100.2-MW photovoltaic solar facility to provide clean, cost effective, renewable energy to one or more public utility companies operating within EPC. The need for the Project was established by multiple factors including local and state statutes including Colorado's renewable energy standard (RES) statute (Section 40-2-124, C.R.S) which requires 30% of retail energy sales to be derived from renewable generation from investor owned utilities and 10% for large municipal utilities by the year 2020. Similarly, the Pikes Peak Area of Council Governments (PPACG) Regional Sustainability Project produced a plan titled "Looking to Our Future – Pikes Peak Region 2030" ("PPACG Regional Sustainability Plan") which outlines a renewable energy goal that by the year 2030, 50% of energy consumed in the region is renewable and/or sustainable, maximizing the amount

of renewable energy produced in the region from a 2010 baseline. Other statutes and policy directives that require or encourage the production of renewable energy include the Colorado Governor's Climate Action Plan, and local initiatives of Colorado rural cooperatives, municipal utilities, and generation and transmission associations. Two existing substations are located in the southwestern portion of the proposed Project boundary; however, the substation properties are not included within the proposed Project Wind/Solar Energy Generation Overlay (WSEO) boundary. The Midway substation is operated by the Western Area Power Administration (WAPA), a federal power marketing agency within the U.S. Department of Energy (DOE) and the Public Service Company of Colorado (PSCo) substation is owned by Xcel Energy. Three public utility transmission lines converge at the Midway substation including Black Hills, CSU, and Tri-State. The PSCo substation is directly adjacent to the WAPA substation. The Project currently has executed interconnection agreements in place with WAPA and PSCo (**Appendix D:** *Interconnection Agreements*).

EPC has agreed to review this 1041 application in anticipation of one or more of the aforementioned public utilities issuing RFPs for solar generated electricity in the near future. Upon approval of the Project by the EPC Board of County Commissioners (BOCC), it is anticipated that construction would commence once a Power Purchase Agreement (PPA) is in place. The Project has submitted a request for a condition of approval a waiver of the requirement that a zoning applicant provide a PPA at the time of an application for the Project WSEO pursuant to Section 2.303 of Appendix B to the EPC LDC.

The Project scope includes the installation of single axis tracking solar PV panels, DC to AC Inverters, pad mount transformers, switches, meteorological stations, a new aboveground transmission line connecting the Project to the WAPA or PSCo substations, located adjacent to the Project site, and underground collection lines

2.303(5)(c) Plans and Specifications of the Project in Sufficient Detail to Evaluate the Application Against the Applicable Review Criteria

The Project site encompasses approximately 1,170 acres. PV solar panels would be mounted on tracking systems that help minimize the angle between the solar panels and the sun, which maximizes solar energy capture and electric generation of the array. When fully extended in an upright position the panels would be no more than 14' from base elevation; when extended downward, the panels would be a minimum of 2' from base elevation. Generated electricity is sent to inverters located throughout the array that would convert the electricity from direct current to alternating current. A series of underground electric collection lines would transfer the electricity from the inverters to a Project substation, from which an overhead electrical transmission line would then transfer the electricity to the Midway or PSCo substation (**Appendix E**: *Preliminary Site Plan*; **Appendix F**: *WSEO Overlay Plan*). The Midway complex is made up of the WAPA substation where WAPA, Black Hills, CSU, and Tri-State transmission lines converge. The PSCo substation, owned by Xcel Energy, is directly adjacent to Midway and is electrically connected to WAPA. Presently, the Project does not have a PPA in place. However, EPC has agreed to review this 1041 application in anticipation of one or more the aforementioned public utilities issuing RFPs for solar generated electricity in the near future. he Project has submitted a request for a condition of approval a waiver of the requirement that a zoning applicant provide a PPA at the time of an application for the Project WSEO pursuant to Section 2.303 of Appendix B to the EPC LDC.

2.303(5)(d) Description of Alternatives Considered

Finding locations where large amounts of electricity generation can be injected into the transmission grid is difficult. Prior to commencing the application process to develop this site, numerous analyses were

conducted on potential sites throughout Colorado to assess feasibility. Prior to selecting the Project site location, the Project identified and analyzed approximately 20 site locations within El Paso County for utility-scale solar development feasibility. The analysis began with a desktop review of multiple layers of GIS data to identify sites characterized by large (1,000 acres), open tracts of land, with minimal slope, free of environmental constraints and in close proximity to electrical power transmission. Site reconnaissance were then conducted to verify the desktop analysis and to further analyze these alternative locations. Of the approximately 20 site locations analyzed, the Project site location was selected due it its location adjacent to two substations where available capacity was anticipated. In addition, several transmission lines transect the Project site location. Co-locating utility-scale solar development with existing electrical power transmission infrastructure significantly reduces a Project's environmental and visual impacts.

2.303(5)(e) Schedules for Designing, Permitting, Constructing and Operating the Project; Include Estimated Project Life

Preliminary Project development began in 2014, at which point it was determined what land would be needed to accommodate the Project design. EPC discussions on permitting requirements commenced at this time. At present, there is no PPA between the Project and any utility offtakers. It is anticipated that a PPA would be executed between the Project and a utility associated with one of the entities with service to the local substations. The Project has submitted a request for a condition of approval a waiver of the requirement that a zoning applicant provide a PPA at the time of an application for the Project WSEO pursuant to Section 2.303 of Appendix B to the EPC LDC. Since the WAPA substation is a federal entity, an interconnection agreement between the Project and the WAPA substation established a federal nexus. As such, approval of an interconnection agreement between the Project and the WAPA substation required National Environmental Policy Act (NEPA) review with the Department of Energy (DOE) acting as the lead agency in the review. NEPA review of the Project interconnection with the WAPA substation commenced in late 2015. In 2016, the DOE issued a Finding of No Significant Impact (FONSI) for the Project (**Appendix G**: *Project FONSI and Fort Carson Approval Letter*). At present, design of the Project and county permitting is underway. It is anticipated that upon Project approval by the EPC Board of Commissioners (BOCC), a PPA with one or multiple public utilities could be under negotiation. It is expected that the Project would be approved in early 2018 and that construction could begin as early as the spring of 2019. The life expectancy for the Project to provide renewable energy is 25 years at a minimum and 35 years at a maximum.

2.303(5)(f) Project Need and Alternatives Considered

The need for the Project was established by multiple factors including local, state, and federal statutes. The Colorado RES statute (Section 40-2-124, C.R.S) requires electricity providers to obtain a minimum percentage of their power from renewable energy resources. This Project would support Colorado power providers in achieving that state required standard. Multiple utilities along the Front Range have issued RFPs for solar renewable energy sources to satisfy those local, state, and federal statutes. The Project would satisfy those RFPs issued by supplying 100.2 MW of solar produced renewable energy to be distributed to utility customers along the Front Range.

Finding locations where large amounts of electricity generation can be injected into the transmission grid is difficult. Prior to commencing the application process to develop this site, numerous analyses were conducted on potential sites throughout Colorado to assess feasibility. Prior to selecting the Project site location, the Project Company analyzed approximately 20 site locations within El Paso County for utility-scale solar development feasibility. The analysis began with a desktop review of multiple layers of GIS data to identify sites characterized by large (1,000 acres), open tracts of land, with minimal slope, free of

environmental constraints and in close proximity to electrical power transmission. Site reconnaissance were then conducted to verify the desktop analysis and to glean additional information. Of the approximately 20 site locations analyzed, the Project site location was selected due it its location adjacent to two substations where available capacity was anticipated.

2.303(5)(g) Conservation Techniques to be used During Construction and Operation of the Project:

The Project would institute multiple conservation techniques during construction. Some of the techniques to be used include the following:

- Disturbance of vegetation would be limited to that which is necessary for Project construction and maintenance.
- Stormwater Management best management practices (BMPs) would be used to minimize stormwater related impacts during construction activities.
- Trees would either be cleared outside of the nesting raptor season (April 1 – July 15); or surveys would be conducted by a qualified biologist prior to commencing construction. There is potential for ground-nesting migratory birds to nest past July 15. Ground nesting birds can be cryptic depending on species and ground cover. As such, a qualified biologist would determine if ground clearance surveys are necessary should initial ground disturbing activities occur past July 15.

- Black tailed prairie dog (State Species of Concern) was identified on the Project Site. Prairie dog colonies are potential habitat for burrowing owl (State Threatened). Per CPW recommendations, the prairie dogs would be relocated prior to commencing earth-moving activities. If a relocation site is not available, prairie dogs would be humanely treated prior to construction. CPW issued additional Project-specific recommendations since the first submittal of the Project WSEO application. The Project has issued a response letter which is appended to the original USFWS and CPW correspondence (**Appendix M**).

- The Project understands that there is suitable habitat on the site for nesting raptors, ground nesting grassland species, and other species of state status or state concern including burrowing owl and mountain plover. Additionally, the Project understands there is potential for the presence of denning swift fox on the Project. As such, the Project has committed to conducting pre-construction surveys to confirm the presence or absence of any of the above listed state status, state species of concern, or nesting birds. Project correspondence with the USFWS and CPW is included in **Appendix M.**

- Should pre-construction surveys locate nesting burrowing owls, active nests would be avoided until after the owls have migrated from the area. A qualified biologist would perform the pre-construction surveys and monitor any burrowing owls identified during construction

- Project construction would avoid the isolated stock pond located in the north central portion of the Project. In addition, Project construction would avoid any drainages on the Project that convey significant flows during precipitation events.

- Project construction would avoid two potential archeological sites identified during the NEPA process. These sites identified in the Class III Cultural Resources Inventory (Appendix L) are identified on maps included in **Appendix F:** *WSEO Overlay Plan* and **Appendix A8:** *Physical Constraints Map.*

Conservation techniques to be employed during operation of the Project include:

- Non-native vegetation and noxious weeds would be managed on the Project site as required for Project operation; management would follow methods described in the Project-specific Noxious Weed Management Plan (**Appendix H:** *Noxious Weed Management Plan*). Revegetation methods would likely include broadcast seeding and/or drill seeding a mix of native grasses. It is anticipated that weed stubble, following noxious weed treatment and mowing of the site, would secure seed in the topsoil. The exact method of revegetation is dependent upon the time of year at which construction would start. As such, specific revegetation methods would be detailed during the Site Development Plan phase. Operations would require regular mowing to prevent shading of the solar panels.
- Project lighting would be limited to inverter pads and the Project substation and would be downcast to preserve the night sky and limit potential effects on nocturnal wildlife (**Appendix I**: *Summary of Project Lighting Memo and Lighting Plan*).

Additional information on specific BMPs to be used during construction would be documented in the Project Stormwater Management Plan (SWMP) and Spill Prevention, Control, and Countermeasure (SPCC) Plan that would be developed prior to construction and would be on site at all times.

2.303(5)(h) Description of Demands the Project Expects to meet and the Basis for Projections

The Project would produce 100.2-MW of power at full capacity. The anticipated operational life expectancy of the Project is 25 years at a minimum and 35 years at a maximum. Over the life of the Project, power generated would support public power providers in achieving the standard set forth by the Colorado RES statute. Potential utility offtakers include Black Hills, Colorado Springs Utilities (CSU), Tri-State G&T, Xcel, and WAPA. All utilities (except WAPA) have been active buyers of solar power within the past three years and are seeking to purchase additional power produced through solar facilities. Presently, there is no PPA in place. However, EPC has agreed to review this 1041 application in anticipation of one or more of the aforementioned public utilities issuing RFPs for solar generated electricity in the near future. The Project has submitted a request for a condition of approval a waiver of the requirement that a zoning applicant provide a PPA at the time of an application for the Project WSEO pursuant to Section 2.303 of Appendix B to the EPC LDC.

2.303(5)(i) List of Adjacent Property Owners

A list of adjacent property owners is provided as **Appendix J:** *List of Adjacent Property Owners.*

2.303(6) Information Describing the Project

2.303(6)(a) Description of Property Rights Affected by the Project

The Project would be constructed on private and county owned lands secured by the Project through direct ownership, lease and easement agreements. Mineral right holders within the Project area were mailed a preliminary notice in December 2017 regarding the Project and advising them of their right to

comment or obtain information from the County (**Appendix B**). At that time, the hearing date had not been scheduled. Once an initial public hearing has been scheduled, the Applicant will mail an additional notice via certified mail, return receipt requested to mineral rights owners in the Project area and those requesting notice at least 30 days prior to the hearing providing the date, time and location of the hearing, the location of the project, name of the applicant and notice that the public will be given the opportunity to comment on the Project at the Planning Commission and BOCC public hearings. Adjacent landowners within 500 feet of the Project boundary have been noticed of upcoming public hearings with no specific dates. Once dates are scheduled for the Planning Commission and BOCC public hearings, the Applicant will work with the County to make sure that all applicable adjacent landowners and mineral rights owners are properly noticed of the scheduled hearing and their opportunity to comment.

The Project could potentially cross multiple easements located on the property (**Appendix A7:** *Site Plan with Easements*) however the actual location of crossings would not be known until the Site Plan Development stage. The Applicant has submitted a request for a waiver of the requirement to provide crossing agreements. Instead, Applicant requests easement crossing agreements be accepted by the County prior to the ground disturbance of each crossing. Since obtaining easement crossing agreements can require extensive and lengthy coordination with the easement holder, this condition would ensure that the necessary agreements are in place prior to each easement crossing without delaying the overall construction for the Project. Easement crossing locations would be provided at the Site Development Plan stage.

2.303(6)(b) Federal, State and Local Permits and Approvals

The Project would obtain and comply with all approvals required by county, federal and state regulatory authorities for the construction and operation of a solar facility. Permits that may be required for the Project are included in **Table 1**. below.

Table 1. *Front Range-Midway Solar Project Permits*

	Agency	***Permit***	***Notes***
Federal			
	U.S. Army Corps of Engineers (USACE)	Nationwide Permit 51 (Land-based renewable energy generation facilities)	No Waters of the U.S. (WOUS) are located on the Project site. It is not anticipated that a nationwide permit would be required.
	USACE	Nationwide Permit 12 (Utilities; i.e. power lines and collection systems)	No WOUS are located within the transmission line corridor. It is not anticipated that a nationwide permit would be required.
	U.S. DOE, WAPA	The NEPA requires FONSI by lead agency (DOE); DOE must consult with State Historic Preservation Office (SHPO), U.S. Fish and Wildlife Service (USFWS), Colorado Parks and Wildlife	A review of the Project Final Environmental Assessment resulted in a Finding of No Significant Impact (FONSI) awarded September 21, 2016 (**Appendix G)**

		(CPW), Farm Service Agency (FSA)	
State			
	Colorado Department of Public Health and Environment (CDPHE)	Air Pollutant Emission Notice and Application for Construction Permit	Permit would be obtained prior to Project construction.
	CDPHE	Stormwater Discharge Permit	Permit would be obtained prior to Project construction.
County			
	EPC	WSEO Generation Plan Overlay	The WSEO application for the Project is currently under review by EPC.
	EPC	Site Development Plan	Administrative approval of Site Development Plans would be required for the Project.
	EPC	Construction Permit	Permit would be obtained prior to Project construction.
	EPC	Erosion and Stormwater Quality Control Permit	Permit would be obtained prior to Project construction.
	Pikes Peak Regional Building Department (PPRBD)	Building Permit	Permit would be obtained prior to Project construction, if applicable.
	PPRBD	Floodplain Development Permit	Not anticipated; no floodplains located in the Project.

2.303(6)(c) Copies of Relevant Federal and State Consultation Correspondence Prepared for the Project; a Description of all Mitigation Required by Federal, State and Local Authorities; and Copies of and Draft or Final Environmental Assessment or Impact Statements Required for the Project

The Project would potentially require an interconnection to the Midway substation operated by the Western Area Power Administration (WAPA), a federal power marketing agency within the U.S. Department of Energy (DOE). Since the WAPA substation is a federal entity, an interconnection agreement between the Project and the WAPA substation would establish a federal nexus. As such, approval of an interconnection agreement between the Project and the WAPA substation requires National Environmental Policy Act (NEPA) review with the Department of Energy (DOE) acting as the lead agency in the review. NEPA review of the Project interconnection with the WAPA substation commenced in late 2015**.** Western Ecosystems Technology, Inc. (WEST) was contracted to evaluate the Project's potential impact on multiple resources including, but not limited to: public health and safety, air quality; water, vegetation, wildlife, special status species and cultural resources (**Appendix K:** *Final Environmental Assessment)*. The Final Environmental Assessment (EA) identified no significant impacts to environmental resources resulting from the Project. The draft EA was distributed to interested agencies,

tribes, groups, and individuals on July 19, 2016 and received no comments during the comment period. Based on the information presented in the EA, WAPA issued a FONSI for the Project (**Appendix G)**. Further, WAPA determined that the Project incorporated WAPA's Standard Construction Practices and Best Management Practices (BMPs). As such, WAPA determined that the Project would not result in potential impacts that would be considered significant and no mitigation measures would be required additional to those embedded within the Project description. In addition, the Project conducted a voluntary public scoping effort between August 5, 2015 and September 10, 2015 during which interested parties located proximally to the Project could provide comments. Fort Carson Military Base (Fort Carson) is located approximately 1.5 miles to the west of the Project and was given the opportunity to comment on the Project during the public scoping effort. Fort Carson personnel did not oppose the Project. In addition, the Army Compatible Use Buffer Program, which gives Fort Carson the right of first refusal for any potential development on the 120 acres of EPC owned land within the Project, was discussed during the public scoping effort. Based on an agreement between EPC and Fort Carson, EPC must receive approval from Fort Carson prior to permitting any development action on those 120 acres. Fort Carson issued a letter stating their approval of Project development on the 120 acres of EPC owned land on March 13, 2017 (**Appendix G**).

Centennial Archaeology (CA) performed an intensive Class III Cultural Resources pedestrian survey of the Project in 2015 (**Appendix L**: *Class III Cultural Resources Inventory*). The survey identified 32 isolated finds and six new sites. The isolated finds were considered prehistoric in nature and consisted of either single occurrences or small quantities of debitage; i.e., the material produced as the result of manufacturing chipped stone tools and lithics reduction. Two sites were determined by CA to be potentially eligible for listing on the National Register of Historic Places (NRHP). The Project activities would avoid the potentially eligible sites as shown in **Appendix F**: *WSEO Overlay Plan* and **Appendix A8**: *Physical Constraints Map*. The remaining four sites and isolated finds were deemed ineligible by CA for NRHP listing. CA did not recommend further investigation of the remaining items. SHPO concurred with this finding (**Appendix K**).

The Project Company solicited input from the USFWS on July 16, 2014 for comments on the Project's potential to impact federally threatened and endangered species (TES). The USFWS responded on July 29, 2014 with recommendations for mitigation measures to avoid impacts to federal TES, migratory birds and bald and golden eagles, and state species of concern (SOC). USFWS correspondence included recommendations to avoid impacts to migratory birds and eagles, and state species of concern (**Appendix M:** *Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Report; USFWS and CPW Correspondence*). Specifically, the USFWS recommended Project construction occur outside of the typical breeding season for migratory birds. If construction must occur during breeding season or at any other time that may result in take of a migratory bird, then pre-construction field surveys are recommended. The USFWS also recommended the Project observe *CPW's Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors*, review the Avian Power Line Interaction Committee's (APLIC) guidelines to address and mitigate wildlife-power line electrocutions, and conducting pre-construction surveys for black-tailed prairie dogs (*Cynomys ludovicianus*) and their dependent sensitive species. The Project is committed to conducting avoidance and minimization measures to minimize impact to species. USFWS recommendations are included below (**Appendix M**).

- Construction should occur outside of the typical breeding season for migratory birds in Colorado; highest levels of activity occur between April 1 and July 15. If construction occurs during this seasonal period, the USFWS recommends that a qualified biologist conduct pre-construction

surveys to identify active nests and/or confirm the absence of nesting birds. USFWS does note that the migratory bird nesting season may continue after July 15. The Project would conduct ground clearance surveys prior to new ground-disturbing activities through August 15 as determined necessary by a qualified biologist. Additionally, the Project should follow the CPW protocol *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* should surveys identify active nesting raptors within or adjacent to the Project.

- To avoid electrocution to eagles and some raptors, the Project should bury distribution lines or build overhead electrical lines with at least 10-foot cross arms on three phase line, or at least five feet of spacing between electrical phases.

- Consult with CPW regarding the potential for the occurrence for SOC on the Project, including black-tailed prairie dogs and burrowing owl.

The Project solicited input from CPW for comments on the Project's potential to impact state TES and SOC. CPW responded on August 25, 2014 with general comments on state TES and SOC included in the desktop review and recommendations for mitigation measures to avoid impacts to state TES and SOC (**Appendix M**). CPW issued additional Project-specific recommendations since the first submittal of the Project WSEO application on October 24, 2017. The Project issued a letter of response detailing avoidance measures on January 2, 2018 (**Appendix M**). The latest CPW recommendations and Project responses are summarized below:

CPW Recommendation
CPW recommends the habitat with water on the Project area remain undisturbed and contiguous with undeveloped and around it. CPW would be happy to work with FRMW and consultants to help identify potential layouts within the proposed footprint that would avoid or minimize potential impacts to these species.
Project Response
A wetlands survey was completed for the Project site in 2015. The study identified a single water feature: a stock pond created by damming a dry drainage way on site. The stock pond did not include characteristics of jurisdictional waters, but Project infrastructure would avoid the water feature and surrounding area nonetheless. Project design is still preliminary, but it is anticipated that the Project fence line would be setback, at minimum, approximately 150 feet from the stock pond.

CPW Recommendation
CPW prefers that native vegetation be retained on-site during the operational lifespan of the Project. Proper reclamation, from a wildlife perspective, involves not only stabilizing the soil and establishing ground cover, but fostering plant communities with a diversity of species and plant types which will fully serve the nutritional needs of wildlife. Strict adherence to the NRCS's recommendations is advised. CPW would appreciate the opportunity to review the Project's Noxious Weed Management Plan prior to construction.
Project Response
The local Natural Resources Conservation Service - El Paso County office reviewed the Project's noxious weed management plan and commented that they were satisfied with the noxious weed management plan. The noxious weed management plan is available for review on the El Paso County Development Application Review website. Per the noxious weed management plan, the site would be re-vegetated with a native seed mix. Site stabilization would be monitored per the SWMP and the Grading and Erosion Control (GEC) Plan, which requires that the site be monitored after construction until vegetation on lands disturbed during construction is restored to reach 70 % coverage

CPW Recommendation

CPW recommends a smooth top to the fence to prevent wildlife from impaling themselves. If wildlife exclusion fencing is installed CPW would request that the solar facility is checked regularly or structures are installed to allow animals to escape, in the unlikely event that a deer or other wildlife become trapped in the facility.

Project Response

The Project would utilize security fence with barbed-wire strands to prevent trespassing and minimize the risk of electrocution. The security fence would be a total of seven feet in height and include six feet of chain link fencing and one foot of barbed wire strands. The security fence would also act as exclusion fencing to keep wildlife out. Per the CPW *Fencing with Wildlife in Mind,* a 7- to 8-foot fence is an effective barrier to deer and elk. Operation and maintenance staff would routinely visit the site and would be trained to contact the CPW – District Wildlife Manager if trapped wildlife within the Project site cannot be easily released.

CPW Recommendation

CPW recommends that new lines follow existing transmission line infrastructure corridors wherever possible. Also recommend that FRMW consult "Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006" and the "Reducing Avian Collisions with Power Lines: The State of the Art in 2012" for proper design considerations to minimize raptor electrocution.

Project Response

The Project substation would tie in to one of two existing substations within the Project boundary via a new Project transmission line. The Project transmission line would be located entirely within the Project area; the length would be determined prior to construction, but would not exceed approximately 1,500 feet. The Project transmission line would be located immediately adjacent to existing transmission lines. See **Appendix A6:** *Existing Transmission Lines Map*. The Project would consult the cited documents for proper design considerations to minimize raptor electrocution.

CPW Recommendation

Consultation with US Fish and Wildlife Service (USFWS) is recommended to ensure compliance with the MBTA and the BGEPA. Surveys for active nests should occur prior to construction should construction occur during the breeding and nesting season.

Project Response

The Project has been developed in coordination with the USFWS. A July 29, 2014 response letter from USFWS included several recommendations for the Project. The recommendations were reviewed and in 2015, a qualified third-party biologist was engaged to conduct a threatened and endangered species survey for the Project. The resulting study is available for review on the El Paso County Development Application Review website. If Project construction occurs during the nesting season, between March 1 and October 31, additional surveys would be conducted so that appropriate avoidance and minimization measures can be implemented during construction.

CPW Recommendation

There is suitable habitat on the site for nesting raptors. CPW recommends the use of preconstruction surveys, as well as continuation of those surveys during construction, to identify all raptor nests within the Project area and implement appropriate restrictions. CPW recommends adherence to the "Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors".

Project Response

The Project has noted in the WSEO Letter of Intent (LOI) that if construction occurs between March 1 and October 31, pre-construction surveys would be conducted so that avoidance and minimization measures can be implemented during construction. The WSEO LOI is available for review on the El Paso County Development Application Review website.

CPW Recommendation

CPW recommends taking special precautions regarding burrowing owl, black-tailed prairie dog, swift fox, mountain plover, Townsend's big eared bat, and northern leopard frog.

Project Response

Based on the threatened and endangered species study completed for the Project in 2015, black tailed prairie dog (State Species of Concern) was identified on the Project Site. Prairie dog colonies are potential habitat for burrowing owl (State Threatened). Per previous CPW recommendations, the prairie dogs would be relocated prior to commencing earth-moving activities. If a relocation site is not available, prairie dogs would be humanely treated prior to construction. Furthermore, the Project would follow CPW recommended measures to avoid impact to the burrowing owl. If construction occurs between March 1st and October 31st, the site would be surveyed for the presence of burrowing owls prior to commencing earth-moving activities. If burrowing owls are identified, their habitat would be avoided until after the owls have migrated from the area. A qualified biologist would perform the pre-construction surveys and monitor any burrowing owls identified during construction. Swift fox have the potential to occur in the Project area; however, by relocating or humanely eradicating black tailed prairie dogs prior to commencing construction, the likelihood for swift fox occurrence within the Project area would be minimized. Roosting habitat for Townsend's big-eared bat was not identified within the Project area; however, the species could use the stock pond on site to forage. The stock pond on-site would not be impacted by Project infrastructure. Suitable habitat for the northern leopard frog was not identified on the Project site.

2.303(7) Land Use

2.303(7)(a) Project Map Detailing Current Land Use and Zoning, Including Adjacent Lands

The majority of the Project is zoned RR-2.5 (Residential Rural). Parcels are approximately 2.5 acres within this zoning designation. Land to the northwest of the WAPA and PSCo substation is zoned RR-5 (Residential Rural); RR-5 is designated rural-residential parcels that are five-acres in size. A single parcel located south of the WAPA and PSCo substation is zoned I-3 (Heavy Industrial); a Southwest Generation natural gas-fueled electric generation unit is located on this parcel (**Appendix N**: *El Paso County Zoning Map*).

The submittal of this 1041 application and accompanying WSEO request would allow for the overlay of a solar generation facility within the parcels zoned RR-2.5, RR-5, and I-3 within the proposed WSEO boundary. Since a solar facility is considered an activity of state interest, this 1041 Permit application is being submitted as part of the rezoning application process.

The 2011 National Land Cover Database depicts small portions of developed-high, medium, and low intensity at the existing substations, natural gas-fired power plant, and existing county roads (**Appendix O**: *Land Use/Land Cover Map*). The proposed transmission line would be located within the Project boundary (**Appendix E**).

2.303(7)(b) Affected Public Land Boundaries and Impacts

Public land has been leased for the Project. The solar arrays would be located on lands held by the Project; Fountain Valley Power, LLC; SWG Fountain Valley II LLC; Public Service Company of Colorado, Powell Homes, LLC; El Paso County; and Midway Development Company, Inc. The WAPA substation is located on federal lands administered by the Department of the Interior (DOI) Bureau of Reclamation. Public lands in the vicinity include state land board lands to the south and northeast, the Fort Carson Military base to the west, and the Clear Spring Ranch Regional park to the north (**Appendix P**: *Public Lands Map*). The Project would not negatively impact public lands.

2.303(7)(c) Specify Whether and how the Proposed Project Conforms to the El Paso County Master Plan

The activities associated with the Project are compatible with the current EPC Master Plan (Master Plan) which consists of the County Policy Plan (CPP), small area plans (SAPs), the Parks Master Plan, The Master Plan for Mineral Extraction, drainage basin planning studies and the major transportation corridors plan. The Master Plan guides land use in EPC. The Master Plan has been reviewed as part of this process and specific component plans under the Master Plan have been identified and reviewed further as they are impacted by the location and nature of the Project, including the CPP and the applicable SAP (South Central Comprehensive Plan). The following is a summary of key elements of the CPP, and the South Central Comprehensive Plan (SCCP) with a detailed discussion of those elements of both plans that are relevant to the Project. Specific sections, goals, and policies from the CPP are outlined below.

The following Sections 1.0 through 13.0 reflect components of Chapter 1 of the CPP and describe how the Project would conform to those components.

CPP 1.0 Small Area Plans

EPC has developed SAPs to provide a framework for development within areas of the County that have similar land use patterns. The Project is proposed within the portion of EPC that is addressed under the SCCP. The SCCP provides a framework for potential growth and development in the South Central Area. Additionally, the South Central Area is divided further into planning districts to allow for planning and development that is more specifically appropriate for the unique characteristics of particular areas within the South Central Area. The Project is located within the West Area planning district. The Project's conformance to the relative goals and policies of the West Area planning district are discussed below, following this discussion detailing the Project's conformance to the CPP.

Policy 1.1.5 Specifically encourage the active participation of affected municipalities in the development of new and revised SAPs.

The Project would endeavor to participate in revisions to SAPs when applicable to affected Project land uses in unincorporated EPC.

CPP 2.0 Natural Systems

Goal 2.1: Preserve, enhance and restore the environment to acceptable health standards.

Solar energy generation is a clean, renewable energy that would not contribute to the pollution in the area. Construction and operation activities would be planned to minimize and mitigate any negative effects to the environment.

The Project has taken a conservative approach to due diligence by conducting multiple environmental studies and coordinating with the appropriate regulatory agencies including CPW and the USFWS. In 2013, the Project conducted a Critical Issues Analysis (CIA) and submitted it to the USFWS and CPW for concurrence in 2014 (**Appendix Q**: *Critical Issues Analysis*). Both agencies provided feedback; and in 2015, wetlands, threatened and endangered species and cultural resource field surveys were conducted (**Appendix M**). Both the USFWS and CPW had the opportunity to comment on the WSEO application initially submitted by the Project on October 24, 2017. Additional comments were provided by CPW, and the Project issued a letter of response detailing avoidance measures on January 2, 2018 (**Appendix M**).

The Project would potentially require an interconnection to the Midway substation operated by the Western Area Power Administration (WAPA), a federal power marketing agency within the U.S. Department of Energy (DOE). Since the WAPA substation is a federal entity, an interconnection agreement between the Project and the WAPA substation established a federal nexus. As such, approval of an interconnection agreement between the Project and the WAPA substation required National Environmental Policy Act (NEPA) review with the Department of Energy (DOE) acting as the lead agency in the review. NEPA review of the Project interconnection with the WAPA substation commenced in late 2015 and evaluated the Project's potential impact on multiple resources including, but not limited to: public health and safety, air quality; water, vegetation, wildlife, special status species and cultural resources. The NEPA review concluded with a Finding of No Significant Impact (FONSI) issued on September 21, 2016. (**Appendix G**)

2.1 Air Quality

The Project would not result in adverse impacts to air quality. Some particulate emissions from dust generation would result from the operation of heavy equipment during construction. However, these emissions would be temporary and limited to active areas of construction. Best Management Practices (BMPs) would be implemented during construction to mitigate dust emissions. Specifically, water trucks would be utilized to spray disturbed areas to minimize dust emissions. The Project would submit an Air Pollutant Emissions Notice (APEN) prior to the start of earth moving activities, in accordance with the EPC Land Development Code Section 6.3.1 and as outlined in the Project Air Quality Management Plan (**Appendix R**: *Air Quality Management Plan*).

2.2 Noise Control

Policy 2.1.7 Encourage the adoption of noise level standards which limit or mitigate adverse impacts to surrounding land-owners.
Policy 2.1.8 Carefully consider all proposed land uses adjacent to interstate highways, railroads, military training areas, and in designated flight zones to protect them from associated disruptive noise levels.

During the construction phase, noise would not exceed decibel levels listed in the EPC Noise Ordinance. Construction activities would typically be limited to normal working hours between 7:00 am and 6:00 pm, Monday through Saturday. Work outside of these hours would be limited and would comply with EPC regulations. Haul routes would lead directly from the Project to Interstate 25 and would not impact or increase noise on County Right of Way (ROW). A Haul Route Plan has been prepared as part of the Transportation Memo (**Appendix S**: *Transportation Memorandum, Haul Route Plan, and Traffic Data Collection*).

Solar panels themselves are silent, however inverters do emit sound. The sound emitted from an inverter has a similar intensity as an air conditioner and the sound dissipates significantly and quickly with distance.

It is unlikely that a person standing outside of the perimeter fence line would be able to distinguish sound emitted from the inverters.

2.3 Wildlife and Vegetation Impacts

Goal 2.2 Protect the flora and fauna found in the County's five life zones and transitional communities.

Policy 2.1.2 Encourage local environmental regulations governing protection of natural resources to be consistent with state and federal regulations
Policy 2.2.1. Encourage a coordinated and systematic planning approach to identify, locate and protect critical areas of wildlife habitat from all five life zones and transitional communities.
Policy 2.2.3 Evaluate the impact from proposed developments on watersheds and wildlife habitat with appropriate governmental agencies early in the development process.
Policy 2.2.4 Provide incentives to encourage development to incorporate sensitive planning that ensures the protection of watersheds and wildlife habitat
Policy 2.2.7 Comply with requirements of the federal Endangered Species Act
Policy 2.2.8 Encourage the protection and preservation of state listed endangered and threatened species, species of special concern, and species with immediate conservation needs

The Applicant contracted Western Ecosystems Technology, Inc. (WEST) to prepare a *Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Report* in August of 2015 (**Appendix M***)*. The findings of this report were included in the NEPA review completed for the Project, which concluded in a FONSI on September 21, 2016 (**Appendix G**).

No federally listed species or their associated habitat were identified at the Project site. Black tailed prairie dog (State Species of Concern) was identified on the Project Site. Prairie dog colonies are potential habitat for burrowing owl (State Threatened). Per CPW recommendations, the prairie dogs would be relocated prior to commencing earth-moving activities. If a relocation site is not available, prairie dogs would be humanely treated prior to construction. CPW issued additional Project-specific recommendations since the first submittal of this WSEO application. The Project has issued a response letter which is appended to the original USFWS and CPW correspondence. The Project understands that there is suitable habitat on the site for nesting raptors, ground nesting grassland species, and other species of state status or state concern including burrowing owl and mountain plover. Additionally, the Project understands there is potential for denning swift fox on the Project site. As such, the Project has committed to conducting pre-construction surveys to confirm the presence or absence of any of the above listed state status, state species of concern, or nesting birds. Project correspondence with the USFWS and CPW are included in **Appendix M.**

According to USGS National Land Cover Database, the primary cover type in the Project area is grassland/herbaceous with a small area of scrub/shrub.

Vegetation that would be temporarily impacted by construction would be reseeded following construction with a native seed mix. Reseeded areas would be protected from erosion with appropriate best management practices (BMPs). Revegetation methods would likely include broadcast seeding and/or drill seeding a mix of native grasses. It is anticipated that weed stubble, following noxious weed treatment and mowing of the site, would secure seed in the topsoil. The exact method of revegetation is dependent upon the time of year at which construction would start. As such, specific revegetation methods would be detailed during the Site Development Plan phase.

2.4 Noxious Weed Control and Revegetation

The Applicant contracted CORE Consultants, Inc. (CORE) to prepare a *Noxious Weed Management Plan* (**Appendix H**). Pre-construction surveys and treatment would conform to applicable EPC requirements for noxious weed control and management. Revegetation of the site, where possible, would occur following construction following procedures outlined above.

2.5 Wetlands

The potential for the presence of Waters of the U.S. (WOUS) was described in the *Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Report* **(Appendix M).** No WOUS are located on the Project. Some non-jurisdictional drainages are located on the Project. Specifically, some non-jurisdictional headwaters to a tributary of Fountain Creek are located in the north central portion of the Project and coincide with the stock pond located on the Project. The Project understands that these headwaters provide drainage capture for the watershed. As such, solar arrays and facilities would avoid these headwaters and stock pond. In addition, the Project has committed to avoiding any drainages on the Project that convey significant flows during precipitation events. The Project security fencing would be located south of the stock pond and headwaters (**Appendix A8:** *Physical Constraints Map*).

2.6 Hazardous Materials

Construction, operation and maintenance activities would comply with applicable local, state and federal laws and regulations regarding the use of hazardous substances. There would be no significant amounts of hazardous materials stored in the right-of-way or at temporary staging sites. Enclosed containment would be provided for trash. Construction waste, including solid waste, petroleum products or other potentially hazardous materials may be transported to a licensed recycling or disposal facility authorized to accept such materials. Spill prevention materials would be maintained on site as required. Operational personnel would follow guidelines posted in the Project *Operations and Maintenance Plan* (**Appendix T:** *Operations and Maintenance Plan*). The Applicant has prepared a *Decommissioning Plan* to ensure Project components are disposed of properly at the termination of Project operations (**Appendix U:** *Decommissioning Plan*).

Policy 2.1.1 Meet the Federal Clean Air and Clean Water Acts and its amendments.

The Project would acquire the applicable construction permits, adhering to federal air and water regulations. The Project would submit an APEN prior to earth disturbing activities in accordance with EPC Land Development Code Section 6.3.1 and as detailed in the Project Air Quality Management Plan (**Appendix R**). The solar generation facility would not require operating air or water permits.

Policy 2.1.9 Encourage approaches to land use that promote innovative techniques to protect water quality and encourage mitigation to reduce pollution from non-point sources such as run-off from roads, parking lots and lawn chemicals.

The Project Company contracted CORE to complete a Preliminary Drainage Report for the Project (**Appendix V:** *Preliminary Drainage Report*). The report identified major and minor drainage basins in the Project. The Project would not impact historic flow rates of major or minor drainage basins within the Project; stormwater detention would be designed to maintain historic flow rates within the Project drainage basins (**Appendix V**). The SWMP, GEC Plan, and SPCC Plan would be completed prior to construction and would include both temporary and permanent BMPs to prevent any erosion and sedimentation to drainage basins within the Project. The SWMP and GEC would be submitted as part of

the application for an EPC Erosion and Stormwater Quality Control Permit (ESQCP) prior to construction.

CPP 3.0 Water Resources

Goal 3.1 Protect and enhance the quality, quantity and dependability of water supplies.

Policy 3.1.7 Carefully analyze each new development's proposed use of water.
Policy 3.3.2 Consider the water requirements for natural areas adjacent to proposed developments
Policy 3.3.4 Implement appropriate measures to protect and/or mitigate effects of point and non-point sources of pollution to surface water
Policy 3.3.6 Evaluate the consequences to surface water from new development including run off of natural soils, as well as chemical compounds that may result from the proposed uses including pesticides, herbicides and hydrocarbons

The Project would have negligible impacts on water quantity. It is anticipated that the solar panels would require washing twice a year. This would require approximately 22,000 gallons per year that would be tapped from the Wigwam Mutual Water Company (WMWC). The WMWC issued a letter stating their commitment and ability to provide water for the Project (**Appendix A9**). Water would be pumped from the Fountain Creek Alluvial Aquifer, which is considered a renewable water resource under the EPC 300-year water supply rules. A WMWC water line traverses the Project site; the Applicant procured three taps from the WMWC for use during construction and operations.

The Applicant has reviewed the PPACG 208 Plan and determined that the Project would cause minimal to no impact to ground or surface water surrounding the Project. The Applicant would follow BMPs that would prevent erosion and sedimentation to the Fountain Creek watershed (**Appendix V**). The Project would not discharge materials into Fountain Creek or any associated tributaries. Headwaters to a tributary of Fountain Creek are located in the north central portion of the Project that coincide with the stock pond located on the Project. Solar arrays and Project facilities would avoid these headwaters. No fill would be placed within these drainages. A GEC Plan, SWMP, and SPCC Plan would be developed to manage on-site pollutants during construction and as needed for operations.

CPP 4.0 Historic Resources

Goal 4.1 Encourage preservation and enhancement of historical resources.

Centennial Archaeology (CA) performed an intensive Class III Cultural Resources pedestrian survey of the Project in 2015 (**Appendix L**). The findings of this report were included in the NEPA EA completed for the Project, which concluded in a FONSI (**Appendix G**). The survey identified 32 isolated finds and six new sites. The isolated finds were considered prehistoric in nature and consisted of either single occurrences or small quantities of debitage; i.e., the material produced as the result of manufacturing chipped stone tools and lithics reduction. Two sites were determined by CA to be potentially eligible for listing on the NRHP. The Project activities would avoid the potentially eligible sites (**Appendix A8**). The remaining four sites and isolated finds were deemed ineligible by CA for NRHP listing. CA did not recommend further investigation of the remaining items.

CPP 5.0 Economic Development

The Project would benefit local businesses in EPC during Project construction. Construction of the Project would positively impact short-term regional growth in EPC. Population growth and development in EPC

are likely to continue regardless of whether the Project is approved. Significant tax revenues from this Project would benefit the local taxing jurisdictions and in some instances, would decrease taxation to certain local home owners.

Goal 5.1 Maintain a land use environment which encourages quality economic development that is compatible with surrounding land uses.

The Project itself offers an increase to the local tax base which could be utilized by the local taxing jurisdiction to promote economic development. The production of additional solar energy to the grid provides a diversified energy source for local utilities requesting alternative energy choices.

CPP 6.0 Growth and Land Use

Goal 6.1.b Support growth and development in the unincorporated County in a manner which reasonably limits long term public costs, provides for the development of supporting infrastructure, preserves environmental quality, provides economic opportunities, and otherwise enhances the quality of life.

The Project may benefit local businesses in EPC during Project construction. Construction of the Project could positively impact short-term regional growth in EPC. Population growth and development in EPC are anticipated to continue regardless of whether the Project is approved.

The Project would be located solely within property owned or leased by the Project Company and should not interfere with adjoining land uses. The Project has been sited and designed to reduce impacts to the environment and existing infrastructure.

Electricity created by the Project would be sold to a utility at a fixed rate for the term of the Project. While this rate could start out slightly higher than other current sources of electricity the price would be locked in for the life of the of the Project which would help hedge against cost increases from generation sources that are subject to commodity pricing risk.

Once operational, the Project would provide renewable solar energy infrastructure to support growth and development in an environmentally sensitive way.

Policy 6.1.1: Allow for a balance of mutually supporting interdependent land uses, including employment, housing and services in the more urban and urbanizing areas of the County.

The proposed use would allow for solar development on the property without negatively impacting the existing topography, transportation infrastructure or utility systems in the area and provides the benefit of emission free renewable energy. Solar development of the Project site would not impact the land use of the surrounding area.

Policy 6.1.3: Encourage new development which is contiguous and compatible with previously developed areas in terms of factors such as density, land use and access.

The proposed use fits within the predominantly industrial uses in the immediate area and allows for the developer to locate the solar arrays near existing utility infrastructure. The Project is consistent with existing utility development at the site.

Policy 6.1.6: Direct development toward areas where the necessary urban-level supporting facilities and services are available or will be developed concurrently.

Solar energy generated by the Project can tie in to one of two existing substations (WAPA or PSCo) located adjacent to the Project.

The Applicant would coordinate with landowners to mitigate any reasonable visual impact concerns identified.

Policy 6.1.10: Ensure that new development will not create a disproportionately high demand on public services and facilities by virtue of its location, design or timing.

Once operational, the Project would be an unmanned facility. Due to the limited required maintenance and remote electronic monitoring of the facility, the proposed use would not negatively affect the existing transportation network, nor create a high demand on public services or facilities. The Applicant has developed an *Emergency Response Plan* (**Appendix W:** *Emergency Response Plan*) to respond to natural hazards including fire; however, the risk of fire on the site is minimal since mowing of potential fuel sources would occur during the growing season. Nonetheless, the Project has procured a fire commitment letter from the Hanover Fire Protection District (HFPD) as part of the Project Fire Protection Plan (**Appendix X**: *Fire Protection Plan and Hanover Fire District Commitment Letter*). Once operational, the Project would add to the electric supply to provide public services to others in the community.

Policy 6.1.11: Plan and implement land development so that it will be functionally and aesthetically integrated within the context of adjoining properties and uses.

The solar arrays would be consistent with surrounding industrial land uses, e.g., Pikes Peak International Raceway, Fort Carson Military Base, Midway Waste Management Landfill. In addition, after construction, the site would be re-vegetated with a native seed mix.

Policy 6.1.16: Allow for new and innovative concepts in land use design and planning if it can be demonstrated that off-site impacts will not be increased and the health, safety and welfare of property owners and residents will be protected.

Utilization of the Project site for generating electricity from renewable energy rather than fossil fuels offers significant public health benefits. Solar generated energy has no associated toxic emissions and requires essentially no water to operate and thus does not pollute water resources or strain local water supplies. Solar development of the Project site would be an innovative use of the land that would not adversely impact adjacent and surrounding residents and property owners and would be protective of human health and the environment.

Goal 6.2 Protect and Enhance Existing and Developing Neighborhoods.

Policy 6.2.1: Fully consider the potential impact of proposed zone changes and development on the integrity of existing neighborhoods.

The Project site is located adjacent to an existing electric substation and associated transmission lines. Given this and the proposed setbacks and distance from existing residences (closest residence at

approximately 265 feet from the WSEO boundary), the Project would not negatively impact the integrity of the existing neighborhoods. Adjoining subdivisions are minimally developed and are platted mostly on the western and northwestern edges of the Project boundary.

Policy 6.2.10: Utilize buffer zones to provide mutually compatible transitions between neighborhoods and adjoining development with differing uses or densities.

The proposed setbacks, which are consistent with the underlying zoning setback requirements, would allow the site to integrate itself into the surrounding industrial uses.

Policy 6.6.6: Consider the development of cooperative building, zoning and infrastructure standards in areas that interface with municipalities and military properties.

The proposed Project is located adjacent to existing rural residential development, electrical substations and high-power transmission lines, the Midway Waste Management Landfill, and Interstate 25. The Project would be consistent with existing adjacent industrial uses and it would have little impact on the existing rural residential neighborhoods to the west and northwest.

CPP 7.0 Special and Unique Land Uses

The purpose of this section of the Plan is to address some of the land uses which are ancillary to traditional residential, commercial, office, industrial and agricultural categories. Examples of these special uses include waste facilities, transmission facilities, recreational facilities, and mining facilities. Since solar facilities, including associated transmission lines, were not originally included in this list of special and unique land uses, the WSEO application process was created to address renewable energy use, including solar facilities and ancillary facilities. Nonetheless, some goals and policies in this section apply to the development of a solar facility.

Policy 7.5.1: Encourage the multiple use of utility sites and corridors where feasible and appropriate.

Solar energy generated by this Project would interconnect with one of two existing substations located adjacent to the Project. Three alternate routing options exist for the new transmission line location (**Appendix E**).

CPP 8.0 Parks, Trails, and Open Space

The Project is located on undeveloped land zoned RR-2.5, RR-5, and I-3. Residential development and existing industrial facilities abut the property. The adjacent property is privately owned and does not provide parks, trails, or open space for any EPC residents. As such, the Project would not impact any existing EPC parks, trails, or open spaces and fully conforms to the goals and policies within this section of the CPP.

CPP 9.0 Transportation

The Project is not anticipated to significantly impact local traffic patterns; traffic resulting from construction would be temporary and would include the delivery of solar panels, utility poles, and associated components that would be delivered to the site via Rancho Colorado Boulevard, El Hambra View, and La Questa Drive (**Appendix S**). Approximate staging area locations proposed for delivery of construction equipment and materials are depicted in the WSEO Overlay Plan (**Appendix F**). These

proposed staging areas are within the permanent Project fence-line, and would ultimately be temporary, with the areas covered by solar arrays as the Project is completed.

A maximum of 600 trips are anticipated with a maximum of six trips per day over a 32-week period. The Applicant has prepared a haul route map to direct contractors and their drivers to avoid any potential traffic bottleneck issues during construction (**Appendix S**). Project roads would be constructed first, to support solar component deliveries to different areas of the Project and would provide a means of travel throughout the site, outside of Rancho Colorado Boulevard, El Hambra View, and La Questa Drive. During operation of the Project, the site would be visited routinely to perform maintenance (**Appendix S).** A haul route video survey was conducted on December 13, 2017 to record the current road conditions of the proposed haul route. The video files were delivered to El Paso County (on January 25, 2018) as an additional exhibit in the WSEO Application. The videos documented generally poor road conditions, with the exception of the recently improved La Questa Drive. Since road conditions are generally poor, the Project requested a waiver of the Development Impact Mitigation Agreement part of the WSEO application.

Policy 9.3.1 Place a high priority on maintaining the environmental condition when planning or building roads.
Policy 9.3.4 Provide for noise attenuation and visual screening along major transportation corridors by incorporating techniques including setbacks, buffers, berms, and vegetation treatments.

The Project design does not include proposed external roads for construction or operations (**Appendix E**). Construction access would use existing routes from Interstate-25 according to the proposed haul route (**Appendix S**). Due to the distance of the Project relative to the highway, the construction would incur minimal noise and visibility impacts along the interstate corridor. Internal Project access roads would be constructed between solar arrays to allow maintenance technicians access to individual arrays during routine maintenance (**Appendix E**).

CPP 10.0 Water and Wastewater Facilities

The Project should not have an adverse impact to water or sewer demands and would not require additional water or wastewater facilities. Sanitary or other wastewater is not anticipated to be released into waters of the U.S. during construction, operation or maintenance of the Project.

Construction personnel would use portable sanitary units during construction and they would carry in drinking water. It is likely that water would be used for dust suppression, soil compaction, and re-vegetation of areas disturbed during construction. Additionally, water would be required for washing of the panels during operation. It is anticipated that panels would require washing twice per year. The Project would utilize water from one or more of the three water taps that have been procured from the WMWC. The WMWC issued a letter stating its commitment and ability to provide water for the Project (**Appendix A9**). Water would be pumped from the Fountain Creek Alluvial Aquifer, which is considered a renewable water resource under the EPC 300-year water supply rules. A water line held by the WMWC traverses the Project area.

Policy 10.2.2 Carefully consider the availability of water and wastewater services prior to approving new development.

The Project would not require long term water or wastewater services. Construction personnel would utilize portable restrooms, and potable water would be provided.

CPP 11.0 Drainage and Flood Protection

The Project is not anticipated to impact hydrologic flow of surface water or groundwater, nor affect groundwater recharge. Existing drainage patterns would be preserved. The Project would not create runoff in excess of historical levels, change existing topography or adversely affect drainage (**Appendix V; Appendix A8)**. Solar arrays and facilities would avoid the headwaters to a tributary of Fountain Creek in the north central portion of the Project site, as well as any other drainage swales that convey significant stormwater flows on the Project. The Project understands that any impacts to drainages that convey significant amounts of stormwater would require additional stormwater detention facilities. The Project would not impact or alter existing headwaters to Fountain Creek nor the stock pond that coincides with this drainage (**Appendix V; Appendix A8**). The Project or its contractor would obtain a permit for stormwater discharges associated with construction activities in compliance with the provisions of the Colorado Water Quality Control Act and would provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect Project facilities from flooding during construction in accordance with the permit. The Project or contractor would comply with the permit by implementing a SWMP that identifies possible pollutant sources that may contribute pollutants to storm water, and identify and implement BMPs that would reduce or eliminate potential water quality impacts. The final SWMP, GEC, and ESQCP application would be submitted to the county in conjunction with the construction permit(s) required for the Project. There are not expected to be facilities or structures associated with Project construction that would impact flood elevations. Site topography would be returned to existing grade where possible and in accordance with the design. Flood plain map revisions are not expected to be required for construction of the Project.

Policy 11.1.4 Require development plans to effectively address both quantitative and qualitative impacts of drainage within the project site
Policy 11.1.8 Promote planning approaches which allow for interim solutions for drainage problems in less developed basins
Policy 11.4.7 Limit new development in and modification of flood plains in accordance with regionally adopted flood-plain regulations

The Project design would account for effects on drainage and would maintain pre-existing drainage patterns. No floodplains would be impacted by the Project construction. There would be minimal areas of additional permanent impervious surfaces as part of the Project that would impact stormwater runoff; however, stormwater runoff would be released at historic rates according to the BMPs detailed in the Preliminary Drainage Report (**Appendix V**).

CPP 12.0 Other Services and Utilities

Goal 12.4 Reduce the adverse impacts and maximize the efficiency of energy generation, transmission and distribution systems.

The Project should not increase the need for fire protection, medical services, schools or other public facilities services, or utilities. The HFPD would service the Project (**Appendix X**). However, the risk of fire on the Project during construction and operation is minimal. The Project would add to the supply of renewable energy to serve other uses in the area.

Policy 12.4.1: Ensure that electric, natural gas, petroleum and other facilities (generation, distribution, pipelines and storage) are located in a manner which is safe, environmentally sensitive and which does not unreasonably burden particular property owners with adverse impacts.

The Project design would be developed in a safe and environmentally sensitive manner on private and county owned lands secured by the Project through direct ownership, lease and easement agreements adjacent to similar uses. Any contractors working on the Project during construction would have a safety plan. All construction activities occurring on the Project would meet the Project Company's corporate standards for environmental responsibility and stewardship.

Policy 12.4.3: Promote energy efficiency through careful siting, design and landscaping, especially the use of passive solar.

The Project would provide renewable energy and is proposed in an area specifically identified for maximum efficiency in solar energy uptake. Additionally, the Project is located adjacent to two existing substations so that the transmission line would not create additional overhead lines in the vicinity of the Project. The Project would maintain existing landscaping to the greatest extent possible and would be reseeded with native seed mixes.

Policy 12.4.7: Allow for the effective use of renewable energy resources especially where it minimizes the local impacts on neighboring properties and non-renewable energy use.

The Project would provide renewable energy to neighboring areas with minimal impacts to adjacent properties. The Applicant contracted CORE to prepare a *Visual Simulation and Solar Glare Hazard Analysis Tool Report* (**Appendix Y:** *Visual Simulation and Solar Glare Hazard Analysis Tool Report*). The Project voluntarily conducted a glare analysis utilizing the Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGHAT) to identify the potential for glare resulting from the solar panels. Results of the tool indicated that the Project solar panels would not result in significant glare to any selected flight or ground observation points (**Appendix Y**). Additionally, the Applicant prepared a *Summary of Project Lighting Memo and Lighting Plan* (**Appendix I**). Neighboring properties would experience little to no visual impacts from either the solar array or transmission line. During operations, lighting would be turned on only when the substation is attended or when inverter maintenance is occurring, and would be motion sensored. Lighting would be directional and would produce 0.1 lumen or less at Project property lines (**Appendix I**). In addition, no new neighborhood utilities or other infrastructure would be required to support this Project.

CPP 13.0 Housing

The Project is not anticipated to impact housing availability. Adequate hotel/motel rooms exist to accommodate the number of contractors for the duration of construction who may travel from outside EPC.

CPP 14.0 Public Finance Districts

The Project would not require a public finance district; however, it is partially located within the boundaries of the Eldorado Village Metropolitan District. Metropolitan Districts are formed, in part, to pay for the debt incurred as a result of public infrastructure being placed in an area to allow for residential development. The Project would be the largest taxpayer in this district so effectively it can result in lower taxes for the residences in the District by paying off the existing debt load at an accelerated rate.

CPP 15.0 Land Development Regulations

The Project would follow existing County land development requirements and would not require a change to the land development regulations.

The WSEO was specifically created by EPC for the purpose of wind and/or solar projects, in addition to this 1041 Application process. Community meetings have been held and additional meetings and hearings would be held in association with the requirements of the land use processes, including the WSEO, 1041. This includes two community meetings to which affected adjacent land owners and mineral estate holders were invited to learn about the project and discuss potential concerns with the Project with Applicant.

Conformance to the Goals and Policies of the West Area Planning District within the South Central Comprehensive Plan

EPC has developed SAPs to provide a framework for development within areas of the County that have similar land use patterns. The Project is situated within the portion of EPC that is addressed under the SCCP. The SCCP provides a framework for potential growth and development in the South Central Area. The SCCP indicated the potential for Colorado Springs to expand electrical facilities on its land within the South Central Area. The South Central Area is divided further into planning districts to allow for planning and development that is more specifically appropriate for the unique characteristics of particular areas within the South Central Area. The Project is located within the District 8 West Area, which is bounded on the west by the Fort Carson Military Base, on the east by I-25, on the south by the Pueblo County border, and on the north by the Colorado Springs lands. The SCCP identifies the following as critical factors of the West Area. The Project is consistent with the relative goals and policies as applied to the unique characteristics of the West Area as further described below.

1. Construction Suitability: The majority of the soils in the area present moderate constraints for development. There are several floodplains running east/west across the district which represent severe development hazards. Access to the area is difficult because of the steep slopes which exist along the southern, eastern and northern boundaries of the site.

The Applicant has prepared a *Preliminary Geotechnical Engineering Report* (**Appendix Z**) to inform Project design. The Applicant would avoid development hazards, including floodplains, and consider soil and topography constraints specific to the West Area.

2. Accessibility: The district is adjacent to I-25 and may be accessed from three interchanges. However, the road system beyond the highway is minimal. Only dirt roads exist and, on occasion, these roads are impassible. Access to this district is difficult due to the steep slopes along most of its perimeter.

The Project has performed a Haul Route Survey on the current road conditions and would return haul route roads to their pre-construction condition after construction. During Project operation, traffic to the site would be minimal.

3. Sewer and Water: The few ranches near I-25 have residential wells and septic systems.

The Project would be served by a Wigwam Water District water line that traverses the Project area through taps that have been procured. No sanitary sewer service would be required for operations and portable facilities would be used during construction.

4. Existing Land Use: The vast majority of the land is vacant and unused. The only existing uses are a few ranches, a gravel mining operation, a utility substation and power lines. A large portion of the area has been approved for large lot residential sites. These sites are generally about 10 acres in size. No residences have been built within this subdivision, but lots have been sold. The critical limiting factor has been a lack of water since the underlying Pierre Shale makes individual wells infeasible.

The Project is consistent with the existing land use of the West Area, located adjacent to the utility substation, which would minimize and confine the Project's above ground transmission lines to the Project site.

5. Community Services: No community services exist in the area. The closest services are in the City of Fountain and these are a minimum of six miles to the north.

The Project is appropriate for the West Area as it would not require nor add demand for community services.

6. Noise Impacts: There are noise constraints due to the military practices at Fort Carson. A Noise Level II impact zone extends up to a half mile into this planning district's boundary (refer to the Composite Map). Within this zone certain uses are considered incompatible. Mobile home parks and courts should not be built within the designated Noise II Zone. Residential uses should be discouraged. If residential uses must be allowed, measures to achieve noise level reduction of at least 25 db through special building practices, site design, berming and barriers should be used. Outdoor sports arenas where announcing is necessary should not be placed within the Noise Level II Zone.

The Project is an appropriate use in the West Area as it would not add to nor be negatively affected by noise impacts from Fort Carson.

SCCP 1.0 Natural Systems
Goal 1.A Maintain and improve the existing natural environment and the area's natural resources.

The Project construction would address revegetation, stormwater management, fugitive dust control, and erosion control by implementing relevant BMPs during construction to best address these issues. More information regarding the BMPs to be used during construction can be found in the SWMP that would be developed and submitted to the county prior to construction. Revegetation methods would likely include broadcast seeding and/or drill seeding a mix of native grasses. It is anticipated that weed stubble, following noxious weed treatment and mowing of the site, would secure seed in the topsoil. The exact method of revegetation is dependent upon the time of year at which construction would start. As such, specific revegetation methods would be detailed during the Site Development Plan phase.

Policy 1.1: Development should minimize disturbance to the natural environment.
Policy 1.2: Any potential adverse effects due to the disturbance of natural hazard areas should be mitigated. Natural hazard areas include but are not limited to steep slopes, 100-year floodplains, flood ways and geologic hazards.

There are not expected to be facilities or structures associated with Project construction that would impact flood elevations. Site topography would be returned to existing grade where possible and in accordance with the design. Flood plain map revisions are not anticipated to be required for construction of the Project. The Applicant contracted Terracon to prepare a *Preliminary Geotechnical Engineering Report* (**Appendix Z**) that demonstrated that the soils would be appropriate for solar facilities and structures

and that Project development would not result in or produce geologic hazards (**Appendix Z**). Since the report is preliminary, final geotechnical design considerations would be identified and mitigation proposed, if necessary, during the Site Development Plan phase. The Project would not result in fill to any drainage ways that convey major storm events.

Policy 1.4: Wherever possible, drainage ways and 100-year floodplains should be maintained in their natural condition.

No Zone-A floodplains are located within the WSEO boundary. The Project would not impact or alter existing floodplains in the vicinity of the Project (**Appendix V**).

Policy 1.7 New developments should minimize negative impacts to air quality
Policy 1.8 Fugitive dust should be controlled by practices acceptable to the County and other responsible governing agencies.

The Project would not result in adverse impacts to air quality. Some particulate emissions from dust generation would result from the operation of heavy equipment during construction. However, these emissions would be temporary and limited to active areas of construction. Best Management Practices (BMPs) would be implemented during construction to mitigate dust emissions. Water trucks would apply water during construction activities in accordance with Section 6.3.1 of the EPC Land Development Code and as detailed in the Project Air Quality Management Plan (**Appendix R**).

SCCP 2.0 Growth and Land Use
Goal 2.B Ensure that support facilities for urban growth are well sited so they do not detract from the existing visual and environmental character of the area.

The Project would be constructed on private and county owned lands secured by the Project through direct ownership, lease and easement agreements. The Project would be situated adjacent to industrial parcels and some rural residential development to the west and northwest. It is not anticipated that the Project, once completed, would significantly disturb or impede residents in the vicinity. Project visual simulations were completed to model how the constructed Project would appear and glare analysis were completed which have demonstrated that the Project has been sited so that it does not detract from the existing visual and environmental character of the area; i.e., the Project is clustered with existing transmission line corridors and substation infrastructure. (**Appendix Y**).

Policy 2.8: Low impact uses which do not require a well-developed transportation system, have low visual impacts, and which have minimal water requirements should be allowed in the planning area if they are not otherwise inconsistent with these policies.

The Project would provide renewable solar energy and would have low impacts to the property and surrounding landowners and require minimal water. The Applicant contracted CORE to prepare a *Visual Simulation and Solar Glare Hazard Analysis Tool Report* (**Appendix Y**) which demonstrated that the Project would result in low visual impacts to adjacent rural residents. Key observation points utilized in the Visual Simulation were selected based on the locations of visual receptors (existing residents) and input from the county. CORE utilized the Sandia National Laboratories SGHAT to identify the potential for glare resulting from the solar panels. Six locations surrounding the Project were selected based on the locations of visual receptors in the vicinity of the Project. Potential flight paths from the Colorado Springs airport

were selected based on publicly available maps and data from the FAA. Military flight paths from Fort Carson were not modeled. Discussions with the base resulted in no request for military flight path modeling since solar panels are located on the base. Results of the tool indicated that the Project solar panels would not result in significant glare to any selected flight or ground observation points. Construction would require water for dust control, and operations would require minimal water for scheduled maintenance.

SCCP 3.0 Land Use Compatibility

The reports attached to this Letter of Intent demonstrate that the Project is not anticipated to:

- Produce adverse effects on the desirability of surrounding existing development or lands
- Impair the stability or value of existing adjacent development
- Adversely affect the quality of life of existing adjacent development
- Exhibit a lack of quality or function in site planning and design
- Create a public danger or nuisance to surrounding areas
- Alter the basic character of adjacent land uses or of the entire community.

SCCP 4.0 Visual Quality

The Applicant contracted CORE to conduct a visual simulation and glare analysis. Points of analysis for the visual simulation were selected based on input from the county (**Appendix Y**). The Project would be clustered with existing industrial infrastructure including the WAPA and PSCo substations, Midway Waste Management Landfill, gravel pit, and a Southwest Generation natural gas-fueled electric generation unit.

Policy 4.2: Large visual intrusions into the landscape, such as radio towers or transmission lines, should be located away from residences and on lands with a lower elevation. These major visual intrusions should be consolidated as much as possible.

The new transmission line would be located entirely within the WSEO boundary and would interconnect to an existing substation (WAPA or PSCo). The Project would result in low visual intrusions to surrounding residents since the Project has been sited so that it does not detract from the existing visual and environmental character of the area; i.e., the Project is clustered with existing transmission line corridors and substation infrastructure (**Appendix Y**).

SCCP 5.0 Transportation

The Project would not significantly impact the existing or proposed transportation system. The Applicant has prepared a *Transportation Memorandum, Haul Route Plan, and Traffic Data Collection* (**Appendix S**) that demonstrated an increase in vehicle frequency and visits during construction, but a minimal increase would be expected. A haul route would be utilized by all contractors working on the Project to avoid unanticipated construction vehicle bottlenecks in the vicinity of the Project. A haul route video survey was conducted to record the current road conditions of the proposed haul route. The video was recorded on December 13, 2017 and indicated generally poor road conditions, with the exception of the recently improved La Questa Drive. Since road conditions are generally poor, the Project requested a waiver of the Development Impact Mitigation Agreement and associated fees as part of the WSEO application. Vehicle traffic would be minimal once operational.

SCCP 6.0 Special Facilities/Utilities
The Project would not create new development in the area or require new utilities to be provided in the South Central planning area.

Policy 6.12: Utility substations, facilities and transmission lines, which are constructed, should be carefully designed and sited. The proposed facility should ensure that the adverse visual, environmental, social, land use, health and · economic impacts are minimized or mitigated.

The new transmission line associated with the Project would be situated entirely within the WSEO boundary and would interconnect to an existing substation (WAPA or PSCo) adjacent to the Project. The new gen-tire line would not result in significant additional impacts to the visual quality of the landscape (**Appendix Y**).

Proposed facilities include solar arrays and single axis trackers, transformers and DC to AC inverters, meteorological towers, and a transmission line interconnecting the Project substation to one of two existing substations within the Project. Preliminary design would arrange solar panels in arrays across the Project. Panels are clustered into modules and fixed to the ground on piles that support the panels. A motor is affixed to a central pile that provides power so that panels can track the movement of the sun. Individual trackers typically measure 157 feet across. At a neutral tilt, panels are parallel to the ground at a typical height of six feet-ten inches. At a maximum tilt, the height of the panel typically reaches between 12 feet-nine inches and 13 feet-nine inches. Up to 50 inverters and transformers would be located adjacent to solar arrays. Each transformer and inverter pair footprint would measure approximately 20-feet by 10-feet; transformers would measure approximately 10 feet in height and inverters would measure approximately seven feet in height. Underground collection lines would transmit power to the Project transmission line. The location and extent of the underground collection would be determined at the Site Development Plan phase. Transmission line poles would be constructed of wood and would have a minimum clearance above grade at 29 feet, after which point electric transmission facilities would be mounted to the poles between approximately 29-feet and 88-feet. Meteorological towers would include multiple tools including a Hukseflux SR200 pyranometer at approximately eight feet-two inches, a Lufft WS 601 multiparameter weather station at approximately 10 feet-eight inches, and a control enclosure E1 CR1000 logger with a 12 AHR battery mounted to the tower at approximately five feet-six inches. The towers would each be powered by a 20 watt photovoltaic module attached to the tower immediately below the control enclosure.

The Applicant completed multiple studies demonstrating that the Project would not significantly impact existing environmental, social, land use, health, or economic levels within the surrounding community (**Appendix G; Appendix K; Appendix M; Appendix R; Appendix S; Appendix V; Appendix A1:** *Feasibility Summary Report*). Some residential lots located in the vicinity of Boca Raton Heights, Van Whye Court, Moab Court, and La Questa View are situated between proposed solar arrays. Buffers between solar arrays and residential lot property lines exceed 25 feet in all cases. In most cases, buffers between residential lot lines and solar arrays exceed 100 feet. The Project has held one community meeting and plans to hold a second community meeting to discuss potential concerns about the Project with property owners in the vicinity.

Policy 6.13: Any major proposed utility projects, which could have significant visual impacts, should include public involvement during all critical stages of plan development.

The Project would result in no significant visual impacts, as documented in the *Visual Simulation and Solar Glare Hazard Analysis Tool Report* (**Appendix Y**). However, a community meeting was held for all adjacent landowners on September 13, 2017. At least 26 members of the community were present. No visual concerns were raised by residents; specifically, no visual concerns were raised by landowners with properties in the vicinity of Boca Raton Heights, Van Whye Court, Moab Court, and La Questa View. The Project plans to conduct an additional community meeting in late January, 2018, during which time concerned landowners can voice their concerns regarding construction and operations of the Project, visual or otherwise. EPC Planning & Community Development Department personnel are invited and encouraged to attend the January 31, 2018 community meeting. The Project would work to practically mitigate any visual impacts concerns identified by adjacent residents.

2.303(7)(d) Specify Whether and how the Proposed Project Conforms to Applicable Regional and State Planning Policies

The Project conforms to multiple local and state statutes and policies including Colorado's renewable energy standard (RES) statute (Section 40-2-124, C.R.S) which requires 30% of retail energy sales to be derived from renewable generation by 2020 from investor owned utilities and 10% for large municipal utilities.

The Colorado State Energy Report 2014 provides the framework for the state to pursue its energy policies based on four key values: Growing Jobs and Spurring Innovation, Protecting Colorado's World-Class Environment, Streamlining Government and Encouraging Collaboration. The report includes a goal to grow jobs and spur innovation by developing Colorado's resources and technologies. "Accelerate the development of renewable energy resources through implementation of Colorado's renewable energy standard (RES). In 2013, Colorado passed Senate Bill 252, increasing portions of the RES and adding new eligible sources to promote economic development and energy market advances, encourage Colorado-based clean and innovative energy solutions, increase energy security, and protect the environment." In addition, the state produced a report[1], which noted the following.

> "Solar energy is virtually limitless, non-polluting, quiet, has no security implications, generates skilled jobs and does not exacerbate greenhouse gases. These benefits have resulted in polling data that repeatedly demonstrates that the public overwhelming favors solar over other energy options…. The current higher initial cost of solar energy electric generating technology results in very low penetration levels under traditional processes. To overcome this barrier, development of solar energy currently requires effective policies that take into account solar's long-term benefits."

The Colorado Blueprint is a statewide strategic plan published in July 2011 that provides a framework for statewide and regional economic development. A specific goal stated for Region 4, including El Paso County, is to "Attract new business – Clean Tech-Renewable Energy".

The Project would conform to Colorado state planning policies by developing the state's solar resources, contributing 100.2 MW of renewable solar energy to a commercial utility off-taker. Doing so would support the state's utilities efforts to meet the state requirement that 30% of retail energy sales are derived from renewable generation by 2020.

---

[1] "Connecting Colorado's Renewable Resources to the Markets," Report of the Colorado Senate Bill 07-091, Renewable Resource Generation Development Areas Task Force, December 21, 2007.

The PPACG Regional Sustainability Plan addresses renewable energy goals for the Pikes Peak region. GOAL 1: By 2030, the region has made considerable progress toward 100% sustainable energy usage. Specifically, the PPACG Regional Sustainability Plan outlines a renewable energy goal that by the year 2030, 50% of energy consumed in the region is renewable and/or sustainable, maximizing the amount of renewable energy produced in the region from a 2010 baseline. Among strategies outlined to reach this goal, the Plan includes a general strategy to encourage utility-scale renewable energy projects within the region and an economic development strategy to support local sustainable industry development.

The Project conforms to this goal and strategies since it would develop a utility-scale solar energy facility within El Paso County that would contribute 100.2 MW of renewable energy to a utility off-taker that would be likely to supply energy to consumers in the Pikes Peak region.

2.303(7)(e) Specify Whether and how the Proposed Project Conforms Applicable Federal Land Management Policies

The Project would be developed on private, county, and federal lands. Since the Project has the potential to interconnect to the WAPA substation, the Project was subject to federal land management policies including preparation of an EA pursuant to the NEPA review process (**Appendix K**). The lead agency, the DOE, consulted with multiple local, state, and federal agencies during the review process. The final EA was approved concurrently with issuance of a FONSI on September 21, 2016 (**Appendix G**).

2.303(7)(f) If Relevant to the Project Design, Describe the Agricultural Productivity Capability of the Land in the Project Area, Using Soil Conservation Service Soils Classification Data

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops; and is available for these uses and is not urban, built up, or water areas (NRCS 2008). The NRCS EPC soil survey identified four soil associations comprising the site including Wilid silt loams (0 to 8 percent slopes), Fort loam (1 to 5 percent slopes), Kim loam (1 to 8 percent slopes), and the Schamber-Razor complex (8 to 50 percent slopes). Wilid silt loams dominated the Project area, comprising approximately 70% of the total Project site. None of the soils occurring on the Project area are characterized as unique or prime farmland by the NRCS (**Appendix A2:** *Soils Map*).

2.303(7)(g) Probability of Affect from Earthquakes, Floods, Fires, Snow, Slides, Avalanches, Rockslides, or Landslides and Measures to that will be taken to Reduce Impacts

Terracon conducted a preliminary geotechnical investigation of the Project (**Appendix Z**). Field investigations, laboratory testing, and geotechnical analyses were conducted for the following site elements: subsurface soil conditions, groundwater conditions, foundation design and construction, earthwork, and drainage. Based on the geotechnical analyses, Terracon determined that development of the site is considered feasible from a geotechnical standpoint provided specific mitigation measures are practiced during construction. Specifically, site preparation, soil types, and compaction levels would be followed to prevent flooding and improper drainage.

The Project is located in Seismic Zone 1 which is an area of very low risk for seismic activity (**Appendix Z**). The Preliminary Drainage Report indicates low risk for flooding **(Appendix V**). There is a chance for low intensity wildfire on the Project site due to historic drought conditions, grassy/weedy vegetation, and Project location in relation to I-25 and Fort Carson. The likelihood of wildfire is not likely to increase significantly with development of the Project. The Project has obtained a Fire Commitment Letter from the Hanover Fire District (**Appendix X**). There is a low risk for snow crushing solar facilities. The Project

procured a Snow Stowing Design Bulletin pertaining to the snow-load bearing capacity of the solar panels. Based on manufacture specifications, modules and racking can support up to 30 pounds per square foot (**Appendix A3**: *NexTracker Design Bulletin-Snow Stowing*). In addition, the Project fence line would minimize snow accumulation inside the solar facility.

Given the relatively low average annual snowfall (29 inches) in Pueblo, Colorado, significant snow drifts are not anticipated along the exterior side of the Project fence line; therefore, impacts to public roadways as a result are not a concern. In addition, the majority of the proposed fence line does not run along public roadways.

The Project was analyzed for the risk of wildfire based on the *Wildfire Hazards Based on Colorado Vegetation Classification Project – El Paso County, Colorado* as referenced in Section 6.3.3(A)(6). The Project is located in a low hazard/nonforested area of the county (**Appendix X**). As such, wildfire hazard mitigation would not be required since wildfire hazard is minimal on the Project. Nonetheless, the Project would conform to the additional fire-related standards under Section 6.3.3 as requested by the county and as described in the Fire Protection Plan. Should fire occur on the Project, the Project would receive services from the HFPD through a mutual aid agreement with Hanover Fire Department (HFD) (**Appendix X**).

No other natural hazards with the potential to affect the Project have been identified.

2.303(7)(h) Specify if Excess Service Capabilities Created by the Proposed Project will Likely Generate Sprawl or Strip Development

The Project would not be open to the public nor would it maintain any permanent on-site employees. For these reasons, it is not expected that the Project would have any impact on local service capabilities or contribute to sprawl or strip development.

2.303(7)(i) Specify Whether Demand for the Project is Associated with Development Within or Contiguous to Existing Service Areas.

Demand for the Project is associated with a need from utility scale energy providers to produce additional sources of alternative, clean energy within EPC. Meeting this demand is consistent with state goals to provide renewable energy options to electric utility customers. It is unknown at this time whether energy generated from this site would provide electricity to customers contiguous to the Project site. However, the Project would support Colorado power providers in achieving that Colorado RES state required standard for additional sources of renewable energy. Multiple utilities along the Front Range have issued RFPs for solar renewable energy sources to satisfy those local, state, and federal statutes. The Project would help to satisfy this demand by supplying 100.2 MW of solar produced renewable energy to be distributed to utility customers along the Front Range.

2.303(8) Surface and Subsurface Drainage Analysis

The Project Preliminary Drainage Report provides recommendations of remediation for changes in the site drainage patterns resulting from the development of the Project (**Appendix V**). The Project is not anticipated to impact hydrologic flow of surface water or groundwater, nor affect groundwater recharge. Existing drainage patterns would be preserved. The Project would not create runoff in excess of historical levels, change existing topography or adversely affect drainage. The Project or its contractor would obtain a permit for stormwater discharges associated with construction activities in compliance with the provisions of the Colorado Water Quality Control Act and would provide, maintain, and operate

temporary facilities to control erosion and sediment releases, and to protect Project facilities from flooding during construction in accordance with the permit. The Project or contractor would comply with the permit by implementing a SWMP that identifies possible pollutant sources that may contribute pollutants to stormwater, and identify and implement BMPs that would reduce or eliminate potential water quality impacts. The final SWMP and ESQCP would be submitted to the county in conjunction with the construction permit(s) required for the Project. There are not expected to be facilities or structures associated with Project construction that would impact flood elevations. Site topography would be returned to existing grade where possible and in accordance with the design. Flood plain map revisions are not expected to be required for construction of the Project (**Appendix V**).

2.303(9) Financial Feasibility of the Project

2.303(9)(a) Relevant Bond Issue, Loan, and other Financing Approvals or Certifications

Full financing for all pre-construction development activities of the Project has been secured through financing with EGP-NA. EGP-NA is a worldwide leader in renewable energy generation and has constructed projects in 22 U.S. states, and two Canadian provinces. EGP-NA is a subsidiary of Enel which is a publicly traded company. In order for the Project to be constructed, additional financing for operations would be required which is contingent upon the Project entering into a long term PPA with a credit worthy buyer.

2.303(9)(b) Business Plan Describing the Financial Feasibility of the Project

The Project would compete against like projects throughout the state and in general, if it is able to deliver a competitive price, it would be selected to enter into a long-term contract to sell the power. Once a long-term contract is obtained, the Project can be financed and built. The Project targets a key node in Colorado's electric system where five utilities converge: Black Hills, Colorado Springs Utilities (CSU), Tri-State G&T, Xcel, and WAPA. All utilities (except WAPA) have been active buyers of solar power within the past three years and are seeking to purchase additional power produced through solar facilities. The Project location provides the Project the ability to target multiple utilities from one solar site. Further, utility preference for renewables is high; utilities may be retiring a coal unit and would be in the market for solar and natural gas generation. Project feasibility has been demonstrated through a *Feasibility Summary Report* (**Appendix A1**).

The Project is located adjacent to platted and existing single family residential housing, including the recently improved El Dorado Village to the north. A portion of the Project is also located on four parcels owned by El Paso County. The Project Company currently has an option to lease these four parcels from El Paso County.

2.303(10) Local Infrastructure and Service Impacts

There are no anticipated negative impacts to federal, state or county roads. Limited maintenance and electronic monitoring of the facility would not affect the existing transportation network or public services. No added services would be required for emergency service agencies for the Project, with the exception of the fire commitment from the HFPD. During construction, all construction traffic would follow the Project haul route (**Appendix S**). A haul route video survey was conducted to record the current road conditions of the proposed haul route. The video was recorded on December 13, 2017 and indicated generally poor road conditions, with the exception of the recently improved La Questa Drive. Since road conditions are generally poor, the Project requests a waiver of the Development Impact

Mitigation Agreement and associated fees. In addition, the Project requests a condition of approval that if construction does not start within six months of the haul route video being recorded, an updated haul route video can be provided prior to construction. The waiver was submitted as an additional item as part of the WSEO application.

No new wastewater or water facilities would be required for construction or operation of the Project. Construction personnel would utilize portable restrooms, and potable water would be provided on-site. Water required for dust mitigation would be obtained from one or more of the three taps procured from the WMWC line and located on the Project site. The WMWC issued a letter stating their commitment and ability to provide water for the Project (**Appendix A9**). Water would be pumped from the Fountain Creek Alluvial Aquifer, which is considered a renewable water resource under the EPC 300-year water supply rules.

2.303(11) Recreational Opportunities

The proposed Project would not have any impact on current or proposed recreational opportunities. The site is composed of land zoned as RR-2.5 (Residential Rural), RR-5 (Residential Rural), and I-3 (Heavy Industrial). There are no county or state recreation areas on or in the vicinity of the Project. The Project would be clustered with existing industrial properties including the WAPA substation, PSCo substation, existing distribution lines, and the Midway Landfill. Disperse rural residential properties are located to the south and to the west. However, rezoning the undeveloped property would not remove any recreational opportunities from these residents since the Project area is comprised of mostly private land, some county property, and some DOI Bureau of Reclamation property on which the WAPA substation is located.

2.303(12) Areas of Paleontological, Historic or Archaeological Importance

Centennial Archaeology (CA) performed an intensive Class III Cultural Resources pedestrian survey of the Project in 2015 (**Appendix L**). The survey identified 32 isolated finds and six new sites. The isolated finds were considered prehistoric in nature and consisted of either single occurrences or small quantities of debitage; i.e., the material produced as the result of manufacturing chipped stone tools and lithics reduction. Two sites were determined by CA to be potentially eligible for listing on the NRHP. The Project activities would avoid the potentially eligible sites as shown in **Appendix F**: *WSEO Overlay Plan* and **Appendix A8**: *Physical Constraints Map*. The remaining four sites and isolated finds were deemed ineligible by CA for NRHP listing. CA did not recommend further investigation of the remaining items.

2.303(13) Nuisance – Descriptions of Noise, Glare, Dust, Fumes, Vibration and Odor Levels Anticipated to be Caused by the Project

The Project would not substantially increase nuisance levels.

- Noise from construction would be temporary, would comply with county noise standards and would be limited to normal working hours. There would be no increase in noise levels after construction is complete.
- The potential glare hazard of the proposed solar arrays to vehicular traffic and adjacent residences in the vicinity was analyzed using Sandia National Laboratories' SGHAT; **Appendix Y**). The analysis determined no ground or flight observation points would experience significant glare from the solar panels.

- There is the potential for a minor increase in fugitive dust during construction activities; however, fugitive dust would be temporary and mitigated through the use of watering trucks and other BMPs identified in the Project APEN that would be submitted prior to construction.
- Fumes, vibration and odor levels are not expected to change as a result of the Project.

2.303(14) Air Quality

Land development projects that are greater than or equal to 25 contiguous acres and/or six months in duration typically require the submission of an APEN and an air permit. The APEN form is used to record general project information (e.g., project description, location, size, and duration) regarding the land development project. The APEN form also includes detailed information on the Fugitive Dust Control Plan (FDCP) for land development. An APEN would be submitted for this Project prior to earth disturbing activities and in accordance with the Project Air Quality Management Plan (**Appendix R**).

The Environmental Protection Agency (EPA) sets forth the National Ambient Air Quality Standards (NAAQs) pursuant to the Clean Air Act. Colorado administers the NAAQS through issuance of the APEN. The standards identify six pollutants that are considered harmful to people's health in excess of the NAAQS. The Project is located in the Pikes Peak air quality monitoring region as identified by the CDPHE. Multiple air quality monitoring stations are located within the Pikes Peak area; however, no monitoring stations are located south of the monitoring station located at the intersection of State Highway (SH) 24 and I-25. As of June 20, 2017, the Pikes Peak monitoring area is considered an attainment area across all NAAQs. Development of the Project would not impact seasonal air circulation patterns.

Air quality impacts associated with construction projects generally arise from fugitive dust generation during the operation of heavy equipment. Large earth-moving equipment, skid loaders, trucks, and other mobile sources may be powered by diesel or gasoline and are sources of combustion emissions, which include NOx, CO, VOCs, particulate matter (PM), small amounts of SO_2, trace amounts of hazardous air pollutants (HAPs), and greenhouse gas (GHG). Seasonal winds have the potential to move emissions outside of the Project area; however, emissions would be minimal and transient in nature during the period of construction (four to six months) and would not significantly contribute to the ozone levels in Arapahoe County.

It is anticipated that construction would result in additional particulate matter in the Pikes Peak monitoring area in the form of dust. Water would be applied regularly during construction to prevent the addition of particulate matter into the local air shed in the form of dust.

Seasonal patterns would have minimal impacts on emissions and fugitive dust emission. Since construction may occur during the late spring and summer months, water would be applied more regularly since evaporative rates, and sometimes winds, are greater during the warmer seasons. Water would be applied according to BMPs.

2.303(15) Visual Quality

The landscape within and surrounding the Project site can be described visually as rural-industrial, with multiple overhead transmission and distribution lines, electrical substations, a gas fired electric generation facility, a landfill, aggregate mines, Interstate 25, and a tire recycling facility. Visual impacts were assessed within one mile of the proposed Project. The proposed Project conforms to the visual resource standards

of the EPC SCCP since new solar arrays and associated infrastructure would be clustered with existing utilities (WAPA and PS-Co substations). Implementation of the proposed Project would introduce new electrical infrastructure into the region. Some Project infrastructure, such as the transmission line, solar facility substation, and new substation bay would have little visual contrast to the existing electric utility infrastructure. Visual simulations were completed to model how the constructed Project would appear from multiple vantage points (**Appendix Y**).

Some residential lots located in the vicinity of Boca Raton Heights, Van Whye Court, Moab Court, and La Questa View are situated between proposed solar arrays. Setbacks between solar arrays and residential lot property lines exceed 25 feet in all cases; and in most cases, exceed 100 feet. The closest existing residence is approximately 265 from proposed solar arrays. The Applicant held a community meeting on September 13, 2017 to address any concerns, visual or otherwise, of landowners in the vicinity of the Project. At least 26 members of the community were present. No visual concerns were raised by residents; specifically, no visual concerns were raised by landowners with properties in the vicinity of Boca Raton Heights, Van Whye Court, Moab Court, and La Questa View. The Applicant would hold another community meeting on January 31, 2018, to give landowners another opportunity to voice their concerns regarding construction and operations of the Project, visual or otherwise. Members of the EPC Planning & Community Development Department are invited and encouraged to attend the community meeting planned for January 31, 2018. The Applicant would coordinate with landowners to mitigate any reasonable visual impact concerns identified.

2.303(16) Surface Water Quality

2.303(16)(a) Map and Description of Surface Waters Relevant to the Project, Including Description of Applicable Regional Water Quality Management Plan, NPDES Phase II Permit and EPC ESQCP, Section 404 Clean Water Act and Assessment of Compliance with these Provisions

The Project is located in the Fountain Watershed (USGS 8-Digit HUC 11020003). It is not anticipated that the Project would impact hydrologic flow of surface water. Existing surface water drainage patterns would be preserved after site development. The Project would not create runoff in excess of historical levels, change existing topography or adversely affect drainage (**Appendix V**). The Applicant or its contractor would obtain a permit for stormwater discharges associated with construction activities in compliance with the provisions of the Colorado Water Quality Control Act and would provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect Project facilities from flooding during construction in accordance with the permit. The Applicant or contractor would comply with the permit by implementing a SWMP that identifies possible pollutant sources that may contribute pollutants to stormwater, and identify and implement BMPs that would reduce or eliminate potential water quality impacts. The final SWMP and county ESQCP would be developed and submitted to the county in conjunction with the construction permit(s) required for the Project.

There are not expected to be facilities or structures associated with construction of the Project that would impact flood elevations. Site topography would be returned to existing grade where possible following construction and in accordance with the approved Project design. Floodplain map revisions are not expected to be required for construction of the Project. It is not anticipated that a Floodplain Development Permit from the Pikes Peak Regional Building Department would be required for construction; however, one would be acquired prior to construction if needed.

The Applicant contracted WEST to conduct an on-site survey to determine the nature of any potentially jurisdictional waters or isolated waters on the property. The survey determined one swale-like drainage was dammed that created an isolated stock pond in the north-central part of the Project (**Appendix M**). No other surface water features were identified during the site visit. The Project would not impact the isolated stock pond; no jurisdictional waters are located on the Project. It is not anticipated that Project construction would require a Section 404 CWA permit.

2.303(16)(b) Existing Data Monitoring Sources

Not applicable. No water wells were monitored for the Project.

2.303(16)(c) Immediate and Long-term Impacts to Surface Water Quantity and Quality

Any impacts to surface water quality during construction would be minimized by implementing BMPs and a Project-specific SWMP. An ESQCP application would be submitted to the county in conjunction with the construction permit(s) required for the Project. Site drainage would not change significantly as a result of Project construction (**Appendix V**). Solar arrays and facilities would avoid the headwaters to a tributary of Fountain Creek in the north central portion of the Project. The Project would not place fill in or alter these existing headwaters nor the stock pond that coincides with this drainage (**Appendix A8**). In addition, the Project would not place fill in or alter any other drainage swales that function to convey significant flows during stormwater events. The Project understands that impacts to drainages that convey significant flows during precipitation events would require additional stormwater detention facilities.

Project construction would avoid impacts to the single, isolated stock pond on the Project. BMPs would be utilized to prevent construction and stormwater runoff from entering the stock pond. Typical BMPs would include silt-fencing and straw waddles to prevent sediment deposition and erosion of soil around the stock pond.

2.303(17) Groundwater Quality

2.303(17)(a) Map and Description of all Groundwater Relevant to the Project

2.303(17)(a)(i) Seasonal Water Levels in Portions of Aquifer Affected by the Project

Terracon conducted a *Phase I Environmental Site Assessment* (ESA) for the Project in 2014 (**Appendix A4:** *Phase I Environmental Site Assessment*). The ESA indicated that the estimated depth to the first occurrence of groundwater beneath the property was 20 to 40 feet below ground surface. NRCS soil survey data report the water table as located at greater than 6.5 feet for the four soil series occurring within the Project.

2.303(17)(a)(ii) Artesian pressure

Since solar facilities would not impact ground water, artesian pressure was not assessed.

2.303(17)(a)(iii) Groundwater flow directions and levels

Since solar facilities would not impact ground water, ground water flow direction and levels were not assessed. However, Terracon did note that these variables would likely vary depending upon seasonal variations in rainfall and the depth to the soil/bedrock interface (**Appendix A4**)

2.303(17)(a)(iv) Existing aquifer recharge rates and methodology used to calculate recharge
Since solar facilities would not impact ground water, existing aquifer recharge rates were not measured.

2.303(17)(a)(v) Ability of aquifer to impound groundwater and storage capacity
Given the minimal water requirements needed to operate solar facilities, the ability of the aquifer to impound groundwater and storage capacity were not measured.

2.303(17)(a)(vi) Seepage losses expected
Given the minimal water requirements needed to operate solar facilities, seepage losses are not expected.

2.303(17)(a)(vii) Existing Groundwater Quality and Classification
The ESA indicated that groundwater quality is not monitored on the site. The CDPHE Hazardous Materials and Waste Management Division was solicited for information regarding environmental records or information indicating environmental concerns for the site that would have the potential to affect groundwater quality. The CDPHE replied that no records are on file for the Project area (**Appendix A4**).

2.303(17)(a)(viii) Location of all Water Wells Potentially Affected by the Project
There are no groundwater wells located on the property. The ESA identified three percolation test holes within the Project (**Appendix A4**).

2.303(17)(b) Description of the Impacts and net Effect of the Project on Groundwater

The Project is anticipated to have little effect on groundwater for the following reasons:

- The Project does not involve the use or installation of groundwater wells.
- No construction activities would occur below the water table.
- The amount of impervious surface to be installed is minimal and is therefore anticipated to have little effect on recharge of the underlying alluvium.

2.303(18) Water Quantity

2.303(18)(a) Map and Description of Existing Stream Flows and Reservoir Levels Relevant to the Project

There are no streams or reservoirs on the Project site; no stream flows or reservoir levels would be affected by the Project (**Appendix V**).

2.303(18)(b) Map and Description of Minimum Stream Flows Held by the Colorado Water Conservation Board

No stream flows would be affected by development of the Project; there are no perennial streams on the Project.

2.303(18)(c) Description of Impacts and net effect on Water Quantity

The Project would have negligible impacts on water quantity. It is anticipated that the solar panels would require washing twice a year. This would require approximately 22,000 gallons per year that would be obtained from one or more of the water taps procured from the WMWC. The WMWC issued a letter stating their commitment and ability to provide water for the Project (**Appendix A9**). Water would be pumped from the Fountain Creek Alluvial Aquifer, which is considered a renewable water resource under the EPC 300-year water supply rules. A WMWC water line traverses the Project site.

2.303(18)(d) Statement of Methods for Efficient Utilization of Water

Water use would be limited to dust mitigation and soil treatment during Project construction. Once installed, the solar panels are cleaned through rain events, but may require additional washings pending soiling conditions. The Project would require minimal additional water during the operational life of the Project.

2.303(19) Floodplains, Wetlands and Riparian Areas; Terrestrial and Aquatic Animals, Plant Life and Habitat

The Project would be developed with a commitment to environmental stewardship. WEST prepared a *Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Survey Report* for the Project in August 2015 (**Appendix M**). The site is located within Land Resource Region G: Western Great Plains and consists of flat to gently rolling topography. Elevations range from approximately 5,360 to 5,520 feet AMSL. Surface water flows to the east towards the Fountain Creek drainage. Project vegetation is comprised by short-grass prairie; cane cholla *(Cylindropuntia imbricata*) was observed throughout most of the Project and juniper (*Juniperus scopulorum*) was observed along the swales and the northwest part of the Project. CORE developed a *Noxious Weed Management Plan* (**Appendix I)**. Noxious weeds would be treated and managed according to county standards prior to, during, and following construction.

WEST conducted a site-survey to determine the potentially jurisdictional nature of any water bodies located on the Project. WEST located a single isolated non-jurisdictional stock pond on the Project. The Preliminary Drainage Report determined that no floodplains occur on the Project. (**Appendix V**).

Federal and state listed threatened and endangered (T&E) species and species of concern (SOC) that have the potential to occur at the Project site are included in table below (**Table 2**). No federally protected species or their associated habitat were identified at the Project site. Black tailed prairie dog (State SOC) was identified on the Project site. Prairie dog colonies are potential habitat for burrowing owl (State Threatened). Per CPW recommendations, the prairie dogs would be relocated or humanely eradicated prior to commencing earth-moving activities. Furthermore, the Project would follow CPW recommended measures to avoid impacts to the burrowing owl. If construction occurs between March 1 and October 31, the site would be surveyed for the presence of burrowing owls prior to commencing earth-moving activities. If burrowing owls are identified, their habitat would be avoided until after the owls have migrated from the area. A qualified biologist would perform the pre-construction surveys and monitor any burrowing owls identified during construction. Project correspondence with the USFWS and CPW are included in **Appendix M.**

WEST conducted a desktop review of federally and state listed Threatened and Endangered Species (TES) and state species of concern (SOC) that would have the potential to occur on the Project (**Table 2; Appendix M**). CORE notes that federal species identified as experimental or candidate, and SOC not relevant to the Project were removed from this summary. The Project requested comments from CPW and USFWS in 2014 regarding the potential for the Project to impact any federal or state TES identified in the review; the letters also solicited for agency input regarding recommended measures to avoid impacts to SOC (**Appendix M**).

NEPA review of the Project included a review of the *Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Report* as well as the Project's coordination with the USFWS and CPW in order to evaluate the Project's potential impact on multiple resources including, but not limited to: water, vegetation, wildlife and special status species and cultural. The NEPA review concluded with a Finding of No Significant Impact (FONSI) issued on September 21, 2016.

Table 2. *TES and SOC with the Potential for Occurrence within the Project*

Species	Federal and State Status[2]	Habitat	Likelihood of Occurrence within Project[3]
Mammals			
Black-tailed prairie dog (*Cynomys ludovicianus*)	SOC	Common across the Western Great Plains shortgrass prairie	High; WEST observed black-tailed prairie dogs in the north central portion of the Project
Preble's meadow jumping mouse (*Zapus hudsonius preblei*)	FT, ST	Well-developed riparian habitat with a nearby water source and with adjacent undisturbed grassland communities. Project area is outside of the range of known occupied habitat.	Unlikely; requisite habitat not present
Swift fox (*Vulpes velox*)	SOC	Typical in undisturbed shortgrass prairie; commonly associated with prairie dog colonies as the fox will modify burrows	High; preferred habitat present
Townsend's big-eared bat (*Corynorhinus townsendii*)	SOC	Roost in spacious cavern-like structures; forage along edge habitats in forested habitats and along heavily vegetated stream habitats; water sources are open and accessible	Moderate; CPW correspondence indicates a colony is located within five-miles of the Project; may utilize stock pond on the Project
Birds			
Burrowing owl (*Athene cunicularia*)	ST	Typical in shortgrass prairie; utilize prairie dog burrows for nesting in Colorado	High; preferred habitat present
Least tern (*Sterna antillarum*)[1]	FE, SE	Interior populations breed near rivers, usually with sandbars.	Unlikely; requisite habitat not present
Mexican spotted owl (*Strix occidentalis lucida*)	FT, ST	Old growth and mature forests; also, canyons with riparian communities.	Unlikely; requisite habitat not present

Mountain plover (*Charadrius montanus*)	SOC	Associated with shortgrass prairie habitat and some flooded, cultivated agricultural fields. May nest on prairie dog colonies since nesting occurs on areas characterized by bare ground or very short vegetation	Moderate
Piping plover (*Charadrius melodus*)[1]	FT, ST	Open sandy beaches on a variety of water bodies. Project is outside of breeding range.	Unlikely
Plains sharp-tailed grouse (*Tympanachus phasianellus jamesii*)	SE	Prefers scrubby plains habitat that includes well established shrub cover in both breeding and winter range; known to occur northeast of the Project	Unlikely; requisite habitat does not occur on site; out of known range
Whooping crane (*Grus americana*)[1]	FE, SE	Migrant found in a variety of wetland habitats and agricultural fields. Introduced as non-essential, experimental population in Colorado – no extant individuals remain.	Unlikely
Amphibians			
Northern leopard frog (*Lithobates pipiens*)	SOC	Requires perennial ponds, marshes, bogs, canals, floodplains, lakes, or slow streams with rooted aquatic vegetation	Unlikely; suitable habitat does not occur on site
Fish			
Arkansas darter (*Etheostoma cragini*)	FC, ST	Found in shallow, cool, clear streams in portions of the Arkansas River basin.	Unlikely; requisite habitat does not occur on site
Greenback Cutthroat trout (*Oncorhynchus clarki stomias*)	FT, ST	Cold water streams and lakes in the South Platte and Arkansas River basins.	Unlikely; requisite habitat does not occur on site
Pallid sturgeon (*Scaphirhynchus albus*)[1]	FE	Found downstream in the Missouri and Mississippi rivers and tributaries. Not known to occur in Colorado.	Unlikely; out of range and requisite habitat does not occur on site
Invertebrates			
Pawnee montane skipper (*Hesperia leonardus montana*)	FT	Restricted to portions of the South Platte Canyon River drainage system in ponderosa pine (*Pinus ponderosa*) on moderately steep, granitic slopes.	Unlikely; out of known range and requisite habitat does not occur on site
Flowers			
Ute ladies'-tresses (*Spiranthes diluvialis*)	FT	Found in moist meadows and a variety of vegetation and hydrology types associated with perennial and seasonally flooded areas.	Unlikely; moist meadows, sandy streams not present on site
Western prairie fringed orchid (*Platanthera praeclara*)[1]	FT	Found in calcareous prairies and sedge meadows in states east of Colorado. Not known to occur in Colorado.	Unlikely; out of known range and requisite habitat does not occur on site

[1] Per USFWS, this species only needs to be considered if the Project consists of water-related activities that would result in downstream depletions in the North Platte, South Platte, or Laramie River Basins. The Project is in the Arkansas River basin and, therefore, these species are unlikely to occur within the Project.

[2] FE= Federal Endangered, FT= Federally Threatened, FC= Federal Candidate, SE = State Endangered, ST = State Threatened

[3] Likelihood of Occurrence: Unlikely– no species range overlap with Project area or unsuitable habitat in Project vicinity; Low– species range overlaps with Project area and marginally suitable habitat in Project vicinity; Moderate– species range overlaps with Project area and suitable habitat present in Project area, or species known to occur in habitat similar to Project area; High–highly suitable habitat present in Project area, or known populations exist in Project vicinity.

2.303(20) Soils, Geologic Conditions and Natural Hazards

2.303(20)(a) Map and/or Description of Soils, Geologic Conditions, and Natural Hazards

The Project is located in a low hazard/nonforested area of the county (**Appendix X**). As such, risk of wildfire is minimal on the Project. In addition, the chance of wildfire would not likely increase significantly as a result of Project development. No other natural hazards with the potential to affect the Project have been identified (**Appendix Z**). However, design constraints have been identified in the Physical Constraints Map (**Appendix A8**). Four soil types were identified as occurring within the Project (**Appendix Z)**.

2.303(20)(b) Description of Risks to the Project from Natural Hazards

As described in sec. 2.203(20)(a) above, there is a minimal risk for wildfire on the Project site. Should wildfire occur, the HFPD would respond. The Project has obtained a Fire Commitment Letter from the district to respond to any fire emergency on the Project (**Appendix X**). An extensive snowstorm could have the potential to crush panels and arrays. The Project procured a Snow Stowing Design Bulletin from NexTracker pertaining to the snow-load bearing capacity of the solar panels. Based on manufacturer specifications, modules and racking can support up to 30 pounds per square foot (**Appendix A3**). No other natural hazards with the potential to affect the Project have been identified.

2.303(20)(c) Description of Impacts and Net Effect of Project on Soil and Geologic Conditions

The Project would have minimal impacts to local soils and no impact to geologic conditions. Soil disturbance would be limited to grading required for solar panel installation, site access, and distribution line pole installation. The Project would prepare a GEC Plan that would be approved by the county, prior to commencing construction.

2.303(21) Hazardous Materials

2.303(21)(a) Description of Hazardous Materials to be Used for the Project

During Project construction, hazardous materials used on site would be limited to petroleum products, including gasoline, oil, and lubricants for construction equipment. Construction equipment would be maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. All vehicle refueling and maintenance of vehicles authorized for highway travel would be conducted off-site. An SPCC Plan would be prepared for the Project and would contain information regarding training, equipment inspection and maintenance, and refueling of construction vehicles, with an emphasis on spill prevention. Hazardous materials would not be stored on the Project site during the operational period.

2.303(21)(b) Location of Storage Areas and Spill Containment Plans and Structures

The location of storage areas for hazardous materials would be described in the Project SPCC Plan and Final Emergency Response Plan (ERP). The SPCC Plan and final ERP would be completed prior to the initiation of construction activities. A preliminary ERP was drafted for the permitting phase of the Project (**Appendix W**).

2.303(22) Monitoring and Mitigation Plan

2.303(22)(a) Description of all Proposed Mitigation

Mitigation techniques for the Project would include:

- Disturbance of vegetation would be limited to that which is necessary for Project construction and maintenance.
- Stormwater management best management practices (BMPs) would be used to minimize stormwater related impacts during construction activities.
- Trees would either be cleared outside of the nesting raptor season (April 1 – July 15) or surveys would be conducted by a qualified biologist prior to commencing construction. There is potential for ground-nesting migratory birds to nest past July 15. Ground nesting birds can be cryptic depending on species and ground cover. As such, a qualified biologist would determine if ground clearance surveys are necessary should initial ground disturbing activities occur past July 15. Should construction occur between March 1 and October 31, nesting burrowing owl surveys would be conducted by a qualified biologist. If burrowing owls are observed, active nests would be avoided until after the owls have migrated from the area. A qualified biologist would perform the pre-construction surveys and monitor any burrowing owls identified during construction
- Project construction would avoid the isolated stock pond located in the north central portion of the Project.
- Non-native vegetation and noxious weeds would be managed on the Project site as required for Project operation; management would follow methods described in the Project-specific Noxious Weed Management Plan (**Appendix H:** *Noxious Weed Management Plan*). Revegetation methods would likely include broadcast seeding and/or drill seeding a mix of native grasses. It is anticipated that weed stubble, following noxious weed treatment and mowing of the site, would secure seed in the topsoil. The exact method of revegetation is dependent upon the time of year at which construction would start. As such, specific revegetation methods would be detailed during the Site Development Plan stage. Operations would require regular mowing to prevent shading of the solar panels.
- BMPs identified in the Project's SPCC Plan would be implemented.
- BMPs identified in the Project's SWMP would be implemented.

2.303(22)(b) Methodology to Measure Impacts

- Routine SPCC Plan inspections and reporting.
- Routine SWMP inspections and reporting.

- Pre-construction surveys and biologist monitoring as needed.

2.303(22)(c) Description of Monitoring

- SWMP BMPs would be monitored during construction activities.
- SPCC Plan BMPs would be monitored during construction activities.
- Monitoring of energy production to ensure adherence to the PPA, once established.
- If necessary, burrowing owls would be monitored during construction.
- Site mowing would maintain low vegetation coverage to avoid shading of solar panels.

Your review of this application is appreciated, and we look forward to any questions or comments regarding the information herein. Please let us know if there is any additional information required. If you have any questions regarding this submittal and the associated appendices please feel free to contact Dave Iadarola, project manager, at (720) 732-3154.

Respectfully submitted,

Matt Gilhousen
Vice President
Front Range-Midway Solar Project, LLC

Appendices

A	Application Form
B	Certification of Deed Research and Notification to Mineral Owners
C	Vicinity Map
D	Interconnection Agreements
E	Preliminary Site Plan
F	WSEO Overlay Plan
G	Project FONSI
H	Noxious Weed Management Plan
I	Summary of Project Lighting Memo and Lighting Plan
J	List of Adjacent Property Owners
K	Final Environmental Assessment
L	Class III Cultural Resources Inventory
M	Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Report; USFWS CPW Correspondence
N	El Paso County Zoning Map
O	Land Use/Land Cover Map
P	Public Lands Map
Q	Critical Issues Analysis
R	Air Quality Management Plan
S	Transportation Memorandum, Haul Route Plan, and Traffic Data Collection
T	Operations and Maintenance Plan
U	Decommissioning Plan
V	Preliminary Drainage Report
W	Preliminary Emergency Response Plan
X	Fire Protection Plan and Hanover Fire District Commitment Letter
Y	Visual Simulation and Solar Glare Hazard Analysis Tool Report
Z	Preliminary Geotechnical Engineering Report
A1	Feasibility Summary Report
A2	Soils Map
A3	NexTracker Design Bulletin-Snow Stowing
A4	Phase I Environmental Site Assessment
A5	Regional Setting Map
A6	Existing Transmission Lines Map
A7	Site Plan with Easements
A8	Physical Constraints Map
A9	Wigwam Mutual Water Company Commitment Letter

Attachment D

STANDARD LARGE GENERATOR

INTERCONNECTION AGREEMENT (LGIA)

BETWEEN

UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
ROCKY MOUNTAIN REGION

COLORADO RIVER STORAGE PROJECT

AND

FRONT RANGE MIDWAY SOLAR PROJECT, LLC

TABLE OF CONTENTS

STANDARD LARGE GENERATOR INTERCONNECTION AGREEMENT

THIS STANDARD LARGE GENERATOR INTERCONNECTION AGREEMENT ("Agreement") is made and entered into this 18th day of January, 2017, by and between Front Range Midway Solar Project, LLC, a Limited Liability Company organized and existing under the laws of the State of Delaware, ("Interconnection Customer" with a Large Generating Facility), and Western Area Power Administration, a Federal power marketing administration organized under the United States Department of Energy ("Transmission Provider and/or Transmission Owner"). Interconnection Customer and Transmission Provider each may be referred to as a "Party" or collectively as the "Parties".

Recitals

WHEREAS, Transmission Provider operates the Transmission System; and

WHEREAS, Interconnection Customer intends to own, lease and/or control and operate the Generating Facility identified as a Large Generating Facility in Appendix C to this Agreement; and,

WHEREAS, Interconnection Customer and Transmission Provider have agreed to enter into this Agreement for the purpose of interconnecting the Large Generating Facility with the Transmission System;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, it is agreed:

When used in this Standard Large Generator Interconnection Agreement, terms with initial capitalization that are not defined in Article 1 shall have the meanings specified in the Article in which they are used or the Open Access Transmission Tariff (Tariff).

Article 1. Definitions

Adverse System Impact shall mean the negative effects due to technical or operational limits on conductors or equipment being exceeded that may compromise the safety and reliability of the electric system.

Affected System shall mean an electric system other than the Transmission Provider's Transmission System that may be affected by the proposed interconnection.

Affected System Operator shall mean the entity that operates an Affected System.

Affiliate shall mean, with respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

Ancillary Services shall mean those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Provider's Transmission System in accordance with Good Utility Practice.

Applicable Laws and Regulations shall mean all duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

Applicable Reliability Council shall mean the reliability council applicable to the Transmission System to which the Generating Facility is directly interconnected.

Applicable Reliability Standards shall mean the requirements and guidelines of NERC, the Applicable Reliability Council, and the Control Area of the Transmission System to which the Generating Facility is directly interconnected.

Base Case shall mean the base case power flow, short circuit, and stability data bases used for the Interconnection Studies by the Transmission Provider or Interconnection Customer.

Breach shall mean the failure of a Party to perform or observe any material term or condition of the Standard Large Generator Interconnection Agreement.

Breaching Party shall mean a Party that is in Breach of the Standard Large Generator Interconnection Agreement.

Business Day shall mean Monday through Friday, excluding Federal Holidays.

Calendar Day shall mean any day including Saturday, Sunday or a Federal Holiday.

Clustering shall mean the process whereby a group of Interconnection Requests is studied together, instead of serially, for the purpose of conducting the Interconnection System Impact Study.

Commercial Operation shall mean the status of a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during Trial Operation.

Commercial Operation Date of a unit shall mean the date on which the Generating Facility commences Commercial Operation as agreed to by the Parties pursuant to Appendix E to the Standard Large Generator Interconnection Agreement.

Confidential Information shall mean any confidential, proprietary or trade secret information of a plan, specification, pattern, procedure, design, device, list, concept, policy or compilation relating to the present or planned business of a Party, which is designated as confidential by the Party supplying the information, whether conveyed orally, electronically, in writing, through inspection, or otherwise.

Control Area shall mean an electrical system or systems bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation of the interconnection. A Control Area must be certified by the Applicable Reliability Council.

Default shall mean the failure of a Breaching Party to cure its Breach in accordance with Article 17 of the Standard Large Generator Interconnection Agreement.

Dispute Resolution shall mean the procedure for resolution of a dispute between the Parties in which they will first attempt to resolve the dispute on an informal basis.

Distribution System shall mean the Transmission Provider's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.

Distribution Upgrades shall mean the additions, modifications, and upgrades to the Transmission Provider's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the transmission service necessary to effect Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

Effective Date shall mean the date on which the Standard Large Generator Interconnection Agreement becomes effective upon execution by the Parties.

Emergency Condition shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of a

Transmission Provider, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to Transmission Provider's Transmission System, Transmission Provider's Interconnection Facilities or the electric systems of others to which the Transmission Provider's Transmission System is directly connected; or (3) that, in the case of Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or Interconnection Customer's Interconnection Facilities. System restoration and black start shall be considered Emergency Conditions; provided, that Interconnection Customer is not obligated by the Standard Large Generator Interconnection Agreement to possess black start capability.

Energy Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or nonfirm capacity of the Transmission Provider's Transmission System on an as available basis. Energy Resource Interconnection Service in and of itself does not convey transmission service.

Engineering & Procurement (E&P) Agreement shall mean an agreement that authorizes the Transmission Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection in order to advance the implementation of the Interconnection Request.

Environmental Law shall mean Applicable Laws or Regulations relating to pollution or protection of the environment or natural resources.

Federal Power Act shall mean the Federal Power Act, as amended, 16 U.S.C. §§ 791a et seq.

FERC shall mean the Federal Energy Regulatory Commission (Commission) or its successor.

Force Majeure shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include acts of negligence or intentional wrongdoing by the Party claiming Force Majeure.

Generating Facility shall mean Interconnection Customer's device for the production of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

Generating Facility Capacity shall mean the net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple energy production devices.

Good Utility Practice shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority shall mean any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Transmission Provider, or any Affiliate thereof.

Hazardous Substances shall mean any chemicals, materials or substances defined as or included in the definition of "hazardous substances," "hazardous wastes," "hazardous materials," "hazardous constituents," "restricted hazardous materials," "extremely hazardous substances," "toxic substances," "radioactive substances," "contaminants," "pollutants," "toxic pollutants" or words of similar meaning and regulatory effect under any applicable Environmental Law, or any other chemical, material or substance, exposure to which is prohibited, limited or regulated by any applicable Environmental Law.

Initial Synchronization Date shall mean the date upon which the Generating Facility is initially synchronized and upon which Trial Operation begins.

In-Service Date shall mean the date upon which the Interconnection Customer reasonably expects it will be ready to begin use of the Transmission Provider's Interconnection Facilities to obtain back feed power.

Interconnection Customer shall mean any entity, including the Transmission Provider, Transmission Owner or any of the Affiliates or subsidiaries of either, that proposes to interconnect its Generating Facility with the Transmission Provider's Transmission System.

Interconnection Customer's Interconnection Facilities shall mean all facilities and equipment, as identified in Appendix A of the Standard Large Generator Interconnection Agreement, that are located between the Generating Facility and the Point of Change of Ownership, including any modification, addition, or upgrades to such facilities and equipment necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Customer's Interconnection Facilities are sole use facilities.

Interconnection Facilities shall mean the Transmission Provider's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities

include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

Interconnection Facilities Study shall mean a study conducted by the Transmission Provider or a third party consultant for the Interconnection Customer to determine a list of facilities (including Transmission Provider's Interconnection Facilities and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with the Transmission Provider's Transmission System. The scope of the study is defined in Section 8 of the Standard Large Generator Interconnection Procedures.

Interconnection Facilities Study Agreement shall mean the form of agreement contained in Appendix 4 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection Facilities Study.

Interconnection Feasibility Study shall mean a preliminary evaluation of the system impact and cost of interconnecting the Generating Facility to the Transmission Provider's Transmission System, the scope of which is described in Section 6 of the Standard Large Generator Interconnection Procedures.

Interconnection Feasibility Study Agreement shall mean the form of agreement contained in Appendix 2 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection Feasibility Study.

Interconnection Request shall mean an Interconnection Customer's request, in the form of Appendix 1 to the Standard Large Generator Interconnection Procedures, in accordance with the Tariff, to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Transmission Provider's Transmission System.

Interconnection Service shall mean the service provided by the Transmission Provider associated with interconnecting the Interconnection Customer's Generating Facility to the Transmission Provider's Transmission System and enabling it to receive electric energy and capacity from the Generating Facility at the Point of Interconnection, pursuant to the terms of the Standard Large Generator Interconnection Agreement and, if applicable, the Transmission Provider's Tariff.

Interconnection Study shall mean any of the following studies: the Interconnection Feasibility Study, the Interconnection System Impact Study, and the Interconnection Facilities Study described in the Standard Large Generator Interconnection Procedures.

Interconnection System Impact Study shall mean an engineering study that evaluates the impact of the proposed interconnection on the safety and reliability of Transmission Provider's

Transmission System and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the Generating Facility were interconnected without project modifications or system modifications, focusing on the Adverse System Impacts identified in the Interconnection Feasibility Study, or to study potential impacts, including but not limited to those identified in the Scoping Meeting as described in the Standard Large Generator Interconnection Procedures.

Interconnection System Impact Study Agreement shall mean the form of agreement contained in Appendix 3 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection System Impact Study.

IRS shall mean the Internal Revenue Service.

Joint Operating Committee shall be a group made up of representatives from Interconnection Customers and the Transmission Provider to coordinate operating and technical considerations of Interconnection Service.

Large Generating Facility shall mean a Generating Facility having a Generating Facility Capacity of more than 20 MW.

Loss shall mean any and all losses relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's performance, or non-performance of its obligations under the Standard Large Generator Interconnection Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnifying Party.

Material Modification shall mean those modifications that have a material impact on the cost or timing of any Interconnection Request with a later queue priority date.

Metering Equipment shall mean all metering equipment installed or to be installed at the Generating Facility pursuant to the Standard Large Generator Interconnection Agreement at the metering points, including but not limited to instrument transformers, MWh-meters, data acquisition equipment, transducers, remote terminal unit, communications equipment, phone lines, and fiber optics.

NERC shall mean the North American Electric Reliability Council or its successor organization.

Network Resource shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis.

Network Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission System (1) in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an RTO or ISO with market based congestion management, in the same manner as Network Resources. Network Resource Interconnection Service in and of itself does not convey transmission service.

Network Upgrades shall mean the additions, modifications, and upgrades to the Transmission Provider's Transmission System required at or beyond the point at which the Interconnection Facilities connect to the Transmission Provider's Transmission System to accommodate the interconnection of the Large Generating Facility to the Transmission Provider's Transmission System.

Notice of Dispute shall mean a written notice of a dispute or claim that arises out of or in connection with the Standard Large Generator Interconnection Agreement or its performance.

Optional Interconnection Study shall mean a sensitivity analysis based on assumptions specified by the Interconnection Customer in the Optional Interconnection Study Agreement.

Optional Interconnection Study Agreement shall mean the form of agreement contained in Appendix 5 of the Standard Large Generator Interconnection Procedures for conducting the Optional Interconnection Study.

Party or Parties shall mean Transmission Provider, Transmission Owner, Interconnection Customer or any combination of the above.

Point of Change of Ownership shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Customer's Interconnection Facilities connect to the Transmission Provider's Interconnection Facilities.

Point of Interconnection shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Facilities connect to the Transmission Provider's Transmission System.

Queue Position shall mean the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, that is established based upon the date and time of receipt of the valid Interconnection Request by the Transmission Provider.

Reasonable Efforts shall mean, with respect to an action required to be attempted or taken by a Party under the Standard Large Generator Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Scoping Meeting shall mean the meeting between representatives of the Interconnection Customer and Transmission Provider conducted for the purpose of discussing alternative interconnection

options, to exchange information including any transmission data and earlier study evaluations that would be reasonably expected to impact such interconnection options, to analyze such information, and to determine the potential feasible Points of Interconnection.

Site Control shall mean documentation reasonably demonstrating: (1) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility; (2) an option to purchase or acquire a leasehold site for such purpose; or (3) an exclusivity or other business relationship between Interconnection Customer and the entity having the right to sell, lease or grant Interconnection Customer the right to possess or occupy a site for such purpose.

Small Generating Facility shall mean a Generating Facility that has a Generating Facility Capacity of no more than 20 MW.

Stand Alone Network Upgrades shall mean Network Upgrades that an Interconnection Customer may construct without affecting day-to-day operations of the Transmission System during their construction. Both the Transmission Provider and the Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify them in Appendix A to the Standard Large Generator Interconnection Agreement.

Standard Large Generator Interconnection Agreement (LGIA) shall mean the form of interconnection agreement applicable to an Interconnection Request pertaining to a Large Generating Facility that is included in the Transmission Provider's Tariff.

Standard Large Generator Interconnection Procedures (LGIP) shall mean the interconnection procedures applicable to an Interconnection Request pertaining to a Large Generating Facility that are included in the Transmission Provider's Tariff.

System Protection Facilities shall mean the equipment, including necessary protection signal communications equipment, required to protect (1) the Transmission Provider's Transmission System from faults or other electrical disturbances occurring at the Generating Facility, and (2) the Generating Facility from faults or other electrical system disturbances occurring on the Transmission Provider's Transmission System or on other delivery systems or other generating systems to which the Transmission Provider's Transmission System is directly connected.

Tariff shall mean the Transmission Provider's Tariff through which open access transmission service and Interconnection Service are offered, and as amended or supplemented from time to time, or any successor tariff.

Transmission Owner shall mean an entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System at the Point of Interconnection and may be a Party to the Standard Large Generator Interconnection Agreement to the extent necessary.

Transmission Provider shall mean the public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity in interstate commerce and provides transmission service under the Tariff. The term Transmission

Provider should be read to include the Transmission Owner when the Transmission Owner is separate from the Transmission Provider.

Transmission Provider's Interconnection Facilities shall mean all facilities and equipment owned, controlled or operated by the Transmission Provider from the Point of Change of Ownership to the Point of Interconnection as identified in Appendix A to the Standard Large Generator Interconnection Agreement, including any modifications, additions or upgrades to such facilities and equipment. Transmission Provider's Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

Transmission System shall mean the facilities owned, controlled or operated by the Transmission Provider or Transmission Owner that are used to provide transmission service under the Tariff.

Trial Operation shall mean the period during which Interconnection Customer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

Article 2. Effective Date, Term, and Termination

2.1 Effective Date. This LGIA shall become effective upon execution by the Parties.

2.2 Term of Agreement. Subject to the provisions of Article 2.3, this LGIA shall remain in effect for a period of ten (10) years from the Effective Date or such other longer period as Interconnection Customer may request (Term to be specified in individual agreements) and shall be automatically renewed for each successive one-year period thereafter. Notwithstanding this Article 2.2 or 2.3, the maximum effective period of this LGIA shall be forty (40) years from the Effective Date. Five years prior to termination, Interconnection Customer shall provide written notice of its intention to extend the LGIA. Upon receiving such notice, Transmission Provider shall enter into good faith discussions regarding an extension of the LGIA at Interconnection Customer's request.

2.3 Termination Procedures.

2.3.1 Written Notice. This LGIA may be terminated either by Interconnection Customer after giving Transmission Provider ninety (90) Calendar Days advance written notice, or by Transmission Provider if the Generating Facility has ceased Commercial Operation for three (3) consecutive years, beginning on the last date of Commercial Operation for the Generating Facility, after giving Interconnection Customer ninety (90) Calendar Days advance written notice.

2.3.2 Default. Either Party may terminate this LGIA in accordance with Article 17.

2.3.3 Notwithstanding Articles 2.3.1 and 2.3.2, no termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

2.4 **Termination Costs**. If a Party elects to terminate this Agreement pursuant to Article 2.3 above, each Party shall pay all costs incurred (including any cancellation costs relating to orders or contracts for Interconnection Facilities and equipment) or charges assessed by the other Party, as of the date of the other Party's receipt of such notice of termination, that are the responsibility of the Terminating Party under this LGIA. In the event of termination by a Party, the Parties shall use commercially Reasonable Efforts to mitigate the costs, damages and charges arising as a consequence of termination. Upon termination of this LGIA:

2.4.1 With respect to any portion of Transmission Provider's Interconnection Facilities that have not yet been constructed or installed, Transmission Provider shall to the extent possible and with Interconnection Customer's authorization cancel any pending orders of, or return, any materials or equipment for, or contracts for construction of, such facilities; provided that in the event Interconnection Customer elects not to authorize such cancellation, Interconnection Customer shall assume all payment obligations with respect to such materials, equipment, and contracts, and Transmission Provider shall deliver such material and equipment, and, if necessary, assign such contracts, to Interconnection Customer as soon as practicable, at Interconnection Customer's expense. To the extent that Interconnection Customer has already paid Transmission Provider for any or all such costs of materials or equipment not taken by Interconnection Customer, Transmission Provider shall promptly refund such amounts to Interconnection Customer, less any costs, including penalties incurred by Transmission Provider to cancel any pending orders of or return such materials, equipment, or contracts.

If an Interconnection Customer terminates this LGIA, it shall be responsible for all costs incurred in association with that Interconnection Customer's interconnection, including any cancellation costs relating to orders or contracts for Interconnection Facilities and equipment, and other expenses including any Network Upgrades for which Transmission Provider has incurred expenses and has not been reimbursed by Interconnection Customer.

2.4.2 Transmission Provider may, at its option, retain any portion of such materials, equipment, or facilities that Interconnection Customer chooses not to accept delivery of, in which case Transmission Provider shall be responsible for all costs associated with procuring such materials, equipment, or facilities.

2.4.3 With respect to any portion of the Interconnection Facilities, and any other facilities already installed or constructed pursuant to the terms of this LGIA, Interconnection Customer shall be responsible for all costs associated with the

removal, relocation or other disposition or retirement of such materials, equipment, or facilities.

2.5 **Disconnection**. Upon termination of this LGIA, the Parties will take all appropriate steps to disconnect the Large Generating Facility from the Transmission System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this LGIA or such non-terminating Party otherwise is responsible for these costs under this LGIA.

2.6 **Survival**. This LGIA shall continue in effect after termination to the extent necessary to provide for final billings and payments and for costs incurred hereunder, including billings and payments pursuant to this LGIA; to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while this LGIA was in effect; and to permit each Party to have access to the lands of the other Party pursuant to this LGIA or other applicable agreements, to disconnect, remove or salvage its own facilities and equipment.

Article 3. [This Article intentionally left blank.]

Article 4. **Scope of Service**

4.1 **Interconnection Product Options**. Interconnection Customer has selected the following (checked) type of Interconnection Service:

4.1.1 **Energy Resource Interconnection Service**. ☐ (check if selected)

4.1.1.1 **The Product**. Energy Resource Interconnection Service allows Interconnection Customer to connect the Large Generating Facility to the Transmission System and be eligible to deliver the Large Generating Facility's output using the existing firm or non-firm capacity of the Transmission System on an "as available" basis. To the extent Interconnection Customer wants to receive Energy Resource Interconnection Service, Transmission Provider shall construct facilities identified in Attachment A.

4.1.1.2 **Transmission Delivery Service Implications**. Under Energy Resource Interconnection Service, Interconnection Customer will be eligible to inject power from the Large Generating Facility into and deliver power across the interconnecting Transmission Provider's Transmission System on an "as available" basis up to the amount of MWs identified in the applicable stability and steady state studies to the extent the upgrades initially required to qualify for Energy Resource Interconnection Service have been constructed. Where eligible to do so (e.g., PJM, ISO-NE, NYISO), Interconnection Customer may place a bid to sell into the market up to the maximum

identified Large Generating Facility output, subject to any conditions specified in the interconnection service approval, and the Large Generating Facility will be dispatched to the extent Interconnection Customer's bid clears. In all other instances, no transmission delivery service from the Large Generating Facility is assured, but Interconnection Customer may obtain Point-to-Point Transmission Service, Network Integration Transmission Service, or be used for secondary network transmission service, pursuant to Transmission Provider's Tariff, up to the maximum output identified in the stability and steady state studies. In those instances, in order for Interconnection Customer to obtain the right to deliver or inject energy beyond the Large Generating Facility Point of Interconnection or to improve its ability to do so, transmission delivery service must be obtained pursuant to the provisions of Transmission Provider's Tariff. The Interconnection Customer's ability to inject its Large Generating Facility output beyond the Point of Interconnection, therefore, will depend on the existing capacity of Transmission Provider's Transmission System at such time as a transmission service request is made that would accommodate such delivery. The provision of firm Point-to-Point Transmission Service or Network Integration Transmission Service may require the construction of additional Network Upgrades.

4.1.2 Network Resource Interconnection Service. ☒ (check if selected)

4.1.2.1 The Product. Transmission Provider must conduct the necessary studies and construct the Network Upgrades needed to integrate the Large Generating Facility (1) in a manner comparable to that in which Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an ISO or RTO with market based congestion management, in the same manner as all Network Resources. To the extent Interconnection Customer wants to receive Network Resource Interconnection Service, Transmission Provider shall construct the facilities identified in Attachment A to this LGIA.

4.1.2.2 Transmission Delivery Service Implications. Network Resource Interconnection Service allows Interconnection Customer's Large Generating Facility to be designated by any Network Customer under the Tariff on Transmission Provider's Transmission System as a Network Resource, up to the Large Generating Facility's full output, on the same basis as existing Network Resources interconnected to Transmission Provider's Transmission System, and to be studied as a Network Resource on the assumption that such a designation will occur. Although Network Resource Interconnection Service does not convey a reservation of transmission service, any Network Customer

under the Tariff can utilize its network service under the Tariff to obtain delivery of energy from the interconnected Interconnection Customer's Large Generating Facility in the same manner as it accesses Network Resources. A Large Generating Facility receiving Network Resource Interconnection Service may also be used to provide Ancillary Services after technical studies and/or periodic analyses are performed with respect to the Large Generating Facility's ability to provide any applicable Ancillary Services, provided that such studies and analyses have been or would be required in connection with the provision of such Ancillary Services by any existing Network Resource. However, if an Interconnection Customer's Large Generating Facility has not been designated as a Network Resource by any load, it cannot be required to provide Ancillary Services except to the extent such requirements extend to all generating facilities that are similarly situated. The provision of Network Integration Transmission Service or firm Point-to-Point Transmission Service may require additional studies and the construction of additional upgrades. Because such studies and upgrades would be associated with a request for delivery service under the Tariff, cost responsibility for the studies and upgrades would be in accordance with FERC's policy for pricing transmission delivery services.

Network Resource Interconnection Service does not necessarily provide Interconnection Customer with the capability to physically deliver the output of its Large Generating Facility to any particular load on Transmission Provider's Transmission System without incurring congestion costs. In the event of transmission constraints on Transmission Provider's Transmission System, Interconnection Customer's Large Generating Facility shall be subject to the applicable congestion management procedures in Transmission Provider's Transmission System in the same manner as Network Resources.

There is no requirement either at the time of study or interconnection, or at any point in the future, that Interconnection Customer's Large Generating Facility be designated as a Network Resource by a Network Service Customer under the Tariff or that Interconnection Customer identify a specific buyer (or sink). To the extent a Network Customer does designate the Large Generating Facility as a Network Resource, it must do so pursuant to Transmission Provider's Tariff.

Once an Interconnection Customer satisfies the requirements for obtaining Network Resource Interconnection Service, any future transmission service request for delivery from the Large Generating

Facility within Transmission Provider's Transmission System of any amount of capacity and/or energy, up to the amount initially studied, will not require that any additional studies be performed or that any further upgrades associated with such Large Generating Facility be undertaken, regardless of whether or not such Large Generating Facility is ever designated by a Network Customer as a Network Resource and regardless of changes in ownership of the Large Generating Facility. However, the reduction or elimination of congestion or redispatch costs may require additional studies and the construction of additional upgrades.

To the extent Interconnection Customer enters into an arrangement for long term transmission service for deliveries from the Large Generating Facility outside Transmission Provider's Transmission System, such request may require additional studies and upgrades in order for Transmission Provider to grant such request.

4.2 **Provision of Service**. Transmission Provider shall provide Interconnection Service for the Large Generating Facility at the Point of Interconnection.

4.3 **Performance Standards**. Each Party shall perform all of its obligations under this LGIA in accordance with Applicable Laws and Regulations, Applicable Reliability Standards, and Good Utility Practice, and to the extent a Party is required or prevented or limited in taking any action by such regulations and standards, such Party shall not be deemed to be in Breach of this LGIA for its compliance therewith.

4.4 **No Transmission Delivery Service**. The execution of this LGIA does not constitute a request for, nor the provision of, any transmission delivery service under Transmission Provider's Tariff, and does not convey any right to deliver electricity to any specific customer or Point of Delivery.

4.5 **Interconnection Customer Provided Services**. The services provided by Interconnection Customer under this LGIA are set forth in Article 9.6 and Article 13.5.1. Interconnection Customer shall be paid for such services in accordance with Article 11.6.

Article 5. Interconnection Facilities Engineering, Procurement, and Construction

5.1 **Options**. Unless otherwise mutually agreed to between the Parties, Interconnection Customer shall select the In-Service Date, Initial Synchronization Date, and Commercial Operation Date; and either Standard Option or Alternate Option set forth below for completion of Transmission Provider's Interconnection Facilities and Network Upgrades as set forth in Appendix A, Interconnection Facilities and Network Upgrades, and such dates and selected option shall be set forth in Appendix B, Milestones.

5.1.1 **Standard Option**. Transmission Provider shall design, procure, and construct Transmission Provider's Interconnection Facilities and Network Upgrades, using Reasonable Efforts to complete Transmission Provider's Interconnection Facilities and Network Upgrades by the dates set forth in Appendix B, Milestones. Transmission Provider shall not be required to undertake any action which is inconsistent with its standard safety and security practices, its material and equipment specifications, its design criteria and construction procedures, its labor agreements, Applicable Laws and Regulations, and Good Utility Practice. In the event Transmission Provider reasonably expects that it will not be able to complete Transmission Provider's Interconnection Facilities and Network Upgrades by the specified dates, Transmission Provider shall promptly provide written notice to Interconnection Customer and shall undertake Reasonable Efforts to meet the earliest dates thereafter.

5.1.2 **Alternate Option**. If the dates designated by Interconnection Customer are acceptable to Transmission Provider, Transmission Provider shall use Reasonable Efforts to so notify Interconnection Customer within thirty (30) Calendar Days, and shall assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities by the designated dates.

5.1.3 **Option to Build**. If the dates designated by Interconnection Customer are not acceptable to Transmission Provider, Transmission Provider shall use Reasonable Efforts to so notify Interconnection Customer within thirty (30) Calendar Days, and unless the Parties agree otherwise, Interconnection Customer shall have the option to assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades on the dates specified in Article 5.1.2. Transmission Provider and Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify such Stand Alone Network Upgrades in Appendix A. Except for Stand Alone Network Upgrades, Interconnection Customer shall have no right to construct Network Upgrades under this option.

5.1.4 **Negotiated Option**. If Interconnection Customer elects not to exercise its option under Article 5.1.3, Option to Build, Interconnection Customer shall so notify Transmission Provider within thirty (30) Calendar Days, and the Parties shall in good faith attempt to negotiate terms and conditions (including revision of the specified dates, the provision of incentives or the procurement and construction of a portion of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades by Interconnection Customer) pursuant to which Transmission Provider is responsible for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Network Upgrades. If the Parties are unable to reach agreement on such terms and conditions, Transmission Provider shall assume responsibility for the design,

procurement and construction of Transmission Provider's Interconnection Facilities and Network Upgrades pursuant to 5.1.1, Standard Option.

5.2 General Conditions Applicable to Option to Build. If Interconnection Customer assumes responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades,

(1) Interconnection Customer shall engineer, procure equipment, and construct Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades (or portions thereof) using Good Utility Practice and using standards and specifications provided in advance by Transmission Provider;

(2) Interconnection Customer's engineering, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades shall comply with all requirements of law to which Transmission Provider would be subject in the engineering, procurement or construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(3) Transmission Provider shall review and approve the engineering design, equipment acceptance tests, and the construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(4) prior to commencement of construction, Interconnection Customer shall provide to Transmission Provider a schedule for construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades, and shall promptly respond to requests for information from Transmission Provider;

(5) at any time during construction, Transmission Provider shall have the right to gain unrestricted access to Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades and to conduct inspections, at Interconnection Customer's cost, of the same;

(6) at any time during construction, should any phase of the engineering, equipment procurement, or construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades not meet the standards and specifications provided by Transmission Provider, Interconnection Customer shall be obligated to remedy deficiencies in that portion of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(7) Interconnection Customer shall indemnify Transmission Provider for claims arising from Interconnection Customer's construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades under the terms and procedures applicable to Article 18.1 Indemnity;

(8) Interconnection Customer shall transfer control of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades to Transmission Provider;

(9) Unless Parties otherwise agree, Interconnection Customer shall transfer ownership of Transmission Provider's Interconnection Facilities and Stand-Alone Network Upgrades to Transmission Provider;

(10) Transmission Provider shall approve and accept for operation and maintenance Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades to the extent engineered, procured, and constructed in accordance with this Article 5.2; and

(11) Interconnection Customer shall deliver to Transmission Provider "as-built" drawings, information, and any other documents in compliance with Transmission Provider's standards that are reasonably required by Transmission Provider to assure that the Interconnection Facilities and Stand-Alone Network Upgrades are built to the standards and specifications required by Transmission Provider.

5.3 [This Article intentionally left blank.]

5.4 **Power System Stabilizers**. The Interconnection Customer shall procure, install, maintain and operate Power System Stabilizers in accordance with the guidelines and procedures established by the Applicable Reliability Council. Transmission Provider reserves the right to reasonably establish minimum acceptable settings for any installed Power System Stabilizers, subject to the design and operating limitations of the Large Generating Facility. If the Large Generating Facility's Power System Stabilizers are removed from service or not capable of automatic operation, Interconnection Customer shall immediately notify Transmission Provider's system operator, or its designated representative. The requirements of this paragraph shall not apply to wind generators.

5.5 **Equipment Procurement**. If responsibility for construction of Transmission Provider's Interconnection Facilities or Network Upgrades is to be borne by Transmission Provider, then Transmission Provider shall commence design of Transmission Provider's Interconnection Facilities or Network Upgrades and procure necessary equipment as soon as practicable after all of the following conditions are satisfied, unless the Parties otherwise agree in writing:

5.5.1 Transmission Provider has completed the Facilities Study pursuant to the Facilities Study Agreement;

5.5.2 Transmission Provider has received written authorization to proceed with design and procurement from Interconnection Customer by the date specified in Appendix B, Milestones; and

5.5.3 Interconnection Customer has provided security to Transmission Provider in accordance with Article 11.5 by the dates specified in Appendix B, Milestones.

5.6 **Construction Commencement**. Transmission Provider shall commence construction of Transmission Provider's Interconnection Facilities and Network Upgrades for which it is responsible as soon as practicable after the following additional conditions are satisfied:

5.6.1 Approval of the appropriate Governmental Authority has been obtained for any facilities requiring regulatory approval;

5.6.2 Necessary real property rights and rights-of-way have been obtained, to the extent required for the construction of a discrete aspect of Transmission Provider's Interconnection Facilities and Network Upgrades;

5.6.3 Transmission Provider has received written authorization to proceed with construction from Interconnection Customer by the date specified in Appendix B, Milestones; and

5.6.4 Interconnection Customer has provided security to Transmission Provider in accordance with Article 11.5 by the dates specified in Appendix B, Milestones.

5.7 **Work Progress**. The Parties will keep each other advised periodically as to the progress of their respective design, procurement and construction efforts. Either Party may, at any time, request a progress report from the other Party. If, at any time, Interconnection Customer determines that the completion of Transmission Provider's Interconnection Facilities will not be required until after the specified In-Service Date, Interconnection Customer will provide written notice to Transmission Provider of such later date upon which the completion of Transmission Provider's Interconnection Facilities will be required.

5.8 **Information Exchange**. As soon as reasonably practicable after the Effective Date, the Parties shall exchange information regarding the design and compatibility of the Parties' Interconnection Facilities and compatibility of the Interconnection Facilities with Transmission Provider's Transmission System, and shall work diligently and in good faith to make any necessary design changes.

5.9 **Limited Operation**. If any of Transmission Provider's Interconnection Facilities or Network Upgrades are not reasonably expected to be completed prior to the Commercial Operation Date of the Large Generating Facility, Transmission Provider shall, upon the request and at the expense of Interconnection Customer, perform operating studies on a timely basis to determine the extent to which the Large Generating Facility and

Interconnection Customer's Interconnection Facilities may operate prior to the completion of Transmission Provider's Interconnection Facilities or Network Upgrades consistent with Applicable Laws and Regulations, Applicable Reliability Standards, Good Utility Practice, and this LGIA. Transmission Provider shall permit Interconnection Customer to operate the Large Generating Facility and Interconnection Customer's Interconnection Facilities in accordance with the results of such studies.

5.10 Interconnection Customer's Interconnection Facilities ('ICIF'). Interconnection Customer shall, at its expense, design, procure, construct, own and install the ICIF, as set forth in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades.

5.10.1 Interconnection Customer's Interconnection Facility Specifications. Interconnection Customer shall submit initial specifications for the ICIF, including System Protection Facilities, to Transmission Provider at least one hundred eighty (180) Calendar Days prior to the Initial Synchronization Date; and final specifications for review and comment at least ninety (90) Calendar Days prior to the Initial Synchronization Date. Transmission Provider shall review such specifications to ensure that the ICIF are compatible with the technical specifications, operational control, and safety requirements of Transmission Provider, and shall use Reasonable Efforts to comment on such specifications within thirty (30) Calendar Days of Interconnection Customer's submission. All specifications provided hereunder shall be deemed confidential.

5.10.2 Transmission Provider's Review. Transmission Provider's review of Interconnection Customer's final specifications shall not be construed as confirming, endorsing, or providing a warranty as to the design, fitness, safety, durability or reliability of the Large Generating Facility, or the ICIF. Interconnection Customer shall make such changes to the ICIF as may reasonably be required by Transmission Provider, in accordance with Good Utility Practice, to ensure that the ICIF are compatible with the technical specifications, operational control, and safety requirements of Transmission Provider.

5.10.3 ICIF Construction. The ICIF shall be designed and constructed in accordance with Good Utility Practice. Within one hundred twenty (120) Calendar Days after the Commercial Operation Date, unless the Parties agree on another mutually acceptable deadline, Interconnection Customer shall deliver to Transmission Provider "as-built" drawings, information and documents for the ICIF, such as: a one-line diagram, a site plan showing the Large Generating Facility and the ICIF, plan and elevation drawings showing the layout of the ICIF, a relay functional diagram, relaying AC and DC schematic wiring diagrams and relay settings for all facilities associated with Interconnection Customer's step-up transformers, the facilities connecting the Large Generating Facility to the step-up transformers and the ICIF, and the impedances (determined by factory tests) for the associated step-up transformers and the Large Generating Facility. The

Interconnection Customer shall provide Transmission Provider specifications for the excitation system, automatic voltage regulator, Large Generating Facility control and protection settings, transformer tap settings, and communications, if applicable.

5.11 Transmission Provider's Interconnection Facilities Construction. Transmission Provider's Interconnection Facilities shall be designed and constructed in accordance with Good Utility Practice. Unless the Parties agree on another mutually acceptable deadline, Transmission Provider shall use Reasonable Efforts to deliver to Interconnection Customer within one hundred twenty (120) Calendar Days after the Commercial Operation Date the following "as-built" drawings, information and documents for Transmission Provider's Interconnection Facilities [include appropriate drawings and relay diagrams].

Transmission Provider will obtain control of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades upon completion of such facilities.

5.12 Access Rights. Upon reasonable notice and supervision by a Party, and subject to any required or necessary regulatory approvals, a Party ("Granting Party") shall furnish at no cost to the other Party ("Access Party") any rights of use, licenses, rights of way and easements with respect to lands owned or controlled by the Granting Party, its agents (if allowed under the applicable agency agreement), or any Affiliate, that are necessary to enable the Access Party to obtain ingress and egress to construct, operate, maintain, repair, test (or witness testing), inspect, replace or remove facilities and equipment to: (i) interconnect the Large Generating Facility with the Transmission System; (ii) operate and maintain the Large Generating Facility, the Interconnection Facilities and the Transmission System; and (iii) disconnect or remove the Access Party's facilities and equipment upon termination of this LGIA. In exercising such licenses, rights of way and easements, the Access Party shall not unreasonably disrupt or interfere with normal operation of the Granting Party's business and shall adhere to the safety rules and procedures established in advance, as may be changed from time to time, by the Granting Party and provided to the Access Party.

5.13 Lands of Other Property Owners. If any part of Transmission Provider or Transmission Owner's Interconnection Facilities and/or Network Upgrades is to be installed on property owned by persons other than Interconnection Customer or Transmission Provider or Transmission Owner, Transmission Provider or Transmission Owner shall at Interconnection Customer's expense use efforts, similar in nature and extent to those that it typically undertakes on its own behalf or on behalf of its Affiliates, including use of its eminent domain authority, and to the extent consistent with Federal or state law, as applicable, to procure from such persons any rights of use, licenses, rights of way and easements that are necessary to construct, operate, maintain, test, inspect, replace or remove Transmission Provider or Transmission Owner's Interconnection Facilities and/or Network Upgrades upon such property.

5.14 **Permits**. Transmission Provider or Transmission Owner and Interconnection Customer shall cooperate with each other in good faith in obtaining all permits, licenses, and authorizations that are necessary to accomplish the interconnection in compliance with Applicable Laws and Regulations. With respect to this paragraph, Transmission Provider or Transmission Owner shall provide permitting assistance to Interconnection Customer comparable to that provided to Transmission Provider's own, or an Affiliate's generation.

5.15 **Early Construction of Base Case Facilities**. Interconnection Customer may request Transmission Provider to construct, and Transmission Provider shall construct, using Reasonable Efforts to accommodate Interconnection Customer's In-Service Date, all or any portion of any Network Upgrades required for Interconnection Customer to be interconnected to the Transmission System which are included in the Base Case of the Facilities Study for Interconnection Customer, and which also are required to be constructed for another Interconnection Customer, but where such construction is not scheduled to be completed in time to achieve Interconnection Customer's In-Service Date.

5.16 **Suspension**. Interconnection Customer reserves the right, upon written notice to Transmission Provider, to suspend at any time all work by Transmission Provider associated with the construction and installation of Transmission Provider's Interconnection Facilities and/or Network Upgrades required under this LGIA with the condition that Transmission System shall be left in a safe and reliable condition in accordance with Good Utility Practice and Transmission Provider's safety and reliability criteria. In such event, Interconnection Customer shall be responsible for all reasonable and necessary costs which Transmission Provider (i) has incurred pursuant to this LGIA prior to the suspension and (ii) incurs in suspending such work, including any costs incurred to perform such work as may be necessary to ensure the safety of persons and property and the integrity of the Transmission System during such suspension and, if applicable, any costs incurred in connection with the cancellation or suspension of material, equipment and labor contracts which Transmission Provider cannot reasonably avoid; provided, however, that prior to canceling or suspending any such material, equipment or labor contract, Transmission Provider shall obtain Interconnection Customer's authorization to do so.

Transmission Provider shall invoice Interconnection Customer for such costs pursuant to Article 12 and shall use due diligence to minimize its costs. In the event Interconnection Customer suspends work by Transmission Provider required under this LGIA pursuant to this Article 5.16, and has not requested Transmission Provider to recommence the work required under this LGIA on or before the expiration of three (3) years following commencement of such suspension, this LGIA shall be deemed terminated. The three-year period shall begin on the date the suspension is requested, or the date of the written notice to Transmission Provider, if no effective date is specified.

5.17 [This Article intentionally left blank.]

5.18 Tax Status. Each Party shall cooperate with the other to maintain the other Party's tax status.

5.19 Modification.

5.19.1 General. Either Party may undertake modifications to its facilities. If a Party plans to undertake a modification that reasonably may be expected to affect the other Party's facilities, that Party shall provide to the other Party sufficient information regarding such modification so that the other Party may evaluate the potential impact of such modification prior to commencement of the work. Such information shall be deemed to be confidential hereunder and shall include information concerning the timing of such modifications and whether such modifications are expected to interrupt the flow of electricity from the Large Generating Facility. The Party desiring to perform such work shall use Reasonable Efforts to provide the relevant drawings, plans, and specifications to the other Party at least ninety (90) Calendar Days in advance of the commencement of the work or such shorter period upon which the Parties may agree, which agreement shall not unreasonably be withheld, conditioned or delayed.

In the case of Large Generating Facility modifications that do not require Interconnection Customer to submit an Interconnection Request, Transmission Provider shall use Reasonable Efforts to provide, within thirty (30) Calendar Days (or such other time as the Parties may agree), an estimate of any additional modifications to the Transmission System, Transmission Provider's Interconnection Facilities or Network Upgrades necessitated by such Interconnection Customer modification and a good faith estimate of the costs thereof.

5.19.2 Standards. Any additions, modifications, or replacements made to a Party's facilities shall be designed, constructed and operated in accordance with this LGIA and Good Utility Practice.

5.19.3 Modification Costs. Interconnection Customer shall not be directly assigned for the costs of any additions, modifications, or replacements that Transmission Provider makes to Transmission Provider's Interconnection Facilities or the Transmission System to facilitate the interconnection of a third party to Transmission Provider's Interconnection Facilities or the Transmission System, or to provide transmission service to a third party under Transmission Provider's Tariff. Interconnection Customer shall be responsible for the costs of any additions, modifications, or replacements to Interconnection Customer's Interconnection Facilities that may be necessary to maintain or upgrade such Interconnection Customer's Interconnection Facilities consistent with Applicable Laws and Regulations, Applicable Reliability Standards or Good Utility Practice.

Article 6. Testing and Inspection

6.1 Pre-Commercial Operation Date Testing and Modifications. Prior to the Commercial Operation Date, Transmission Provider shall test Transmission Provider's Interconnection Facilities and Network Upgrades and Interconnection Customer shall test the Large Generating Facility and Interconnection Customer's Interconnection Facilities to ensure their safe and reliable operation. Similar testing may be required after initial operation. Each Party shall make any modifications to its facilities that are found to be necessary as a result of such testing. Interconnection Customer shall bear the cost of all such testing and modifications. Interconnection Customer shall generate test energy at the Large Generating Facility only if it has arranged for the delivery of such test energy.

6.2 Post-Commercial Operation Date Testing and Modifications. Each Party shall at its own expense perform routine inspection and testing of its facilities and equipment in accordance with Good Utility Practice as may be necessary to ensure the continued interconnection of the Large Generating Facility with the Transmission System in a safe and reliable manner. Each Party shall have the right, upon advance written notice, to require reasonable additional testing of the other Party's facilities, at the requesting Party's expense, as may be in accordance with Good Utility Practice.

6.3 Right to Observe Testing. Each Party shall notify the other Party in advance of its performance of tests of its Interconnection Facilities. The other Party has the right, at its own expense, to observe such testing.

6.4 Right to Inspect. Each Party shall have the right, but shall have no obligation to: (i) observe the other Party's tests and/or inspection of any of its System Protection Facilities and other protective equipment, including Power System Stabilizers; (ii) review the settings of the other Party's System Protection Facilities and other protective equipment; and (iii) review the other Party's maintenance records relative to the Interconnection Facilities, the System Protection Facilities and other protective equipment. A Party may exercise these rights from time to time as it deems necessary upon reasonable notice to the other Party. The exercise or non-exercise by a Party of any such rights shall not be construed as an endorsement or confirmation of any element or condition of the Interconnection Facilities or the System Protection Facilities or other protective equipment or the operation thereof, or as a warranty as to the fitness, safety, desirability, or reliability of same. Any information that a Party obtains through the exercise of any of its rights under this Article 6.4 shall be deemed to be Confidential Information and treated pursuant to Article 22 of this LGIA.

Article 7. Metering

7.1 General. Each Party shall comply with the Applicable Reliability Council requirements. Unless otherwise agreed by the Parties, Transmission Provider shall install Metering Equipment at the Point of Interconnection prior to any operation of the Large Generating Facility and shall own, operate, test and maintain such Metering Equipment. Power flows

to and from the Large Generating Facility shall be measured at or, at Transmission Provider's option, compensated to, the Point of Interconnection. Transmission Provider shall provide metering quantities, in analog and/or digital form, to Interconnection Customer upon request. Interconnection Customer shall bear all reasonable documented costs associated with the purchase, installation, operation, testing and maintenance of the Metering Equipment.

7.2 **Check Meters**. Interconnection Customer, at its option and expense, may install and operate, on its premises and on its side of the Point of Interconnection, one or more check meters to check Transmission Provider's meters. Such check meters shall be for check purposes only and shall not be used for the measurement of power flows for purposes of this LGIA, except as provided in Article 7.4 below. The check meters shall be subject at all reasonable times to inspection and examination by Transmission Provider or its designee. The installation, operation and maintenance thereof shall be performed entirely by Interconnection Customer in accordance with Good Utility Practice.

7.3 **Standards**. Transmission Provider shall install, calibrate, and test revenue quality Metering Equipment in accordance with applicable ANSI standards.

7.4 **Testing of Metering Equipment**. Transmission Provider shall inspect and test all Transmission Provider-owned Metering Equipment in accordance with Transmission Provider's regional meter testing policies. If requested to do so by Interconnection Customer, Transmission Provider shall, at Interconnection Customer's expense, inspect or test Metering Equipment more frequently than the periods set forth in Transmission Provider's regional meter testing policies. Transmission Provider shall give reasonable notice of the time when any inspection or test shall take place, and Interconnection Customer may have representatives present at the test or inspection. If at any time Metering Equipment is found to be inaccurate or defective, it shall be adjusted, repaired or replaced at Interconnection Customer's expense, in order to provide accurate metering, unless the inaccuracy or defect is due to Transmission Provider's failure to maintain, then Transmission Provider shall pay. If Metering Equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than two percent from the measurement made by the standard meter used in the test, Transmission Provider shall adjust the measurements by correcting all measurements for the period during which Metering Equipment was in error by using Interconnection Customer's check meters, if installed. If no such check meters are installed or if the period cannot be reasonably ascertained, the adjustment shall be for the period immediately preceding the test of the Metering Equipment equal to one-half the time from the date of the last previous test of the Metering Equipment.

7.5 **Metering Data**. At Interconnection Customer's expense, the metered data shall be telemetered to one or more locations designated by Transmission Provider and one or more locations designated by Interconnection Customer. Such telemetered data shall be used, under normal operating conditions, as the official measurement of the amount of energy delivered from the Large Generating Facility to the Point of Interconnection.

Article 8. Communications

8.1 Interconnection Customer Obligations. Interconnection Customer shall maintain satisfactory operating communications with Transmission Provider's Transmission System dispatcher or representative designated by Transmission Provider. Interconnection Customer shall provide at its expense standard voice line, dedicated voice line and facsimile communications at its Large Generating Facility control room or central dispatch facility through use of either the public telephone system, or a voice communications system that does not rely on the public telephone system. Interconnection Customer shall also provide the dedicated data circuit(s) necessary to provide Interconnection Customer data to Transmission Provider as set forth in Appendix D, Security Arrangements Details. The data circuit(s) shall extend from the Large Generating Facility to the location(s) specified by Transmission Provider. Any required maintenance of such communications equipment shall be performed by Interconnection Customer. Operational communications shall be activated and maintained under, but not be limited to, the following events: system paralleling or separation, scheduled and unscheduled shutdowns, equipment clearances, and hourly and daily load data.

8.2 Remote Terminal Unit. Prior to the Initial Synchronization Date of the Large Generating Facility, a Remote Terminal Unit, or equivalent data collection and transfer equipment acceptable to the Parties, shall be installed by Interconnection Customer, or by Transmission Provider at Interconnection Customer's expense, to gather accumulated and instantaneous data to be telemetered to the location(s) designated by Transmission Provider through use of a dedicated point-to-point data circuit(s) as indicated in Article 8.1. The communication protocol for the data circuit(s) shall be specified by Transmission Provider. Instantaneous bi-directional analog real power and reactive power flow information must be telemetered directly to the location(s) specified by Transmission Provider.

Each Party will promptly advise the other Party if it detects or otherwise learns of any metering, telemetry or communications equipment errors or malfunctions that require the attention and/or correction by the other Party. The Party owning such equipment shall correct such error or malfunction as soon as reasonably feasible.

8.3 No Annexation. Any and all equipment placed on the premises of a Party shall be and remain the property of the Party providing such equipment regardless of the mode and manner of annexation or attachment to real property, unless otherwise mutually agreed by the Parties.

Article 9. Operations

9.1 General. Each Party shall comply with the Applicable Reliability Council requirements. Each Party shall provide to the other Party all information that may reasonably be required by the other Party to comply with Applicable Laws and Regulations and Applicable Reliability Standards.

9.2 **Control Area Notification**. At least three months before Initial Synchronization Date, Interconnection Customer shall notify Transmission Provider in writing of the Control Area in which the Large Generating Facility will be located. If Interconnection Customer elects to locate the Large Generating Facility in a Control Area other than the Control Area in which the Large Generating Facility is physically located, and if permitted to do so by the relevant transmission tariffs, all necessary arrangements, including but not limited to those set forth in Article 7 and Article 8 of this LGIA, and remote Control Area generator interchange agreements, if applicable, and the appropriate measures under such agreements, shall be executed and implemented prior to the placement of the Large Generating Facility in the other Control Area.

9.3 **Transmission Provider Obligations**. Transmission Provider shall cause the Transmission System and Transmission Provider's Interconnection Facilities to be operated, maintained and controlled in a safe and reliable manner and in accordance with this LGIA. Transmission Provider may provide operating instructions to Interconnection Customer consistent with this LGIA and Transmission Provider's operating protocols and procedures as they may change from time to time. Transmission Provider will consider changes to its operating protocols and procedures proposed by Interconnection Customer.

9.4 **Interconnection Customer Obligations.**

9.4.1 General Obligations. Interconnection Customer shall at its own expense operate, maintain and control the Large Generating Facility and Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA. Interconnection Customer shall operate the Large Generating Facility and Interconnection Customer's Interconnection Facilities in accordance with all applicable requirements of the Control Area of which it is part, as such requirements are set forth in Appendix C, Interconnection Details, of this LGIA. Appendix C, Interconnection Details, will be modified to reflect changes to the requirements as they may change from time to time. Either Party may request that the other Party provide copies of the requirements set forth in Appendix C, Interconnection Details, of this LGIA.

9.4.2 Generator Balancing Obligation. Interconnection Customer shall at its own expense be responsible for ensuring that its actual Large Generating Facility output matches the scheduled delivery from the Large Generating Facility to Transmission Provider's Transmission System, consistent with the scheduling requirements of the Transmission Provider's Tariff and any applicable FERC-approved market structure in which the Transmission Provider participates, including ramping into and out of such scheduled delivery, as measured at the Point of Interconnection. To the extent Interconnection Customer's Large Generating Facility output does not match the scheduled delivery from the Large Generating Facility to Transmission Provider's Transmission System, any such disparate amounts shall be subject to Transmission Provider's Energy Imbalance

rate and/or any other applicable scheduling incentives set forth under Transmission Provider's Tariff.

9.5 Start-Up and Synchronization. Consistent with the Parties' mutually acceptable procedures, Interconnection Customer is responsible for the proper synchronization of the Large Generating Facility to Transmission Provider's Transmission System.

9.6 Reactive Power.

9.6.1 Power Factor Design Criteria. Interconnection Customer shall design the Large Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless Transmission Provider has established different requirements that apply to all generators in the Control Area on a comparable basis. The requirements of Appendix G to this LGIA shall apply to wind generators.

9.6.2 Voltage Schedules. Once Interconnection Customer has synchronized the Large Generating Facility with the Transmission System, Transmission Provider shall require Interconnection Customer to operate the Large Generating Facility to produce or absorb reactive power within the design limitations of the Large Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria). Transmission Provider's voltage schedules shall treat all sources of reactive power in the Control Area in an equitable and not unduly discriminatory manner. Transmission Provider shall exercise Reasonable Efforts to provide Interconnection Customer with such schedules at least one (1) day in advance, and may make changes to such schedules as necessary to maintain the reliability of the Transmission System. Interconnection Customer shall operate the Large Generating Facility to maintain the specified output voltage or power factor at the Point of Interconnection within the design limitations of the Large Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria). If Interconnection Customer is unable to maintain the specified voltage or power factor, it shall promptly notify the System Operator.

9.6.2.1 Governors and Regulators. Whenever the Large Generating Facility is operated in parallel with the Transmission System and the speed governors (if installed on the generating unit pursuant to Good Utility Practice) and voltage regulators are capable of operation, Interconnection Customer shall operate the Large Generating Facility with its speed governors and voltage regulators in automatic operation. If the Large Generating Facility's speed governors and voltage regulators are not capable of such automatic operation, Interconnection Customer shall immediately notify Transmission Provider's system operator, or its designated representative, and ensure that such Large Generating Facility's reactive power

production or absorption (measured in MVARs) are within the design capability of the Large Generating Facility's generating unit(s) and steady state stability limits. Interconnection Customer shall not cause its Large Generating Facility to disconnect automatically or instantaneously from the Transmission System or trip any generating unit comprising the Large Generating Facility for an under or over frequency condition unless the abnormal frequency condition persists for a time period beyond the limits set forth in ANSI/IEEE Standard C37.106, or such other standard as applied to other generators in the Control Area on a comparable basis.

9.6.3 Payment for Reactive Power. Transmission Provider is required to pay Interconnection Customer for reactive power that Interconnection Customer provides or absorbs from the Large Generating Facility when Transmission Provider requests Interconnection Customer to operate its Large Generating Facility outside the range specified in Article 9.6.1, provided that if Transmission Provider pays its own or affiliated generators for reactive power service within the specified range, it must also pay Interconnection Customer. Payments shall be pursuant to Article 11.6 or such other agreement to which the Parties have otherwise agreed.

9.7 Outages and Interruptions.

9.7.1 Outages.

9.7.1.1 Outage Authority and Coordination. Each Party may in accordance with Good Utility Practice in coordination with the other Party remove from service any of its respective Interconnection Facilities or Network Upgrades that may impact the other Party's facilities as necessary to perform maintenance or testing or to install or replace equipment. Absent an Emergency Condition, the Party scheduling a removal of such facility(ies) from service will use Reasonable Efforts to schedule such removal on a date and time mutually acceptable to the Parties. In all circumstances, any Party planning to remove such facility(ies) from service shall use Reasonable Efforts to minimize the effect on the other Party of such removal.

9.7.1.2 Outage Schedules. **Transmission Provider shall post** scheduled outages of its transmission facilities on the OASIS. Interconnection Customer shall submit its planned maintenance schedules for the Large Generating Facility to Transmission Provider for a minimum of a rolling twenty-four month period. Interconnection Customer shall update its planned maintenance schedules as necessary. Transmission Provider may request Interconnection Customer to reschedule its maintenance as necessary to maintain the reliability of the

Transmission System; provided, however, adequacy of generation supply shall not be a criterion in determining Transmission System reliability. Transmission Provider shall compensate Interconnection Customer for any additional direct costs that Interconnection Customer incurs as a result of having to reschedule maintenance, including any additional overtime, breaking of maintenance contracts or other costs above and beyond the cost Interconnection Customer would have incurred absent Transmission Provider's request to reschedule maintenance. Interconnection Customer will not be eligible to receive compensation, if during the twelve (12) months prior to the date of the scheduled maintenance, Interconnection Customer had modified its schedule of maintenance activities.

9.7.1.3 **Outage Restoration**. If an outage on a Party's Interconnection Facilities or Network Upgrades adversely affects the other Party's operations or facilities, the Party that owns or controls the facility that is out of service shall use Reasonable Efforts to promptly restore such facility(ies) to a normal operating condition consistent with the nature of the outage. The Party that owns or controls the facility that is out of service shall provide the other Party, to the extent such information is known, information on the nature of the Emergency Condition, an estimated time of restoration, and any corrective actions required. Initial verbal notice shall be followed up as soon as practicable with written notice explaining the nature of the outage.

9.7.2 **Interruption of Service**. If required by Good Utility Practice to do so, Transmission Provider may require Interconnection Customer to interrupt or reduce deliveries of electricity if such delivery of electricity could adversely affect Transmission Provider's ability to perform such activities as are necessary to safely and reliably operate and maintain the Transmission System. The following provisions shall apply to any interruption or reduction permitted under this Article 9.7.2:

9.7.2.1 The interruption or reduction shall continue only for so long as reasonably necessary under Good Utility Practice;

9.7.2.2 Any such interruption or reduction shall be made on an equitable, non-discriminatory basis with respect to all generating facilities directly connected to the Transmission System;

9.7.2.3 When the interruption or reduction must be made under circumstances which do not allow for advance notice, Transmission Provider shall notify Interconnection Customer by telephone as soon as practicable of the reasons for the curtailment, interruption, or reduction, and, if

known, its expected duration. Telephone notification shall be followed by written notification as soon as practicable;

9.7.2.4 Except during the existence of an Emergency Condition, when the interruption or reduction can be scheduled without advance notice, Transmission Provider shall notify Interconnection Customer in advance regarding the timing of such scheduling and further notify Interconnection Customer of the expected duration. Transmission Provider shall coordinate with Interconnection Customer using Good Utility Practice to schedule the interruption or reduction during periods of least impact to Interconnection Customer and Transmission Provider;

9.7.2.5 The Parties shall cooperate and coordinate with each other to the extent necessary in order to restore the Large Generating Facility, Interconnection Facilities, and the Transmission System to their normal operating state, consistent with system conditions and Good Utility Practice.

9.7.3 **Under-Frequency and Over Frequency Conditions**. The Transmission System is designed to automatically activate a load-shed program as required by the Applicable Reliability Council in the event of an under-frequency system disturbance. Interconnection Customer shall implement under-frequency and over-frequency relay set points for the Large Generating Facility as required by the Applicable Reliability Council to ensure "ride through" capability of the Transmission System. Large Generating Facility response to frequency deviations of pre-determined magnitudes, both under-frequency and over-frequency deviations, shall be studied and coordinated with Transmission Provider in accordance with Good Utility Practice. The term "ride through" as used herein shall mean the ability of a Generating Facility to stay connected to and synchronized with the Transmission System during system disturbances within a range of under-frequency and over-frequency conditions, in accordance with Good Utility Practice.

9.7.4 **System Protection and Other Control Requirements**.

9.7.4.1 **System Protection Facilities**. Interconnection Customer shall, at its expense, install, operate and maintain System Protection Facilities as a part of the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Transmission Provider shall install at Interconnection Customer's expense any System Protection Facilities that may be required on Transmission Provider's Interconnection Facilities or the Transmission System as a result of the interconnection of the Large Generating Facility and Interconnection Customer's Interconnection Facilities.

9.7.4.2 Each Party's protection facilities shall be designed and coordinated with other systems in accordance with Good Utility Practice.

9.7.4.3 Each Party shall be responsible for protection of its facilities consistent with Good Utility Practice.

9.7.4.4 Each Party's protective relay design shall incorporate the necessary test switches to perform the tests required in Article 6. The required test switches will be placed such that they allow operation of lockout relays while preventing breaker failure schemes from operating and causing unnecessary breaker operations and/or the tripping of Interconnection Customer's units.

9.7.4.5 Each Party will test, operate and maintain System Protection Facilities in accordance with Good Utility Practice.

9.7.4.6 Prior to the In-Service Date, and again prior to the Commercial Operation Date, each Party or its agent shall perform a complete calibration test and functional trip test of the System Protection Facilities. At intervals suggested by Good Utility Practice and following any apparent malfunction of the System Protection Facilities, each Party shall perform both calibration and functional trip tests of its System Protection Facilities. These tests do not require the tripping of any in-service generation unit. These tests do, however, require that all protective relays and lockout contacts be activated.

9.7.5 **Requirements for Protection**. In compliance with Good Utility Practice, Interconnection Customer shall provide, install, own, and maintain relays, circuit breakers and all other devices necessary to remove any fault contribution of the Large Generating Facility to any short circuit occurring on the Transmission System not otherwise isolated by Transmission Provider's equipment, such that the removal of the fault contribution shall be coordinated with the protective requirements of the Transmission System. Such protective equipment shall include, without limitation, a disconnecting device or switch with load-interrupting capability located between the Large Generating Facility and the Transmission System at a site selected upon mutual agreement (not to be unreasonably withheld, conditioned or delayed) of the Parties. Interconnection Customer shall be responsible for protection of the Large Generating Facility and Interconnection Customer's other equipment from such conditions as negative sequence currents, over- or under-frequency, sudden load rejection, over- or under-voltage, and generator loss-of-field. Interconnection Customer shall be solely responsible to disconnect the Large Generating Facility and Interconnection Customer's other equipment if conditions on the Transmission System could adversely affect the Large Generating Facility.

9.7.6 **Power Quality**. Neither Party's facilities shall cause excessive voltage flicker nor introduce excessive distortion to the sinusoidal voltage or current waves as defined by ANSI Standard C84.1-1989, in accordance with IEEE Standard 519, or any applicable superseding electric industry standard. In the event of a conflict between ANSI Standard C84.1-1989, or any applicable superseding electric industry standard, ANSI Standard C84.1-1989, or the applicable superseding electric industry standard, shall control.

9.8 **Switching and Tagging Rules**. Each Party shall provide the other Party a copy of its switching and tagging rules that are applicable to the other Party's activities. Such switching and tagging rules shall be developed on a non-discriminatory basis. The Parties shall comply with applicable switching and tagging rules, as amended from time to time, in obtaining clearances for work or for switching operations on equipment.

9.9 **Use of Interconnection Facilities by Third Parties**.

9.9.1 **Purpose of Interconnection Facilities**. Except as may be required by Applicable Laws and Regulations, or as otherwise agreed to among the Parties, the Interconnection Facilities shall be constructed for the sole purpose of interconnecting the Large Generating Facility to the Transmission System and shall be used for no other purpose.

9.9.2 **Third Party Users**. If required by Applicable Laws and Regulations or if the Parties mutually agree, such agreement not to be unreasonably withheld, to allow one or more third parties to use Transmission Provider's Interconnection Facilities, or any part thereof, Interconnection Customer will be entitled to compensation for the capital expenses it incurred in connection with the Interconnection Facilities based upon the pro rata use of the Interconnection Facilities by Transmission Provider, all third party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually-agreed upon methodology. In addition, cost responsibility for ongoing costs, including operation and maintenance costs associated with the Interconnection Facilities, will be allocated between Interconnection Customer and any third party users based upon the pro rata use of the Interconnection Facilities by Transmission Provider, all third party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually agreed upon methodology.

9.10 **Disturbance Analysis Data Exchange**. The Parties will cooperate with one another in the analysis of disturbances to either the Large Generating Facility or Transmission Provider's Transmission System by gathering and providing access to any information relating to any disturbance, including information from oscillography, protective relay targets, breaker operations and sequence of events records, and any disturbance information required by Good Utility Practice.

Article 10. Maintenance

10.1 Transmission Provider Obligations. Transmission Provider shall maintain the Transmission System and Transmission Provider's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA.

10.2 Interconnection Customer Obligations. Interconnection Customer shall maintain the Large Generating Facility and Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA.

10.3 Coordination. The Parties shall confer regularly to coordinate the planning, scheduling and performance of preventive and corrective maintenance on the Large Generating Facility and the Interconnection Facilities.

10.4 Secondary Systems. Each Party shall cooperate with the other in the inspection, maintenance, and testing of control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers that directly affect the operation of a Party's facilities and equipment which may reasonably be expected to impact the other Party. Each Party shall provide advance notice to the other Party before undertaking any work on such circuits, especially on electrical circuits involving circuit breaker trip and close contacts, current transformers, or potential transformers.

10.5 Operating and Maintenance Expenses. Subject to the provisions herein addressing the use of facilities by others, and except for operations and maintenance expenses associated with modifications made for providing interconnection or transmission service to a third party and such third party pays for such expenses, Interconnection Customer shall be responsible for all reasonable expenses including overheads, associated with: (1) owning, operating, maintaining, repairing, and replacing Interconnection Customer's Interconnection Facilities; and (2) operation, maintenance, repair and replacement of Transmission Provider's Interconnection Facilities.

Article 11. Performance Obligation

11.1 Interconnection Customer Interconnection Facilities. Interconnection Customer shall design, procure, construct, install, own and/or control Interconnection Customer Interconnection Facilities described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades, at its sole expense.

11.2 Transmission Provider's Interconnection Facilities. Transmission Provider or Transmission Owner shall design, procure, construct, install, own and/or control the Transmission Provider's Interconnection Facilities described in Appendix A,

Interconnection Facilities, Network Upgrades and Distribution Upgrades, at the sole expense of the Interconnection Customer.

11.3 Network Upgrades and Distribution Upgrades. Transmission Provider or Transmission Owner shall design, procure, construct, install, and own the Network Upgrades and Distribution Upgrades described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades. The Interconnection Customer shall be responsible for all costs related to Distribution Upgrades. Unless Transmission Provider or Transmission Owner elects to fund the capital for the Network Upgrades, they shall be solely funded by Interconnection Customer.

11.4 Transmission Credits.

11.4.1 Repayment of Amounts Advanced for Network Upgrades. Interconnection Customer shall be entitled to ongoing credits to its transmission charges, the total amount of which will be paid in a timely manner and will equal the total amount paid to Transmission Provider and Affected System Operator, if any, for the Network Upgrades, to be credited to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under Transmission Provider's Tariff or Affected System's Tariff for transmission services with respect to the Large Generating Facility; provided, that Transmission Provider shall net bill or bill credit Interconnection Customer for any amounts to be credited. Any credits shall include interest calculated from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph, with such interest to be fixed for the length of the crediting period at the lower of either (1) Interconnection Customer's interest rate applicable to the Network Upgrades or (2) the Federal interest rate applicable to Transmission Provider's Transmission System at the time the Network Upgrades are placed in service and ownership thereof is transferred to Transmission Provider. With Transmission Provider's approval, Interconnection Customer may assign such crediting rights to any person having an executed net billing or bill crediting agreement with Transmission Provider that is effective throughout the entire term of the assignment.

Notwithstanding the foregoing, Transmission Provider or Affected System Operator will continue to provide credits to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, without any restriction as to the period of time under which such crediting will occur.

If the Large Generating Facility fails to achieve commercial operation, but it or another Generating Facility is later constructed and makes use of the Network Upgrades, Transmission Provider and Affected System Operator shall at that time reimburse Interconnection Customer for the amounts advanced for the Network

Upgrades; provided, that the party making use of the Network Upgrades must first pay to Transmission Provider all amounts to be reimbursed to Interconnection Customer. Such amounts shall be subsequently credited by Transmission Provider to the new party in accordance with Article 11.4 of this LGIA. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the Generating Facility, if different, is responsible for identifying the entity to which reimbursement must be made.

11.4.2 **Special Provisions for Affected Systems**. Unless Transmission Provider provides, under the LGIA, for the repayment of amounts advanced to Affected System Operator for Network Upgrades, Interconnection Customer and Affected System Operator shall enter into an agreement that provides for such repayment. The agreement shall specify the terms governing payments to be made by Interconnection Customer to the Affected System Operator as well as the repayment by the Affected System Operator.

11.4.3 Notwithstanding any other provision of this LGIA, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that Interconnection Customer, shall be entitled to, now or in the future under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain transmission credits for transmission service that is not associated with the Large Generating Facility.

11.5 Advance Payment.

11.5.1 Interconnection Customer shall be required to pay Transmission Provider for all actual costs incurred by Transmission Provider for the procurement, installation, or construction of a discrete portion of a Transmission Provider's Interconnection Facilities or Network Upgrades and shall pay Transmission Provider, in advance, for all work to be conducted, under the terms and conditions set forth in this LGIA. Such advance payments shall be considered estimated costs for project planning, management, design, engineering, land purchase, environmental investigations, procurement, construction, inspection and commissioning activities for which such advance payments are then due. The funds shall be deposited by Interconnection Customer according to the instructions on individual invoices from Transmission Provider, which shall be delivered by Transmission Provider to Interconnection Customer at least ten (10) Business Days prior to the date of such payment being due. Transmission Provider shall not provide any labor, equipment, materials, parts, travel, or incur incidental costs associated with tasks described above, or commence any other work until applicable advance payment(s) is/are received in full.

11.5.2 Interconnection Customer shall not be required to make any subsequent payment in the event tasks relating to the prior payment have not been substantially completed.

11.5.3 Transmission Provider shall keep detailed records for actual costs incurred. Interconnection Customer shall be entitled, during normal business hours and at its own expense, to review such records and supporting documentation. If, during procurement, installation, or construction of a discrete portion of a Transmission Provider's Interconnection Facilities or Network Upgrades, or upon close-out of any phase of such activities, costs by Transmission Provider are expected to exceed the sum of payments made by Interconnection Customer, Transmission Provider will inform Interconnection Customer of the additional expenses and provide a written revision to the estimate, together with an invoice for the amount due. Interconnection Customer shall then promptly pay Transmission Provider in full and without interest for the billed amount. If, upon completion of the procurement, installation, or construction of a discrete portion of Transmission Provider's Interconnection Facilities or Network Upgrades, costs incurred by Transmission Provider are less than the sum of payment(s) made to Transmission Provider by Interconnection Customer, Transmission Provider shall refund the difference, without interest, as soon as the necessary vouchers may be prepared.

11.6 Interconnection Customer Compensation. If Transmission Provider requests or directs Interconnection Customer to provide a service pursuant to Articles 9.6.3 (Payment for Reactive Power), or 13.5.1 of this LGIA, Transmission Provider shall compensate Interconnection Customer in accordance with Interconnection Customer's applicable rate schedule then in effect unless the provision of such service(s) is subject to an RTO or ISO FERC-approved rate schedule. Interconnection Customer shall serve Transmission Provider or RTO or ISO with any filing of a proposed rate schedule at the time of such filing with FERC. To the extent that no rate schedule is in effect at the time the Interconnection Customer is required to provide or absorb any Reactive Power under this LGIA, Transmission Provider agrees to compensate Interconnection Customer in such amount as would have been due Interconnection Customer had the rate schedule been in effect at the time service commenced; provided, however, that such rate schedule must be filed at FERC or other appropriate Governmental Authority within sixty (60) Calendar Days of the commencement of service.

11.6.1 Interconnection Customer Compensation for Actions During Emergency Condition. Transmission Provider or RTO or ISO shall compensate Interconnection Customer for its provision of real and reactive power and other Emergency Condition services that Interconnection Customer provides to support the Transmission System during an Emergency Condition in accordance with Article 11.6.

Article 12. Invoice

12.1 General. Transmission Provider shall submit to Interconnection Customer invoices of amounts due in accordance with Articles 11.5.1 and 11.5.2 of this LGIA. Interconnection Customer shall submit to Transmission Provider, on a monthly basis, invoices of amounts due for the preceding month. Each invoice shall state the time period to which the invoice applies and fully describe the services and equipment provided. The Parties may discharge mutual debts and payment obligations due and owing to each other on the same date through netting, in which case all amounts a Party owes to the other Party under this LGIA, including interest owed by the Interconnection Customer, shall be netted so that only the net amount remaining due shall be paid by the owing Party.

12.2 Final Invoice. Within six months after completion of the construction of Transmission Provider's Interconnection Facilities and the Network Upgrades, Transmission Provider shall provide an invoice of the final cost of the construction of Transmission Provider's Interconnection Facilities and the Network Upgrades and shall set forth such costs in sufficient detail to enable Interconnection Customer to compare the actual costs with the estimates and to ascertain deviations, if any, from the cost estimates. Transmission Provider shall refund to Interconnection Customer any amount by which the actual payment by Interconnection Customer for estimated costs in accordance with Article 11.5.3 of this LGIA.

12.3 Payment. Invoices shall be rendered to the paying Party at the address specified in Appendix F. The Party receiving the invoice shall pay the invoice within thirty (30) Calendar Days of receipt. All payments shall be made in immediately available funds payable to the other Party, or by wire transfer to a bank named and account designated by the invoicing Party. Payment of invoices by either Party will not constitute a waiver of any rights or claims either Party may have under this LGIA.

12.4 Disputes. In the event of a billing dispute between Transmission Provider and Interconnection Customer, Transmission Provider shall continue to provide Interconnection Service under this LGIA as long as Interconnection Customer: (i) continues to make all payments not in dispute; and (ii) pays to Transmission Provider or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet these two requirements for continuation of service, then Transmission Provider may provide notice to Interconnection Customer of a Default pursuant to Article 17. Within thirty (30) Calendar Days after the resolution of the dispute, the Party that owes money to the other Party shall pay the amount due, with the Interconnection Customer to pay the amount due plus interest calculated in accord with the methodology set forth in FERC's regulations at 18 CFR § 35.19a(a)(2)(iii).

Article 13. Emergencies

13.1 Definition. "Emergency Condition" shall mean a condition or situation: (i) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (ii) that, in the case of Transmission Provider, is imminently likely (as determined in a

non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Transmission System, Transmission Provider's Interconnection Facilities or the Transmission Systems of others to which the Transmission System is directly connected; or (iii) that, in the case of Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Large Generating Facility or Interconnection Customer's Interconnection Facilities' System restoration and black start shall be considered Emergency Conditions; provided, that Interconnection Customer is not obligated by this LGIA to possess black start capability.

13.2 Obligations. Each Party shall comply with the Emergency Condition procedures of the applicable ISO/RTO, NERC, the Applicable Reliability Council, Applicable Laws and Regulations, and any emergency procedures agreed to by the Joint Operating Committee.

13.3 Notice. Transmission Provider shall notify Interconnection Customer promptly when it becomes aware of an Emergency Condition that affects Transmission Provider's Interconnection Facilities or the Transmission System that may reasonably be expected to affect Interconnection Customer's operation of the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Interconnection Customer shall notify Transmission Provider promptly when it becomes aware of an Emergency Condition that affects the Large Generating Facility or Interconnection Customer's Interconnection Facilities that may reasonably be expected to affect the Transmission System or Transmission Provider's Interconnection Facilities. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of Interconnection Customer's or Transmission Provider's facilities and operations, its anticipated duration and the corrective action taken and/or to be taken. The initial notice shall be followed as soon as practicable with written notice.

13.4 Immediate Action. Unless, in Interconnection Customer's reasonable judgment, immediate action is required, Interconnection Customer shall obtain the consent of Transmission Provider, such consent to not be unreasonably withheld, prior to performing any manual switching operations at the Large Generating Facility or Interconnection Customer's Interconnection Facilities in response to an Emergency Condition either declared by Transmission Provider or otherwise regarding the Transmission System.

13.5 Transmission Provider Authority.

13.5.1 General. Transmission Provider may take whatever actions or inactions with regard to the Transmission System or Transmission Provider's Interconnection Facilities it deems necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the Transmission System or Transmission Provider's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service.

Transmission Provider shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Transmission Provider may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing Interconnection Customer to assist with blackstart (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of Transmission Provider's operating instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

13.5.2 Reduction and Disconnection. Transmission Provider may reduce Interconnection Service or disconnect the Large Generating Facility or Interconnection Customer's Interconnection Facilities, when such, reduction or disconnection is necessary under Good Utility Practice due to Emergency Conditions. These rights are separate and distinct from any right of curtailment of Transmission Provider pursuant to Transmission Provider's Tariff. When Transmission Provider can schedule the reduction or disconnection in advance, Transmission Provider shall notify Interconnection Customer of the reasons, timing and expected duration of the reduction or disconnection. Transmission Provider shall coordinate with Interconnection Customer using Good Utility Practice to schedule the reduction or disconnection during periods of least impact to Interconnection Customer and Transmission Provider. Any reduction or disconnection shall continue only for so long as reasonably necessary under Good Utility Practice. The Parties shall cooperate with each other to restore the Large Generating Facility, the Interconnection Facilities, and the Transmission System to their normal operating state as soon as practicable consistent with Good Utility Practice.

13.6 Interconnection Customer Authority. Consistent with Good Utility Practice and the LGIA and the LGIP, Interconnection Customer may take actions or inactions with regard to the Large Generating Facility or Interconnection Customer's Interconnection Facilities during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the Large Generating Facility or Interconnection Customer's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service. Interconnection Customer shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Transmission System and Transmission Provider's

Interconnection Facilities. Transmission Provider shall use Reasonable Efforts to assist Interconnection Customer in such actions.

13.7 Limited Liability. Except as otherwise provided in Article 11.6.1 of this LGIA, neither Party shall be liable to the other for any action it takes in responding to an Emergency Condition so long as such action is made in good faith and is consistent with Good Utility Practice.

Article 14. Regulatory Requirements and Governing Law

14.1 Regulatory Requirements. Each Party's obligations under this LGIA shall be subject to its receipt of any required approval or certificate from one or more Governmental Authorities in the form and substance satisfactory to the applying Party, or the Party making any required filings with, or providing notice to, such Governmental Authorities, and the expiration of any time period associated therewith. Each Party shall in good faith seek and use its Reasonable Efforts to obtain such other approvals. Nothing in this LGIA shall require Interconnection Customer to take any action that could result in its inability to obtain, o95r its loss of, status or exemption under the Federal Power Act, the Public Utility Holding Company Act of 1935, as amended, or the Public Utility Regulatory Policies Act of 1978.

14.2 Governing Law.

14.2.1 The validity, interpretation and performance of this LGIA and each of its provisions shall be governed by Federal law or by the laws of the state where the Point of Interconnection is located, as applicable.

14.2.2 This LGIA is subject to all Applicable Laws and Regulations.

14.2.3 Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, rules, or regulations of a Governmental Authority.

Article 15. Notices.

15.1 General. Unless otherwise provided in this LGIA, any notice, demand or request required or permitted to be given by either Party to the other and any instrument required or permitted to be tendered or delivered by either Party in writing to the other shall be effective when delivered and may be so given, tendered or delivered, by recognized national courier, or by depositing the same with the United States Postal Service with postage prepaid, for delivery by certified or registered mail, addressed to the Party, or personally delivered to the Party, at the address set out in Appendix F, Addresses for Delivery of Notices and Billings.

Either Party may change the notice information in this LGIA by giving five (5) Business Days written notice prior to the effective date of the change.

15.2 Billings and Payments. Billings and payments shall be sent to the addresses set out in Appendix F.

15.3 Alternative Forms of Notice. Any notice or request required or permitted to be given by a Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or email to the telephone numbers and email addresses set out in Appendix F.

15.4 Operations and Maintenance Notice . Each Party shall notify the other Party in writing of the identity of the person(s) that it designates as the point(s) of contact with respect to the implementation of Articles 9 and 10.

Article 16. Force Majeure

16.1 Force Majeure.

16.1.1 Economic hardship is not considered a Force Majeure event.

16.1.2 Neither Party shall be considered to be in Default with respect to any obligation hereunder, (including obligations under Article 4), other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Party in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this article shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

Article 17. Default

17.1 Default

17.1.1 General. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of Force Majeure as defined in this LGIA or the result of an act of omission of the other Party. Upon a Breach, the non-breaching Party shall give written notice of such Breach to the breaching Party. Except as provided in Article 17.1.2, the breaching Party shall have thirty (30) Calendar Days from receipt of the Default notice within which to cure such Breach; provided however, if such Breach is not capable of cure within thirty (30) Calendar Days, the breaching Party shall commence such cure within thirty (30)

Calendar Days after notice and continuously and diligently complete such cure within ninety (90) Calendar Days from receipt of the Default notice; and, if cured within such time, the Breach specified in such notice shall cease to exist.

17.1.2 **Right to Terminate**. If a Breach is not cured as provided in this article, or if a Breach is not capable of being cured within the period provided for herein, the non-breaching Party shall have the right to declare a Default and terminate this LGIA by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this LGIA, to recover from the breaching Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this LGIA.

Article 18. Indemnity, Consequential Damages and Insurance

18.1 **Indemnity**. Interconnection Customer shall at all times indemnify, defend, and hold Transmission Provider harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from Transmission Provider's action or inactions of its obligations under this LGIA on behalf of Interconnection Customer, except in cases of gross negligence or intentional wrongdoing by Transmission Provider. The liability of Transmission Provider shall be determined in accordance with the Federal Tort Claims Act provision set forth in Attachment J of Transmission Provider's Tariff.

18.1.1 **Indemnified Person**. If an indemnified person is entitled to indemnification under this Article 18 as a result of a claim by a third party, and Interconnection Customer fails, after notice and reasonable opportunity to proceed under Article 18.1, to assume the defense of such claim, such indemnified person may at the expense of Interconnection Customer contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

18.1.2 **Indemnifying Party**. If Interconnection Customer is obligated to indemnify and hold any indemnified person harmless under this Article 18, the amount owing to the indemnified person shall be the amount of such indemnified person's actual Loss, net of any other recovery.

18.1.3 **Indemnity Procedures**. Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in Article 18.1 may apply, the indemnified person shall notify Interconnection Customer of such fact. Any failure of or delay in such notification shall not affect Interconnection Customer's indemnification obligation unless such failure or delay is materially prejudicial to Interconnection Customer.

Interconnection Customer shall have the right to assume the defense thereof with counsel designated by such Interconnection Customer and reasonably satisfactory to the indemnified person. If the defendants in any such action include one or more indemnified persons and Interconnection Customer, and if the indemnified person reasonably concludes that there may be legal defenses available to it and/or other indemnified persons which are different from or additional to those available to Interconnection Customer, the indemnified person shall have the right to select separate counsel to assert such legal defenses and to otherwise participate in the defense of such action on its own behalf. In such instances, Interconnection Customer shall only be required to pay the fees and expenses of one additional attorney to represent an indemnified person or indemnified persons having such differing or additional legal defenses.

The indemnified person shall be entitled, at its expense, to participate in any such action, suit or proceeding, the defense of which has been assumed by Interconnection Customer. Notwithstanding the foregoing, Interconnection Customer (i) shall not be entitled to assume and control the defense of any such action, suit or proceedings if and to the extent that, in the opinion of the indemnified person and its counsel, such action, suit or proceeding involves the potential imposition of criminal liability on the indemnified person, or there exists a conflict or adversity of interest between the indemnified person and Interconnection Customer, in such event Interconnection Customer shall pay the reasonable expenses of the indemnified person, and (ii) shall not settle or consent to the entry of any judgment in any action, suit or proceeding without the consent of the indemnified person, which shall not be reasonably withheld, conditioned or delayed.

18.2 Consequential Damages. In no event shall either Party be liable under any provision of this LGIA for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

18.3 Interconnection Customer Insurance. Interconnection customer shall, at its own expense, maintain in force throughout the period of this LGIA, and until released by Transmission Provider, the following minimum insurance coverages, with insurers authorized to do business in the state where the Point of Interconnection is located:

18.3.1 Employers' Liability and Workers' Compensation Insurance providing statutory benefits in accordance with the laws and regulations of the state in which the Point of Interconnection is located.

18.3.2 Commercial General Liability Insurance including premises and operations, personal injury, broad form property damage, broad form blanket contractual liability coverage (including coverage for the contractual indemnification) products and completed operations coverage, coverage for explosion, collapse and underground hazards, independent contractors coverage, coverage for pollution to the extent normally available and punitive damages to the extent normally available and a cross liability endorsement, with minimum limits of One Million Dollars ($1,000,000) per occurrence/One Million Dollars ($1,000,000) aggregate combined single limit for personal injury, bodily injury, including death and property damage.

18.3.3 Comprehensive Automobile Liability Insurance for coverage of owned and non-owned and hired vehicles, trailers or semi-trailers designed for travel on public roads, with a minimum, combined single limit of One Million Dollars ($1,000,000) per occurrence for bodily injury, including death, and property damage.

18.3.4 Excess Public Liability Insurance over and above the Employers' Liability Commercial General Liability and Comprehensive Automobile Liability Insurance coverage, with a minimum combined single limit of Twenty Million Dollars ($20,000,000) per occurrence/Twenty Million Dollars ($20,000,000) aggregate.

18.3.5 The Commercial General Liability Insurance, Comprehensive Automobile Insurance and Excess Public Liability Insurance policies shall name Transmission Provider and its respective directors, officers, agents, servants and employees ("Other Party Group") as additional insured. All policies shall contain provisions whereby the insurers waive all rights of subrogation in accordance with the provisions of this LGIA against the Other Party Group and provide thirty (30) Calendar Days advance written notice to the Other Party Group prior to anniversary date of cancellation or any material change in coverage or condition.

18.3.6 The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies shall contain provisions that specify that the policies are primary and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been covered. Interconnection Customer shall be responsible for its respective deductibles or retentions.

18.3.7 The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies, if written on a

Claims First Made Basis, shall be maintained in full force and effect for two (2) years after termination of this LGIA, which coverage may be in the form of tail coverage or extended reporting period coverage if agreed by the Parties.

18.3.8 The requirements contained herein as to the types and limits of all insurance to be maintained by Interconnection Customer are not intended to and shall not in any manner, limit or qualify the liabilities and obligations assumed by Interconnection Customer under this LGIA.

18.3.9 Within ten (10) days following execution of this LGIA, and as soon as practicable after the end of each fiscal year or at the renewal of the insurance policy and in any event within ninety (90) days thereafter, Interconnection Customer shall provide certification of all insurance required in this LGIA, executed by each insurer or by an authorized representative of each insurer.

18.3.10 Notwithstanding the foregoing, Interconnection Customer may self-insure to meet the minimum insurance requirements of Articles 18.3.2 through 18.3.8 to the extent it maintains a self-insurance program; provided that, Interconnection Customer's senior secured debt is rated at investment grade or better by Standard & Poor's and that its self-insurance program meets the minimum insurance requirements of Articles 18.3.2 through 18.3.8. For any period of time that Interconnection Customer's senior secured debt is unrated by Standard & Poor's or is rated at less than investment grade by Standard & Poor's, Interconnection Customer shall comply with the insurance requirements applicable to it under Articles 18.3.2 through 18.3.9. In the event that Interconnection Customer is permitted to self-insure pursuant to this article, it shall notify Transmission Provider that it meets the requirements to self-insure and that its self-insurance program meets the minimum insurance requirements in a manner consistent with that specified in Article 18.3.9.

18.3.11 The Parties agree to report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of this LGIA.

18.4 Transmission Provider Insurance. Transmission Provider shall self-provide the insurance coverages described under Article 18.3 of this LGIA.

Article 19. Assignment

19.1 Assignment. Either party may assign this LGIA with the written consent of the other party to any Affiliate of the assigning Party or other third party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning party under this LGIA. Interconnection Customer may assign this LGIA with the written consent of Transmission Provider for collateral security purposes to aid in providing financing for the Large Generating Facility. Any financing arrangement entered

into by Interconnection Customer pursuant to this article will provide that prior to or upon the exercise of the secured party's, trustee's or mortgagee's assignment rights pursuant to said arrangement, the secured creditor, the trustee or mortgagee will notify Transmission Provider of the date and particulars of any such exercise of assignment right(s), including providing the Transmission Provider with proof that it meets the requirements of Articles 11.5 and 18.3. Any attempted assignment that violates this article is void and ineffective. Any assignment under this LGIA shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. Consent to assignment will not be unreasonably withheld, conditioned or delayed.

Article 20. Severability

20.1 Severability. If any provision in this LGIA is finally determined to be invalid, void or unenforceable by any court or other Governmental Authority having jurisdiction, such determination shall not invalidate, void or make unenforceable any other provision, agreement or covenant of this LGIA; provided that if Interconnection Customer (or any third party, but only if such third party is not acting at the direction of Transmission Provider) seeks and obtains such a final determination with respect to any provision of the Alternate Option (Article 5.1.2), or the Negotiated Option (Article 5.1.4), then none of these provisions shall thereafter have any force or effect and the Parties' rights and obligations shall be governed solely by the Standard Option (Article 5.1.1).

Article 21. Comparability

21.1 Comparability. The Parties will comply with all applicable comparability and code of conduct laws, rules and regulations, as amended from time to time.

Article 22. Confidentiality

22.1 Confidentiality. Confidential Information shall include, without limitation, all information relating to a Party's technology, research and development, business affairs, and pricing, and any information supplied by either of the Parties to the other prior to the execution of this LGIA.

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document, or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential.

If requested by either Party, the other Party shall provide in writing, the basis for asserting that the information referred to in this Article 22 warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

22.1.1 Term. During the term of this LGIA, and for a period of three (3) years after the expiration or termination of this LGIA, except as otherwise provided in this Article 22, each Party shall hold in confidence and shall not disclose to any person Confidential Information.

22.1.2 Scope. Confidential Information shall not include information that the receiving Party can demonstrate: (1) is generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a third party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the receiving Party without reference to Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the receiving Party or Breach of this LGIA; or (6) is required, in accordance with Article 22.1.7 of the LGIA, Order of Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena, or is necessary in any legal proceeding establishing rights and obligations under this LGIA. Information designated as Confidential Information will no longer be deemed confidential if the Party that designated the information as confidential notifies the other Party that it no longer is confidential.

22.1.3 **Release of Confidential Information**. Neither Party shall release or disclose Confidential Information to any other person, except to its Affiliates (limited by the Standards of Conduct requirements), subcontractors, employees, consultants, or to parties who may be or considering providing financing to or equity participation with Interconnection Customer, or to potential purchasers or assignees of Interconnection Customer, on a need-to-know basis in connection with this LGIA, unless such person has first been advised of the confidentiality provisions of this Article 22 and has agreed to comply with such provisions. Notwithstanding the foregoing, a Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Article 22.

22.1.4 **Rights**. Each Party retains all rights, title, and interest in the Confidential Information that each Party discloses to the other Party. The disclosure by each Party to the other Party of Confidential Information shall not be deemed a waiver by either Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

22.1.5 **No Warranties**. By providing Confidential Information, neither Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, neither Party obligates itself to provide any particular information or Confidential Information to the other Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

22.1.6 **Standard of Care**. Each Party shall use at least the same standard of care to protect Confidential Information it receives as it uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination. Each Party may use Confidential Information solely to fulfill its obligations to the other Party under this LGIA or its regulatory requirements.

22.1.7 **Order of Disclosure**. If a court or a Government Authority or entity with the right, power, and apparent authority to do so requests or requires either Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirement(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this LGIA. Notwithstanding the absence of a protective order or waiver, the Party may disclose such Confidential Information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

22.1.8 **Termination of Agreement**. Upon termination of this LGIA for any reason, each Party shall, within ten (10) Calendar Days of receipt of a written request from the other Party, use Reasonable Efforts to destroy, erase, or delete (with such destruction, erasure, and deletion certified in writing to the other Party) or return to the other Party, without retaining copies thereof, any and all written or electronic Confidential Information received from the other Party.

22.1.9 **Remedies**. The Parties agree that monetary damages would be inadequate to compensate a Party for the other Party's Breach of its obligations under this Article 22. Each Party accordingly agrees that the other Party shall be entitled to equitable relief, by way of injunction or otherwise, if the first Party Breaches or threatens to Breach its obligations under this Article 22, which equitable relief shall be granted without bond or proof of damages, and the receiving Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed an exclusive remedy for the Breach of this Article 22, but shall be in addition to all other remedies available at law or in equity. The Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Party, however, shall be liable for indirect, incidental, or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Article 22.

22.1.10 **Disclosure to FERC or its Staff** . Notwithstanding anything in this Article 22 to the contrary, and pursuant to 18 CFR section 1b.20, if FERC or its staff, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this LGIA, the Party shall provide the requested information to FERC or its staff, within the time provided for in the request for information. In providing the information to FERC or its staff, the Party must, consistent with 18 CFR section 388.112, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. Parties are prohibited from notifying the other Party to this LGIA prior to the release of the Confidential Information to FERC or its staff. The Party shall notify the other Party to the LGIA when it is notified by FERC or its staff that a request to release Confidential Information has been received by FERC, at which time either of the Parties may respond before such information would be made public, pursuant to 18 CFR section 388.112.

22.1.11 Subject to the exception in Article 22.1.10, any information that a Party claims is competitively sensitive, commercial or financial information under this LGIA ("Confidential Information") shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is: (i) required by law; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent

of the other Party, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this LGIA or as a transmission service provider or a Control Area operator including disclosing the Confidential Information to an RTO or ISO or to a regional or national reliability organization. The Party asserting confidentiality shall notify the other Party in writing of the information it claims is confidential. Prior to any disclosures of the other Party's Confidential Information under this subparagraph, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the disclosing Party agrees to promptly notify the other Party in writing and agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

Article 23. Environmental Releases

23.1 Each Party shall notify the other Party, first orally and then in writing, of the release of any Hazardous Substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Large Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall: (i) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than twenty-four hours after such Party becomes aware of the occurrence; and (ii) promptly furnish to the other Party copies of any publicly available reports filed with any Governmental Authorities addressing such events.

23.2 Each Party shall remedy as soon as practicable all releases of Hazardous Substances brought to, or created at, real property it owns underlying the Large Generating Facility or Interconnection Facilities, and any such substances migrating from real property it owns at the Large Generating Facility site. The Party that caused the release shall bear the costs of the remedial action, which shall meet applicable Federal and state environmental standards at the time of the action. Such costs may include, but are not limited to, Federal and state supervision, remedial action plans, removal and remedial actions, and negotiation of voluntary and judicial agreements required to meet such environmental standards.

23.3 The Parties agree to comply fully with the substantive requirements of all applicable Federal, state and local environmental laws in the performance of their obligations hereunder, and to mitigate and abate adverse environmental impacts accordingly.

Article 24. Information Requirements

24.1 **Information Acquisition**. Transmission Provider and Interconnection Customer shall submit specific information regarding the electrical characteristics of their respective facilities to each other as described below and in accordance with Applicable Reliability Standards.

24.2 Information Submission by Transmission Provider. Transmission Provider shall use Reasonable Efforts to submit to Interconnection Customer no later than one hundred eighty (180) Calendar Days prior to Trial Operation the information necessary to allow Interconnection Customer to select equipment and meet any system protection and stability requirements, unless otherwise agreed to by the Parties. On a monthly basis Transmission Provider shall provide Interconnection Customer a status report on the construction and installation of Transmission Provider's Interconnection Facilities and Network Upgrades, including, but not limited to, the following information: (1) progress to date; (2) a description of the activities since the last report (3) a description of the action items for the next period; and (4) the delivery status of equipment ordered.

24.3 Updated Information Submission by Interconnection Customer. The updated information submission by Interconnection Customer, including manufacturer information, shall occur no later than one hundred eighty (180) Calendar Days prior to the Trial Operation. Interconnection Customer shall submit a completed copy of the Large Generating Facility data requirements contained in Appendix 1 to the LGIP. It shall also include any additional information provided to Transmission Provider for the Feasibility and Facilities Study. Information in this submission shall be the most current Large Generating Facility design or expected performance data. Information submitted for stability models shall be compatible with Transmission Provider standard models. If there is no compatible model, Interconnection Customer will work with a consultant mutually agreed to by the Parties to develop and supply a standard model and associated information.

If Interconnection Customer's data is materially different from what was originally provided to Transmission Provider pursuant to the Interconnection Study Agreement between Transmission Provider and Interconnection Customer, then Transmission Provider will conduct appropriate studies to determine the impact on Transmission Provider Transmission System based on the actual data submitted pursuant to this Article 24.3. The Interconnection Customer shall not begin Trial Operation until such studies are completed.

24.4 Information Supplementation. Prior to the Operation Date, the Parties shall supplement their information submissions described above in this Article 24 with any and all "as-built" Large Generating Facility information or "as-tested" performance information that differs from the initial submissions or, alternatively, written confirmation that no such differences exist. The Interconnection Customer shall conduct tests on the Large Generating Facility as required by Good Utility Practice such as an open circuit "step voltage" test on the Large Generating Facility to verify proper operation of the Large Generating Facility's automatic voltage regulator.

Unless otherwise agreed, the test conditions shall include: (1) Large Generating Facility at synchronous speed; (2) automatic voltage regulator on and in voltage control mode; and (3) a five percent change in Large Generating Facility terminal voltage initiated by a change in the voltage regulators reference voltage. Interconnection Customer shall provide

validated test recordings showing the responses of Large Generating Facility terminal and field voltages. In the event that direct recordings of these voltages is impractical, recordings of other voltages or currents that mirror the response of the Large Generating Facility's terminal or field voltage are acceptable if information necessary to translate these alternate quantities to actual Large Generating Facility terminal or field voltages is provided. Large Generating Facility testing shall be conducted and results provided to Transmission Provider for each individual generating unit in a station.

Subsequent to the Operation Date, Interconnection Customer shall provide Transmission Provider any information changes due to equipment replacement, repair, or adjustment. Transmission Provider shall provide Interconnection Customer any information changes due to equipment replacement, repair or adjustment in the directly connected substation or any adjacent Transmission Provider-owned substation that may affect Interconnection Customer's Interconnection Facilities equipment ratings, protection or operating requirements. The Parties shall use Reasonable Efforts to provide such information no later than thirty (30) Calendar Days after the date of the equipment replacement, repair or adjustment.

Article 25. Information Access and Audit Rights

25.1 Information Access. Each Party (the "disclosing Party") shall make available to the other Party information that is in the possession of the disclosing Party and is necessary in order for the other Party to: (i) verify the costs incurred by the disclosing Party for which the other Party is responsible under this LGIA; and
(ii) carry out its obligations and responsibilities under this LGIA. The Parties shall not use such information for purposes other than those set forth in this Article 25.1 and to enforce their rights under this LGIA.

25.2 Reporting of Non-Force Majeure Events. Each Party (the "notifying Party") shall notify the other Party when the notifying Party becomes aware of its inability to comply with the provisions of this LGIA for a reason other than a Force Majeure event. The Parties agree to cooperate with each other and provide necessary information regarding such inability to comply, including the date, duration, reason for the inability to comply, and corrective actions taken or planned to be taken with respect to such inability to comply. Notwithstanding the foregoing, notification, cooperation or information provided under this article shall not entitle the Party receiving such notification to allege a cause for anticipatory breach of this LGIA.

25.3 Audit Rights. Subject to the requirements of confidentiality under Article 22 of this LGIA, each Party shall have the right, during normal business hours, and upon prior reasonable notice to the other Party, to audit at its own expense the other Party's accounts and records pertaining to either Party's performance or either Party's satisfaction of obligations under this LGIA. Such audit rights shall include audits of the other Party's costs, calculation of invoiced amounts, Transmission Provider's efforts to allocate responsibility for the provision of reactive support to the Transmission System, Transmission Provider's efforts

to allocate responsibility for interruption or reduction of generation on the Transmission System, and each Party's actions in an Emergency Condition. Any audit authorized by this article shall be performed at the offices where such accounts and records are maintained and shall be limited to those portions of such accounts and records that relate to each Party's performance and satisfaction of obligations under this LGIA. Each Party shall keep such accounts and records for a period equivalent to the audit rights periods described in Article 25.4.

25.4 Audit Rights Periods.

25.4.1 Audit Rights Period for Construction-Related Accounts and Records. Accounts and records related to the design, engineering, procurement, and construction of Transmission Provider's Interconnection Facilities and Network Upgrades shall be subject to audit for a period of twenty-four months following Transmission Provider's issuance of a final invoice in accordance with Article 12.2.

25.4.2 Audit Rights Period for All Other Accounts and Records. Accounts and records related to either Party's performance or satisfaction of all obligations under this LGIA other than those described in Article 25.4.1 shall be subject to audit as follows: (i) for an audit relating to cost obligations, the applicable audit rights period shall be twenty-four months after the auditing Party's receipt of an invoice giving rise to such cost obligations; and (ii) for an audit relating to all other obligations, the applicable audit rights period shall be twenty-four months after the event for which the audit is sought.

25.5 Audit Results. If an audit by a Party determines that an overpayment or an underpayment has occurred, a notice of such overpayment or underpayment shall be given to the other Party together with those records from the audit which support such determination.

Article 26. Subcontractors

26.1 General. Nothing in this LGIA shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this LGIA; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this LGIA in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

26.2 Responsibility of Principal. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this LGIA. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall Transmission Provider be liable for the actions or inactions of Interconnection Customer or its subcontractors with respect to obligations of Interconnection Customer under Article 5 of this LGIA. Any applicable obligation imposed by this LGIA upon the hiring Party

shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

26.3 No Limitation by Insurance. The obligations under this Article 26 will not be limited in any way by any limitation of subcontractor's insurance.

Article 27. Disputes

27.1 Submission. In the event either Party has a dispute, or asserts a claim, that arises out of or in connection with this LGIA or its performance, such Party (the "disputing Party") shall provide the other Party with written notice of the dispute or claim ("Notice of Dispute"). Such dispute or claim shall be referred to a designated senior representative of each Party for resolution on an informal basis as promptly as practicable after receipt of the Notice of Dispute by the other Party. In the event the designated representatives are unable to resolve the claim or dispute through unassisted or assisted negotiations within thirty (30) Calendar Days of the other Party's receipt of the Notice of Dispute, such claim or dispute may, upon mutual agreement of the Parties, be submitted to arbitration and resolved in accordance with the arbitration procedures set forth below. In the event the Parties do not agree to submit such claim or dispute to arbitration, each Party may exercise whatever rights and remedies it may have in equity or at law consistent with the terms of this LGIA.

27.2 External Arbitration Procedures. Any arbitration initiated under this LGIA shall be conducted before a single neutral arbitrator appointed by the Parties. If the Parties fail to agree upon a single arbitrator within ten (10) Calendar Days of the submission of the dispute to arbitration, each Party shall choose one arbitrator who shall sit on a three-member arbitration panel. The two arbitrators so chosen shall within twenty (20) Calendar Days select a third arbitrator to chair the arbitration panel. In either case, the arbitrators shall be knowledgeable in electric utility matters, including electric transmission and bulk power issues, and shall not have any current or past substantial business or financial relationships with any party to the arbitration (except prior arbitration). The arbitrator(s) shall provide each of the Parties an opportunity to be heard and, except as otherwise provided herein, shall conduct the arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("Arbitration Rules") and any applicable FERC regulations or RTO rules; provided, however, in the event of a conflict between the Arbitration Rules and the terms of this Article 27, the terms of this Article 27 shall prevail.

27.3 Arbitration Decisions. Unless otherwise agreed by the Parties, the arbitrator(s) shall render a decision within ninety (90) Calendar Days of appointment and shall notify the Parties in writing of such decision and the reasons therefore. The arbitrator(s) shall be authorized only to interpret and apply the provisions of this LGIA and shall have no power to modify or change any provision of this Agreement in any manner. The decision of the arbitrator(s) shall be non-binding upon the Parties. The decision of the arbitrator(s) may be appealed solely on the grounds that the conduct of the arbitrator(s), or the decision itself,

violated the standards set forth in the Federal Arbitration Act or the Administrative Dispute Resolution Act.

27.4 **Costs**. Each Party shall be responsible for its own costs incurred during the arbitration process and for the following costs, if applicable: (1) the cost of the arbitrator chosen by the Party to sit on the three member panel and one half of the cost of the third arbitrator chosen; or (2) one half the cost of the single arbitrator jointly chosen by the Parties.

Article 28. Representations, Warranties, and Covenants

28.1 **General**. Each Party makes the following representations, warranties and covenants:

28.1.1 **Good Standing**. Such Party is duly organized, validly existing and in good standing under Federal law or the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business under Federal law or the laws of the state or states in which the Large Generating Facility, Interconnection Facilities and Network Upgrades owned by such Party, as applicable, are located; and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this LGIA and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this LGIA.

28.1.2 **Authority**. Such Party has the right, power and authority to enter into this LGIA, to become a Party hereto and to perform its obligations hereunder. This LGIA is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

28.1.3 **No Conflict**. The execution, delivery and performance of this LGIA does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of such Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.

28.1.4 **Consent and Approval**. Such Party has sought or obtained, or, in accordance with this LGIA will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of this LGIA, and it will provide to any Governmental Authority notice of any actions under this LGIA that are required by Applicable Laws and Regulations.

Article 29. Joint Operating Committee

29.1 Joint Operating Committee. Except in the case of ISOs and RTOs, Transmission Provider shall constitute a Joint Operating Committee to coordinate operating and technical considerations of Interconnection Service. At least six (6) months prior to the expected Initial Synchronization Date, Interconnection Customer and Transmission Provider shall each appoint one representative and one alternate to the Joint Operating Committee. Each Interconnection Customer shall notify Transmission Provider of its appointment in writing. Such appointments may be changed at any time by similar notice. The Joint Operating Committee shall meet as necessary, but not less than once each calendar year, to carry out the duties set forth herein. The Joint Operating Committee shall hold a meeting at the request of either Party, at a time and place agreed upon by the representatives. The Joint Operating Committee shall perform all of its duties consistent with the provisions of this LGIA. Each Party shall cooperate in providing to the Joint Operating Committee all information required in the performance of the Joint Operating Committee's duties. All decisions and agreements, if any, made by the Joint Operating Committee, shall be evidenced in writing. The duties of the Joint Operating Committee shall include the following:

29.1.1 Establish data requirements and operating record requirements.

29.1.2 Review the requirements, standards, and procedures for data acquisition equipment, protective equipment, and any other equipment or software.

29.1.3 Annually review the one (1) year forecast of maintenance and planned outage schedules of Transmission Provider's and Interconnection Customer's facilities at the Point of Interconnection.

29.1.4 Coordinate the scheduling of maintenance and planned outages on the Interconnection Facilities, the Large Generating Facility and other facilities that impact the normal operation of the interconnection of the Large Generating Facility to the Transmission System.

29.1.5 Ensure that information is being provided by each Party regarding equipment availability.

29.1.6 Perform such other duties as may be conferred upon it by mutual agreement of the Parties.

Article 30. Miscellaneous

30.1 Binding Effect. This LGIA and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

30.2 **Conflicts**. In the event of a conflict between the body of this LGIA and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this LGIA shall prevail and be deemed the final intent of the Parties.

30.3 **Rules of Interpretation**. This LGIA, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this LGIA, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this LGIA), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any Applicable Laws and Regulations means such Applicable Laws and Regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Article, Section or Appendix means such Article of this LGIA or such Appendix to this LGIA, or such Section to the LGIP or such Appendix to the LGIP, as the case may be; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this LGIA as a whole and not to any particular Article or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including".

30.4 **Entire Agreement**. This LGIA, including all Appendices and Schedules attached hereto, and also incorporating through reference Attachments J and K of Transmission Provider's Tariff as if they were a part hereof, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this LGIA. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this LGIA.

30.5 **No Third Party Beneficiaries**. This LGIA is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

30.6 **Waiver**. The failure of a Party to this LGIA to insist, on any occasion, upon strict performance of any provision of this LGIA will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this LGIA shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this LGIA. Termination or Default of this LGIA for any reason by Interconnection Customer shall not constitute a waiver of Interconnection Customer's legal rights to obtain an interconnection from Transmission Provider. Any waiver of this LGIA shall, if requested, be provided in writing.

30.7 Headings. The descriptive headings of the various Articles of this LGIA have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this LGIA.

30.8 Multiple Counterparts. This LGIA may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

30.9 Amendment. The Parties may by mutual agreement amend this LGIA by a written instrument duly executed by the Parties.

30.10 Modification by the Parties. The Parties may by mutual agreement amend the Appendices to this LGIA by a written instrument duly executed by the Parties. Such amendment shall become effective and a part of this LGIA upon satisfaction of all Applicable Laws and Regulations.

30.11 [This Article intentionally left blank.]

30.12 No Partnership. This LGIA shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

IN WITNESS WHEREOF, the Parties have executed this LGIA in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties.

WESTERN AREA POWER ADMINISTRATION

By _____
Robert H. Easton

Title Vice President of Transmission Services for CRSP, DSW and RMR

Address 5555 East Crossroads Boulevard
Loveland, CO 80538

Date 1/18/17

FRONT RANGE MIDWAY SOLAR PROJECT LLC

By _____
Geoff Coventry

Title Vice President

Address 16015 W. 113th Street, Suite 105
Lenexa, KS 66219-2305

Date 1.12.17

(SEAL)

Attest:

By _____

Title Notary Public
Director of Real Estate

NOTARY PUBLIC
STATE OF KANSAS
VICKI SCHUMACHER
NOTARY PUBLIC
STATE OF KANSAS
My App. Exp. 9-8-2017

STANDARD LARGE GENERATOR INTERCONNECTION AGREEMENT (LGIA)

between

Public Service Company of Colorado,
a Colorado Corporation and wholly-owned subsidiary of
Xcel Energy Inc.

and

Front Range Midway Solar Project, LLC

for the

100.2 MW Photovoltaic Solar Generation Project

TABLE OF CONTENTS

STANDARD LARGE GENERATOR INTERCONNECTION AGREEMENT

THIS STANDARD LARGE GENERATOR INTERCONNECTION AGREEMENT ("Agreement" or "LGIA") is made and entered into this 8th day of May 2017, by and between Front Range Midway Solar Project, a limited liability company, organized and existing under the laws of the State/Commonwealth of Delaware, ("Interconnection Customer" with a Large Generating Facility), and Public Service Company of Colorado, a Colorado Corporation and wholly-owned subsidiary of Xcel Energy, Inc., ("Transmission Provider and/or Transmission Owner"). Interconnection Customer and Transmission Provider each may be referred to as a "Party" or collectively as the "Parties."

Recitals

WHEREAS, Transmission Provider operates the Transmission System; and

WHEREAS, Interconnection Customer intends to own, lease and/or control and operate the Generating Facility identified as a Large Generating Facility in Appendix C to this Agreement; and,

WHEREAS, Interconnection Customer and Transmission Provider have agreed to enter into this Agreement for the purpose of interconnecting the Large Generating Facility with the Transmission System;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, it is agreed:

When used in this Standard Large Generator Interconnection Agreement, terms with initial capitalization that are not defined in Article 1 shall have the meanings specified in the Article in which they are used or the Open Access Transmission Tariff (Tariff).

Article 1. Definitions

Adverse System Impact shall mean the negative effects due to technical or operational limits on conductors or equipment being exceeded that may compromise the safety and reliability of the electric system.

Affected System shall mean an electric system other than the Transmission Provider's Transmission System that may be affected by the proposed interconnection.

Affected System Operator shall mean the entity that operates an Affected System.

Affiliate shall mean, with respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

Ancillary Services shall mean those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Provider's Transmission System in accordance with Good Utility Practice.

Applicable Laws and Regulations shall mean all duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

Applicable Reliability Council shall mean the reliability council applicable to the Transmission System to which the Generating Facility is directly interconnected.

Applicable Reliability Standards shall mean the requirements and guidelines of NERC, the Applicable Reliability Council, and the Control Area of the Transmission System to which the Generating Facility is directly interconnected.

Base Case shall mean the base case power flow, short circuit, and stability data bases used for the Interconnection Studies by the Transmission Provider or Interconnection Customer.

Breach shall mean the failure of a Party to perform or observe any material term or condition of the Standard Large Generator Interconnection Agreement.

Breaching Party shall mean a Party that is in Breach of the Standard Large Generator Interconnection Agreement.

Business Day shall mean Monday through Friday, excluding Federal Holidays.

Calendar Day shall mean any day including Saturday, Sunday or a Federal Holiday.

Clustering shall mean the process whereby a group of Interconnection Requests is studied together, instead of serially, for the purpose of conducting the Interconnection System Impact Study.

Commercial Operation shall mean the status of a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during Trial Operation.

Commercial Operation Date of a unit shall mean the date on which the Generating Facility commences Commercial Operation as agreed to by the Parties pursuant to Appendix E to the Standard Large Generator Interconnection Agreement.

Confidential Information shall mean any confidential, proprietary or trade secret information of a plan, specification, pattern, procedure, design, device, list, concept, policy or compilation relating to the present or planned business of a Party, which is designated as confidential by the Party supplying the information, whether conveyed orally, electronically, in writing, through inspection, or otherwise.

Control Area shall mean an electrical system or systems bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation of the interconnection. A Control Area must be certified by the Applicable Reliability Council.

Default shall mean the failure of a Breaching Party to cure its Breach in accordance with Article 17 of the Standard Large Generator Interconnection Agreement.

Dispute Resolution shall mean the procedure for resolution of a dispute between the Parties in which they will first attempt to resolve the dispute on an informal basis.

Distribution System shall mean the Transmission Provider's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.

Distribution Upgrades shall mean the additions, modifications, and upgrades to the Transmission Provider's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the transmission service necessary to effect Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

Effective Date shall mean the date on which the Standard Large Generator Interconnection Agreement becomes effective upon execution by the Parties subject to acceptance by FERC, or if filed unexecuted, upon the date specified by FERC.

Emergency Condition shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of a Transmission Provider, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to Transmission Provider's Transmission System, Transmission Provider's Interconnection Facilities or the electric systems of others to which the Transmission Provider's Transmission System is directly connected; or (3) that, in the case of Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or Interconnection Customer's Interconnection Facilities. System restoration and black start shall be considered Emergency Conditions; provided, that Interconnection Customer is not obligated by the Standard Large Generator Interconnection Agreement to possess black start capability.

Energy Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or nonfirm capacity of the Transmission Provider's Transmission System on an as available basis. Energy Resource Interconnection Service in and of itself does not convey transmission service.

Engineering & Procurement (E&P) Agreement shall mean an agreement that authorizes the Transmission Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection in order to advance the implementation of the Interconnection Request.

Environmental Law shall mean Applicable Laws or Regulations relating to pollution or protection of the environment or natural resources.

Federal Power Act shall mean the Federal Power Act, as amended, 16 U.S.C. §§ 791a et seq.

FERC shall mean the Federal Energy Regulatory Commission (Commission) or its successor.

Force Majeure shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include acts of negligence or intentional wrongdoing by the Party claiming Force Majeure.

Generating Facility shall mean Interconnection Customer's device for the production of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

Generating Facility Capacity shall mean the net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple energy production devices.

Good Utility Practice shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority shall mean any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Transmission Provider, or any Affiliate thereof.

Hazardous Substances shall mean any chemicals, materials or substances defined as or included in the definition of "hazardous substances," "hazardous wastes," "hazardous materials," "hazardous constituents," "restricted hazardous materials," "extremely hazardous substances," "toxic substances," "radioactive substances," "contaminants," "pollutants," "toxic

pollutants" or words of similar meaning and regulatory effect under any applicable Environmental Law, or any other chemical, material or substance, exposure to which is prohibited, limited or regulated by any applicable Environmental Law.

Initial Synchronization Date shall mean the date upon which the Generating Facility is initially synchronized and upon which Trial Operation begins.

In-Service Date shall mean the date upon which the Interconnection Customer reasonably expects it will be ready to begin use of the Transmission Provider's Interconnection Facilities to obtain back feed power.

Interconnection Customer shall mean any entity, including the Transmission Provider, Transmission Owner or any of the Affiliates or subsidiaries of either, that proposes to interconnect its Generating Facility with the Transmission Provider's Transmission System.

Interconnection Customer's Interconnection Facilities shall mean all facilities and equipment, as identified in Appendix A of the Standard Large Generator Interconnection Agreement, that are located between the Generating Facility and the Point of Change of Ownership, including any modification, addition, or upgrades to such facilities and equipment necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Customer's Interconnection Facilities are sole use facilities.

Interconnection Facilities shall mean the Transmission Provider's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

Interconnection Facilities Study shall mean a study conducted by the Transmission Provider or a third party consultant for the Interconnection Customer to determine a list of facilities (including Transmission Provider's Interconnection Facilities and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with the Transmission Provider's Transmission System. The scope of the study is defined in Section 8 of the Standard Large Generator Interconnection Procedures.

Interconnection Facilities Study Agreement shall mean the form of agreement contained in Appendix 4 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection Facilities Study.

Interconnection Feasibility Study shall mean a preliminary evaluation of the system impact and cost of interconnecting the Generating Facility to the Transmission Provider's Transmission System, the scope of which is described in Section 6 of the Standard Large Generator Interconnection Procedures.

Interconnection Feasibility Study Agreement shall mean the form of agreement contained in Appendix 2 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection Feasibility Study.

Interconnection Request shall mean an Interconnection Customer's request, in the form of Appendix 1 to the Standard Large Generator Interconnection Procedures, in accordance with the Tariff, to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Transmission Provider's Transmission System.

Interconnection Service shall mean the service provided by the Transmission Provider associated with interconnecting the Interconnection Customer's Generating Facility to the Transmission Provider's Transmission System and enabling it to receive electric energy and capacity from the Generating Facility at the Point of Interconnection, pursuant to the terms of the Standard Large Generator Interconnection Agreement and, if applicable, the Transmission Provider's Tariff.

Interconnection Study shall mean any of the following studies: the Interconnection Feasibility Study, the Interconnection System Impact Study, and the Interconnection Facilities Study described in the Standard Large Generator Interconnection Procedures.

Interconnection System Impact Study shall mean an engineering study that evaluates the impact of the proposed interconnection on the safety and reliability of Transmission Provider's Transmission System and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the Generating Facility were interconnected without project modifications or system modifications, focusing on the Adverse System Impacts identified in the Interconnection Feasibility Study, or to study potential impacts, including but not limited to those identified in the Scoping Meeting as described in the Standard Large Generator Interconnection Procedures.

Interconnection System Impact Study Agreement shall mean the form of agreement contained in Appendix 3 of the Standard Large Generator Interconnection Procedures for conducting the Interconnection System Impact Study.

IRS shall mean the Internal Revenue Service.

Joint Operating Committee shall be a group made up of representatives from Interconnection Customers and the Transmission Provider to coordinate operating and technical considerations of Interconnection Service.

Large Generating Facility shall mean a Generating Facility having a Generating Facility Capacity of more than 20 MW.

Loss shall mean any and all losses relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's performance, or non-performance of its obligations under the Standard Large Generator

Interconnection Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnifying Party.

Material Modification shall mean those modifications that have a material impact on the cost or timing of any Interconnection Request with a later queue priority date.

Metering Equipment shall mean all metering equipment installed or to be installed at the Generating Facility pursuant to the Standard Large Generator Interconnection Agreement at the metering points, including but not limited to instrument transformers, MWh-meters, data acquisition equipment, transducers, remote terminal unit, communications equipment, phone lines, and fiber optics.

NERC shall mean the North American Electric Reliability Council or its successor organization.

Network Resource shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis.

Network Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission System (1) in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an RTO or ISO with market based congestion management, in the same manner as Network Resources. Network Resource Interconnection Service in and of itself does not convey transmission service.

Network Upgrades shall mean the additions, modifications, and upgrades to the Transmission Provider's Transmission System required at or beyond the point at which the Interconnection Facilities connect to the Transmission Provider's Transmission System to accommodate the interconnection of the Large Generating Facility to the Transmission Provider's Transmission System.

Notice of Dispute shall mean a written notice of a dispute or claim that arises out of or in connection with the Standard Large Generator Interconnection Agreement or its performance.

Optional Interconnection Study shall mean a sensitivity analysis based on assumptions specified by the Interconnection Customer in the Optional Interconnection Study Agreement.

Optional Interconnection Study Agreement shall mean the form of agreement contained in Appendix 5 of the Standard Large Generator Interconnection Procedures for conducting the Optional Interconnection Study.

Party or Parties shall mean Transmission Provider, Transmission Owner, Interconnection Customer or any combination of the above.

Point of Change of Ownership shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Customer's Interconnection Facilities connect to the Transmission Provider's Interconnection Facilities.

Point of Interconnection shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Facilities connect to the Transmission Provider's Transmission System.

Queue Position shall mean the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, that is established based upon the date and time of receipt of the valid Interconnection Request by the Transmission Provider.

Reasonable Efforts shall mean, with respect to an action required to be attempted or taken by a Party under the Standard Large Generator Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Scoping Meeting shall mean the meeting between representatives of the Interconnection Customer and Transmission Provider conducted for the purpose of discussing alternative interconnection options, to exchange information including any transmission data and earlier study evaluations that would be reasonably expected to impact such interconnection options, to analyze such information, and to determine the potential feasible Points of Interconnection.

Site Control shall mean documentation reasonably demonstrating: (1) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility; (2) an option to purchase or acquire a leasehold site for such purpose; or (3) an exclusivity or other business relationship between Interconnection Customer and the entity having the right to sell, lease or grant Interconnection Customer the right to possess or occupy a site for such purpose.

Small Generating Facility shall mean a Generating Facility that has a Generating Facility Capacity of no more than 20 MW.

Stand Alone Network Upgrades shall mean Network Upgrades that an Interconnection Customer may construct without affecting day-to-day operations of the Transmission System during their construction. Both the Transmission Provider and the Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify them in Appendix A to the Standard Large Generator Interconnection Agreement.

Standard Large Generator Interconnection Agreement (LGIA) shall mean the form of interconnection agreement applicable to an Interconnection Request pertaining to a Large Generating Facility that is included in the Transmission Provider's Tariff.

Standard Large Generator Interconnection Procedures (LGIP) shall mean the interconnection procedures applicable to an Interconnection Request pertaining to a Large Generating Facility that are included in the Transmission Provider's Tariff.

System Protection Facilities shall mean the equipment, including necessary protection signal communications equipment, required to protect (1) the Transmission Provider's Transmission System from faults or other electrical disturbances occurring at the Generating Facility and (2) the Generating Facility from faults or other electrical system disturbances occurring on the Transmission Provider's Transmission System or on other delivery systems or other generating systems to which the Transmission Provider's Transmission System is directly connected.

Tariff shall mean the Transmission Provider's Tariff through which open access transmission service and Interconnection Service are offered, as filed with FERC, and as amended or supplemented from time to time, or any successor tariff.

Transmission Owner shall mean an entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System at the Point of Interconnection and may be a Party to the Standard Large Generator Interconnection Agreement to the extent necessary.

Transmission Provider shall mean the public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity in interstate commerce and provides transmission service under the Tariff. The term Transmission Provider should be read to include the Transmission Owner when the Transmission Owner is separate from the Transmission Provider.

Transmission Provider's Interconnection Facilities shall mean all facilities and equipment owned, controlled or operated by the Transmission Provider from the Point of Change of Ownership to the Point of Interconnection as identified in Appendix A to the Standard Large Generator Interconnection Agreement, including any modifications, additions or upgrades to such facilities and equipment. Transmission Provider's Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

Transmission System shall mean the facilities owned, controlled or operated by the Transmission Provider or Transmission Owner that are used to provide transmission service under the Tariff.

Trial Operation shall mean the period during which Interconnection Customer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

Variable Energy Resource shall mean a device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator.

Article 2. Effective Date, Term, and Termination

2.1 Effective Date. This LGIA shall become effective upon execution by the Parties subject to acceptance by FERC (if applicable), or if filed unexecuted, upon the date specified by FERC. Transmission Provider shall promptly file this LGIA with FERC upon execution in accordance with Article 3.1, if required.

2.2 **Term of Agreement**. Subject to the provisions of Article 2.3, this LGIA shall remain in effect for a period of twenty five (25) years from the Effective Date or such other longer period as Interconnection Customer may request (Term to be specified in individual agreements) and shall be automatically renewed for each successive one-year period thereafter.

2.3 **Termination Procedures**.

2.3.1 **Written Notice**. This LGIA may be terminated by Interconnection Customer after giving Transmission Provider ninety (90) Calendar Days advance written notice, or by Transmission Provider notifying FERC after the Generating Facility permanently ceases Commercial Operation.

2.3.2 **Default**. Either Party may terminate this LGIA in accordance with Article 17.

2.3.3 Notwithstanding Articles 2.3.1 and 2.3.2, no termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination, including the filing with FERC of a notice of termination of this LGIA, which notice has been accepted for filing by FERC.

2.4 **Termination Costs**. If a Party elects to terminate this Agreement pursuant to Article 2.3 above, each Party shall pay all costs incurred (including any cancellation costs relating to orders or contracts for Interconnection Facilities and equipment) or charges assessed by the other Party, as of the date of the other Party's receipt of such notice of termination, that are the responsibility of the Terminating Party under this LGIA. In the event of termination by a Party, the Parties shall use commercially Reasonable Efforts to mitigate the costs, damages and charges arising as a consequence of termination. Upon termination of this LGIA, unless otherwise ordered or approved by FERC:

2.4.1 With respect to any portion of Transmission Provider's Interconnection Facilities that have not yet been constructed or installed, Transmission Provider shall to the extent possible and with Interconnection Customer's authorization cancel any pending orders of, or return, any materials or equipment for, or contracts for construction of, such facilities; provided that in the event Interconnection Customer elects not to authorize such cancellation, Interconnection Customer shall assume all payment obligations with respect to such materials, equipment, and contracts, and Transmission Provider shall deliver such material and equipment, and, if necessary, assign such contracts, to Interconnection Customer as soon as practicable, at Interconnection Customer's expense. To the extent that Interconnection Customer has already paid Transmission Provider for any or all such costs of materials or equipment not taken by Interconnection Customer, Transmission Provider shall promptly refund such amounts to Interconnection Customer, less any costs, including penalties incurred by Transmission Provider to cancel any pending orders of or return such materials, equipment, or contracts.

If an Interconnection Customer terminates this LGIA, it shall be responsible for all costs incurred in association with that Interconnection Customer's interconnection, including any cancellation costs relating to orders or contracts for Interconnection Facilities and equipment, and other expenses including any Network Upgrades for which Transmission Provider has incurred expenses and has not been reimbursed by Interconnection Customer.

2.4.2 Transmission Provider may, at its option, retain any portion of such materials, equipment, or facilities that Interconnection Customer chooses not to accept delivery of, in which case Transmission Provider shall be responsible for all costs associated with procuring such materials, equipment, or facilities.

2.4.3 With respect to any portion of the Interconnection Facilities, and any other facilities already installed or constructed pursuant to the terms of this LGIA, Interconnection Customer shall be responsible for all costs associated with the removal, relocation or other disposition or retirement of such materials, equipment, or facilities.

2.5 **Disconnection**. Upon termination of this LGIA, the Parties will take all appropriate steps to disconnect the Large Generating Facility from the Transmission System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this LGIA or such non-terminating Party otherwise is responsible for these costs under this LGIA.

2.6 **Survival**. This LGIA shall continue in effect after termination to the extent necessary to provide for final billings and payments and for costs incurred hereunder, including billings and payments pursuant to this LGIA; to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while this LGIA was in effect; and to permit each Party to have access to the lands of the other Party pursuant to this LGIA or other applicable agreements, to disconnect, remove or salvage its own facilities and equipment

Article 3. Regulatory Filings

3.1 **Filing**. Transmission Provider shall file this LGIA (and any amendment hereto) with the appropriate Governmental Authority, if required. Interconnection Customer may request that any information so provided be subject to the confidentiality provisions of Article 22. If Interconnection Customer has executed this LGIA, or any amendment thereto, Interconnection Customer shall reasonably cooperate with Transmission Provider with respect to such filing and to provide any information reasonably requested by Transmission Provider needed to comply with applicable regulatory requirements.

Article 4. Scope of Service

4.1 **Interconnection Product Options**. Interconnection Customer has selected the following (checked) type of Interconnection Service:

4.1.1 Energy Resource Interconnection Service [NOT SELECTED]

4.1.1.1 The Product. Energy Resource Interconnection Service allows Interconnection Customer to connect the Large Generating Facility to the Transmission System and be eligible to deliver the Large Generating Facility's output using the existing firm or non-firm capacity of the Transmission System on an "as available" basis. To the extent Interconnection Customer wants to receive Energy Resource Interconnection Service, Transmission Provider shall construct facilities identified in Attachment A.

4.1.1.2 Transmission Delivery Service Implications. Under Energy Resource Interconnection Service, Interconnection Customer will be eligible to inject power from the Large Generating Facility into and deliver power across the interconnecting Transmission Provider's Transmission System on an "as available" basis up to the amount of MWs identified in the applicable stability and steady state studies to the extent the upgrades initially required to qualify for Energy Resource Interconnection Service have been constructed. Where eligible to do so (e.g., PJM, ISO-NE, NYISO), Interconnection Customer may place a bid to sell into the market up to the maximum identified Large Generating Facility output, subject to any conditions specified in the interconnection service approval, and the Large Generating Facility will be dispatched to the extent Interconnection Customer's bid clears. In all other instances, no transmission delivery service from the Large Generating Facility is assured, but Interconnection Customer may obtain Point-to-Point Transmission Service, Network Integration Transmission Service, or be used for secondary network transmission service, pursuant to Transmission Provider's Tariff, up to the maximum output identified in the stability and steady state studies. In those instances, in order for Interconnection Customer to obtain the right to deliver or inject energy beyond the Large Generating Facility Point of Interconnection or to improve its ability to do so, transmission delivery service must be obtained pursuant to the provisions of Transmission Provider's Tariff. The Interconnection Customer's ability to inject its Large Generating Facility output beyond the Point of Interconnection, therefore, will depend on the existing capacity of Transmission Provider's Transmission System at such time as a transmission service request is made that would accommodate such delivery. The provision of firm Point-to-Point Transmission Service or Network Integration Transmission Service may require the construction of additional Network Upgrades.

4.1.2 Network Resource Interconnection Service. **[SELECTED]**

4.1.2.1 **The Product**. Transmission Provider must conduct the necessary studies and construct the Network Upgrades needed to integrate the Large Generating Facility (1) in a manner comparable to that in which Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an ISO or RTO with market based congestion management, in the same manner as all Network Resources. To the extent Interconnection Customer wants to receive Network Resource Interconnection Service, Transmission Provider shall construct the facilities identified in Attachment A to this LGIA.

4.1.2.2 **Transmission Delivery Service Implications**. Network Resource Interconnection Service allows Interconnection Customer's Large Generating Facility to be designated by any Network Customer under the Tariff on Transmission Provider's Transmission System as a Network Resource, up to the Large Generating Facility's full output, on the same basis as existing Network Resources interconnected to Transmission Provider's Transmission System, and to be studied as a Network Resource on the assumption that such a designation will occur. Although Network Resource Interconnection Service does not convey a reservation of transmission service, any Network Customer under the Tariff can utilize its network service under the Tariff to obtain delivery of energy from the interconnected Interconnection Customer's Large Generating Facility in the same manner as it accesses Network Resources. A Large Generating Facility receiving Network Resource Interconnection Service may also be used to provide Ancillary Services after technical studies and/or periodic analyses are performed with respect to the Large Generating Facility's ability to provide any applicable Ancillary Services, provided that such studies and analyses have been or would be required in connection with the provision of such Ancillary Services by any existing Network Resource. However, if an Interconnection Customer's Large Generating Facility has not been designated as a Network Resource by any load, it cannot be required to provide Ancillary Services except to the extent such requirements extend to all generating facilities that are similarly situated. The provision of Network Integration Transmission Service or firm Point-to-Point Transmission Service may require additional studies and the construction of additional upgrades. Because such studies and upgrades would be associated with a request for delivery service under the Tariff, cost responsibility for the studies and upgrades would be in accordance with FERC's policy for pricing transmission delivery services.

Network Resource Interconnection Service does not necessarily provide Interconnection Customer with the capability to physically deliver the output of its Large Generating Facility to any particular

load on Transmission Provider's Transmission System without incurring congestion costs. In the event of transmission constraints on Transmission Provider's Transmission System, Interconnection Customer's Large Generating Facility shall be subject to the applicable congestion management procedures in Transmission Provider's Transmission System in the same manner as Network Resources.

There is no requirement either at the time of study or interconnection, or at any point in the future, that Interconnection Customer's Large Generating Facility be designated as a Network Resource by a Network Service Customer under the Tariff or that Interconnection Customer identify a specific buyer (or sink). To the extent a Network Customer does designate the Large Generating Facility as a Network Resource, it must do so pursuant to Transmission Provider's Tariff.

Once an Interconnection Customer satisfies the requirements for obtaining Network Resource Interconnection Service, any future transmission service request for delivery from the Large Generating Facility within Transmission Provider's Transmission System of any amount of capacity and/or energy, up to the amount initially studied, will not require that any additional studies be performed or that any further upgrades associated with such Large Generating Facility be undertaken, regardless of whether or not such Large Generating Facility is ever designated by a Network Customer as a Network Resource and regardless of changes in ownership of the Large Generating Facility. However, the reduction or elimination of congestion or redispatch costs may require additional studies and the construction of additional upgrades.

To the extent Interconnection Customer enters into an arrangement for long term transmission service for deliveries from the Large Generating Facility outside Transmission Provider's Transmission System, such request may require additional studies and upgrades in order for Transmission Provider to grant such request.

4.2 **Provision of Service**. Transmission Provider shall provide Interconnection Service for the Large Generating Facility at the Point of Interconnection.

4.3 **Performance Standards**. Each Party shall perform all of its obligations under this LGIA in accordance with Applicable Laws and Regulations, Applicable Reliability Standards, and Good Utility Practice, and to the extent a Party is required or prevented or limited in taking any action by such regulations and standards, such Party shall not be deemed to be in Breach of this LGIA for its compliance therewith. If such Party is a Transmission

Provider or Transmission Owner, then that Party shall amend the LGIA and submit the amendment to FERC for approval.

4.4 No Transmission Delivery Service. The execution of this LGIA does not constitute a request for, nor the provision of, any transmission delivery service under Transmission Provider's Tariff, and does not convey any right to deliver electricity to any specific customer or Point of Delivery.

4.5 Interconnection Customer Provided Services. The services provided by Interconnection Customer under this LGIA are set forth in Article 9.6 and Article 13.5.1. Interconnection Customer shall be paid for such services in accordance with Article 11.6.

Article 5. Interconnection Facilities Engineering, Procurement, and Construction

5.1 Options. Unless otherwise mutually agreed to between the Parties, Interconnection Customer shall select the In-Service Date, Initial Synchronization Date, and Commercial Operation Date; and either Standard Option or Alternate Option set forth below for completion of Transmission Provider's Interconnection Facilities and Network Upgrades as set forth in Appendix A, Interconnection Facilities and Network Upgrades, and such dates and selected option shall be set forth in Appendix B, Milestones.

5.1.1 Standard Option. Transmission Provider shall design, procure, and construct Transmission Provider's Interconnection Facilities and Network Upgrades, using Reasonable Efforts to complete Transmission Provider's Interconnection Facilities and Network Upgrades by the dates set forth in Appendix B, Milestones. Transmission Provider shall not be required to undertake any action which is inconsistent with its standard safety practices, its material and equipment specifications, its design criteria and construction procedures, its labor agreements, and Applicable Laws and Regulations. In the event Transmission Provider reasonably expects that it will not be able to complete Transmission Provider's Interconnection Facilities and Network Upgrades by the specified dates, Transmission Provider shall promptly provide written notice to Interconnection Customer and shall undertake Reasonable Efforts to meet the earliest dates thereafter.

5.1.2 Alternate Option. If the dates designated by Interconnection Customer are acceptable to Transmission Provider, Transmission Provider shall so notify Interconnection Customer within thirty (30) Calendar Days, and shall assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities by the designated dates.

If Transmission Provider subsequently fails to complete Transmission Provider's Interconnection Facilities by the In-Service Date, to the extent necessary to provide back feed power; or fails to complete Network Upgrades by the Initial Synchronization Date to the extent necessary to allow for Trial Operation at full power output, unless other arrangements are made by the Parties for such Trial Operation; or fails to complete the Network Upgrades by the Commercial Operation Date, as such dates are reflected in Appendix B,

Milestones; Transmission Provider shall pay Interconnection Customer liquidated damages in accordance with Article 5.3, Liquidated Damages, provided, however, the dates designated by Interconnection Customer shall be extended day for day for each day that the applicable RTO or ISO refuses to grant clearances to install equipment.

5.1.3 **Option to Build**. If the dates designated by Interconnection Customer are not acceptable to Transmission Provider, Transmission Provider shall so notify Interconnection Customer within thirty (30) Calendar Days, and unless the Parties agree otherwise, Interconnection Customer shall have the option to assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades on the dates specified in Article 5.1.2. Transmission Provider and Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify such Stand Alone Network Upgrades in Appendix A. Except for Stand Alone Network Upgrades, Interconnection Customer shall have no right to construct Network Upgrades under this option.

5.1.4 **Negotiated Option**. If Interconnection Customer elects not to exercise its option under Article 5.1.3, Option to Build, Interconnection Customer shall so notify Transmission Provider within thirty (30) Calendar Days, and the Parties shall in good faith attempt to negotiate terms and conditions (including revision of the specified dates and liquidated damages, the provision of incentives or the procurement and construction of a portion of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades by Interconnection Customer) pursuant to which Transmission Provider is responsible for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Network Upgrades. If the Parties are unable to reach agreement on such terms and conditions, Transmission Provider shall assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Network Upgrades pursuant to 5.1.1, Standard Option.

5.2 **General Conditions Applicable to Option to Build**. If Interconnection Customer assumes responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades,

(1) Interconnection Customer shall engineer, procure equipment, and construct Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades (or portions thereof) using Good Utility Practice and using standards and specifications provided in advance by Transmission Provider;

(2) Interconnection Customer's engineering, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades shall comply with all requirements of law to which Transmission Provider would be subject in the

engineering, procurement or construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(3) Transmission Provider shall review and approve the engineering design, equipment acceptance tests, and the construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(4) prior to commencement of construction, Interconnection Customer shall provide to Transmission Provider a schedule for construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades, and shall promptly respond to requests for information from Transmission Provider;

(5) at any time during construction, Transmission Provider shall have the right to gain unrestricted access to Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades and to conduct inspections of the same;

(6) at any time during construction, should any phase of the engineering, equipment procurement, or construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades not meet the standards and specifications provided by Transmission Provider, Interconnection Customer shall be obligated to remedy deficiencies in that portion of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades;

(7) Interconnection Customer shall indemnify Transmission Provider for claims arising from Interconnection Customer's construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades under the terms and procedures applicable to Article 18.1 Indemnity;

(8) Interconnection Customer shall transfer control of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades to Transmission Provider;

(9) Unless Parties otherwise agree, Interconnection Customer shall transfer ownership of Transmission Provider's Interconnection Facilities and Stand-Alone Network Upgrades to Transmission Provider;

(10) Transmission Provider shall approve and accept for operation and maintenance Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades to the extent engineered, procured, and constructed in accordance with this Article 5.2; and

(11) Interconnection Customer shall deliver to Transmission Provider "as-built" drawings, information, and any other documents that are reasonably required by Transmission Provider to assure that the Interconnection Facilities and Stand-Alone Network Upgrades are built to the standards and specifications required by Transmission Provider.

5.3 Liquidated Damages. The actual damages to Interconnection Customer, in the event Transmission Provider's Interconnection Facilities or Network Upgrades are not completed by the dates designated by Interconnection Customer and accepted by Transmission Provider pursuant to subparagraphs 5.1.2 or 5.1.4, above, may include Interconnection Customer's fixed operation and maintenance costs and lost opportunity costs. Such actual damages are uncertain and impossible to determine at this time. Because of such uncertainty, any liquidated damages paid by Transmission Provider to Interconnection Customer in the event that Transmission Provider does not complete any portion of Transmission Provider's Interconnection Facilities or Network Upgrades by the applicable dates, shall be an amount equal to ½ of 1 percent per day of the actual cost of Transmission Provider's Interconnection Facilities and Network Upgrades, in the aggregate, for which Transmission Provider has assumed responsibility to design, procure and construct.

However, in no event shall the total liquidated damages exceed 20 percent of the actual cost of Transmission Provider's Interconnection Facilities and Network Upgrades for which Transmission Provider has assumed responsibility to design, procure, and construct. The foregoing payments will be made by Transmission Provider to Interconnection Customer as just compensation for the damages caused to Interconnection Customer, which actual damages are uncertain and impossible to determine at this time, and as reasonable liquidated damages, but not as a penalty or a method to secure performance of this LGIA. Liquidated damages, when the Parties agree to them, are the exclusive remedy for the Transmission Provider's failure to meet its schedule.

No liquidated damages shall be paid to Interconnection Customer if: (1) Interconnection Customer is not ready to commence use of Transmission Provider's Interconnection Facilities or Network Upgrades to take the delivery of power for the Large Generating Facility's Trial Operation or to export power from the Large Generating Facility on the specified dates, unless Interconnection Customer would have been able to commence use of Transmission Provider's Interconnection Facilities or Network Upgrades to take the delivery of power for Large Generating Facility's Trial Operation or to export power from the Large Generating Facility, but for Transmission Provider's delay; (2) Transmission Provider's failure to meet the specified dates is the result of the action or inaction of Interconnection Customer or any other Interconnection Customer who has entered into an LGIA with Transmission Provider or any cause beyond Transmission Provider's reasonable control or reasonable ability to cure; (3) the Interconnection Customer has assumed responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades; or (4) the Parties have otherwise agreed.

5.4 **Power System Stabilizers**. The Interconnection Customer shall procure, install, maintain and operate Power System Stabilizers in accordance with the guidelines and procedures established by the Applicable Reliability Council. Transmission Provider reserves the right to reasonably establish minimum acceptable settings for any installed Power System Stabilizers, subject to the design and operating limitations of the Large Generating Facility. If the Large Generating Facility's Power System Stabilizers are removed from service or not capable of automatic operation, Interconnection Customer shall immediately notify Transmission Provider's system operator, or its designated representative. The requirements of this paragraph shall not apply to wind generators.

5.5 **Equipment Procurement.** If responsibility for construction of Transmission Provider's Interconnection Facilities or Network Upgrades is to be borne by Transmission Provider, then Transmission Provider shall commence design of Transmission Provider's Interconnection Facilities or Network Upgrades and procure necessary equipment as soon as practicable after all of the following conditions are satisfied, unless the Parties otherwise agree in writing:

5.5.1 Transmission Provider has completed the Facilities Study pursuant to the Facilities Study Agreement;

5.5.2 Transmission Provider has received written authorization to proceed with design and procurement from Interconnection Customer by the date specified in Appendix B, Milestones; and

5.5.3 Interconnection Customer has provided security to Transmission Provider in accordance with Article 11.5 by the dates specified in Appendix B, Milestones.

5.6 **Construction Commencement.** Transmission Provider shall commence construction of Transmission Provider's Interconnection Facilities and Network Upgrades for which it is responsible as soon as practicable after the following additional conditions are satisfied:

5.6.1 Approval of the appropriate Governmental Authority has been obtained for any facilities requiring regulatory approval;

5.6.2 Necessary real property rights and rights-of-way have been obtained, to the extent required for the construction of a discrete aspect of Transmission Provider's Interconnection Facilities and Network Upgrades;

5.6.3 Transmission Provider has received written authorization to proceed with construction from Interconnection Customer by the date specified in Appendix B, Milestones; and

5.6.4 Interconnection Customer has provided security to Transmission Provider in accordance with Article 11.5 by the dates specified in Appendix B, Milestones.

5.7 **Work Progress**. The Parties will keep each other advised periodically as to the progress of their respective design, procurement and construction efforts. Either Party may, at any time, request a progress report from the other Party. If, at any time, Interconnection Customer determines that the completion of Transmission Provider's Interconnection Facilities will not be required until after the specified In-Service Date, Interconnection Customer will provide written notice to Transmission Provider of such later date upon which the completion of Transmission Provider's Interconnection Facilities will be required.

5.8 **Information Exchange**. As soon as reasonably practicable after the Effective Date, the Parties shall exchange information regarding the design and compatibility of the Parties' Interconnection Facilities and compatibility of the Interconnection Facilities with Transmission Provider's Transmission System, and shall work diligently and in good faith to make any necessary design changes.

5.9 **Limited Operation**. If any of Transmission Provider's Interconnection Facilities or Network Upgrades are not reasonably expected to be completed prior to the Commercial Operation Date of the Large Generating Facility, Transmission Provider shall, upon the request and at the expense of Interconnection Customer, perform operating studies on a timely basis to determine the extent to which the Large Generating Facility and Interconnection Customer's Interconnection Facilities may operate prior to the completion of Transmission Provider's Interconnection Facilities or Network Upgrades consistent with Applicable Laws and Regulations, Applicable Reliability Standards, Good Utility Practice, and this LGIA. Transmission Provider shall permit Interconnection Customer to operate the Large Generating Facility and Interconnection Customer's Interconnection Facilities in accordance with the results of such studies.

5.10 **Interconnection Customer's Interconnection Facilities** ('ICIF'). Interconnection Customer shall, at its expense, design, procure, construct, own and install the ICIF, as set forth in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades.

5.10.1 **Interconnection Customer's Interconnection Facility Specifications**. Interconnection Customer shall submit initial specifications for the ICIF, including System Protection Facilities, to Transmission Provider at least one hundred eighty (180) Calendar Days prior to the Initial Synchronization Date; and final specifications for review and comment at least ninety (90) Calendar Days prior to the Initial Synchronization Date. Transmission Provider shall review such specifications to ensure that the ICIF are compatible with the technical specifications, operational control, and safety requirements of Transmission Provider and comment on such specifications within thirty (30) Calendar Days of Interconnection Customer's submission. All specifications provided hereunder shall be deemed confidential.

5.10.2 **Transmission Provider's Review**. Transmission Provider's review of Interconnection Customer's final specifications shall not be construed as confirming, endorsing, or providing a warranty as to the design, fitness, safety, durability or reliability of the Large Generating Facility, or the ICIF.

Interconnection Customer shall make such changes to the ICIF as may reasonably be required by Transmission Provider, in accordance with Good Utility Practice, to ensure that the ICIF are compatible with the technical specifications, operational control, and safety requirements of Transmission Provider.

5.10.3 **ICIF Construction**. The ICIF shall be designed and constructed in accordance with Good Utility Practice. Within one hundred twenty (120) Calendar Days after the Commercial Operation Date, unless the Parties agree on another mutually acceptable deadline, Interconnection Customer shall deliver to Transmission Provider "as-built" drawings, information and documents for the ICIF, such as: a one-line diagram, a site plan showing the Large Generating Facility and the ICIF, plan and elevation drawings showing the layout of the ICIF, a relay functional diagram, relaying AC and DC schematic wiring diagrams and relay settings for all facilities associated with Interconnection Customer's step-up transformers, the facilities connecting the Large Generating Facility to the step-up transformers and the ICIF, and the impedances (determined by factory tests) for the associated step-up transformers and the Large Generating Facility. The Interconnection Customer shall provide Transmission Provider specifications for the excitation system, automatic voltage regulator, Large Generating Facility control and protection settings, transformer tap settings, and communications, if applicable.

5.11 **Transmission Provider's Interconnection Facilities Construction**. Transmission Provider's Interconnection Facilities shall be designed and constructed in accordance with Good Utility Practice. Upon request, within one hundred twenty (120) Calendar Days after the Commercial Operation Date, unless the Parties agree on another mutually acceptable deadline, Transmission Provider shall deliver to Interconnection Customer the following "as-built" drawings, information and documents for Transmission Provider's Interconnection Facilities [include appropriate drawings and relay diagrams]. Transmission Provider will obtain control of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades upon completion of such facilities.

5.12 **Access Rights**. Upon reasonable notice and supervision by a Party, and subject to any required or necessary regulatory approvals, a Party ("Granting Party") shall furnish at no cost to the other Party ("Access Party") any rights of use, licenses, rights of way and easements with respect to lands owned or controlled by the Granting Party, its agents (if allowed under the applicable agency agreement), or any Affiliate, that are necessary to enable the Access Party to obtain ingress and egress to construct, operate, maintain, repair, test (or witness testing), inspect, replace or remove facilities and equipment to: (i) interconnect the Large Generating Facility with the Transmission System; (ii) operate and maintain the Large Generating Facility, the Interconnection Facilities and the Transmission System; and (iii) disconnect or remove the Access Party's facilities and equipment upon termination of this LGIA. In exercising such licenses, rights of way and easements, the Access Party shall not unreasonably disrupt or interfere with normal operation of the Granting Party's business and shall adhere to the safety rules and

procedures established in advance, as may be changed from time to time, by the Granting Party and provided to the Access Party.

5.13 Lands of Other Property Owners. If any part of Transmission Provider or Transmission Owner's Interconnection Facilities and/or Network Upgrades is to be installed on property owned by persons other than Interconnection Customer or Transmission Provider or Transmission Owner, Transmission Provider or Transmission Owner shall at Interconnection Customer's expense use efforts, similar in nature and extent to those that it typically undertakes on its own behalf or on behalf of its Affiliates, including use of its eminent domain authority, and to the extent consistent with state law, to procure from such persons any rights of use, licenses, rights of way and easements that are necessary to construct, operate, maintain, test, inspect, replace or remove Transmission Provider or Transmission Owner's Interconnection Facilities and/or Network Upgrades upon such property.

5.14 Permits. Transmission Provider or Transmission Owner and Interconnection Customer shall cooperate with each other in good faith in obtaining all permits, licenses, and authorizations that are necessary to accomplish the interconnection in compliance with Applicable Laws and Regulations. With respect to this paragraph, Transmission Provider or Transmission Owner shall provide permitting assistance to Interconnection Customer comparable to that provided to Transmission Provider's own, or an Affiliate's generation.

5.15 Early Construction of Base Case Facilities. Interconnection Customer may request Transmission Provider to construct, and Transmission Provider shall construct, using Reasonable Efforts to accommodate Interconnection Customer's In-Service Date, all or any portion of any Network Upgrades required for Interconnection Customer to be interconnected to the Transmission System which are included in the Base Case of the Facilities Study for Interconnection Customer, and which also are required to be constructed for another Interconnection Customer, but where such construction is not scheduled to be completed in time to achieve Interconnection Customer's In-Service Date.

5.16 Suspension. Interconnection Customer reserves the right, upon written notice to Transmission Provider, to suspend at any time all work by Transmission Provider associated with the construction and installation of Transmission Provider's Interconnection Facilities and/or Network Upgrades required under this LGIA with the condition that Transmission System shall be left in a safe and reliable condition in accordance with Good Utility Practice and Transmission Provider's safety and reliability criteria. In such event, Interconnection Customer shall be responsible for all reasonable and necessary costs which Transmission Provider (i) has incurred pursuant to this LGIA prior to the suspension and (ii) incurs in suspending such work, including any costs incurred to perform such work as may be necessary to ensure the safety of persons and property and the integrity of the Transmission System during such suspension and, if applicable, any costs incurred in connection with the cancellation or suspension of material, equipment and labor contracts which Transmission Provider cannot reasonably avoid; provided, however, that prior to canceling or suspending any such material,

equipment or labor contract, Transmission Provider shall obtain Interconnection Customer's authorization to do so.

Transmission Provider shall invoice Interconnection Customer for such costs pursuant to Article 12 and shall use due diligence to minimize its costs. In the event Interconnection Customer suspends work by Transmission Provider required under this LGIA pursuant to this Article 5.16, and has not requested Transmission Provider to recommence the work required under this LGIA on or before the expiration of three (3) years following commencement of such suspension, this LGIA shall be deemed terminated. The three-year period shall begin on the date the suspension is requested, or the date of the written notice to Transmission Provider, if no effective date is specified.

5.17 Taxes

5.17.1 Interconnection Customer Payments Not Taxable. The Parties intend that all payments or property transfers made by Interconnection Customer to Transmission Provider for the installation of Transmission Provider's Interconnection Facilities and the Network Upgrades shall be non-taxable, either as contributions to capital, or as an advance, in accordance with the Internal Revenue Code and any applicable state income tax laws and shall not be taxable as contributions in aid of construction or otherwise under the Internal Revenue Code and any applicable state income tax laws.

5.17.2 Representations and Covenants. In accordance with IRS Notice 2001-82 and IRS Notice 88-129, Interconnection Customer represents and covenants that (i) ownership of the electricity generated at the Large Generating Facility will pass to another party prior to the transmission of the electricity on the Transmission System, (ii) for income tax purposes, the amount of any payments and the cost of any property transferred to Transmission Provider for Transmission Provider's Interconnection Facilities will be capitalized by Interconnection Customer as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years, and (iii) any portion of Transmission Provider's Interconnection Facilities that is a "dual-use intertie," within the meaning of IRS Notice 88-129, is reasonably expected to carry only a de minimis amount of electricity in the direction of the Large Generating Facility. For this purpose, "de minimis amount" means no more than 5 percent of the total power flows in both directions, calculated in accordance with the "5 percent test" set forth in IRS Notice 88-129. This is not intended to be an exclusive list of the relevant conditions that must be met to conform to IRS requirements for non-taxable treatment.

At Transmission Provider's request, Interconnection Customer shall provide Transmission Provider with a report from an independent engineer confirming its representation in clause (iii), above. Transmission Provider represents and covenants that the cost of Transmission Provider's Interconnection Facilities paid for by Interconnection Customer will have no net effect on the base upon which rates are determined.

5.17.3 Indemnification for the Cost Consequences of Current Tax Liability Imposed Upon the Transmission Provider.
Notwithstanding Article 5.17.1, Interconnection Customer shall protect, indemnify and hold harmless Transmission Provider from the cost consequences of any current tax liability imposed against Transmission Provider as the result of payments or property transfers made by Interconnection Customer to Transmission Provider under this LGIA for Interconnection Facilities, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by Transmission Provider

Transmission Provider shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges Interconnection Customer under this LGIA unless (i) Transmission Provider has determined, in good faith, that the payments or property transfers made by Interconnection Customer to Transmission Provider should be reported as income subject to taxation or (ii) any Governmental Authority directs Transmission Provider to report payments or property as income subject to taxation; provided, however, that Transmission Provider may require Interconnection Customer to provide security for Interconnection Facilities, in a form reasonably acceptable to Transmission Provider (such as a parental guarantee or a letter of credit), in an amount equal to the cost consequences of any current tax liability under this Article 5.17. Interconnection Customer shall reimburse Transmission Provider for such costs on a fully grossed-up basis, in accordance with Article 5.17.4, within thirty (30) Calendar Days of receiving written notification from Transmission Provider of the amount due, including detail about how the amount was calculated.

The indemnification obligation shall terminate at the earlier of (1) the expiration of the ten year testing period and the applicable statute of limitation, as it may be extended by Transmission Provider upon request of the IRS, to keep these years open for audit or adjustment, or (2) the occurrence of a subsequent taxable event and the payment of any related indemnification obligations as contemplated by this Article 5.17

5.17.4 Tax Gross-Up Amount. Interconnection Customer's liability for the cost consequences of any current tax liability under this Article 5.17 shall be calculated on a fully grossed-up basis. Except as may otherwise be agreed to by the parties, this means that Interconnection Customer will pay Transmission Provider, in addition to the amount paid for the Interconnection Facilities and Network Upgrades, an amount equal to (1) the current taxes imposed on Transmission Provider ("Current Taxes") on the excess of (a) the gross income realized by Transmission Provider as a result of payments or property transfers made by Interconnection Customer to Transmission Provider under this LGIA (without regard to any payments under this Article 5.17) (the "Gross Income Amount") over (b) the present value of future tax deductions for depreciation that will be available as a result of such payments or property transfers (the "Present Value Depreciation Amount"), plus (2) an

additional amount sufficient to permit Transmission Provider to receive and retain, after the payment of all Current Taxes, an amount equal to the net amount described in clause (1).

For this purpose, (i) Current Taxes shall be computed based on Transmission Provider's composite federal and state tax rates at the time the payments or property transfers are received and Transmission Provider will be treated as being subject to tax at the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting Transmission Provider's anticipated tax depreciation deductions as a result of such payments or property transfers by Transmission Provider's current weighted average cost of capital. Thus, the formula for calculating Interconnection Customer's liability to Transmission Owner pursuant to this Article 5.17.4 can be expressed as follows: (Current Tax Rate x (Gross Income Amount – Present Value of Tax Depreciation))/(1-Current Tax Rate). Interconnection Customer's estimated tax liability in the event taxes are imposed shall be stated in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades.

5.17.5 **Private Letter Ruling or Change or Clarification of Law**. At Interconnection Customer's request and expense, Transmission Provider shall file with the IRS a request for a private letter ruling as to whether any property transferred or sums paid, or to be paid, by Interconnection Customer to Transmission Provider under this LGIA are subject to federal income taxation. Interconnection Customer will prepare the initial draft of the request for a private letter ruling, and will certify under penalties of perjury that all facts represented in such request are true and accurate to the best of Interconnection Customer's knowledge. Transmission Provider and Interconnection Customer shall cooperate in good faith with respect to the submission of such request. Transmission Provider shall keep Interconnection Customer fully informed of the status of such request for a private letter ruling and shall execute either a privacy act waiver or a limited power of attorney, in a form acceptable to the IRS that authorizes Interconnection Customer to participate in all discussions with the IRS regarding such request for a private letter ruling. Transmission Provider shall allow Interconnection Customer to attend all meetings with IRS officials about the request and shall permit Interconnection Customer to prepare the initial drafts of any follow-up letters in connection with the request.

5.17.6 **Subsequent Taxable Events.** If, within 10 years from the date on which the relevant Transmission Provider's Interconnection Facilities are placed in service, (i) Interconnection Customer Breaches the covenants contained in Article 5.17.2, (ii) a "disqualification event" occurs within the meaning of IRS Notice 88-129, or (iii) this LGIA terminates and Transmission Provider retains ownership of the Interconnection Facilities and Network Upgrades, Interconnection Customer shall pay a tax gross-up for the cost consequences of any current tax liability imposed on Transmission Provider, calculated

using the methodology described in Article 5.17.4 and in accordance with IRS Notice 90-60.

5.17.7 **Contests**. In the event any Governmental Authority determines that Transmission Provider's receipt of payments or property constitutes income that is subject to taxation, Transmission Provider shall notify Interconnection Customer, in writing, within thirty (30) Calendar Days of receiving notification of such determination by a Governmental Authority. Upon the timely written request by Interconnection Customer and at Interconnection Customer's sole expense, Transmission Provider may appeal, protest, seek abatement of, or otherwise oppose such determination. Upon Interconnection Customer's written request and sole expense, Transmission Provider may file a claim for refund with respect to any taxes paid under this Article 5.17, whether or not it has received such a determination. Transmission Provider reserves the right to make all decisions with regard to the prosecution of such appeal, protest, abatement or other contest, including the selection of counsel and compromise or settlement of the claim, but Transmission Provider shall keep Interconnection Customer informed, shall consider in good faith suggestions from Interconnection Customer about the conduct of the contest, and shall reasonably permit Interconnection Customer or an Interconnection Customer representative to attend contest proceedings.

Interconnection Customer shall pay to Transmission Provider on a periodic basis, as invoiced by Transmission Provider, Transmission Provider's documented reasonable costs of prosecuting such appeal, protest, abatement or other contest. At any time during the contest, Transmission Provider may agree to a settlement either with Interconnection Customer's consent or after obtaining written advice from nationally-recognized tax counsel, selected by Transmission Provider, but reasonably acceptable to Interconnection Customer, that the proposed settlement represents a reasonable settlement given the hazards of litigation. Interconnection Customer's obligation shall be based on the amount of the settlement agreed to by Interconnection Customer, or if a higher amount, so much of the settlement that is supported by the written advice from nationally-recognized tax counsel selected under the terms of the preceding sentence. The settlement amount shall be calculated on a fully grossed-up basis to cover any related cost consequences of the current tax liability. Any settlement without Interconnection Customer's consent or such written advice will relieve Interconnection Customer from any obligation to indemnify Transmission Provider for the tax at issue in the contest.

5.17.8 **Refund**. In the event that (a) a private letter ruling is issued to Transmission Provider which holds that any amount paid or the value of any property transferred by Interconnection Customer to Transmission Provider under the terms of this LGIA is not subject to federal income taxation, (b) any legislative change or administrative announcement, notice, ruling or other determination makes it reasonably clear to Transmission Provider in good faith that any amount paid or the value of any property transferred by Interconnection

Customer to Transmission Provider under the terms of this LGIA is not taxable to Transmission Provider, (c) any abatement, appeal, protest, or other contest results in a determination that any payments or transfers made by Interconnection Customer to Transmission Provider are not subject to federal income tax, or (d) if Transmission Provider receives a refund from any taxing authority for any overpayment of tax attributable to any payment or property transfer made by Interconnection Customer to Transmission Provider pursuant to this LGIA, Transmission Provider shall promptly refund to Interconnection Customer the following:

(i) any payment made by Interconnection Customer under this Article 5.17 for taxes that is attributable to the amount determined to be non-taxable, together with interest thereon,

(ii) interest on any amount paid by Interconnection Customer to Transmission Provider for such taxes which Transmission Provider did not submit to the taxing authority, calculated in accordance with the methodology set forth in FERC's regulations at 18 CFR §35.19a(a)(2)(iii) from the date payment was made by Interconnection Customer to the date Transmission Provider refunds such payment to Interconnection Customer, and

(iii) with respect to any such taxes paid by Transmission Provider, any refund or credit Transmission Provider receives or to which it may be entitled from any Governmental Authority, interest (or that portion thereof attributable to the payment described in clause (i), above) owed to Transmission Provider for such overpayment of taxes (including any reduction in interest otherwise payable by Transmission Provider to any Governmental Authority resulting from an offset or credit); provided, however, that Transmission Provider will remit such amount promptly to Interconnection Customer only after and to the extent that Transmission Provider has received a tax refund, credit or offset from any Governmental Authority for any applicable overpayment of income tax related to Transmission Provider's Interconnection Facilities. The intent of this provision is to leave the Parties, to the extent practicable, in the event that no taxes are due with respect to any payment for Interconnection Facilities and Network Upgrades hereunder, in the same position they would have been in had no such tax payments been made.

5.17.9 **Taxes Other Than Income Taxes**. Upon the timely request by Interconnection Customer, and at Interconnection Customer's sole expense, Transmission Provider may appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against Transmission Provider for which Interconnection Customer may be required to reimburse Transmission Provider under the terms of this LGIA. Interconnection Customer shall pay to Transmission Provider on a periodic basis, as invoiced by Transmission Provider, Transmission Provider's

documented reasonable costs of prosecuting such appeal, protest, abatement, or other contest. Interconnection Customer and Transmission Provider shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to Transmission Provider for such taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by Transmission Provider.

5.17.10 Transmission Owners Who Are Not Transmission Providers. If Transmission Provider is not the same entity as the Transmission Owner, then (i) all references in this Article 5.17 to Transmission Provider shall be deemed also to refer to and to include the Transmission Owner, as appropriate, and (ii) this LGIA shall not become effective until such Transmission Owner shall have agreed in writing to assume all of the duties and obligations of Transmission Provider under this Article 5.17 of this LGIA.

5.18 Tax Status. Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this LGIA is intended to adversely affect any Transmission Provider's tax exempt status with respect to the issuance of bonds including, but not limited to, Local Furnishing Bonds.

5.19 Modification.

5.19.1 General. Either Party may undertake modifications to its facilities. If a Party plans to undertake a modification that reasonably may be expected to affect the other Party's facilities, that Party shall provide to the other Party sufficient information regarding such modification so that the other Party may evaluate the potential impact of such modification prior to commencement of the work. Such information shall be deemed to be confidential hereunder and shall include information concerning the timing of such modifications and whether such modifications are expected to interrupt the flow of electricity from the Large Generating Facility. The Party desiring to perform such work shall provide the relevant drawings, plans, and specifications to the other Party at least ninety (90) Calendar Days in advance of the commencement of the work or such shorter period upon which the Parties may agree, which agreement shall not unreasonably be withheld, conditioned or delayed.

In the case of Large Generating Facility modifications that do not require Interconnection Customer to submit an Interconnection Request, Transmission Provider shall provide, within thirty (30) Calendar Days (or such other time as the Parties may agree), an estimate of any additional modifications to the Transmission System, Transmission Provider's Interconnection Facilities or Network Upgrades necessitated by such

Interconnection Customer modification and a good faith estimate of the costs thereof.

5.19.2 **Standards**. Any additions, modifications, or replacements made to a Party's facilities shall be designed, constructed and operated in accordance with this LGIA and Good Utility Practice.

5.19.3 **Modification Costs**. Interconnection Customer shall not be directly assigned for the costs of any additions, modifications, or replacements that Transmission Provider makes to Transmission Provider's Interconnection Facilities or the Transmission System to facilitate the interconnection of a third party to Transmission Provider's Interconnection Facilities or the Transmission System, or to provide transmission service to a third party under Transmission Provider's Tariff. Interconnection Customer shall be responsible for the costs of any additions, modifications, or replacements to Interconnection Customer's Interconnection Facilities that may be necessary to maintain or upgrade such Interconnection Customer's Interconnection Facilities consistent with Applicable Laws and Regulations, Applicable Reliability Standards or Good Utility Practice.

Article 6. Testing and Inspection

6.1 **Pre-Commercial Operation Date Testing and Modifications**. Prior to the Commercial Operation Date, Transmission Provider shall test Transmission Provider's Interconnection Facilities and Network Upgrades and Interconnection Customer shall test the Large Generating Facility and Interconnection Customer's Interconnection Facilities to ensure their safe and reliable operation. Similar testing may be required after initial operation. Each Party shall make any modifications to its facilities that are found to be necessary as a result of such testing. Interconnection Customer shall bear the cost of all such testing and modifications. Interconnection Customer shall generate test energy at the Large Generating Facility only if it has arranged for the delivery of such test energy.

6.2 **Post-Commercial Operation Date Testing and Modifications**. Each Party shall at its own expense perform routine inspection and testing of its facilities and equipment in accordance with Good Utility Practice as may be necessary to ensure the continued interconnection of the Large Generating Facility with the Transmission System in a safe and reliable manner. Each Party shall have the right, upon advance written notice, to require reasonable additional testing of the other Party's facilities, at the requesting Party's expense, as may be in accordance with Good Utility Practice.

6.3 **Right to Observe Testing.** Each Party shall notify the other Party in advance of its performance of tests of its Interconnection Facilities. The other Party has the right, at its own expense, to observe such testing.

6.4 **Right to Inspect**. Each Party shall have the right, but shall have no obligation to: (i) observe the other Party's tests and/or inspection of any of its System Protection Facilities and other protective equipment, including Power System Stabilizers; (ii) review

the settings of the other Party's System Protection Facilities and other protective equipment; and (iii) review the other Party's maintenance records relative to the Interconnection Facilities, the System Protection Facilities and other protective equipment. A Party may exercise these rights from time to time as it deems necessary upon reasonable notice to the other Party. The exercise or non-exercise by a Party of any such rights shall not be construed as an endorsement or confirmation of any element or condition of the Interconnection Facilities or the System Protection Facilities or other protective equipment or the operation thereof, or as a warranty as to the fitness, safety, desirability, or reliability of same. Any information that a Party obtains through the exercise of any of its rights under this Article 6.4 shall be deemed to be Confidential Information and treated pursuant to Article 22 of this LGIA.

Article 7. Metering

7.1 **General**. Each Party shall comply with the Applicable Reliability Council requirements. Unless otherwise agreed by the Parties, Transmission Provider shall install Metering Equipment at the Point of Interconnection prior to any operation of the Large Generating Facility and shall own, operate, test and maintain such Metering Equipment. Power flows to and from the Large Generating Facility shall be measured at or, at Transmission Provider's option, compensated to, the Point of Interconnection. Transmission Provider shall provide metering quantities, in analog and/or digital form, to Interconnection Customer upon request. Interconnection Customer shall bear all reasonable documented costs associated with the purchase, installation, operation, testing and maintenance of the Metering Equipment.

7.2 **Check Meters**. Interconnection Customer, at its option and expense, may install and operate, on its premises and on its side of the Point of Interconnection, one or more check meters to check Transmission Provider's meters. Such check meters shall be for check purposes only and shall not be used for the measurement of power flows for purposes of this LGIA, except as provided in Article 7.4 below. The check meters shall be subject at all reasonable times to inspection and examination by Transmission Provider or its designee. The installation, operation and maintenance thereof shall be performed entirely by Interconnection Customer in accordance with Good Utility Practice.

7.3 **Standards**. Transmission Provider shall install, calibrate, and test revenue quality Metering Equipment in accordance with applicable ANSI standards.

7.4 **Testing of Metering Equipment**. Transmission Provider shall inspect and test all Transmission Provider-owned Metering Equipment upon installation and at least once every two (2) years thereafter. If requested to do so by Interconnection Customer, Transmission Provider shall, at Interconnection Customer's expense, inspect or test Metering Equipment more frequently than every two (2) years. Transmission Provider shall give reasonable notice of the time when any inspection or test shall take place, and Interconnection Customer may have representatives present at the test or inspection. If at any time Metering Equipment is found to be inaccurate or defective, it shall be adjusted, repaired or replaced at Interconnection Customer's expense, in order to provide accurate metering, unless the inaccuracy or defect is due to Transmission

Provider's failure to maintain, then Transmission Provider shall pay. If Metering Equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than two percent from the measurement made by the standard meter used in the test, Transmission Provider shall adjust the measurements by correcting all measurements for the period during which Metering Equipment was in error by using Interconnection Customer's check meters, if installed. If no such check meters are installed or if the period cannot be reasonably ascertained, the adjustment shall be for the period immediately preceding the test of the Metering Equipment equal to one-half the time from the date of the last previous test of the Metering Equipment

7.5 Metering Data. At Interconnection Customer's expense, the metered data shall be telemetered to one or more locations designated by Transmission Provider and one or more locations designated by Interconnection Customer. Such telemetered data shall be used, under normal operating conditions, as the official measurement of the amount of energy delivered from the Large Generating Facility to the Point of Interconnection.

Article 8. Communications

8.1 Interconnection Customer Obligations. Interconnection Customer shall maintain satisfactory operating communications with Transmission Provider's Transmission System dispatcher or representative designated by Transmission Provider. Interconnection Customer shall provide standard voice line, dedicated voice line and facsimile communications at its Large Generating Facility control room or central dispatch facility through use of either the public telephone system, or a voice communications system that does not rely on the public telephone system. Interconnection Customer shall also provide the dedicated data circuit(s) necessary to provide Interconnection Customer data to Transmission Provider as set forth in Appendix D, Security Arrangements Details. The data circuit(s) shall extend from the Large Generating Facility to the location(s) specified by Transmission Provider. Any required maintenance of such communications equipment shall be performed by Interconnection Customer. Operational communications shall be activated and maintained under, but not be limited to, the following events: system paralleling or separation, scheduled and unscheduled shutdowns, equipment clearances, and hourly and daily load data

8.2 Remote Terminal Unit. Prior to the Initial Synchronization Date of the Large Generating Facility, a Remote Terminal Unit, or equivalent data collection and transfer equipment acceptable to the Parties, shall be installed by Interconnection Customer, or by Transmission Provider at Interconnection Customer's expense, to gather accumulated and instantaneous data to be telemetered to the location(s) designated by Transmission Provider through use of a dedicated point-to-point data circuit(s) as indicated in Article 8.1. The communication protocol for the data circuit(s) shall be specified by Transmission Provider. Instantaneous bi-directional analog real power and reactive power flow information must be telemetered directly to the location(s) specified by Transmission Provider.

Each Party will promptly advise the other Party if it detects or otherwise learns of any metering, telemetry or communications equipment errors or malfunctions that require the

attention and/or correction by the other Party. The Party owning such equipment shall correct such error or malfunction as soon as reasonably feasible.

8.3 No Annexation. Any and all equipment placed on the premises of a Party shall be and remain the property of the Party providing such equipment regardless of the mode and manner of annexation or attachment to real property, unless otherwise mutually agreed by the Parties.

8.4 Provision of Data from a Variable Energy Resource. The Interconnection Customer whose Generating Facility is a Variable Energy Resource shall provide meteorological and forced outage data to the Transmission Provider to the extent necessary for the Transmission Provider's development and deployment of power production forecasts for that class of Variable Energy Resources.

The Interconnection Customer with a Variable Energy Resource having wind as the energy source, at a minimum, will be required to provide the Transmission Provider with site-specific meteorological data including: manufacturer, model, and year of all wind turbines and meteorological instrumentation, latitude, longitude and hub height at every wind turbine and meteorological tower, real-time data including turbine generation (kW), wind speed (mph), turbine availability, wind direction (in degrees relative to true north), temperature (Celsius and F), pressure (mb), air density and turbine manufacturer power curve. The information provided shall be refreshed in approximately four-ten (4-10) second intervals with regard to its generation of Renewable Energy at the Facility.

The Interconnection Customer with a Variable Energy Resource having solar as the energy source, at a minimum, will be required to provide the Transmission Provider with site-specific meteorological data including: manufacturer, model and year of all panels, inverters and meteorological instrumentation, latitude and longitude of the center of the solar panels for every inverter and every meteorological tower, real-time data including inverter generation (kW), inverter availability, direct normal solar insolation (solar intensity), temperature, barometric pressure, wind speed (mph), wind direction (degrees relative to true north) and solar panel manufacturer power curve. The information provided shall be refreshed as frequently as allowed by the SCADA System, not to exceed sixty (60) second intervals.

The Transmission Provider and Interconnection Customer whose Generating Facility is a Variable Energy Resource shall mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. The Interconnection Customer whose Generating Facility is a Variable Energy Resource also shall submit data to the Transmission Provider regarding all forced outages to the extent necessary for the Transmission Provider's development and deployment of power production forecasts for that class of Variable Energy Resources. The exact specifications of the meteorological and forced outage data to be provided by the Interconnection Customer to the Transmission Provider including the frequency and timing of data submittals shall be made taking into account the size and configuration of the Variable Energy Resource, its characteristics, location, and its importance in maintaining generation resource adequacy and transmission system reliability in its area. All requirements for meteorological

and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Such requirements for meteorological and forced outage data are set forth in Appendix C, Interconnection Details, of this LGIA, as they may change from time to time.

Article 9. Operations

9.1 **General**. Each Party shall comply with the Applicable Reliability Council requirements. Each Party shall provide to the other Party all information that may reasonably be required by the other Party to comply with Applicable Laws and Regulations and Applicable Reliability Standards.

9.2 **Control Area Notification**. At least three months before Initial Synchronization Date, Interconnection Customer shall notify Transmission Provider in writing of the Control Area in which the Large Generating Facility will be located. If Interconnection Customer elects to locate the Large Generating Facility in a Control Area other than the Control Area in which the Large Generating Facility is physically located, and if permitted to do so by the relevant transmission tariffs, all necessary arrangements, including but not limited to those set forth in Article 7 and Article 8 of this LGIA, and remote Control Area generator interchange agreements, if applicable, and the appropriate measures under such agreements, shall be executed and implemented prior to the placement of the Large Generating Facility in the other Control Area.

9.3 **Transmission Provider Obligations**. Transmission Provider shall cause the Transmission System and Transmission Provider's Interconnection Facilities to be operated, maintained and controlled in a safe and reliable manner and in accordance with this LGIA. Transmission Provider may provide operating instructions to Interconnection Customer consistent with this LGIA and Transmission Provider's operating protocols and procedures as they may change from time to time. Transmission Provider will consider changes to its operating protocols and procedures proposed by Interconnection Customer.

9.4 **Interconnection Customer Obligations**. Interconnection Customer shall at its own expense operate, maintain and control the Large Generating Facility and Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA. Interconnection Customer shall operate the Large Generating Facility and Interconnection Customer's Interconnection Facilities in accordance with all applicable requirements of the Control Area of which it is part, as such requirements are set forth in Appendix C, Interconnection Details, of this LGIA. Appendix C, Interconnection Details, will be modified to reflect changes to the requirements as they may change from time to time. Either Party may request that the other Party provide copies of the requirements set forth in Appendix C, Interconnection Details, of this LGIA.

9.5 **Start-Up and Synchronization**. Consistent with the Parties' mutually acceptable procedures, Interconnection Customer is responsible for the proper synchronization of the Large Generating Facility to Transmission Provider's Transmission System.

9.6 **Reactive Power**.

9.6.1 **Power Factor Design Criteria**. Interconnection Customer shall design the Large Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless Transmission Provider has established different requirements that apply to all generators in the Control Area on a comparable basis. The requirements of this paragraph shall not apply to wind generators.

9.6.2 **Voltage Schedules**. Once Interconnection Customer has synchronized the Large Generating Facility with the Transmission System, Transmission Provider shall require Interconnection Customer to operate the Large Generating Facility to produce or absorb reactive power within the design limitations of the Large Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria). Transmission Provider's voltage schedules shall treat all sources of reactive power in the Control Area in an equitable and not unduly discriminatory manner. Transmission Provider shall exercise Reasonable Efforts to provide Interconnection Customer with such schedules at least one (1) day in advance, and may make changes to such schedules as necessary to maintain the reliability of the Transmission System. Interconnection Customer shall operate the Large Generating Facility to maintain the specified output voltage or power factor at the Point of Interconnection within the design limitations of the Large Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria). If Interconnection Customer is unable to maintain the specified voltage or power factor, it shall promptly notify the System Operator.

9.6.2.1 **Governors and Regulators**. Whenever the Large Generating Facility is operated in parallel with the Transmission System and the speed governors (if installed on the generating unit pursuant to Good Utility Practice) and voltage regulators are capable of operation, Interconnection Customer shall operate the Large Generating Facility with its speed governors and voltage regulators in automatic operation. If the Large Generating Facility's speed governors and voltage regulators are not capable of such automatic operation, Interconnection Customer shall immediately notify Transmission Provider's system operator, or its designated representative, and ensure that such Large Generating Facility's reactive power production or absorption (measured in MVARs) are within the design capability of the Large Generating Facility's generating unit(s) and steady state stability limits. Interconnection Customer shall not cause its Large Generating Facility to disconnect automatically or instantaneously from the Transmission System or trip any generating unit comprising the Large Generating Facility for an under or over frequency condition unless the abnormal frequency condition persists for a time period beyond the limits set forth in ANSI/IEEE

Standard C37.106, or such other standard as applied to other generators in the Control Area on a comparable basis.

9.6.3 **Payment for Reactive Power**. Transmission Provider is required to pay Interconnection Customer for reactive power that Interconnection Customer provides or absorbs from the Large Generating Facility when Transmission Provider requests Interconnection Customer to operate its Large Generating Facility outside the range specified in Article 9.6.1, provided that if Transmission Provider pays its own or affiliated generators for reactive power service within the specified range, it must also pay Interconnection Customer. Payments shall be pursuant to Article 11.6 or such other agreement to which the Parties have otherwise agreed.

9.7 Outages and Interruptions.

9.7.1 Outages.

9.7.1.1 **Outage Authority and Coordination**. Each Party may in accordance with Good Utility Practice in coordination with the other Party remove from service any of its respective Interconnection Facilities or Network Upgrades that may impact the other Party's facilities as necessary to perform maintenance or testing or to install or replace equipment. Absent an Emergency Condition, the Party scheduling a removal of such facility(ies) from service will use Reasonable Efforts to schedule such removal on a date and time mutually acceptable to the Parties. In all circumstances, any Party planning to remove such facility(ies) from service shall use Reasonable Efforts to minimize the effect on the other Party of such removal.

9.7.1.2 **Outage Schedules**. Transmission Provider shall post scheduled outages of its transmission facilities on the OASIS. Interconnection Customer shall submit its planned maintenance schedules for the Large Generating Facility to Transmission Provider for a minimum of a rolling twenty-four month period. Interconnection Customer shall update its planned maintenance schedules as necessary. Transmission Provider may request Interconnection Customer to reschedule its maintenance as necessary to maintain the reliability of the Transmission System; provided, however, adequacy of generation supply shall not be a criterion in determining Transmission System reliability. Transmission Provider shall compensate Interconnection Customer for any additional direct costs that Interconnection Customer incurs as a result of having to reschedule maintenance, including any additional overtime, breaking of maintenance contracts or other costs above and beyond the cost Interconnection Customer would have incurred absent Transmission Provider's request to reschedule maintenance.

Interconnection Customer will not be eligible to receive compensation, if during the twelve (12) months prior to the date of the scheduled maintenance, Interconnection Customer had modified its schedule of maintenance activities.

9.7.1.3 **Outage Restoration**. If an outage on a Party's Interconnection Facilities or Network Upgrades adversely affects the other Party's operations or facilities, the Party that owns or controls the facility that is out of service shall use Reasonable Efforts to promptly restore such facility(ies) to a normal operating condition consistent with the nature of the outage. The Party that owns or controls the facility that is out of service shall provide the other Party, to the extent such information is known, information on the nature of the Emergency Condition, an estimated time of restoration, and any corrective actions required. Initial verbal notice shall be followed up as soon as practicable with written notice explaining the nature of the outage.

9.7.2 **Interruption of Service**. If required by Good Utility Practice to do so, Transmission Provider may require Interconnection Customer to interrupt or reduce deliveries of electricity if such delivery of electricity could adversely affect Transmission Provider's ability to perform such activities as are necessary to safely and reliably operate and maintain the Transmission System. The following provisions shall apply to any interruption or reduction permitted under this Article 9.7.2:

9.7.2.1 The interruption or reduction shall continue only for so long as reasonably necessary under Good Utility Practice

9.7.2.2 Any such interruption or reduction shall be made on an equitable, non-discriminatory basis with respect to all generating facilities directly connected to the Transmission System;

9.7.2.3 When the interruption or reduction must be made under circumstances which do not allow for advance notice, Transmission Provider shall notify Interconnection Customer by telephone as soon as practicable of the reasons for the curtailment, interruption, or reduction, and, if known, its expected duration. Telephone notification shall be followed by written notification as soon as practicable;

9.7.2.4 Except during the existence of an Emergency Condition, when the interruption or reduction can be scheduled without advance notice, Transmission Provider shall notify Interconnection Customer in advance regarding the timing of such scheduling and further notify Interconnection Customer of the expected duration. Transmission Provider shall coordinate with Interconnection Customer using Good Utility Practice to schedule the interruption or reduction

during periods of least impact to Interconnection Customer and Transmission Provider;

9.7.2.5 The Parties shall cooperate and coordinate with each other to the extent necessary in order to restore the Large Generating Facility, Interconnection Facilities, and the Transmission System to their normal operating state, consistent with system conditions and Good Utility Practice.

9.7.3 **Under-Frequency and Over Frequency Conditions**. The Transmission System is designed to automatically activate a load-shed program as required by the Applicable Reliability Council in the event of an under-frequency system disturbance. Interconnection Customer shall implement under-frequency and over-frequency relay set points for the Large Generating Facility as required by the Applicable Reliability Council to ensure "ride through" capability of the Transmission System. Large Generating Facility response to frequency deviations of pre-determined magnitudes, both under-frequency and over-frequency deviations, shall be studied and coordinated with Transmission Provider in accordance with Good Utility Practice. The term "ride through" as used herein shall mean the ability of a Generating Facility to stay connected to and synchronized with the Transmission System during system disturbances within a range of under-frequency and over-frequency conditions, in accordance with Good Utility Practice

9.7.4 **System Protection and Other Control Requirements.**

9.7.4.1 **System Protection Facilities**. Interconnection Customer shall, at its expense, install, operate and maintain System Protection Facilities as a part of the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Transmission Provider shall install at Interconnection Customer's expense any System Protection Facilities that may be required on Transmission Provider's Interconnection Facilities or the Transmission System as a result of the interconnection of the Large Generating Facility and Interconnection Customer's Interconnection Facilities.

9.7.4.2 Each Party's protection facilities shall be designed and coordinated with other systems in accordance with Good Utility Practice.

9.7.4.3 Each Party shall be responsible for protection of its facilities consistent with Good Utility Practice.

9.7.4.4 Each Party's protective relay design shall incorporate the necessary test switches to perform the tests required in Article 6. The required test switches will be placed such that they allow operation of lockout relays while preventing breaker failure

schemes from operating and causing unnecessary breaker operations and/or the tripping of Interconnection Customer's units.

9.7.4.5 Each Party will test, operate and maintain System Protection Facilities in accordance with Good Utility Practice.

9.7.4.6 Prior to the In-Service Date, and again prior to the Commercial Operation Date, each Party or its agent shall perform a complete calibration test and functional trip test of the System Protection Facilities. At intervals suggested by Good Utility Practice and following any apparent malfunction of the System Protection Facilities, each Party shall perform both calibration and functional trip tests of its System Protection Facilities. These tests do not require the tripping of any in-service generation unit. These tests do, however, require that all protective relays and lockout contacts be activated

9.7.5 **Requirements for Protection**. In compliance with Good Utility Practice, Interconnection Customer shall provide, install, own, and maintain relays, circuit breakers and all other devices necessary to remove any fault contribution of the Large Generating Facility to any short circuit occurring on the Transmission System not otherwise isolated by Transmission Provider's equipment, such that the removal of the fault contribution shall be coordinated with the protective requirements of the Transmission System. Such protective equipment shall include, without limitation, a disconnecting device or switch with load-interrupting capability located between the Large Generating Facility and the Transmission System at a site selected upon mutual agreement (not to be unreasonably withheld, conditioned or delayed) of the Parties. Interconnection Customer shall be responsible for protection of the Large Generating Facility and Interconnection Customer's other equipment from such conditions as negative sequence currents, over- or under-frequency, sudden load rejection, over- or under-voltage, and generator loss-of-field. Interconnection Customer shall be solely responsible to disconnect the Large Generating Facility and Interconnection Customer's other equipment if conditions on the Transmission System could adversely affect the Large Generating Facility.

9.7.6 **Power Quality**. Neither Party's facilities shall cause excessive voltage flicker nor introduce excessive distortion to the sinusoidal voltage or current waves as defined by ANSI Standard C84.1-1989, in accordance with IEEE Standard 519, or any applicable superseding electric industry standard. In the event of a conflict between ANSI Standard C84.1-1989, or any applicable superseding electric industry standard, ANSI Standard C84.1-1989, or the applicable superseding electric industry standard, shall control.

9.8 **Switching and Tagging Rules**. Each Party shall provide the other Party a copy of its switching and tagging rules that are applicable to the other Party's activities. Such switching and tagging rules shall be developed on a non-discriminatory basis. The

Parties shall comply with applicable switching and tagging rules, as amended from time to time, in obtaining clearances for work or for switching operations on equipment.

9.9 Use of Interconnection Facilities by Third Parties.

9.9.1 Purpose of Interconnection Facilities. Except as may be required by Applicable Laws and Regulations, or as otherwise agreed to among the Parties, the Interconnection Facilities shall be constructed for the sole purpose of interconnecting the Large Generating Facility to the Transmission System and shall be used for no other purpose.

9.9.2 Third Party Users. If required by Applicable Laws and Regulations or if the Parties mutually agree, such agreement not to be unreasonably withheld, to allow one or more third parties to use Transmission Provider's Interconnection Facilities, or any part thereof, Interconnection Customer will be entitled to compensation for the capital expenses it incurred in connection with the Interconnection Facilities based upon the pro rata use of the Interconnection Facilities by Transmission Provider, all third party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually-agreed upon methodology. In addition, cost responsibility for ongoing costs, including operation and maintenance costs associated with the Interconnection Facilities, will be allocated between Interconnection Customer and any third party users based upon the pro rata use of the Interconnection Facilities by Transmission Provider, all third party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually agreed upon methodology. If the issue of such compensation or allocation cannot be resolved through such negotiations, it shall be submitted to FERC for resolution.

9.10 Disturbance Analysis Data Exchange. The Parties will cooperate with one another in the analysis of disturbances to either the Large Generating Facility or Transmission Provider's Transmission System by gathering and providing access to any information relating to any disturbance, including information from oscillography, protective relay targets, breaker operations and sequence of events records, and any disturbance information required by Good Utility Practice

Article 10. Maintenance.

10.1 Transmission Provider Obligations. Transmission Provider shall maintain the Transmission System and Transmission Provider's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA.

10.2 Interconnection Customer Obligations. Interconnection Customer shall maintain the Large Generating Facility and Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this LGIA.

10.3 Coordination. The Parties shall confer regularly to coordinate the planning, scheduling and performance of preventive and corrective maintenance on the Large Generating Facility and the Interconnection Facilities.

10.4 Secondary Systems. Each Party shall cooperate with the other in the inspection, maintenance, and testing of control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers that directly affect the operation of a Party's facilities and equipment which may reasonably be expected to impact the other Party. Each Party shall provide advance notice to the other Party before undertaking any work on such circuits, especially on electrical circuits involving circuit breaker trip and close contacts, current transformers, or potential transformers.

10.5 Operating and Maintenance Expenses. Subject to the provisions herein addressing the use of facilities by others, and except for operations and maintenance expenses associated with modifications made for providing interconnection or transmission service to a third party and such third party pays for such expenses, Interconnection Customer shall be responsible for all reasonable expenses including overheads, associated with: (1) owning, operating, maintaining, repairing, and replacing Interconnection Customer's Interconnection Facilities; and (2) operation, maintenance, repair and replacement of Transmission Provider's Interconnection Facilities.

Article 11. Performance Obligation.

11.1 Interconnection Customer Interconnection Facilities. Interconnection Customer shall design, procure, construct, install, own and/or control Interconnection Customer Interconnection Facilities described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades, at its sole expense.

11.2 Transmission Provider's Interconnection Facilities. Transmission Provider or Transmission Owner shall design, procure, construct, install, own and/or control the Transmission Provider's Interconnection Facilities described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades, at the sole expense of the Interconnection Customer.

11.3 Network Upgrades and Distribution Upgrades. Transmission Provider or Transmission Owner shall design, procure, construct, install, and own the Network Upgrades and Distribution Upgrades described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades. The Interconnection Customer shall be responsible for all costs related to Distribution Upgrades. Unless Transmission Provider or Transmission Owner elects to fund the capital for the Network Upgrades, they shall be solely funded by Interconnection Customer.

11.4 Transmission Credits.

11.4.1 Repayment of Amounts Advanced for Network Upgrades. Interconnection Customer shall be entitled to a cash repayment, equal to the

total amount paid to Transmission Provider and Affected System Operator, if any, for the Network Upgrades, including any tax gross-up or other tax-related payments associated with Network Upgrades, and not refunded to Interconnection Customer pursuant to Article 5.17.8 or otherwise, to be paid to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under Transmission Provider's Tariff and Affected System's Tariff for transmission services with respect to the Large Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC=s regulations at 18 C.F.R. '35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. Interconnection Customer may assign such repayment rights to any person.

Notwithstanding the foregoing, Interconnection Customer, Transmission Provider, and Affected System Operator may adopt any alternative payment schedule that is mutually agreeable so long as Transmission Provider and Affected System Operator take one of the following actions no later than five years from the Commercial Operation Date: (1) return to Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that Transmission Provider or Affected System Operator will continue to provide payments to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the Commercial Operation Date.

If the Large Generating Facility fails to achieve commercial operation, but it or another Generating Facility is later constructed and makes use of the Network Upgrades, Transmission Provider and Affected System Operator shall at that time reimburse Interconnection Customer for the amounts advanced for the Network Upgrades. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the Generating Facility, if different, is responsible for identifying the entity to which reimbursement must be made

11.4.2 **Special Provisions for Affected Systems.** Unless Transmission Provider provides, under the LGIA, for the repayment of amounts advanced to Affected System Operator for Network Upgrades, Interconnection Customer and Affected System Operator shall enter into an agreement that provides for such repayment. The agreement shall specify the terms governing payments to be made by Interconnection Customer to the Affected System Operator as well as the repayment by the Affected System Operator.

11.4.3 Notwithstanding any other provision of this LGIA, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited

to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that Interconnection Customer, shall be entitled to, now or in the future under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Large Generating Facility.

11.5 Provision of Security. At least thirty (30) Calendar Days prior to the commencement of the procurement, installation, or construction of a discrete portion of a Transmission Provider's Interconnection Facilities, Network Upgrades, or Distribution Upgrades, Interconnection Customer shall provide Transmission Provider, at Interconnection Customer's option, a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to Transmission Provider and is consistent with the Uniform Commercial Code of the jurisdiction identified in Article 14.2.1. Such security for payment shall be in an amount sufficient to cover the costs for constructing, procuring and installing the applicable portion of Transmission Provider's Interconnection Facilities, Network Upgrades, or Distribution Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to Transmission Provider for these purposes

In addition:

11.5.1 The guarantee must be made by an entity that meets the creditworthiness requirements of Transmission Provider, and contain terms and conditions that guarantee payment of any amount that may be due from Interconnection Customer, up to an agreed-to maximum amount.

11.5.2 The letter of credit must be issued by a financial institution reasonably acceptable to Transmission Provider and must specify a reasonable expiration date.

11.5.3 The surety bond must be issued by an insurer reasonably acceptable to Transmission Provider and must specify a reasonable expiration date.

11.6 Interconnection Customer Compensation. If Transmission Provider requests or directs Interconnection Customer to provide a service pursuant to Articles 9.6.3 (Payment for Reactive Power), or 13.5.1 of this LGIA, Transmission Provider shall compensate Interconnection Customer in accordance with Interconnection Customer's applicable rate schedule then in effect unless the provision of such service(s) is subject to an RTO or ISO FERC-approved rate schedule. Interconnection Customer shall serve Transmission Provider or RTO or ISO with any filing of a proposed rate schedule at the time of such filing with FERC. To the extent that no rate schedule is in effect at the time the Interconnection Customer is required to provide or absorb any Reactive Power under this LGIA, Transmission Provider agrees to compensate Interconnection Customer in such amount as would have been due Interconnection Customer had the rate schedule been in effect at the time service commenced; provided, however, that such rate schedule must be filed at FERC or other appropriate Governmental Authority within sixty (60) Calendar Days of the commencement of service

11.6.1 Interconnection Customer Compensation for Actions During Emergency Condition. Transmission Provider or RTO or ISO shall compensate Interconnection Customer for its provision of real and reactive power and other Emergency Condition services that Interconnection Customer provides to support the Transmission System during an Emergency Condition in accordance with Article 11.6.

Article 12. Invoice.

12.1 General. Each Party shall submit to the other Party, on a monthly basis, invoices of amounts due for the preceding month. Each invoice shall state the month to which the invoice applies and fully describe the services and equipment provided. The Parties may discharge mutual debts and payment obligations due and owing to each other on the same date through netting, in which case all amounts a Party owes to the other Party under this LGIA, including interest payments or credits, shall be netted so that only the net amount remaining due shall be paid by the owing Party.

12.2 Final Invoice. Within six months after completion of the construction of Transmission Provider's Interconnection Facilities and the Network Upgrades, Transmission Provider shall provide an invoice of the final cost of the construction of Transmission Provider's Interconnection Facilities and the Network Upgrades and shall set forth such costs in sufficient detail to enable Interconnection Customer to compare the actual costs with the estimates and to ascertain deviations, if any, from the cost estimates. Transmission Provider shall refund to Interconnection Customer any amount by which the actual payment by Interconnection Customer for estimated costs exceeds the actual costs of construction within thirty (30) Calendar Days of the issuance of such final construction invoice

12.3 Payment. Invoices shall be rendered to the paying Party at the address specified in Appendix F. The Party receiving the invoice shall pay the invoice within thirty (30) Calendar Days of receipt. All payments shall be made in immediately available funds payable to the other Party, or by wire transfer to a bank named and account designated by the invoicing Party. Payment of invoices by either Party will not constitute a waiver of any rights or claims either Party may have under this LGIA.

12.4 Disputes. In the event of a billing dispute between Transmission Provider and Interconnection Customer, Transmission Provider shall continue to provide Interconnection Service under this LGIA as long as Interconnection Customer: (i) continues to make all payments not in dispute; and (ii) pays to Transmission Provider or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet these two requirements for continuation of service, then Transmission Provider may provide notice to Interconnection Customer of a Default pursuant to Article 17. Within thirty (30) Calendar Days after the resolution of the dispute, the Party that owes money to the other Party shall pay the amount due with interest calculated in accord with the methodology set forth in FERC's regulations at 18 CFR § 35.19a(a)(2)(iii)

Article 13. Emergencies

13.1 Definition. "Emergency Condition" shall mean a condition or situation: (i) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (ii) that, in the case of Transmission Provider, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Transmission System, Transmission Provider's Interconnection Facilities or the Transmission Systems of others to which the Transmission System is directly connected; or (iii) that, in the case of Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Large Generating Facility or Interconnection Customer's Interconnection Facilities' System restoration and black start shall be considered Emergency Conditions; provided, that Interconnection Customer is not obligated by this LGIA to possess black start capability.

13.2 Obligations. Each Party shall comply with the Emergency Condition procedures of the applicable ISO/RTO, NERC, the Applicable Reliability Council, Applicable Laws and Regulations, and any emergency procedures agreed to by the Joint Operating Committee.

13.3 Notice. Transmission Provider shall notify Interconnection Customer promptly when it becomes aware of an Emergency Condition that affects Transmission Provider's Interconnection Facilities or the Transmission System that may reasonably be expected to affect Interconnection Customer's operation of the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Interconnection Customer shall notify Transmission Provider promptly when it becomes aware of an Emergency Condition that affects the Large Generating Facility or Interconnection Customer's Interconnection Facilities that may reasonably be expected to affect the Transmission System or Transmission Provider's Interconnection Facilities. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of Interconnection Customer's or Transmission Provider's facilities and operations, its anticipated duration and the corrective action taken and/or to be taken. The initial notice shall be followed as soon as practicable with written notice.

13.4 Immediate Action. Unless, in Interconnection Customer's reasonable judgment, immediate action is required, Interconnection Customer shall obtain the consent of Transmission Provider, such consent to not be unreasonably withheld, prior to performing any manual switching operations at the Large Generating Facility or Interconnection Customer's Interconnection Facilities in response to an Emergency Condition either declared by Transmission Provider or otherwise regarding the Transmission System.

13.5 Transmission Provider Authority.

13.5.1 General. Transmission Provider may take whatever actions or inactions with regard to the Transmission System or Transmission Provider's Interconnection Facilities it deems necessary during an Emergency Condition

in order to (i) preserve public health and safety, (ii) preserve the reliability of the Transmission System or Transmission Provider's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service.

Transmission Provider shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Large Generating Facility or Interconnection Customer's Interconnection Facilities. Transmission Provider may, on the basis of technical considerations, require the Large Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Large Generating Facility; implementing a reduction or disconnection pursuant to Article 13.5.2; directing Interconnection Customer to assist with blackstart (if available) or restoration efforts; or altering the outage schedules of the Large Generating Facility and Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of Transmission Provider's operating instructions concerning Large Generating Facility real power and reactive power output within the manufacturer's design limitations of the Large Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

13.5.2 **Reduction and Disconnection**. Transmission Provider may reduce Interconnection Service or disconnect the Large Generating Facility or Interconnection Customer's Interconnection Facilities, when such, reduction or disconnection is necessary under Good Utility Practice due to Emergency Conditions. These rights are separate and distinct from any right of curtailment of Transmission Provider pursuant to Transmission Provider's Tariff. When Transmission Provider can schedule the reduction or disconnection in advance, Transmission Provider shall notify Interconnection Customer of the reasons, timing and expected duration of the reduction or disconnection. Transmission Provider shall coordinate with Interconnection Customer using Good Utility Practice to schedule the reduction or disconnection during periods of least impact to Interconnection Customer and Transmission Provider. Any reduction or disconnection shall continue only for so long as reasonably necessary under Good Utility Practice. The Parties shall cooperate with each other to restore the Large Generating Facility, the Interconnection Facilities, and the Transmission System to their normal operating state as soon as practicable consistent with Good Utility Practice.

13.6 **Interconnection Customer Authority**. Consistent with Good Utility Practice and the LGIA and the LGIP, Interconnection Customer may take actions or inactions with regard to the Large Generating Facility or Interconnection Customer's Interconnection Facilities during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the Large Generating Facility or Interconnection Customer's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service. Interconnection Customer shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Transmission System and Transmission Provider's

Interconnection Facilities. Transmission Provider shall use Reasonable Efforts to assist Interconnection Customer in such actions.

13.7 Limited Liability. Except as otherwise provided in Article 11.6.1 of this LGIA, neither Party shall be liable to the other for any action it takes in responding to an Emergency Condition so long as such action is made in good faith and is consistent with Good Utility Practice.

Article 14. Regulatory Requirements and Governing Law

14.1 Regulatory Requirements. Each Party's obligations under this LGIA shall be subject to its receipt of any required approval or certificate from one or more Governmental Authorities in the form and substance satisfactory to the applying Party, or the Party making any required filings with, or providing notice to, such Governmental Authorities, and the expiration of any time period associated therewith. Each Party shall in good faith seek and use its Reasonable Efforts to obtain such other approvals. Nothing in this LGIA shall require Interconnection Customer to take any action that could result in its inability to obtain, or its loss of, status or exemption under the Federal Power Act, the Public Utility Holding Company Act of 1935, as amended, or the Public Utility Regulatory Policies Act of 1978.

14.2 Governing Law.

14.2.1 The validity, interpretation and performance of this LGIA and each of its provisions shall be governed by the laws of the state where the Point of Interconnection is located, without regard to its conflicts of law principles.

14.2.2 This LGIA is subject to all Applicable Laws and Regulations.

14.2.3 Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, rules, or regulations of a Governmental Authority.

Article 15. Notices

15.1 General. Unless otherwise provided in this LGIA, any notice, demand or request required or permitted to be given by either Party to the other and any instrument required or permitted to be tendered or delivered by either Party in writing to the other shall be effective when delivered and may be so given, tendered or delivered, by recognized national courier, or by depositing the same with the United States Postal Service with postage prepaid, for delivery by certified or registered mail, addressed to the Party, or personally delivered to the Party, at the address set out in Appendix F, Addresses for Delivery of Notices and Billings.

Either Party may change the notice information in this LGIA by giving five (5) Business Days written notice prior to the effective date of the change.

15.2 Billings and Payments. Billings and payments shall be sent to the addresses set out in Appendix F.

15.3 Alternative Forms of Notice. Any notice or request required or permitted to be given by a Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or email to the telephone numbers and email addresses set out in Appendix F.

15.4 Operations and Maintenance Notice. Each Party shall notify the other Party in writing of the identity of the person(s) that it designates as the point(s) of contact with respect to the implementation of Articles 9 and 10

Article 16. Force Majeure

16.1 Force Majeure.

16.1.1 Economic hardship is not considered a Force Majeure event.

16.1.2 Neither Party shall be considered to be in Default with respect to any obligation hereunder, (including obligations under Article 4), other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Party in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this article shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

Article 17. Default

17.1 Default.

17.1.1 General. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of Force Majeure as defined in this LGIA or the result of an act of omission of the other Party. Upon a Breach, the non-breaching Party shall give written notice of such Breach to the breaching Party. Except as provided in Article 17.1.2, the breaching Party shall have thirty (30) Calendar Days from receipt of the Default notice within which to cure such Breach; provided however, if such Breach is not capable of cure within thirty (30) Calendar Days, the breaching Party shall commence such cure within thirty (30) Calendar Days after notice and continuously and diligently complete such cure within ninety (90) Calendar

Days from receipt of the Default notice; and, if cured within such time, the Breach specified in such notice shall cease to exist.

17.1.2 **Right to Terminate**. If a Breach is not cured as provided in this article, or if a Breach is not capable of being cured within the period provided for herein, the non-breaching Party shall have the right to declare a Default and terminate this LGIA by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this LGIA, to recover from the breaching Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this LGIA.

Article 18. Indemnity, Consequential Damages and Insurance

18.1 **Indemnity.** The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inactions of its obligations under this LGIA on behalf of the Indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the Indemnified Party.

18.1.1 **Indemnified Person**. If an Indemnified Person is entitled to indemnification under this Article 18 as a result of a claim by a third party, and the Indemnifying Party fails, after notice and reasonable opportunity to proceed under Article 18.1, to assume the defense of such claim, such Indemnified Person may at the expense of the Indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

18.1.2 **Indemnifying Party**. If an Indemnifying Party is obligated to indemnify and hold any Indemnified Person harmless under this Article 18, the amount owing to the Indemnified Person shall be the amount of such Indemnified Person's actual Loss, net of any insurance or other recovery.

18.1.3 **Indemnity Procedures**. Promptly after receipt by an Indemnified Person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in Article 18.1 may apply, the Indemnified Person shall notify the Indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the Indemnifying Party.

The Indemnifying Party shall have the right to assume the defense thereof with counsel designated by such Indemnifying Party and reasonably satisfactory to the Indemnified Person. If the defendants in any such action include one or more Indemnified Persons and the Indemnifying Party and if the Indemnified Person reasonably concludes that there may be legal

defenses available to it and/or other Indemnified Persons which are different from or additional to those available to the Indemnifying Party, the Indemnified Person shall have the right to select separate counsel to assert such legal defenses and to otherwise participate in the defense of such action on its own behalf. In such instances, the Indemnifying Party shall only be required to pay the fees and expenses of one additional attorney to represent an Indemnified Person or Indemnified Persons having such differing or additional legal defenses.

The Indemnified Person shall be entitled, at its expense, to participate in any such action, suit or proceeding, the defense of which has been assumed by the Indemnifying Party. Notwithstanding the foregoing, the Indemnifying Party (i) shall not be entitled to assume and control the defense of any such action, suit or proceedings if and to the extent that, in the opinion of the Indemnified Person and its counsel, such action, suit or proceeding involves the potential imposition of criminal liability on the Indemnified Person, or there exists a conflict or adversity of interest between the Indemnified Person and the Indemnifying Party, in such event the Indemnifying Party shall pay the reasonable expenses of the Indemnified Person, and (ii) shall not settle or consent to the entry of any judgment in any action, suit or proceeding without the consent of the Indemnified Person, which shall not be reasonably withheld, conditioned or delayed.

18.2 **Consequential Damages**. Other than the Liquidated Damages heretofore described, in no event shall either Party be liable under any provision of this LGIA for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

18.3 **Insurance**. Each party shall, at its own expense, maintain in force throughout the period of this LGIA, and until released by the other Party, the following minimum insurance coverages, with insurers authorized to do business in the state where the Point of Interconnection is located:

18.3.1 Employers' Liability and Workers' Compensation Insurance providing statutory benefits in accordance with the laws and regulations of the state in which the Point of Interconnection is located.

18.3.2 Commercial General Liability Insurance including premises and operations, personal injury, broad form property damage, broad form blanket contractual liability coverage (including coverage for the contractual indemnification) products and completed operations coverage, coverage for explosion, collapse and underground hazards, independent contractors coverage, coverage for pollution to the extent normally available and punitive damages

to the extent normally available and a cross liability endorsement, with minimum limits of One Million Dollars ($1,000,000) per occurrence/One Million Dollars ($1,000,000) aggregate combined single limit for personal injury, bodily injury, including death and property damage.

18.3.3 Comprehensive Automobile Liability Insurance for coverage of owned and non-owned and hired vehicles, trailers or semi-trailers designed for travel on public roads, with a minimum, combined single limit of One Million Dollars ($1,000,000) per occurrence for bodily injury, including death, and property damage.

18.3.4 Excess Public Liability Insurance over and above the Employers' Liability Commercial General Liability and Comprehensive Automobile Liability Insurance coverage, with a minimum combined single limit of Twenty Million Dollars ($20,000,000) per occurrence/Twenty Million Dollars ($20,000,000) aggregate.

18.3.5 The Commercial General Liability Insurance, Comprehensive Automobile Insurance and Excess Public Liability Insurance policies shall name the other Party, its parent, associated and Affiliate companies and their respective directors, officers, agents, servants and employees ("Other Party Group") as additional insured. All policies shall contain provisions whereby the insurers waive all rights of subrogation in accordance with the provisions of this LGIA against the Other Party Group and provide thirty (30) Calendar Days advance written notice to the Other Party Group prior to anniversary date of cancellation or any material change in coverage or condition.

18.3.6 The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies shall contain provisions that specify that the policies are primary and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been covered. Each Party shall be responsible for its respective deductibles or retentions.

18.3.7 The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies, if written on a Claims First Made Basis, shall be maintained in full force and effect for two (2) years after termination of this LGIA, which coverage may be in the form of tail coverage or extended reporting period coverage if agreed by the Parties.

18.3.8 The requirements contained herein as to the types and limits of all insurance to be maintained by the Parties are not intended to and shall not in any manner, limit or qualify the liabilities and obligations assumed by the Parties under this LGIA.

18.3.9 Within ten (10) days following execution of this LGIA, and as soon as practicable after the end of each fiscal year or at the renewal of the insurance policy and in any event within ninety (90) days thereafter, each Party shall provide certification of all insurance required in this LGIA, executed by each insurer or by an authorized representative of each insurer.

18.3.10 Notwithstanding the foregoing, each Party may self-insure to meet the minimum insurance requirements of Articles 18.3.2 through 18.3.8 to the extent it maintains a self-insurance program; provided that, such Party's senior secured debt is rated at investment grade or better by Standard & Poor's and that its self-insurance program meets the minimum insurance requirements of Articles 18.3.2 through 18.3.8. For any period of time that a Party's senior secured debt is unrated by Standard & Poor's or is rated at less than investment grade by Standard & Poor's, such Party shall comply with the insurance requirements applicable to it under Articles 18.3.2 through 18.3.9. In the event that a Party is permitted to self-insure pursuant to this article, it shall notify the other Party that it meets the requirements to self-insure and that its self-insurance program meets the minimum insurance requirements in a manner consistent with that specified in Article 18.3.9.

18.3.11 The Parties agree to report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of this LGIA.

Article 19. Assignment

19.1 **Assignment**. This LGIA may be assigned by either Party only with the written consent of the other; provided that either Party may assign this LGIA without the consent of the other Party to any Affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this LGIA; and provided further that Interconnection Customer shall have the right to assign this LGIA, without the consent of Transmission Provider, for collateral security purposes to aid in providing financing for the Large Generating Facility, provided that Interconnection Customer will promptly notify Transmission Provider of any such assignment. Any financing arrangement entered into by Interconnection Customer pursuant to this article will provide that prior to or upon the exercise of the secured party's, trustee's or mortgagee's assignment rights pursuant to said arrangement, the secured creditor, the trustee or mortgagee will notify Transmission Provider of the date and particulars of any such exercise of assignment right(s), including providing the Transmission Provider with proof that it meets the requirements of Articles 11.5 and 18.3. Any attempted assignment that violates this article is void and ineffective. Any assignment under this LGIA shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

Article 20. Severability

20.1 Severability. If any provision in this LGIA is finally determined to be invalid, void or unenforceable by any court or other Governmental Authority having jurisdiction, such determination shall not invalidate, void or make unenforceable any other provision, agreement or covenant of this LGIA; provided that if Interconnection Customer (or any third party, but only if such third party is not acting at the direction of Transmission Provider) seeks and obtains such a final determination with respect to any provision of the Alternate Option (Article 5.1.2), or the Negotiated Option (Article 5.1.4), then none of these provisions shall thereafter have any force or effect and the Parties' rights and obligations shall be governed solely by the Standard Option (Article 5.1.1)

Article 21. Comparability

21.1 Comparability. The Parties will comply with all applicable comparability and code of conduct laws, rules and regulations, as amended from time to time.

Article 22. Confidentiality

22.1 Confidentiality. Confidential Information shall include, without limitation, all information relating to a Party's technology, research and development, business affairs, and pricing, and any information supplied by either of the Parties to the other prior to the execution of this LGIA.

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document, or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential.

If requested by either Party, the other Party shall provide in writing, the basis for asserting that the information referred to in this Article 22 warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

22.1.1 Term. During the term of this LGIA, and for a period of three (3) years after the expiration or termination of this LGIA, except as otherwise provided in this Article 22, each Party shall hold in confidence and shall not disclose to any person Confidential Information.

22.1.2 Scope. Confidential Information shall not include information that the receiving Party can demonstrate: (1) is generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a third party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the receiving Party without reference to Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the

receiving Party or Breach of this LGIA; or (6) is required, in accordance with Article 22.1.7 of the LGIA, Order of Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena, or is necessary in any legal proceeding establishing rights and obligations under this LGIA. Information designated as Confidential Information will no longer be deemed confidential if the Party that designated the information as confidential notifies the other Party that it no longer is confidential.

22.1.3 **Release of Confidential Information**. Neither Party shall release or disclose Confidential Information to any other person, except to its Affiliates (limited by the Standards of Conduct requirements), subcontractors, employees, consultants, or to parties who may be or considering providing financing to or equity participation with Interconnection Customer, or to potential purchasers or assignees of Interconnection Customer, on a need-to-know basis in connection with this LGIA, unless such person has first been advised of the confidentiality provisions of this Article 22 and has agreed to comply with such provisions. Notwithstanding the foregoing, a Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Article 22.

22.1.4 **Rights**. Each Party retains all rights, title, and interest in the Confidential Information that each Party discloses to the other Party. The disclosure by each Party to the other Party of Confidential Information shall not be deemed a waiver by either Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

22.1.5 **No Warranties**. By providing Confidential Information, neither Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, neither Party obligates itself to provide any particular information or Confidential Information to the other Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

22.1.6 **Standard of Care**. Each Party shall use at least the same standard of care to protect Confidential Information it receives as it uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination. Each Party may use Confidential Information solely to fulfill its obligations to the other Party under this LGIA or its regulatory requirements.

22.1.7 **Order of Disclosure**. If a court or a Government Authority or entity with the right, power, and apparent authority to do so requests or requires either Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirement(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this LGIA.

Notwithstanding the absence of a protective order or waiver, the Party may disclose such Confidential Information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

22.1.8 **Termination of Agreement**. Upon termination of this LGIA for any reason, each Party shall, within ten (10) Calendar Days of receipt of a written request from the other Party, use Reasonable Efforts to destroy, erase, or delete (with such destruction, erasure, and deletion certified in writing to the other Party) or return to the other Party, without retaining copies thereof, any and all written or electronic Confidential Information received from the other Party.

22.1.9 **Remedies**. The Parties agree that monetary damages would be inadequate to compensate a Party for the other Party's Breach of its obligations under this Article 22. Each Party accordingly agrees that the other Party shall be entitled to equitable relief, by way of injunction or otherwise, if the first Party Breaches or threatens to Breach its obligations under this Article 22, which equitable relief shall be granted without bond or proof of damages, and the receiving Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed an exclusive remedy for the Breach of this Article 22, but shall be in addition to all other remedies available at law or in equity. The Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Party, however, shall be liable for indirect, incidental, or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Article 22.

22.1.10 **Disclosure to FERC, its Staff, or a State**. Notwithstanding anything in this Article 22 to the contrary, and pursuant to 18 CFR section 1b.20, if FERC or its staff, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this LGIA, the Party shall provide the requested information to FERC or its staff, within the time provided for in the request for information. In providing the information to FERC or its staff, the Party must, consistent with 18 CFR section 388.112, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. Parties are prohibited from notifying the other Party to this LGIA prior to the release of the Confidential Information to FERC or its staff. The Party shall notify the other Party to the LGIA when it is notified by FERC or its staff that a request to release Confidential Information has been received by FERC, at which time either of the Parties may respond before such information would be made public, pursuant to 18 CFR section 388.112. Requests from a state regulatory body conducting a confidential investigation shall be treated in a similar manner if consistent with the applicable state rules and regulations.

22.1.11 Subject to the exception in Article 22.1.10, any information that a Party claims is competitively sensitive, commercial or financial information under this LGIA ("Confidential Information") shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is (i) required by law; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the other Party, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this LGIA or as a transmission service provider or a Control Area operator including disclosing the Confidential Information to an RTO or ISO or to a regional or national reliability organization. The Party asserting confidentiality shall notify the other Party in writing of the information it claims is confidential. Prior to any disclosures of the other Party's Confidential Information under this subparagraph, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the disclosing Party agrees to promptly notify the other Party in writing and agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

Article 23. Environmental Releases

23.1 Each Party shall notify the other Party, first orally and then in writing, of the release of any Hazardous Substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Large Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall: (i) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than twenty-four hours after such Party becomes aware of the occurrence; and (ii) promptly furnish to the other Party copies of any publicly available reports filed with any Governmental Authorities addressing such events

Article 24. Information Requirements

24.1 **Information Acquisition.** Transmission Provider and Interconnection Customer shall submit specific information regarding the electrical characteristics of their respective facilities to each other as described below and in accordance with Applicable Reliability Standards.

24.2 **Information Submission by Transmission Provider**. The initial information submission by Transmission Provider shall occur no later than one hundred eighty (180) Calendar Days prior to Trial Operation and shall include Transmission System information necessary to allow Interconnection Customer to select equipment and meet any system protection and stability requirements, unless otherwise agreed to by the Parties. On a monthly basis Transmission Provider shall provide Interconnection Customer a status report on the construction and installation of Transmission Provider's Interconnection Facilities and Network Upgrades, including, but not limited to, the

following information: (1) progress to date; (2) a description of the activities since the last report (3) a description of the action items for the next period; and (4) the delivery status of equipment ordered.

24.3 Updated Information Submission by Interconnection Customer. The updated information submission by Interconnection Customer, including manufacturer information, shall occur no later than one hundred eighty (180) Calendar Days prior to the Trial Operation. Interconnection Customer shall submit a completed copy of the Large Generating Facility data requirements contained in Appendix 1 to the LGIP. It shall also include any additional information provided to Transmission Provider for the Feasibility and Facilities Study. Information in this submission shall be the most current Large Generating Facility design or expected performance data. Information submitted for stability models shall be compatible with Transmission Provider standard models. If there is no compatible model, Interconnection Customer will work with a consultant mutually agreed to by the Parties to develop and supply a standard model and associated information.

If Interconnection Customer's data is materially different from what was originally provided to Transmission Provider pursuant to the Interconnection Study Agreement between Transmission Provider and Interconnection Customer, then Transmission Provider will conduct appropriate studies to determine the impact on Transmission Provider Transmission System based on the actual data submitted pursuant to this Article 24.3. The Interconnection Customer shall not begin Trial Operation until such studies are completed.

24.4 Information Supplementation. Prior to the Operation Date, the Parties shall supplement their information submissions described above in this Article 24 with any and all "as-built" Large Generating Facility information or "as-tested" performance information that differs from the initial submissions or, alternatively, written confirmation that no such differences exist. The Interconnection Customer shall conduct tests on the Large Generating Facility as required by Good Utility Practice such as an open circuit "step voltage" test on the Large Generating Facility to verify proper operation of the Large Generating Facility's automatic voltage regulator.

Unless otherwise agreed, the test conditions shall include: (1) Large Generating Facility at synchronous speed; (2) automatic voltage regulator on and in voltage control mode; and (3) a five percent change in Large Generating Facility terminal voltage initiated by a change in the voltage regulators reference voltage. Interconnection Customer shall provide validated test recordings showing the responses of Large Generating Facility terminal and field voltages. In the event that direct recordings of these voltages is impractical, recordings of other voltages or currents that mirror the response of the Large Generating Facility's terminal or field voltage are acceptable if information necessary to translate these alternate quantities to actual Large Generating Facility terminal or field voltages is provided. Large Generating Facility testing shall be conducted and results provided to Transmission Provider for each individual generating unit in a station.

Subsequent to the Operation Date, Interconnection Customer shall provide Transmission Provider any information changes due to equipment replacement, repair,

or adjustment. Transmission Provider shall provide Interconnection Customer any information changes due to equipment replacement, repair or adjustment in the directly connected substation or any adjacent Transmission Provider-owned substation that may affect Interconnection Customer's Interconnection Facilities equipment ratings, protection or operating requirements. The Parties shall provide such information no later than thirty (30) Calendar Days after the date of the equipment replacement, repair or adjustment.

Article 25. Information Access and Audit Rights

25.1 Information Access. Each Party (the "disclosing Party") shall make available to the other Party information that is in the possession of the disclosing Party and is necessary in order for the other Party to: (i) verify the costs incurred by the disclosing Party for which the other Party is responsible under this LGIA; and (ii) carry out its obligations and responsibilities under this LGIA. The Parties shall not use such information for purposes other than those set forth in this Article 25.1 and to enforce their rights under this LGIA.

25.2 Reporting of Non-Force Majeure Events. Each Party (the "notifying Party") shall notify the other Party when the notifying Party becomes aware of its inability to comply with the provisions of this LGIA for a reason other than a Force Majeure event. The Parties agree to cooperate with each other and provide necessary information regarding such inability to comply, including the date, duration, reason for the inability to comply, and corrective actions taken or planned to be taken with respect to such inability to comply. Notwithstanding the foregoing, notification, cooperation or information provided under this article shall not entitle the Party receiving such notification to allege a cause for anticipatory breach of this LGIA.

25.3 Audit Rights. Subject to the requirements of confidentiality under Article 22 of this LGIA, each Party shall have the right, during normal business hours, and upon prior reasonable notice to the other Party, to audit at its own expense the other Party's accounts and records pertaining to either Party's performance or either Party's satisfaction of obligations under this LGIA. Such audit rights shall include audits of the other Party's costs, calculation of invoiced amounts, Transmission Provider's efforts to allocate responsibility for the provision of reactive support to the Transmission System, Transmission Provider's efforts to allocate responsibility for interruption or reduction of generation on the Transmission System, and each Party's actions in an Emergency Condition. Any audit authorized by this article shall be performed at the offices where such accounts and records are maintained and shall be limited to those portions of such accounts and records that relate to each Party's performance and satisfaction of obligations under this LGIA. Each Party shall keep such accounts and records for a period equivalent to the audit rights periods described in Article 25.4.

25.4 Audit Rights Periods.

25.4.1 Audit Rights Period for Construction-Related Accounts and Records. Accounts and records related to the design, engineering, procurement, and construction of Transmission Provider's Interconnection Facilities and Network Upgrades shall be subject to audit for a period of twenty-four months

following Transmission Provider's issuance of a final invoice in accordance with Article 12.2.

25.4.2 **Audit Rights Period for All Other Accounts and Records**. Accounts and records related to either Party's performance or satisfaction of all obligations under this LGIA other than those described in Article 25.4.1 shall be subject to audit as follows: (i) for an audit relating to cost obligations, the applicable audit rights period shall be twenty-four months after the auditing Party's receipt of an invoice giving rise to such cost obligations; and (ii) for an audit relating to all other obligations, the applicable audit rights period shall be twenty-four months after the event for which the audit is sought.

25.5 **Audit Results**. If an audit by a Party determines that an overpayment or an underpayment has occurred, a notice of such overpayment or underpayment shall be given to the other Party together with those records from the audit which support such determination.

Article 26. Subcontractors

26.1 **General**. Nothing in this LGIA shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this LGIA; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this LGIA in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

26.2 **Responsibility of Principal**. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this LGIA. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall Transmission Provider be liable for the actions or inactions of Interconnection Customer or its subcontractors with respect to obligations of Interconnection Customer under Article 5 of this LGIA. Any applicable obligation imposed by this LGIA upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

26.3 **No Limitation by Insurance**. The obligations under this Article 26 will not be limited in any way by any limitation of subcontractor's insurance.

Article 27. Disputes

27.1 **Submission**. In the event either Party has a dispute, or asserts a claim, that arises out of or in connection with this LGIA or its performance, such Party (the "disputing Party") shall provide the other Party with written notice of the dispute or claim ("Notice of Dispute"). Such dispute or claim shall be referred to a designated senior representative of each Party for resolution on an informal basis as promptly as practicable after receipt of the Notice of Dispute by the other Party. In the event the designated representatives are unable to resolve the claim or dispute through unassisted or assisted negotiations within thirty (30) Calendar Days of the other Party's receipt of the Notice of Dispute, such

claim or dispute may, upon mutual agreement of the Parties, be submitted to arbitration and resolved in accordance with the arbitration procedures set forth below. In the event the Parties do not agree to submit such claim or dispute to arbitration, each Party may exercise whatever rights and remedies it may have in equity or at law consistent with the terms of this LGIA.

27.2 **External Arbitration Procedures**. Any arbitration initiated under this LGIA shall be conducted before a single neutral arbitrator appointed by the Parties. If the Parties fail to agree upon a single arbitrator within ten (10) Calendar Days of the submission of the dispute to arbitration, each Party shall choose one arbitrator who shall sit on a three-member arbitration panel. The two arbitrators so chosen shall within twenty (20) Calendar Days select a third arbitrator to chair the arbitration panel. In either case, the arbitrators shall be knowledgeable in electric utility matters, including electric transmission and bulk power issues, and shall not have any current or past substantial business or financial relationships with any party to the arbitration (except prior arbitration). The arbitrator(s) shall provide each of the Parties an opportunity to be heard and, except as otherwise provided herein, shall conduct the arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("Arbitration Rules") and any applicable FERC regulations or RTO rules; provided, however, in the event of a conflict between the Arbitration Rules and the terms of this Article 27, the terms of this Article 27 shall prevail.

27.3 **Arbitration Decisions**. Unless otherwise agreed by the Parties, the arbitrator(s) shall render a decision within ninety (90) Calendar Days of appointment and shall notify the Parties in writing of such decision and the reasons therefor. The arbitrator(s) shall be authorized only to interpret and apply the provisions of this LGIA and shall have no power to modify or change any provision of this Agreement in any manner. The decision of the arbitrator(s) shall be final and binding upon the Parties, and judgment on the award may be entered in any court having jurisdiction. The decision of the arbitrator(s) may be appealed solely on the grounds that the conduct of the arbitrator(s), or the decision itself, violated the standards set forth in the Federal Arbitration Act or the Administrative Dispute Resolution Act. The final decision of the arbitrator must also be filed with FERC if it affects jurisdictional rates, terms and conditions of service, Interconnection Facilities, or Network Upgrades.

27.4 **Costs**. Each Party shall be responsible for its own costs incurred during the arbitration process and for the following costs, if applicable: (1) the cost of the arbitrator chosen by the Party to sit on the three member panel and one half of the cost of the third arbitrator chosen; or (2) one half the cost of the single arbitrator jointly chosen by the Parties.

Article 28. Representations, Warranties, and Covenants

28.1 **General**. Each Party makes the following representations, warranties and covenants:

28.1.1 **Good Standing**. Such Party is duly organized, validly existing and in good standing under the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business in the state or

states in which the Large Generating Facility, Interconnection Facilities and Network Upgrades owned by such Party, as applicable, are located; and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this LGIA and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this LGIA.

28.1.2 **Authority**. Such Party has the right, power and authority to enter into this LGIA, to become a Party hereto and to perform its obligations hereunder. This LGIA is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

28.1.3 **No Conflict**. The execution, delivery and performance of this LGIA does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of such Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.

28.1.4 **Consent and Approval**. Such Party has sought or obtained, or, in accordance with this LGIA will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of this LGIA, and it will provide to any Governmental Authority notice of any actions under this LGIA that are required by Applicable Laws and Regulations

Article 29. Joint Operating Committee

29.1 **Joint Operating Committee**. Except in the case of ISOs and RTOs, Transmission Provider shall constitute a Joint Operating Committee to coordinate operating and technical considerations of Interconnection Service. At least six (6) months prior to the expected Initial Synchronization Date, Interconnection Customer and Transmission Provider shall each appoint one representative and one alternate to the Joint Operating Committee. Each Interconnection Customer shall notify Transmission Provider of its appointment in writing. Such appointments may be changed at any time by similar notice. The Joint Operating Committee shall meet as necessary, but not less than once each calendar year, to carry out the duties set forth herein. The Joint Operating Committee shall hold a meeting at the request of either Party, at a time and place agreed upon by the representatives. The Joint Operating Committee shall perform all of its duties consistent with the provisions of this LGIA. Each Party shall cooperate in providing to the Joint Operating Committee all information required in the performance of the Joint Operating Committee's duties. All decisions and agreements, if any, made by the Joint Operating Committee, shall be evidenced in writing. The duties of the Joint Operating Committee shall include the following:

29.1.1 Establish data requirements and operating record requirements.

29.1.2 Review the requirements, standards, and procedures for data acquisition equipment, protective equipment, and any other equipment or software.

29.1.3 Annually review the one (1) year forecast of maintenance and planned outage schedules of Transmission Provider's and Interconnection Customer's facilities at the Point of Interconnection.

29.1.4 Coordinate the scheduling of maintenance and planned outages on the Interconnection Facilities, the Large Generating Facility and other facilities that impact the normal operation of the interconnection of the Large Generating Facility to the Transmission System.

29.1.5 Ensure that information is being provided by each Party regarding equipment availability.

29.1.6 Perform such other duties as may be conferred upon it by mutual agreement of the Parties.

Article 30. Miscellaneous

30.1 Binding Effect. This LGIA and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

30.2 Conflicts. In the event of a conflict between the body of this LGIA and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this LGIA shall prevail and be deemed the final intent of the Parties.

30.3 Rules of Interpretation. This LGIA, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this LGIA, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this LGIA), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any Applicable Laws and Regulations means such Applicable Laws and Regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Article, Section or Appendix means such Article of this LGIA or such Appendix to this LGIA, or such Section to the LGIP or such Appendix to the LGIP, as the case may be; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this LGIA as a whole and not to any particular Article or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description

preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including".

30.4 Entire Agreement. This LGIA, including all Appendices and Schedules attached hereto, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this LGIA. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this LGIA.

30.5 No Third Party Beneficiaries. This LGIA is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

30.6 Waiver. The failure of a Party to this LGIA to insist, on any occasion, upon strict performance of any provision of this LGIA will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this LGIA shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this LGIA. Termination or Default of this LGIA for any reason by Interconnection Customer shall not constitute a waiver of Interconnection Customer's legal rights to obtain an interconnection from Transmission Provider. Any waiver of this LGIA shall, if requested, be provided in writing.

30.7 Headings. The descriptive headings of the various Articles of this LGIA have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this LGIA.

30.8 Multiple Counterparts. This LGIA may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

30.9 Amendment. The Parties may by mutual agreement amend this LGIA by a written instrument duly executed by the Parties.

30.10 Modification by the Parties. The Parties may by mutual agreement amend the Appendices to this LGIA by a written instrument duly executed by the Parties. Such amendment shall become effective and a part of this LGIA upon satisfaction of all Applicable Laws and Regulations.

30.11 Reservation of Rights. Transmission Provider shall have the right to make a unilateral filing with FERC to modify this LGIA with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under section 205 or any other applicable provision of the Federal Power Act and FERC's rules and regulations

thereunder, and Interconnection Customer shall have the right to make a unilateral filing with FERC to modify this LGIA pursuant to section 206 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this LGIA shall limit the rights of the Parties or of FERC under sections 205 or 206 of the Federal Power Act and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.

30.12 No Partnership. This LGIA shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

IN WITNESS WHEREOF, the Parties have executed this LGIA in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties.

Public Service Company of Colorado

By: _____

Printed Name: Ian R. Benson

Title: Area Vice President Transmission Strategy and Planning
Xcel Energy Services Inc., agent for
Public Service Company of Colorado,
a Colorado Corporation

Date: 5/8/2017

Front Range Midway Solar Project, LLC

By: _____

Printed Name: Geoff Coventry

Title: Vice President

Date: 6.18.17

Attachment G

U.S. DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
ROCKY MOUNTAIN REGION

FINDING OF NO SIGNIFICANT IMPACT

Front Range - Midway Solar Interconnection Project
El Paso County, Colorado

DOE/EA-2018

AGENCY: U.S. Department of Energy, Western Area Power Administration

ACTION: Finding of No Significant Impact

On May 20, 2014, Front Range - Midway Solar (Midway Solar) submitted an interconnection request to Western Area Power Administration (WAPA) to interconnect Midway Solar's proposed photovoltaic (PV) solar electric generation facility (proposed Project) and WAPA's existing Midway Substation. The project is located 8 miles south of the City of Fountain in El Paso County, Colorado. Midway Solar will be the developer, contractor, and operator of the Project.

WAPA is a federal power marketing agency within the U.S. Department of Energy (DOE). Under its Open Access Transmission Service Tariff (Tariff), WAPA is required to respond to Midway Solar's interconnection request. WAPA's Tariff conforms to section 211 of the Federal Power Act and Federal Energy Regulatory Commission's (FERC) Final Orders addressing non-discriminatory transmission system access. WAPA's Tariff provides for interconnections to WAPA's transmission system by all eligible entities, consistent with, and subject to environmental review under the National Environmental Policy Act (NEPA), and other environmental regulations. Under its Tariff, WAPA must offer access to capacity on its transmission system, when capacity is available, on a non-discriminatory basis. WAPA also needs to ensure that by offering such capacity, existing transmission system reliability and service is not degraded by new or additional generation interconnections.

In accordance with applicable law and regulations, WAPA prepared an Environmental Assessment (EA), entitled *Environmental Assessment for the Front Range - Midway Solar, LLC Interconnection Project* (DOE/EA-2018). WAPA's purpose and need for the EA is to consider the interconnection request in accordance with its Tariff. WAPA's proposed Federal action is to execute an interconnection agreement with Midway Solar to interconnect the proposed PV solar electric generation facility and WAPA's existing Midway Substation. WAPA would be required to build a new 230-kilovolt (kV) bay within the Midway Substation; install new communications and protection equipment within the substation's control building; and install new take-off and gen-tie structures to direct the 230-kV transmission line into the new bay. Depending on final design, WAPA may be required to alter existing 115-kV and 230-kV transmission lines entering and exiting the Midway Substation to accommodate the proposed 230-kV gen-tie transmission line connecting the substation with the solar facility. Outside of the scope of this EA, Midway Solar may opt to interconnect into an adjacent substation owned by Public Service Company of

Colorado (PSCo) which would require obtaining a licensing agreement across WAPA-owned property. This agreement would be subject to an environmental review, payment of fair market value, and confirmation that the design would not interfere with WAPA's operations.

WAPA's Federal action does not include Midway Solar's proposed Project, which would be constructed, owned, operated, and maintained by Midway Solar. However, WAPA's EA analyzed and disclosed the potential environmental impacts of Midway Solar's proposed Project. The EA identified no significant impacts to environmental resources resulting from either WAPA's Federal action or Midway Solar's proposed Project.

The Draft EA was distributed to interested agencies, tribes, groups, and individuals on July 19, 2016. The public comment period ended on August 19, 2016. No comments were received during the comment period for the Draft EA. Based on the information contained in the EA, WAPA's Federal action would not result in significant environmental impacts. WAPA has determined that proposed Federal action described above does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Thus, the preparation of an environmental impact statement is not required, and WAPA is issuing this Finding of No Significant Impact (FONSI). The Final EA is approved concurrently with this FONSI.

FOR FURTHER INFORMATION:
Additional information and copies of the EA and this FONSI are available to all interested parties and the public from the following contact:

Brian Little, Supervisory Environmental Protection Specialist
Western Area Power Administration
Rocky Mountain Regional Office
P.O. Box 3700
Loveland, CO 80539-3003
Phone: (970) 461-7287
Fax: (970) 461-7213
Email: blittle@wapa.gov

This FONSI will be sent directly to individuals who previously requested a copy. A notification of availability will be sent to other potentially affected parties. A copy of the Final EA and this FONSI are also available on the following website:

https://www.wapa.gov/regions/RM/environment/Pages/Front_Range-Midway_Solar_Interconnection_Project.aspx

For further information on the DOE NEPA process, contact:

Ms. Carol M. Borgstrom
Director, Office of NEPA Policy and Compliance, GC-54
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585
Phone: (202) 586-4600 or (800) 472-2756

SUPPLEMENTARY INFORMATION:
This FONSI was prepared in accordance with the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR 1508.13, and the DOE NEPA Implementing Procedures, 10 CFR 1021.322. The FONSI briefly presents the reasons why WAPA's proposal to execute an interconnection agreement for the Midway Solar Project will not have a significant impact on the human environment within the meaning of NEPA. Execution of the interconnection agreement would allow Midway Solar to interconnect their proposed Project to WAPA's existing Midway substation. WAPA's EA evaluated the environmental effects of WAPA's proposed Federal action and also included an analysis and disclosure of the potential environmental impacts of Midway Solar's proposed Project.

WAPA's PROPOSED FEDERAL ACTION:
WAPA's proposed Federal action is to execute an interconnection agreement with Midway Solar to interconnect the proposed PV solar electric generation facility and WAPA's existing Midway Substation. WAPA would be required to build a new 230- kV bay within the Midway Substation; install new communications and protection equipment within the substation's control building; and install new take-off and gen-tie structures to direct the 230-kV transmission line into the new bay. Depending on final design, WAPA may be required to alter existing 115-kV and 230-kV transmission lines entering and exiting the Midway Substation to accommodate the proposed 230-kV gen-tie transmission line connecting the substation with the solar facility.

Midway SOLAR'S PROPOSED PROJECT DESCRIPTION:
Midway Solar proposes to construct two main but connected components: a 100-MW PV solar electric generation facility and the associated gen-tie line to connect the solar facility to WAPA's Midway Substation. The proposed Project would consist of PV panels, tracking system, and associated electric power collection system, with light-duty gravel covered service roads and would occupy approximately 911 acres. A full and complete Project description is included in the EA.

COMMENTS RECEIVED ON THE PRE-APPROVAL EA:
No formal public comments, questions, or concerns were received. The Northern Arapaho Tribe of the Wind River Reservation requested the opportunity to participate in the cultural resources site survey; however, the survey was completed at the time of the request. The Northern Arapaho Tribal Historic Preservation Office was given an opportunity to review the Class III Cultural Resources Inventory report. Further details of WAPA's and Midway Solar's public scoping and tribal consultation efforts are included in the Final EA.

ALTERNATIVES:
DOE's NEPA regulations require that an EA include the proposed action and the no action alternative (10 CFR 1022.321(c)).

WAPA's above-described proposed Federal action was considered. In addition, as part of the EA, WAPA evaluated modifications to existing 115-kV and 230-kV transmission lines entering and exiting the Midway Substation to accommodate the proposed 230-kV gen-tie transmission line connecting the substation with the solar facility.

Under the No Action Alternative, WAPA would not execute an interconnection agreement with Midway Solar and the proposed Project would not be constructed or interconnected to WAPA's transmission system. WAPA would continue to operate the Midway Substation, however the construction activities associated with the proposed Action would not occur. Midway Solar could continue to pursue the proposed Project by applying for an interconnection into an adjacent substation owned by PSCo which would require obtaining a licensing agreement across WAPA-owned property. This agreement would be subject to an environmental review, payment of fair market value, and confirmation that that the design would not interfere with WAPA's operations. For the purpose of the Final EA and this FONSI, which discusses WAPA's proposed Action, the No Action Alternative is considered to result in the proposed Project not being constructed, and thus provides a baseline against which the proposed Action can be evaluated.

ENVIRONMENTAL IMPACTS OF WAPA'S ACTION:
The execution of an interconnection agreement with Midway Solar to connect the proposed Project to WAPA's Midway Substation and taking possession of: a new 230-kV bay within the Midway Substation; new communications and protection equipment within the substation's control building; new take-off and gen-tie structures to direct the 230-kV transmission line into the new bay, and, depending on final design, WAPA may be required to alter existing 115-kV and 230-kV transmission lines entering and exiting the Midway Substation to accommodate the proposed 230-kV gen-tie transmission line connecting the substation with the solar facility. WAPA's Federal action will have no significant impact to environmental resources.

ENVIRONMENTAL IMPACTS OF FRONT RANGE MIDWAY SOLAR'S PROPOSED PROJECT:
The EA evaluated the potential for Midway Solar's proposed Project to impact environmental resources found in the proposed Project area. Midway Solar has incorporated WAPA's Standard Construction Practices and Best Management Practices into the description of its proposed Project. The analysis of environmental impacts identified no potential impacts that would be considered significant and no mitigation measures that should be implemented additional to those already embedded within the proposed project description. The principal reasons for the lack of significant environmental impact was the avoidance of sensitive resources during siting of the solar facility, the minor amount of disturbance at structure locations, and Midway Solar's efforts to work cooperatively with affected landowners.

DETERMINATION:
WAPA will allow 15 days of public review after publication of this statement of findings before implementing the Proposed Action. Based on the information contained in the EA, WAPA's Federal action would not result in significant environmental impacts. WAPA has determined that it's proposed Federal action is not a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, preparation of an environmental impact statement is not required and WAPA is issuing this FONSI.

Bradley S. Warren

Bradley S. Warren
Senior Vice President
Rocky Mountain Regional Manager
Western Area Power Administration
U.S. Department of Energy

9-21-16

Date

Attachment K

Final Environmental Assessment for the Front Range-Midway Solar LLC Interconnection Project

DOE Project Number: DOE/EA-2018

Prepared for:

US Department of Energy

Western Area Power Administration

Rocky Mountain Region

Prepared by

Western EcoSystems Technology, Inc.

415 West 17th Street, Suite 200
Cheyenne, Wyoming 82001

September 2016

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
°	degree
°C	degrees Celsius
°F	degrees Fahrenheit
1041 Regulations	*Guidelines and Regulations for Areas and Activities of State Interest*
AC	alternating current
ACHP	Advisory Council on Historical Preservation
AF	acre-foot
APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
Argonne	Argonne National Laboratories
BMP	best management practice
CA	Centennial Archeology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CH_4	methane
Cm	centimeter
CO_2	carbon dioxide
CPW	Colorado Division of Parks and Wildlife
CRS	Colorado Revised Statutes
DC	direct current
Dir.	Director
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electromagnetic Fields
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
Fort Carson	Fort Carson US Army Installation
FR	Federal Register
ft	foot
ft^2	square foot
ft^3	cubic foot
GCC	GCC Colorado Energy Recyclers
gen-tie	generation intertie or generation intertie transmission line
ha	Hectare
HAZMAT	hazardous materials
HMP	Hazard Mitigation Plan
I-25	Interstate 25
I-3	Zoning classification for heavy industrial or manufacturing
ICNIRP	International Commission on Non-Ionizing Radiation Protection
kph	kilometers per hour
kV	kilovolt
kV/m	kilovolt per meter
M	meter
m^2	square meter
m^3	cubic meter
mG	milliGauss
Midway Solar	Front Range-Midway Solar, LLC

Acronym	Meaning
mph	miles per hour
MW	megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
OAHP	Office of Archeology and Historical Preservation
OEM	Office of Emergency Management
OEM	Office of Emergency Management
OHV	off-highway vehicle
OSHA	Occupational Safety and Health
Phase 1	Phase I Environmental Site Assessment
PM10	Particulate matter between 2.5 and 10 microns
PM2.5	Particulate matter less than or equal to 2.5 microns
Project	Front Range-Midway Solar, LLC Interconnection Project
PSCo	Public Services Company of Colorado
PSCW	Public Service Commission of Wisconsin
PV	photovoltaic
REC	Recognized Environmental Condition
ROW	right-of-way
RR-2.5	Zoning classification for rural, single family, and residential dwellings on parcels of approximately 2.5 acres
RR-5	Zoning classification for rural, single family, residential dwellings on parcels of approximately five acres
Sandia	Sandia National Laboratories
SB40	Senate Bill 40
Service	US Fish and Wildlife Service
SGHAT	Solar Glare Hazard Analysis Tool
SHPO	State Historic Preservation Office
SHP Officer	State Historic Preservation Officer
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
Tariff	Open Access Transmission Service Tariff
Terracon	Terracon Consulting Engineers and Scientists
Tetra Tech	Tetra Tech Inc.
UCSUSA	Union of Concerned Scientists of the United States of America
US	United States
USC	United States Code
USDA	US Department of Agriculture
US EPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
UTC	Coordinated Universal Time
WAPA	Western Area Power Administration
WEST	Western Ecosystem Technologies, Inc.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Project Location

The Front Range-Midway Solar, LLC Interconnection Project (Project) is located in El Paso County, Colorado, on private, county, and federally owned lands.

Project Participants

Western Area Power Administration (WAPA), a federal power marketing agency within the US Department of Energy (DOE), is the lead federal agency for the Project under the National Environmental Policy Act (NEPA) review. Front Range-Midway Solar, LLC (Midway Solar) is a private solar development company and the Project proponent.

Purpose and Need

WAPA Area Power Administration's Purpose and Need

WAPA's purpose and need is to consider and respond to an interconnection request from Midway Solar in accordance with its Open Access Transmission Service Tariff and the Federal Power Act. The Open Access Transmission Service Tariff is submitted to and accepted by the Federal Energy Regulatory Commission.

Midway Solar's Purpose and Need

The Purpose of the Project is construct, operate and maintain a 100-megawatt (MW) photovoltaic solar facility to provide clean, cost effective, renewable energy. The need for the Project was established by multiple factors including local, state and federal statues and directives including Colorado's renewable energy standard ("RES") statute (Section 40-2-124, C.R.S.). The state of Colorado passed the RES in 2004, which requires electricity providers to obtain a minimum percentage of their power from renewable energy sources. This project would aid in meeting the stated requirements of the Renewable Energy Standard for the state of Colorado.

Summary of Environmental Consequences

The following resources were considered but were not further evaluated as these resources would not be impacted by the proposed Project: prime or unique farmland, floodplains, wetlands and riparian zones, recreation, rangelands, and environmental justice.

A summary of the environmental consequences resulting from the Proposed Action, the proposed Project for each resource analyzed is listed below:

Land Use

WAPA's Proposed Action would be limited to their existing substation and right-of-way (ROW). WAPA's actions would not affect land use near the Project Study Area or in El Paso County on

a larger scale. Continued operation of the Midway Substation by WAPA would have no effect on land use in the Project vicinity or within El Paso County.

Assuming Midway Solar's proposed Project were approved and proceeded with rezoning of the Project Study Area, Midway Solar's proposed Project would comply with county land use codes, plans, and regulations. Operation and maintenance of the proposed Project would not impact the zoned land use near the Project Study Area nor would it affect land use in El Paso County.

Air Quality and Climate Change

WAPA's Proposed Action would generate localized, short-term pollutant emissions from construction equipment during construction of the interconnection facilities. Over the long-term, minimal vehicular emissions associated with maintenance and repair of the Midway Substation would be released. WAPA's Proposed Action would have minimal temporary effects on air quality in the Project study area.

Midway Solar's proposed Project would generate localized, short-term pollutant emissions from construction equipment during construction of the solar and gen-tie facilities. Because of the limited time associated with Project construction and the use of dust suppression practices, impacts associated with construction on air quality would be minimal and temporary.

Midway Solar's permanent impacts to air quality associated with the operations and maintenance (O&M) of the solar facility would be negligible to minimal.

Beneficial long-term impacts to air quality and climate change would occur through the implementation of the proposed Project in that solar development would likely lead to a reduction in the reliance on the production of electricity from pollution-generating fossil fuels. No greenhouse gases are associated with the generation of electricity from solar energy. However, emissions are associated with the manufacturing, transportation of materials, and decommissioning of solar energy facilities (Union of Concerned Scientists of the United States of America [UCSUSA] 2013).

Soils and Geology

WAPA's Proposed Action would be limited to existing disturbances within the footprint of Midway Substation and WAPA's transmission line ROW. WAPA's impacts from the Proposed Action would have a negligible effect on native undisturbed soils.

The construction of the proposed Project would require disruption of the top surface of the soil profile (topsoil). Construction would occur in a phased approach that would help reduce the amount of topsoil that would be exposed to wind and water erosion during construction activities. Midway Solar would incorporate industry standard best management practices (BMPs) to minimize soil erosion potential during construction activities and promote an on-site vegetative community compatible with the proposed solar facility's operation for the duration of operations at the facility.

Water Resources

No surface water resources occur within or near the footprint of WAPA's Midway Substation or transmission line ROW. Additionally, WAPA would implement its Construction Standard 13 guidance manual, specifically Standard 13.11, which outlines measures WAPA is committed to take to prevent spills of pollutants and response procedures if a spill occurs. With no surface water present within the Proposed Solar Facility Area and following protocols identified in Standard 13.11, WAPA's impact to water resources would be negligible.

No surface waters would be impacted by Midway Solar's proposed Project. In the event of a spill or leak during construction or operation, Midway Solar's commitment to a Stormwater Pollution Prevention Plan (SWPPP) and best management practices would minimize impacts to surface and ground water.

Vegetation

WAPA's Proposed Action would be limited to disturbances within the footprint of the Midway Substation and WAPA's transmission line ROW. WAPA maintains a bare earth standard of a 5-foot (ft) bare earth apron around its substations, so no new direct impacts to vegetation would occur within and around Midway Substation. Indirect impacts of introducing weeds to the area would be negligible because WAPA's Construction Standard 13.6 states that WAPA would need to maintains a "clean vehicle policy" while entering and leaving construction areas to prevent the transport of noxious weed plants or seeds. WAPA also employs the use of noxious weed control in and around its facilities.

Temporary, high-level direct impacts would occur in areas that would be graded to achieve proper slope or elevation for solar array installation; and, all vegetative cover would be disturbed in graded areas. These impacts would be considered temporary because graded areas would be revegetated with an approved groundcover seed mix as part of the Midway Solar revegetation plan. Temporary impacts to vegetation would be minimal. However, if weed control were needed, Midway Solar would seek technical assistance from the El Paso County Forestry and Noxious Weed Inspector for determining appropriate noxious weed control methods.

Wildlife

The impacts of WAPA's Proposed Action to wildlife would be negligible. No wildlife habitat occurred at WAPA's Midway Substation as WAPA maintains a bare earth standard within their substations. The disturbance of wildlife would be a temporary negligible effect on wildlife; therefore, long-term impacts on wildlife would not occur.

Impacts to wildlife from Midway's proposed Project includes loss of grassland habitat, displacement and disturbance of individuals, and potential for direct mortality, but such impacts would be minimal since most wildlife are likely to avoid construction activities near the Project area. Long−term, grass and forb cover would likely recover after construction but the quality of habitat would be diminished due to the presence of the solar panels. Small ground-dwelling species might continue to use the habitat available under the panels, but some larger predators, such as raptors, may avoid the Project area. Solar panels would eliminate opportunities for

perching by birds on larger vegetation and shelter for other species. As a result of diminished habitat quality and quantity, species abundance may decline. Birds and bats would likely be impacted directly through collisions with Project structures; however, collision impact on bats and birds would likely be negligible.

Species Status Species

The impacts of WAPA's Proposed Action to species of concern would be negligible. No suitable habitat occurred at WAPA's Midway Substation. The addition of a new 230-kV bay at Midway Substation would not affect any threatened, endangered, or special status species.

The concern over injuries and deaths of special status species at the proposed solar facilities is centered on the theory that the bird species - piping plovers, least terns, and whooping cranes - may potentially mistake the extensive solar arrays for water features on which the birds can land; this theory has been coined the "lake effect hypothesis." Recent studies have concluded that no empirical evidence exists that PV facilities lead to distinct changes to water birds or waterfowl risk or mortality and that additional structured studies of utility scale PV facilities are necessary before a statistically significant conclusions about avian risk and mortality associated with solar facilities can be drawn. The general behavior of terns, plovers, and cranes to land on solid ground or shallow water requires these birds to approach slowly and identify the substrate they will touch upon, which would greatly reduce the potential for these species to impact PV panels. Therefore, even if there is a potential for lake effect hypothesis impacts to occur at Midway Solar's PV solar field, the Project would pose a low risk to least terns, piping plovers, whopping cranes, and other birds.

Cultural Resources

WAPA's Proposed Action would not result in impacts to cultural resources within the Project study area. Additionally, WAPA's Proposed Action would result in no visual impacts to cultural sites within a two-mile (3.2-kilometer) buffer around the substation.
While two cultural sites were identified through a Class III survey of the Project Study Area, measures were proposed by Midway Solar and agreed to by the State Historic Preservation Officer that would protect and preserve the two sites adequately. In adhering to the identified measures, Midway Solar's proposed Project would have no impact to known protected cultural resources.

Visual Resources

The visual impacts associated with WAPA's proposed construction activities would have minimal impact due to both the timing of activities and in that, the construction activities would occur on the south side of the substation while the nearest resident is approximately 0.5 miles to the northwest of the substation. WAPA's Proposed Action would have a negligible to minimal permanent impact to visual resources of the area.

The temporary visual impacts associated with Midway Solar's proposed construction activities would have a minimal impact. Midway Solar's proposed Project would have a minor to moderate permanent impact on the views and visual resources.

Transportation

WAPA's Proposed Action would temporarily impact transportation (traffic) within that Project area as these impacts would only primarily occur during construction of the Project, if approved. Impacts to transportation activities within the Project area would be minimal.

Negligible-to-minimal impacts to traffic would occur through implementation of Midway Solar's proposed Project. The Project would not require improvements to existing transportation facilities nor are any road closures. Midway Solar would construct new or improve existing roads within the Project Study Area that are needed for the proposed Project. No impacts to rail service or air traffic would occur as a result of the Midway Solar's proposed Project.

Public Health and Safety

WAPA's Proposed Action would result in negligible public health and safety impacts associated with electromagnetic fields (EMF), worker safety, or hazardous materials due to the temporary timeframe of construction activities.

The construction phase for Midway Solar's proposed Project would release fugitive dust and vehicle and equipment emission. Dust and exhaust would likely degrade local air quality temporarily during construction. Local sensitive receptors, the elderly, infants and people with pre-existing respiratory issues, may experience additional difficulties breathing as a result of construction. The severity of the impacts would depend on the health of the individuals affected. Construction crews would use water trucks to minimize fugitive dust and equipment would meet emission standards set by the state. In general, the operation of the proposed Project would negligibly affect workers' health and would not place additional demand on police or public emergency resources. Site maintenance and other requisite visits would not result in demonstrable additional vehicle emissions or fugitive dust releases. Electromagnetic Field (EMF) impacts from the proposed Project would be below the International Commission on Non-Ionizing Radiation Protection established magnetic field exposure limits for the general public and workers. No federal or Colorado state laws or policies regulate exposure levels of EMF.

Intentional Destructive Acts

Any electric grid infrastructure can be a target for intentional destructive acts including WAPA's and Midway Solar's infrastructure. While a terrorist attack is possible, destruction due to vandalism or theft is far more probable; however, such potential acts would unlikely have substantial effects on the environment.

For the purposes of this EA, the No Action Alternative would result in the proposed Project not being constructed. Therefore, the impacts on described for each resource would not occur under the No Action Alternative.

1.0 INTRODUCTION

1.1 Background

The WAPA Regional Manager, Bradley S. Warren, determined the scope of the project did not require an Environmental Impact Statement to be prepared, but could be evaluated through an Environmental Assessment (EA) (Warren 2015). WAPA prepared this EA to analyze the environmental impacts of the proposed Project as required under the National Environmental Policy Act (NEPA)

Midway Solar submitted an interconnection request to WAPA to connect a proposed 100-MW PV solar facility (proposed Project) located south of Fountain, Colorado, in El Paso County to WAPA's Midway Substation. The Project Study Area (approximately 1,085 acres) is located between Interstate-25 (I-25) and Fort Carson US Army Installation (Fort Carson), just north of the Midway Landfill, in unincorporated, southern El Paso County, Colorado (Figures 1.1 and 1.2). Of the 1,085 acres studied for the proposed Project, Midway Solar determined approximately 911 acres would be needed for the development and is referred to as the Proposed Solar Facility Area (Figure 1.3). Midway Solar would make the connection to the WAPA substation with a gen-tie transmission line approximately 0.85 mile in length.

Midway Solar has also submitted an interconnection request to the Public Service Company of Colorado (PSCo), who has a substation located adjacent to and east of WAPA's Midway Substation. However, in order to connect the proposed Project with the PSCo substation, Midway Solar's gen-tie line to the PSCo substation would likely cross WAPA owned land. Crossing WAPA's land would require a licensing agreement between Midway Solar and WAPA. Impacts would likely be similar from either gen-tie line. Impacts described in this EA that would result from the proposed Project's construction, operations, maintenance, or decommissioning, would remain the same regardless of which interconnection is made due to the close proximity of both WAPA's and PSCo's substations.

This chapter provides an overview of the proposed project, explains why WAPA needs to take action, details the proposed Project and its purpose and need, and provides the purpose that WAPA is trying to achieve to meet this need. This chapter also describes the public involvement that has occurred related to the proposed Project.

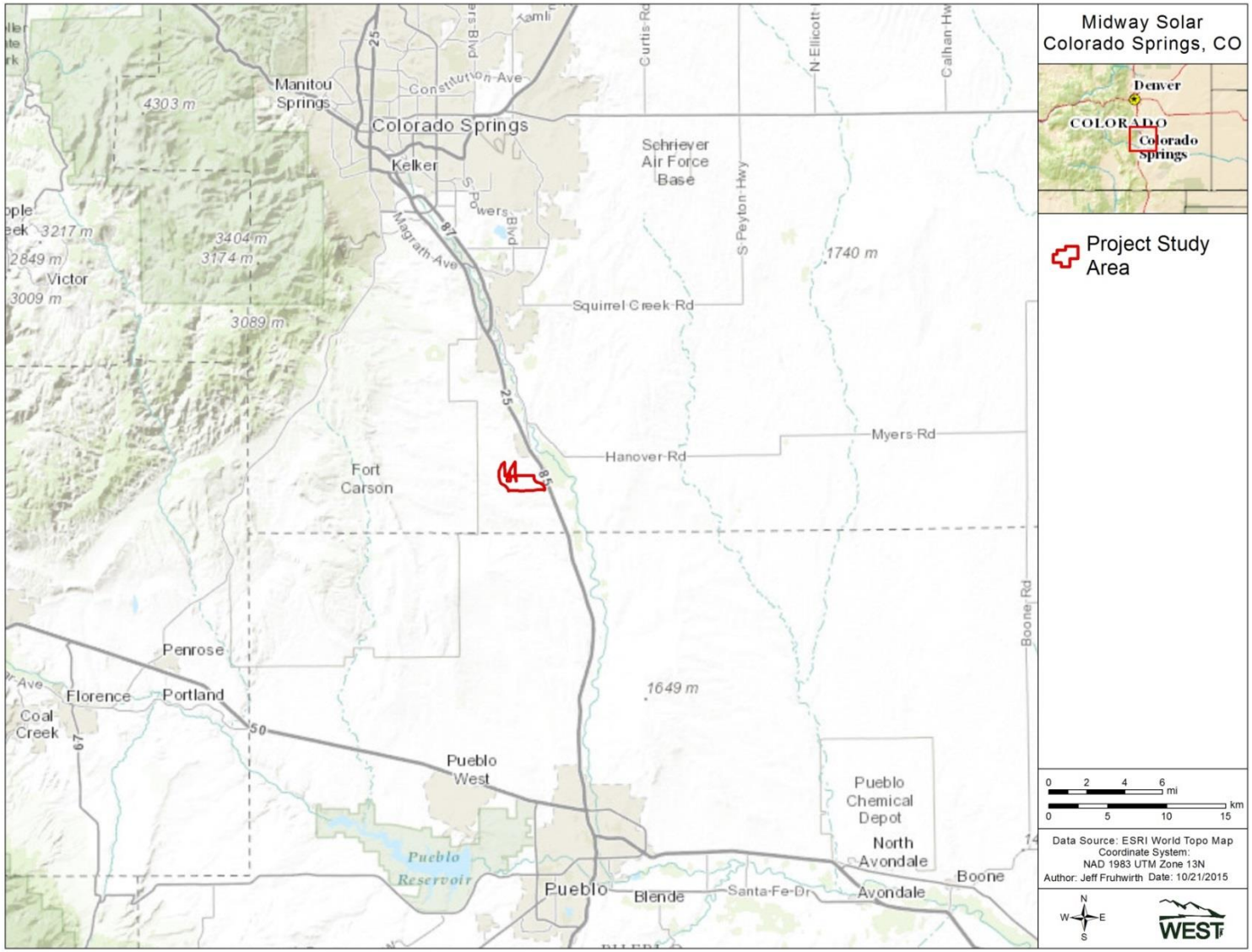


Figure 1.1 Location of the Midway Solar Interconnection Project, El Paso County, Colorado.

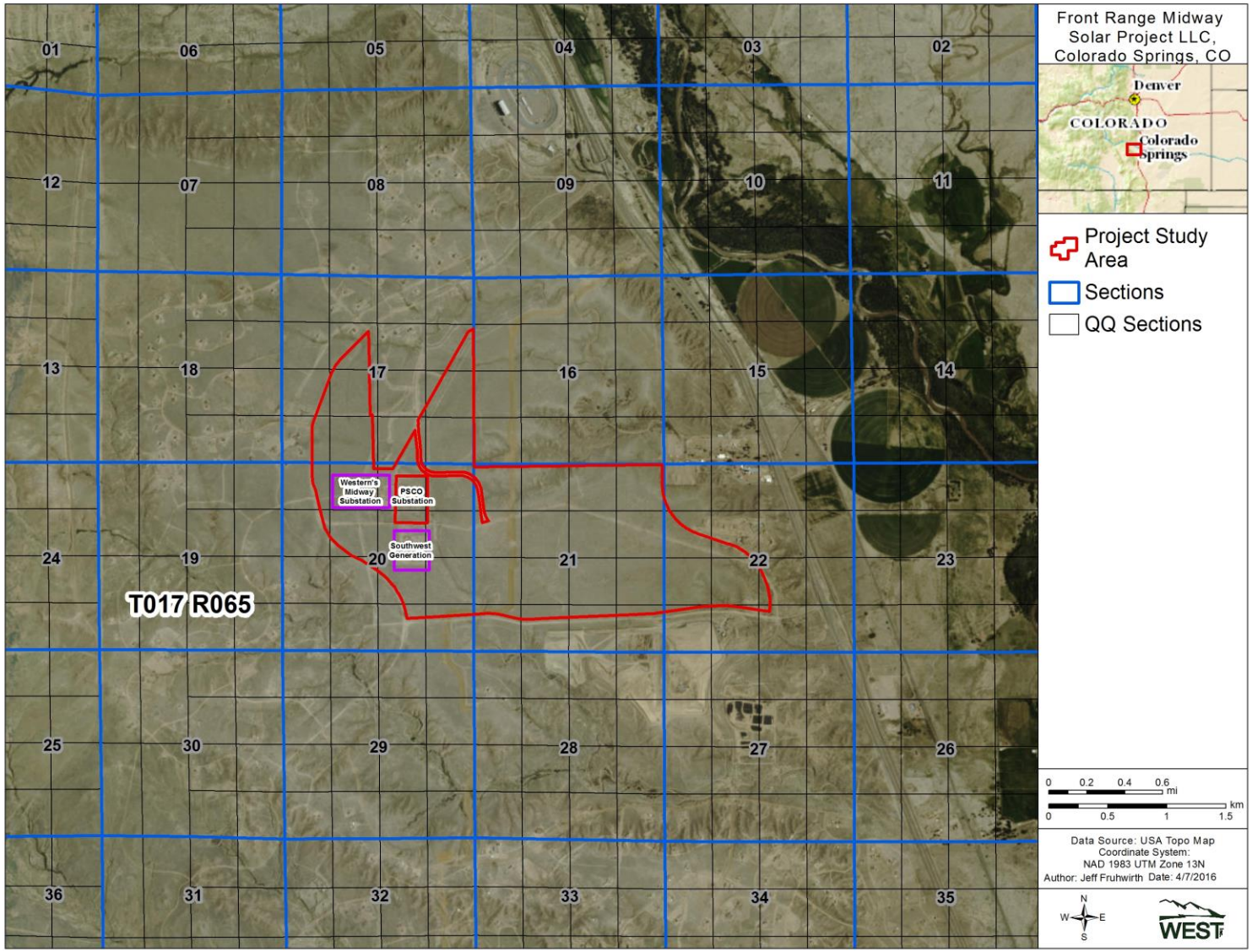


Figure 1.2 Location and study area boundary of the Midway Solar Interconnection Project, El Paso County, Colorado.

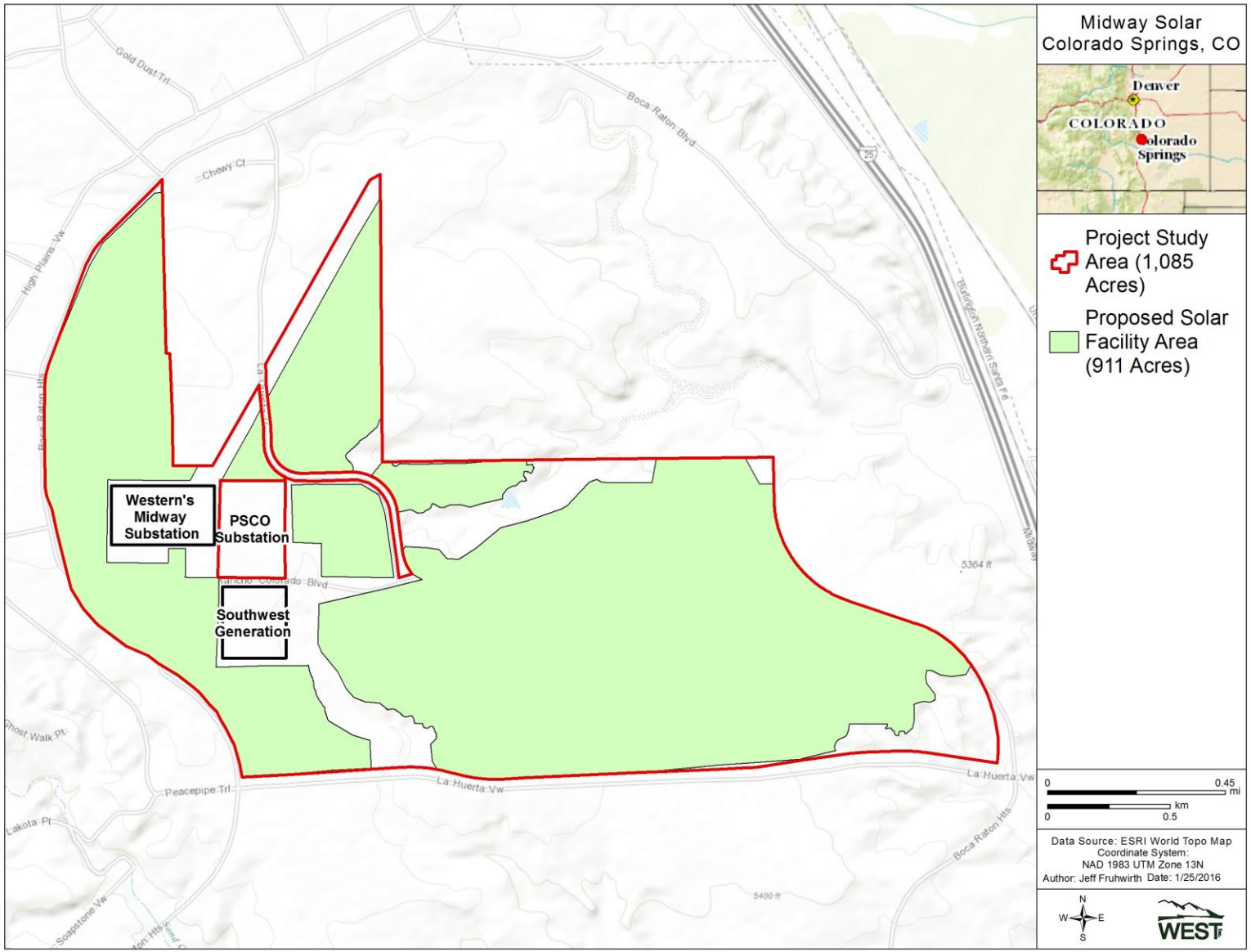


Figure 1.3 The Project Study Area and Proposed Solar Facility Area for the Midway Solar Interconnection Project.

1.2 Purpose and Need

1.2.1 WAPA's Purpose and Need

WAPA needs to consider and respond to Midway Solar's interconnection request in accordance with its Open Access Transmission Service Tariff (Tariff) and the Federal Power Act. Under the Tariff, WAPA offers capacity on its transmission system to deliver electricity when capacity is available. The Tariff also contains terms for processing requests for the interconnection of generation facilities to WAPA's transmission system. In reviewing interconnection requests, WAPA must ensure that existing reliability and services are not degraded. WAPA's Tariff provides for transmission and system studies to ensure that system reliability and service to existing customers are not adversely affected by new interconnections. These studies also identify system upgrades or additions necessary to accommodate the proposed Project and address whether the upgrades or additions are within the Project scope. Lastly, under WAPA's Tariff, WAPA offers interconnection to all eligible customers on a first-come, first-served basis, with a final decision on whether or not to make this offer subject to an environmental review under the NEPA.

1.2.2 Midway Solar Project Purpose and Need

The Purpose of the Project is construct, operate and maintain a 100-megawatt (MW) photovoltaic solar facility to provide clean, cost effective, renewable energy. The need for the Project was established by multiple factors. Colorado has a renewable energy standard ("RES") statute (Section 40-2-124, C.R.S.) requiring 30% of retail energy sales to be derived from renewable generation by 2020 from investor owned utilities, and 10% for large municipal utilities and cooperatives. While some utilities are in full compliance with the RES other utilities have not yet achieved compliance. The Project will allow cost effective solar energy to be delivered to those entities. In addition to the RES, however, other statutory and policy directives, including but not limited to the Colorado Governor's Climate Action Plan, the Environmental Protection Agency's Clean Power Plan, and local initiatives of Colorado rural cooperatives, municipal utilities, and generation and transmission associations are driving an increased need for clean, renewable sources of electricity that the Project intends to meet, in part. The cost of solar continues to decline making it more competitive with other sources of new generation, which has led to utilities procuring solar outside of needs established by mandates and goals.

Initially, Midway Solar planned to develop 1,085 acres within the Study Area for the proposed Project (Figure 1.3). However, portions of the Study Area were found to have existing utility easements; had slopes that were unsuitable for solar development; or contained ephemeral washes that greatly restrained Midway Solar's ability to develop the entire area. Based on these existing conditions, Midway Solar determined that only 911 acres were suitable for Project development. Within this EA, the 911-acre developable area is referred to as the Proposed Solar Facility Area (Figure 1.3) and was evaluated for potential environmental impacts.

1.3 Public Scoping and Tribal Consultation

1.3.1 Public Scoping

Midway Solar voluntarily conducted a public scoping effort to identify any potential concerns with the proposed Project. Midway Solar engaged potential stakeholders near the proposed Project since the early stages of project development and proposed to continue such outreach through project construction, if an interconnection or licensing agreement is approved. In order to solicit comments specific to the Draft EA, Midway Solar, in conjunction with WAPA, sent an informational brochure (Appendix A) to identified stakeholders on August 5, 2015. Recipients of the brochure were determined by their proximity to the Project Study Area and included local residences and businesses. The brochure contained information informing recipients of the proposed Project, the intent to prepare an EA, and the scoping period for comments to be considered as part of the EA. Comments from stakeholders were requested by September 10, 2015. Copies of the brochure were also made available at County offices. No public comments, questions, or concerns were received.

In addition to mailing informational brochures, Midway Solar personally met with several local private businesses in the area including: Southwest Generation, Midway Landfill, GCC Colorado Energy Recyclers (GCC), James Kirkland Aggregate/Quarries, Corvette Center of Colorado Springs, and Cactus Creek Ranch, Table 1.1. Representatives from El Paso County and Fort Carson were also contacted regarding the proposed Project. The purpose of the meetings were to discuss Project details, the preparation of the EA, and to solicit comments and concerns of businesses and affected communities within the Project area for their consideration in the EA. Midway Solar representatives conducted in-person meetings between May 27 and August 25, 2015, which resulted in no expressed opposition to the proposed Project. In general, people expressed interest and support for the proposed solar facility.

Table 1.1 Midway Solar Scoping Efforts.

Organization	Contact	Title	Comments/Concerns
Southwest Generation	Dave Rhodes	VP Business Development	Not opposed to Project; interested in solar development.
Fort Carson	Wayne Thomas	NEPA and Cultural Management Branch Chief	Not opposed to Project; Fort Carson has participated in solar project in the past and is looking to participate in future solar projects.
Fort Carson	Vince Guthrie	Director of Public Works Utility Programs Manager, CEM	
Midway Landfill	Rod Gabol	District Manager for Waste Management	Expressed belief that a large solar project would be a good neighbor and serve as a buffer around the landfill.
Groupo Cementos de Chihuahua (GCC)	Scott Pederson	Site Manager	Expressed belief that a large solar project would be a good neighbor.
El Paso County	Craig Dosey	Project Manager III El Paso County Development Services	Concerns over traffic congestions during construction; concerns over impacts and possible improvements to local roads; concerns over visual

Organization	Contact	Title	Comments/Concerns
El Paso County	Monnie Gore Jr.	Deputy County Administrator	impacts.
El Paso County	Lori Seago	Senior Assistant County Attorney	
El Paso County	Amy Lathen	El Paso County District 2 Commissioner	
El Paso County	Dennis Hisey	El Paso County District 4 Commissioner	
James Kirkland Aggregate/Quarries	James Kirkland	Owner	Would like to provide aggregates for the project.
Corvette Center of Colorado Springs – Cactus Creek Ranch	Ric Noring	Owner	Supportive of solar.

Through discussions with El Paso County and Fort Carson representatives, it was identified that Fort Carson held Contingent Rights to approximately 120 acres of land owned by El Paso County. The Department of the Army has established the Army Compatible Use Buffer (ACUB) Program. The ABUC aims to prevent encroachment that may interfere with the Army's mission on private property that abuts military installations. Therefore, Fort Carson maintains the right of first refusal for any potential development on the approximate 120 acre to ensure any such encroachment would not interfere with the objectives of the Army. The acreage where Fort Carson held Contingent Rights is located on the northwest portion of the Study Area and is subject to a Water Restriction Agreement. Fort Carson obtained the Contingent Rights as a result of Cooperative Agreement W911SR-07-2-0003 (Cooperative Agreement) executed between El Paso County and the United States Army Research Development and Environmental Command on the behalf of Fort Carson and the Army. Terms and conditions of the Cooperative Agreement specified that if El Paso County permits the land to be developed, then the County shall notify Fort Carson and receive written approval from the Army prior to permitting any development action. Neither the Army nor Fort Carson own property rights within the Study Area and therefore there are no additional federal actions or NEPA compliance requirements that need to be considered further. However, a representative from Fort Carson has requested that they be notified once the EA is made public so they can review the EA and determine whether they need to participate in the process if necessary.

1.3.2 Tribal Consultation

As the federal lead agency under NEPA and the National Historic Preservation Act (NHPA) Section 106 review, WAPA initiated government-to-government consultation with Native American tribes to identify locations of traditional or cultural importance within the Project vicinity of the proposed solar facility. Tribes that were contacted included:

- Northern Arapaho Tribe of the Wind River
- Southern Ute Indian Tribe
- Shoshone Tribe
- Ute Mountain Ute Tribe
- Ute Indian Tribe

A representative from the Northern Arapaho Tribe of the Wind River Reservation, Northern Arapaho Tribal Historic Preservation Office requested the opportunity to participate in the cultural resources survey of the site (see Section 3.11); however, the survey had been completed at the time of the request. WAPA and Midway Solar will continue to work with the Northern Arapaho Tribe in the future to address any concerns expressed as a result of their review of the Class III Cultural Resources Inventory report.

1.3.3 Draft Environmental Assessment Outreach

WAPA approved and released the Draft EA for this project on July 19, 2016. Notices were published on July 20, 2016 in the Colorado Springs Gazette and the El Paso County Advertiser and News stating the document was available and requested that comments be submitted by August 19, 2016. The announcements provided a website address where the document could be obtained as well as the contact information for the WAPA Project Manager. No comments were submitted.

In addition, tribes and locally affected individuals were informed through mailings that the Draft EA was available for review and comment. On July 19, 2016, letters were sent to the following tribes:

- Northern Arapaho Tribe of the Wind River
- Southern Ute Indian Tribe
- Eastern Shoshone Tribe
- Ute Mountain Ute Tribe
- Ute Indian Tribe

On July 15, 2016 postcards were sent to the 37 residents within a half-mile of the study area boundary. WAPA received no comments from the tribes or general public.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 WAPA's Proposed Action

2.1.1 Overview

In order to accommodate Midway Solar's interconnection request at WAPA's Midway Substation, WAPA would be required to build a new 230-kV bay within the existing Midway Substation fence line including new communications, metering and protection equipment and new take-off and gen-tie structures to direct the 230-kV transmission line into the new bay. Depending on final design, WAPA may need to alter existing transmission lines entering and exiting the Midway Substation to ensure safe clearances with the proposed 230-kV gen-tie transmission line connecting the substation with the proposed Project. WAPA's federal action would be limited to the construction of electrical infrastructure associated with the Midway Substation, the operation and maintenance of the substation, and implementation of the interconnection agreement.

2.1.2 Proposed Facilities

<u>230-Kilovolt Substation Bay</u>

To accommodate the interconnection between WAPA and Midway Solar, WAPA would construct a new 230-kV bay in an open portion of WAPA's Midway Substation. The new bay would require a 230-kV circuit breaker, 230-kV disconnecting switches, structural steel and foundation, bus-work, take-off structure, and protection equipment. Furthermore, WAPA would run additional communications and control cables within existing substation cable trays between the substation's control building and the new bay. Finally, WAPA would install metering equipment in the control building and at the new 230-kV bay.

<u>Generation Intertie Substation Entry Structure</u>

In order to ensure proper conductor tension and alignment between the proposed 230-kV gen-tie line and 230-kV substation bay, WAPA would construct a gen-tie substation entry structure approximately 200 to 400 ft outside the fenced Midway Substation yard. The gen-tie substation entry structure would be a self-supporting, full tension, dead-end structure aligned with the designated 230-kV substation bay. Less than one acre of disturbance within WAPA's existing right-of-way (ROW), and outside of the existing fence line of Midway Substation, would occur as a result of the gen-tie substation entry structure installation.

<u>Existing Transmission Line Modification</u>

WAPA may need to modify existing transmission lines that enter and exit WAPA's Midway Substation in order to physically and electrically interconnect the proposed Project to WAPA's system. Modification may include, but not be limited to, adjusting existing structure heights to provide sufficient clearance between proposed and existing conductors. WAPA would design and construct these modifications to fit within their existing ROW.

2.1.3 Construction

WAPA's proposed construction would last approximately seven months and employ a construction crew of approximately five to ten people.

The installation of the dead-end structure outside WAPA's Midway Substation has the potential to disturb less than one acre of ground within WAPA's existing ROW. Construction activities that would occur within the Midway Substation boundary would result in approximately one-half acre of ground disturbance. All of WAPA's combined construction activities would require less than one acre-foot (AF) of water to complete. The following equipment would be required to complete WAPA's Proposed Action.

- Backhoe
- Cement mixing truck
- Crane; 25-50 ton capacity
- Flatbed truck
- Front-end loader
- Motor grader
- Puller
- Tractor trailer
- 4-wheeled sedan
- 4-wheeled pick-up truck
- Boom line truck
- Construction trailer
- Dump truck
- Fork Lift
- Man lift
- Bulldozer
- Tensioner
- Tractor with auger
- 6-wheeled pick-up truck (dually

<u>Generation Intertie Substation Entry Structure</u>

As mentioned, WAPA would erect the gen-tie substation entry structure outside the Midway Substation to include a dead-end structure and foundation required to anchor the structure. The structure's location would be surveyed and staked. The foundation would be excavated using an auger. The diameter and depth of the foundation would be determined based on geotechnical investigations and engineering design criteria. After the foundation is excavated, a pre-fabricated anchor-bolt cage would be lowered into the foundation. The excavated foundation, with cage, would be filled with concrete and the surfaces would be finished. After the concrete cured, WAPA personnel or their contractors would then assemble the gen-tie entry pole by anchoring the base piece to the foundation and placing the sequential segments. Insulators and other hardware may be installed on the ground or in place once structure segments are erected.

<u>Bay Take-Off Structure</u>

WAPA would install the bay take-off structure in a similar manner as the gen-tie substation entry structure: stake foundation location; excavate foundations; place anchor bolt cages; fill foundations with concrete; allow the concrete to cure; and, install structure segments.

<u>Conductor between Generation Intertie Substation Entry Structure and Takeoff Structure</u>

WAPA would string conductors between the gen-tie substation entry structure and the takeoff structure. A combination of cable reel stringing trucks, pullers and tensioners, and lifts would pull the ground wire and phase conductors into the insulator attachment points and then clip and tension the cables.

2.1.4 Operation and Maintenance

WAPA's operations and maintenance (O&M) procedures at their Midway Substation would not likely change greatly once the proposed interconnection has been completed. General activities would include checking, testing, and replacing circuit breakers; disconnecting and replacing switches, transformers, or insulators; tightening, replacing, or repairing structures or bus work; or replacing conductors. WAPA would perform these tasks when damage, deterioration, or deficiencies of the substation facilities or transmission lines pose a threat to human life, the environment, or the reliability of the electrical system.

2.1.5 Decommissioning

In the event the proposed Project no longer requires an interconnection with WAPA's Midway Substation, WAPA would decommission the facilities that are no longer essential. Equipment added as WAPA's Proposed Action, would remain in service, except possibly line jumpers. Circuit breakers and switches would stay intact but be placed in the closed position. Protective equipment would remain in place but reprogrammed or recalibrated to reflect the operational change.

2.1.6 Permits and Authorizations

WAPA's Proposed Action would be limited to their existing substation and ROW. WAPA would not be required to obtain any additional permits.

2.1.7 WAPA's Resource Protection Measures

WAPA's Construction Standards, Standard 13 Environmental Quality Protection (Appendix B), would be strictly adhered to during all phases of construction and O&M of WAPA constructed and owned facilities.

2.2 Midway Solar's Proposed Project

2.2.1 Overview

Midway Solar proposed to construct two main but connected components: a 100-MW PV solar facility and the associated gen-tie line to connect their proposed solar facility to WAPA's Midway Substation. The solar facility would be constructed on lands either directly owned by Midway Solar or that which Midway Solar had or would have site control over. The proposed solar facility, which would occupy approximately 911 acres, would be located 8.5 miles south of Fountain, Colorado, and 0.5 mile west of I-25.

As part of initial conceptual planning and siting of the proposed solar facility, Midway Solar identified several criteria that need to be met, including:

- High solar insolation;
- Sufficient and available land to construct a commercial solar facility;
- Proximity to existing electric infrastructure, like substations and transmission lines;

- Proximity to existing roads for adequate construction and operational access; and
- Proximity to infrastructure that would be considered “industrial” in nature.

The National Renewable Energy Laboratory identified Midway Solar’s proposed Project Study Area as possessing approximately 6.0 to 6.5 kW-hours per square meter (m^2) per day average. The Project study area is close to electrical infrastructure (transmission lines and substations) and I-25. Midway Solar owned, and possessed the rights to purchase or obtain lease agreements for a large portion of the land needed for the proposed solar facility. Midway Solar considered multiple other locations in detail.

2.2.2 Proposed Facilities

The proposed Project would consist of ground-mounted PV panels with an anticipated single axis tracking system to allow the solar array to track the sun as the Earth rotates. The proposed Project infrastructure, including PV panels, tracking system, and associated electric power collection system, would occur within the Proposed Solar Facility Area. Midway Solar would establish a light-duty gravel covered service road system throughout the Proposed Solar Facility Area for installation and O&M activities (Figure 2.1).

<u>Solar Field</u>

Various types of solar technology could be utilized on the proposed Project. Polycrystalline panels are very common and widely used on solar projects in various geographies. If polycrystalline panels were used for the Project, the proposed solar array would consist of over 300,000 PV panels on a single axis tracking system supported on steel posts. If other technologies such as thin film were incorporated, more panels would be needed; although the panels are smaller, the same overall area would be occupied by the proposed Project. Solar arrays would be positioned nearly three feet above ground level and extend up to 10 ft in height.

<u>Electrical Collection System</u>

The PV panels would be organized into electrical divisions or blocks. Each block would span approximately 15 acres and be capable of producing 1.67-MW each. Each block would require their own electrical collection equipment, including power inverters to convert power from direct current (DC) to alternating current (AC), switchgear, transformers to step up the low voltage produced in the panels to voltage more efficient for transmitting, and conductors. The size of each block would be dependent on the type and size of inverter and may be subject to change in response to other electrical design factors that may arise.

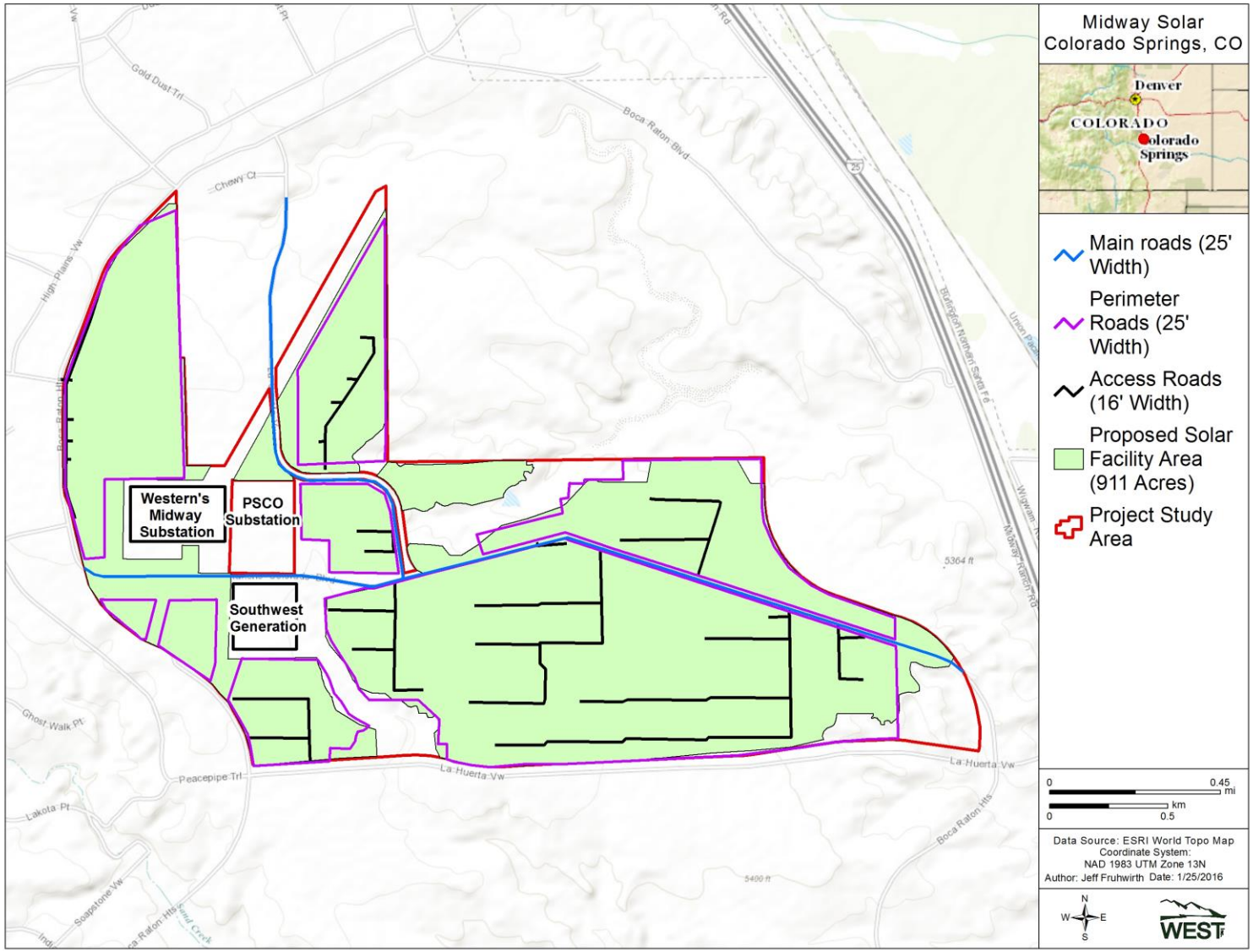


Figure 2.1 Access roads around the perimeter of the Midway Solar Interconnection Project and between solar blocks.

Solar Facility Collection Substation

In general, PV electric generation produces low voltage DC electricity, of which inverters convert the electrical current to AC and finally the transformers step up the voltage to 34.5-kV medium voltage within the solar field. In order to transmit the power more efficiently, the voltage needs to be stepped up further. Prior to conveying the electricity produced to WAPA or PSCo's system, an on-site solar facility collection substation would be required to step up the voltage to 230-kV. The solar facility collection substation component of the proposed Project would require about a three acres and would include, but not be limited to, the following major system equipment:

- 34.5-kV medium voltage bus and associated switching apparatus;
- 230-kV bus and switching apparatus,
- 230- to 34.5-kV transformer,
- Medium voltage capacitors,
- Steel support structures with foundations,
- Grounding grid,
- Control building,
- Security and perimeter fence, and
- Rain or contaminant containment.

Generation Intertie Transmission Line

In addition to the solar facility, the proposed Project would also include building, operating, and maintaining a gen-tie line to connect the proposed solar facility with the electric grid for distribution. The gen-tie line would deliver the generated electricity to either the existing WAPA Midway Substation or PSCo's Substation. The power line, a 230-kV transmission line, would originate at the proposed solar facility collection substation and terminate at WAPA or PSCo's Substation.

Roads, Fencing, and Security

The proposed Project would need approximately 20 miles of access roads around the perimeter of the facility and between solar blocks (Figure 2.1). Midway Solar would utilize these access roads for O&M activities such as equipment inspections, cleaning panels, lubricating tracking equipment, and security patrols. Access roads would be compacted earth or graveled, if needed, to comply with fugitive dust issues.

Site security structures would include perimeter security fencing, controlled access points, signage, lighting and cameras. Perimeter fencing would be 10 ft high and consist of chain-link fence with barbed-wired security strands across the top. Controlled access gates would allow maintenance and security personnel access to all portions of the facilities.

2.2.3 Construction

Midway Solar estimated that phased construction would require approximately 10 months to complete. Midway Solar's construction would occur in phases of approximately 1.67-MW blocks on approximately 15 acres. Peak construction activities may require as many 400 people on site including road construction workers, solar array installation personnel, agency or third party construction monitors and various other subcontractors and support personnel. In general, the average number of personnel would be substantially less. Midway Solar would use traditional earthmoving equipment such as bulldozers, motor graders, disking equipment, compacters, water trucks, cement trucks, and other normal heavy construction equipment. Midway Solar would utilize standard industry BMPs to stabilize soils and minimize dust during construction. Midway Solar would require approximately one AF of water during construction.

Solar Field

Site preparation and construction would require Midway Solar to mow surrounding vegetation. Disking and rolling may be performed across the entire Proposed Solar Facility Area to create a level surface for solar panel installation. Minimal grading and re-contouring of approximately 25% of the site would be performed to provide site access and best utilize the land for solar energy production. Midway Solar would install PV panels on an anticipated single axis, tracking system. The tracking system would be attached to steel support structures with footings embedded below grade. Geotechnical studies would be performed and foundation recommendations made based on existing subsurface soil conditions.

Detailed design layout and construction methods would be developed as part of the final solar facility engineering, however some construction procedures are standard operating practices. The general course of actions for construction of 1.67-MW blocks would include vegetation mowing and removal, disking and rolling, grading as necessary, installation of the AC collection system, installation of the majority of the fencing, installation of posts, installation of the AC and DC collection system, installation of racking, installation of PV panels, and completion of the electrical collection systems. Midway Solar would follow this series of events until the maximum build out for the site has been achieved. Temporary fencing would be installed around active disturbance areas during construction, including parking areas, laydown yards, solar field, and the solar facility collection substation. Permanent fencing would be installed once construction activities have been completed.

Solar Facility Collection Substation

The solar facility collection substation would include a control building, transformers, capacitors, circuit breakers, metering equipment, protection equipment, and other electrical apparatus. The solar facility collection substation equipment would be placed on concrete foundations and the entire yard would have a grounding grid installed below grade.

Generation Intertie Transmission Line

Midway Solar would design and construct a gen-tie transmission line originating at the solar facility collection substation and terminating at WAPA's Midway Substation or PSCo's

Substation. All construction vehicles and material staging would occur within the gen-tie line ROW. Installation of gen-tie line structures would proceed after clearing of the alignment of any excessive vegetation.

2.2.4 Operation and Maintenance

The proposed Project would be designed with a minimum 30-year operational life expectancy. Operation of the solar facility would include periodic maintenance, overhaul, and replacement of facility equipment in general accordance with manufacturer's recommended schedules. Routine cleaning of the PV panels with water would be required to maintain desired system efficiencies. Routine replacement of PV panels would be needed within the 30-year operational life of the facility. After all spare panels have been utilized, any additional panel replacement would potentially incorporate the latest technology that is compatible with the operational systems in place at that time.

Maintenance activities at the solar facility would include periodically checking electrical performance parameters, maintenance of transformers and inverters, vegetation maintenance, dust control, PV panel cleaning, driveway and access road maintenance, and general inspections of the facility. Transformers (which contain mineral oil) and inverters (which may contain cooling fluid) pose the potential to introduce contaminants to the environment. To minimize this potential, Midway Solar would develop a Spill Prevention, Control, and Countermeasure (SPCC) plan in accordance with federal Oil Pollution Prevention regulations (40 Code of Federal Regulations [CFR] 112). Detailed design layout and construction methods of site drainage, retention, and contaminant containment would be identified in the SPCC. The SPCC would be developed and finalized at the time of the final solar facility engineering.

Midway Solar's personnel or properly trained or certified contractors would conduct systematic inspections of the solar facility collection substation and the gen-tie transmission line. Inspection intervals would be set by applicable federal, state, or local regulations and codes specific to electrical utility reliability standards. Inspections may also be based on industry standards that exceed the regulatory guidelines and standards. Infrastructure such as transformers, inverters, gen-tie line structures, and circuit breakers, would be replaced based on manufactures' recommendations or as inspections identify deficiencies in operational standards of the equipment.

2.2.5 Decommissioning

Midway Solar completely expects a full operational life of the solar facility and considers an operational life beyond original design expectations to be a realistic outcome. If individual PV panel output does not produce at threshold levels, PV panels would be replaced. Current industry warrantees range from 20 to 25 years, which coincides with the informal rule of thumb that a PV panel would lose less than 1% of its output per year. However, modern PV panels (produced after 2000) have been tested and appear to have less degradation over time. In any case, prior to end of the 30-year operational life sequence, a percentage of the PV panels would be removed and replaced with the latest available compatible technology that may extend the operational life of the Midway Solar facility. Furthermore, if the facility is viable and demand for

the facility continues into the future, Midway Solar may plan and execute facility upgrades to continue the operation of the solar facility beyond 30 years.

Eventually, the proposed Project would reach a point whereby it would not be a viable operation and would need to be decommissioned. When decommissioning is determined to be appropriate, PV panels, support structures, and electric equipment would be removed from the site. In general, decommissioning and demolition would proceed in four steps:

- Dismantling and demolition of above grade structures;
- Removal of concrete features (slabs, foundations, or below grade walls) to a depth of three ft. below final grade;
- Removal of below grade utilities and support equipment (cable trays, communication cables, or grounding equipment) to a depth of three ft. below final grade; and
- Excavation and removal of soils and final site grading to match the surrounding area.

Where applicable, equipment and materials that are removed would be salvaged, recycled or disposed of in accordance with regulations governing such debris at the time of the decommissioning. Midway Solar does not expect to encounter contaminated soils during decommissioning or through the operational life of the Project. However, in the event that soil contamination is discovered, Midway Solar would conduct soil removal or follow the recommendations produced after a thorough subsurface soils analysis is performed by a third party to meet regulatory cleanup requirements for the protection of soils and groundwater in the vicinity of the proposed solar facility. Furthermore, Midway Solar would backfill any resulting excavation with certified clean fill soils of a permeability and texture determined by geotechnical analysis to closely match surrounding soils and compacted to recommended density. After surface disturbing activities are complete and final grade and contours are established, Midway Solar would revegetate the area with native seed, as appropriate.

2.2.6 Midway Solar's Resource Protection Measures

Industry standard BMPs would be followed to minimize soil erosion and siltation of nearby waterways during any surface disturbing activities on the solar facility or the gen-tie transmission line. In addition, Midway Solar would enact dust control measure during all phases of construction and operation of the Project. Dust control measures would follow the guidelines prescribed by El Paso County or the State of Colorado. Portions of the Project Study Area would be seeded with an approved seed blend. Revegetating the exposed soils would aid in dust and erosion control, but would also minimize the spread of non-native plant species. Midway Solar would also prepare and institute a SPCC plan to limit the potential for on-site contaminants to migrate off site. Finally, Midway Solar would follow any and all environmental-, natural resource-, or cultural resource-based requirements set forth as a condition of any construction or operational permit necessary to build, operate, or maintain the solar facility.

2.2.7 Other Decisions/Approvals Needed

In addition to WAPA's decision described previously, approvals from other governing bodies would be required in order for the solar facility and gen-tie line to be constructed. Midway Solar would need to apply for and obtain a building permit from El Paso County Development Services Department. Design and construction of the proposed Project would be required to follow the El Paso County Land Code, which regulates the use, occupancy, and location, of electric utility infrastructure in the county. Additional permits and authorization may be required at the local and state level. Midway Solar would pursue all additional requisite permits and authorizations once the solar facility engineering and layout design are complete.

2.3 No Action Alternative

Under the No Action Alternative, WAPA would not execute an interconnection agreement with Midway Solar and the Project would not be constructed or interconnected to WAPA's transmission system. WAPA would continue to operate the Midway Substation, however the construction activities associated with the Proposed Action would not occur. Midway Solar could continue to pursue the Project by applying for an interconnection with another transmission provider. For the purpose of this EA, which discusses WAPA's Proposed Action, the No Action Alternative is considered to result in the Project not being constructed, and thus provides a baseline against which the Proposed Action and proposed Project can be evaluated.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS, AND CONSERVATION MEASURES

3.1 Introduction

This chapter describes the affected environments and the environmental impacts of the Proposed Action, proposed Project, and No Action Alternatives. The affected environment consists of the physical area that bounds the environmental, sociological, economic, or cultural resources of interest that would likely have been impacted by the alternatives. The affected environment is described for each resource analyzed based on primary and secondary data sources, and for some resources, field observations. The affected environment also serves as the baseline from which to evaluate likely changes, or impacts (beneficial or adverse) resulting from the Proposed Action, proposed Project, and No Action Alternatives.

Environmental impacts were defined as modifications to the affected environment brought about by implementing the Proposed Action, proposed Project, or the No Action Alternative. Impacts can be beneficial or adverse, result from the action directly or indirectly, and can be short-term, long-term, permanent, or cumulative in nature. The impact analysis was conducted on either a quantitative or qualitative basis, depending on available data or the nature of the impact, and established the severity of impact in the context of the affected environment.

The approach to impacts analysis and descriptions of impact intensity was conducted for this EA. WAPA used an accumulative approach for the impact assessments, which assumed a greater intensity of impacts resulted from a greater change in conditions. Impact intensity in this analysis varied from negligible to minor, moderate, and major impacts. These descriptions of impact intensity primarily evaluated changes in mapped habitat or vegetation communities.

- Negligible: Effects would be at the lowest levels of detection, barely measurable, with no perceptible consequences.
- Minor: Effects result in a detectable change, but the change would be slight.
- Moderate: Effects would result in a clearly detectable change, with measurable effects.
- Major: Effects would be readily apparent with substantial consequences.

3.2 Resources Considered but Not Evaluated

In accordance with NEPA regulations, some resources were eliminated from evaluation because they were not present in or near the Project Study Area and would not be affected by the Proposed Action, proposed Project, or No Action Alternatives (Table 3.1).

Table 3.1 Resources considered but not analyzed.

Resource	Rationale for Exclusion from Analysis
Prime or Unique Farmland	None of the soils that occur in the Project study area were classified as prime or unique farmland[1].
Floodplains	WAPA would not locate features within or impact designated floodplains. No designated floodplains occur within or adjacent to the Project study area[2].
Wetlands/Riparian Areas	No wetlands or riparian areas occurred within the Project Study Area[3].
Wild and Scenic Rivers	No wild and scenic rivers were within or near the Project Study Area. The only river with wild and scenic designation in Colorado is the Cache la Poudre, which was over 100 miles from the Project Study Area.
State or National Parks, Forest, Conservation Areas, or Recreation areas of	No state or national park, forest, conservation, or recreational area exists within five miles of the Project Study Area.
Natural Resources: Timber, Minerals, Fish, and Aquifer	No sufficient water is located on site to sustain fish. No sufficient stands of commercial viable tree are located within the Project Study Area. Known aquifers in southern El Paso County are at a depth of 2,000−4,500 ft. Due to aquifer depth and minimal surface disturbances, impacts to aquifers are highly unlikely. No federal mineral rights are located within the Project Study Area[4].
Recreation	WAPA did not identify any designated recreation opportunities within or near the Project study area.
Rangeland	Midway Solar would fence the perimeter of the Project Study Area, which would exclude livestock grazing opportunities.
Environmental Justice	Residential development adjacent to the Project study area and west of La Questa View was limited to 2.5 acre lots, where existing housing prices average over $200,000; this indicates the Project would not disproportionally affect low income populations. While the nearby community of Fountain has the highest concentration of minorities in El Paso County (15.1% of the population is Hispanic or Latino)[5], the Project would not disproportionally affect any minority population.

[1] US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) 2015
[2] Federal Emergency Management Agency (FEMA) 1997
[3] Western EcoSystems Technology (WEST) 2015
[4]Personal communication with Martin Weimer, NEPA Coordinator Front Range District Office Bureau of Land Management March 31, 2016
[5] El Paso County, no date.

3.3 Cumulative Impact Methodology

3.3.1 Past, Present, and Reasonably Foreseeable Future Actions

Cumulative impacts are those effects that may result from the incremental impacts of an action when added to the impacts of other past, present, and reasonably foreseeable future actions. Cumulative impacts are considered regardless of the agency or person undertaking the other actions and can result from the combined effects of actions that are minor when considered individually over a period of time.

Spatial Boundary of Evaluation

The spatial boundary is the physical area that comprises the region of influence for the cumulative effects analysis. The spatial boundary evaluated for this cumulative effects analysis was defined as those areas in the immediate vicinity, up to one mile, of the proposed Project Study Area and west of I-25 (Figure 3.1). The interstate was considered a limiting factor and large hindrance for the natural flow of resources (i.e., wildlife and vegetation), and therefore was considered the eastern border for cumulative effects. This spatial boundary was chosen to encompass similar existing land uses and zoning as the Project Study Area with the potential to affect similar resources, soil types and geology, cultural resources, vegetative communities, regional air quality, etc., as the Proposed Action and proposed Project. The spatial boundary was defined by land uses rather than by geographic features because of the rural, undeveloped nature of this portion of El Paso County. Including areas beyond the one-mile boundary and east of the interstate would have encompassed lands of significantly different use and resources. The spatial boundary would be the same for the resources evaluated in detail, unless otherwise specified, such as visual resources impacts.

Temporal Boundary of Evaluation

A temporal boundary is the timeframe over which the cumulative analysis occurs. The temporal parameters for this cumulative effects analysis followed the anticipated lifespan of the proposed Project, beginning as early as 2016 with initial construction activities, and included energy production extending out at least 30 years, which is the minimum life expectancy of Midway Solar's proposed Project.

For the cumulative impact analysis, effects of the Proposed Action, proposed Project and other past, present, and reasonably foreseeable future actions were evaluated in context with inventoried resources within the vicinity. A list of past, present, and reasonably foreseeable future activities within the defined spatial boundary and within the temporal limits are included in Table 3.2.

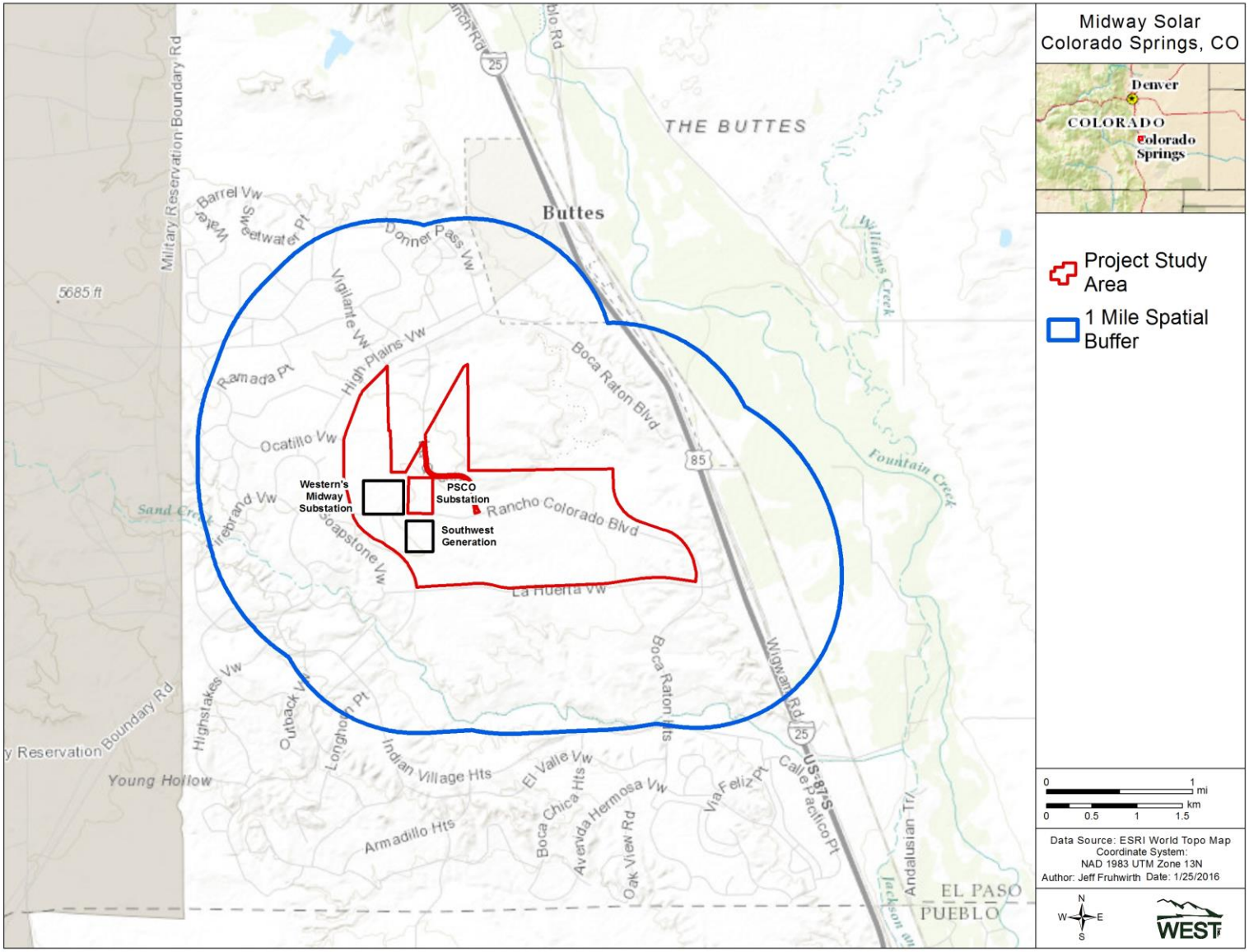


Figure 3.1. Spatial Boundary used for cumulative impacts analysis.

Table 3.2 Past, present, and reasonably foreseeable future actions considered in the cumulative effects evaluation.

Name or Owner	General Descriptions	Type of Activities	Temporal Status
Residential development	Single-family homes and ranchette development.	Grading, excavations, and other ground disturbing activities. Residential wells and septic systems.	Past, present, and future.
Off-highway vehicle (OHV) use	General OHV use.	General recreation.	Past, present, and future
El Paso County Department of Transportation	County road maintenance.	General transportation maintenance.	Past, present, and future.
El Paso County Landfill	Residential waste landfill operations.	Grading, excavation, and other ground disturbing activities. Burial of residential waste.	Past, present, and future.
WAPA Midway Substation	Routine substation operation and maintenance.	General electric utility operation and maintenance.	Past, present, and future.
Public Service Company of Colorado (PSCo) Midway Substation	Routine substation operation and maintenance.	General electric utility operation and maintenance.	Past, present, and future.
Southwest Generation Fountain Valley generation facility	Routine natural gas fueled electric generation operation and maintenance.	General electric utility operation and maintenance.	Past, present, and future.
WAPA transmission lines	Electric transmission line operation and maintenance.	General electric utility operation and maintenance.	Past, present, and future.
PSCo transmission lines	Electric transmission line operation and maintenance.	General electric utility operation and maintenance.	Past, present, and future.
Southwest Generation transmission lines	Electric transmission line operation and maintenance	General electric utility operation and maintenance	Past, present, and future
GCC tire storage.	Storage of used tires for future fuel sources.	Excavation of tire storage pits.	Past, present, and future.
Midway Gravel	Excavation and processing of sand and gravel.	Excavation of gravel and material processing. Storage and hauling of material. Equipment storage, use, and maintenance.	Past, present, and future.
Cactus Creek Ranch	Horse boarding and guest ranch.	Boarding and training of horses with guest facilities. Horse trail rides.	Past, present, and future

Name or Owner	General Descriptions	Type of Activities	Temporal Status
Corvette Center of Colorado Springs	Automotive restoration and sales facility.	General automotive repairs and maintenance. Automotive restorations, performance upgrades, and sales. Storage of automotive fluids, including used oil. Retail sales.	Past, present, and future

3.4 Land Use

3.4.1 Affected Environment

The land uses within the Project Study Area were described as vacant or undeveloped. Land uses near the Project Study Area included residential developments to the immediate west and northwest of the Project Study Area, with Fort Carson further west. Immediately south of the Project Study Area was a landfill operation and undeveloped lands. East of the Project Study Area were gravel quarrying operations and a horse boarding facility with the I-25 corridor approximately 0.25 mile from the southeastern corner of the Project Study Area. The interstate in the area generally stretched from southeast to northwest towards Fountain, Colorado. Lands to the north and northwest of the Project Study Area were generally undeveloped. Some lands in the area had restricted water rights, which minimized the amount of residential development that was possible.

El Paso County Colorado has several land use and land planning policies, plans, and regulations for unincorporated lands. El Paso County Master Plan was a collection of nine small area plans that cover all of the county's unincorporated lands. The county plan that applied to the Proposed Action and proposed Project, the South Central Comprehensive Plan (El Paso County 1988), provided land use policies for these lands in general terms. The Land Development Code of El Paso County implemented the small area plans as the Master Plan for unincorporated portions of the county, and was applicable to buildings, structures and uses of land in those unincorporated area. El Paso County Development Services Department developed and maintained zoning designation maps for the entire county.

El Paso County Development Services Department zoning designation maps were reviewed for land zoning information associated with the Project Study Area. The majority of the site was zoned RR-2.5, a classification defined as rural, single family, and residential dwellings on parcels of approximately 2.5 acres. Parcels in the vicinity of the proposed Project were also zoned RR-5, which includes rural, single family, residential dwellings on parcels of approximately five acres. Generally, lands mapped as RR-2.5 or RR-5 in the Project vicinity were undeveloped and vacant. One exception was a single parcel on the southeast corner of the Project, where an outdoor storage yard was previously established. Finally, a small parcel to the west and south of WAPA's Midway Substation was zoned I-3 for heavy industrial or manufacturing, and supported a Southwest Generation natural gas-fueled electric generation unit.

Chapter 4 (*Special Purpose Overlay and Obsolete Districts, Section 4.3.5*) of the El Paso County Land Development Code identified an overlay district for wind or solar energy generation that would be needed for the Midway Solar's proposed Project. As stated in Section 4.3.5 of the El Paso County Land Development Code (El Paso County 2013), the overlay district was applicable for all zoning but the regulations identify a need for an application to rezone the Propose Solar Facility Area. Furthermore, Appendix B of the Land Development Code, *Guidelines and Regulations for Areas and Activities of State Interest* (also called 1041 Regulations), required County review and permitting for the solar electric generation facility, solar facility collection substation, and gen-tie line, including initial site selection.

3.4.2 Environmental Impacts

Impacts of WAPA's Proposed Action

In order to accommodate an interconnection with Midway Solar, WAPA proposes to construct a new 230-kV bay and associated infrastructure to their Midway Substation. The Midway Substation was already in operation and constructed prior to El Paso County's land use regulations were developed. WAPA would not need to pursue any new zoning overlay or permit to expand its operations in the existing Midway Substation, assuming the upgrades take place within the existing footprint.

WAPA would need to install the gen-tie line entry structure for the 230-kV substation bay. WAPA proposes to locate this structure outside the existing substation footprint, but within WAPA's existing transmission line ROW. The gen-tie line entry structure would not require rezoning; however, the structure may require 1041 Regulation review and permitting. El Paso County 1041 Regulations stipulated that a permit (and presumably County review) is required to construct or locate any electric transmission line and appurtenant facility used to transmit electricity at 115-kV or more voltage within unincorporated El Paso County. As WAPA's Proposed Action would be limited to their existing substation and ROW, WAPA's actions would not affect land use in the vicinity of the proposed Project or in El Paso County on a larger scale and a permit would not be required. Continued operation of the Midway Substation by WAPA would have no effect on land use in the Project vicinity or within El Paso County.

Impacts of Midway Solar's Proposed Project

The lands in the Project vicinity were zoned RR-2.5, RR-5, or I-3. All three zoning designations would allow for a solar electric generating facility; however, Midway Solar would be required to file for rezoning for a solar energy generation plan overlay district with El Paso County. Midway Solar would also be required to conform to El Paso County 1041 Regulations for the siting, construction, and operation of the solar facility.

Midway Solar would proceed with permitting and application for rezoning of the Proposed Solar Facility Area, and the proposed Project would comply with El Paso County's land use codes, plans, and regulations. The development of parcels zoned rural residential and industrial lands would remove these parcels from future residential or industrial uses. The conversion of rural residentially-zoned lands would have negligible to possibly minor effects on land use in the vicinity of the Project. Though hundreds of additional acres of RR-5 zoned lands are available in

the area, there are no additional RR-2.5 zoned lands in the vicinity. Operation and maintenance of the proposed solar facility would not impact the zoned land use in the vicinity of the proposed Project, nor would it affect land use in El Paso County.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the land use impacts associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

The proposed Project and other past, present, and reasonably foreseeable future projects would result in the removal of lands available for other uses. The overwhelming majority of the lands in the area were zoned rural residential with a density of one home site every 2.5 acre or 5.0 acres. Heavy industrial and agricultural zoned lands also existed in the vicinity. The Southwest Generation natural gas-fueled electric generation facility occupied portions of the heavy industrial zoned lands, as mentioned above. Agricultural zoned lands in the immediate area were used for the landfill operation to the south, a used tire storage facility to the southeast, and a horse boarding facility and automotive restoration and sales facility on the east edge of the Project Study Area. Past and present actions have previously shaped the zoning and land use of the area. Future actions will likely remove land from potential other uses, but would not influence future land use or the zoning of land in the vicinity of the Proposed Action or proposed Project study area or El Paso County.

3.5 Air Quality and Climate Change

3.5.1 Affected Environment

Air Quality

The Clean Air Act (CAA) requires the US Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS; see US EPA 2012a) for six criteria pollutants: ground-level ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter (PM10 [Particulate Matter between 2.5 and 10 microns in size] and PM 2.5 [Particulate Matter less than or equal to 2.5 microns in size), and lead. These standards regulate the amount of contaminants in the air due to all sources. The EPA designates areas that do not meet the NAAQS as nonattainment areas, and provides a specified amount of time to achieve compliance (US EPA 2012b). The EPA gives special protection to certain areas from air quality degradation through the use of more stringent requirements. The EPA designates these areas as Class I and includes some, but not necessarily all, national parks, monuments, wilderness areas, and certain tribal lands (US EPA 2012b).

The EPA designates most areas within the US as Class II, meaning standard pollution control requirements apply. The Project Study Area was within a designated Class II area. According to the Colorado Department of Public Health and Environment, sources of air pollution within a 6.2-mile radius of the proposed Project included: Midway Sand and Gravel (particulate matter), Colorado Energy Tire Recyclers (particulate matter), Midway Landfill (particulate matter, carbon

monoxide, and volatile organic compounds), and Fountain Valley Power (particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and volatile organic compounds). Other sources of air pollution near the Project Study Area included vehicles traveling along I-25 and the many miles of unpaved roads.

Climate

El Paso County has a generally mild climate, with an average of 17 inches (43 centimeters [cm]) of precipitation per year and low levels of humidity. Most of the precipitation occurs from late-April to late-September. Summer precipitation on the Colorado plains occurs largely from thunderstorms and the precipitation is sometimes extremely heavy. Strong winds occur frequently in winter and spring. The Rocky Mountains to the west intercept much of the precipitation from Pacific storms during the winter. On average, there are 247 sunny days per year in El Paso County. The July high is approximately 83 degrees Fahrenheit (°F; degrees Celsius [°C]) and the January low is 15 °F (-9.4 °C).

Climate Change

The EPA agrees with scientific research that human activity has changed the composition of the Earth's atmosphere as greenhouse gases including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons have been on the rise. All of these greenhouse gases have heat-trapping properties (US EPA 2013). Throughout Colorado, no consistent long-term trends in annual precipitation have been detected as variability of precipitation is high, which makes detection of trends difficult. Climate model projections do not agree whether annual mean precipitation would increase or decrease by mid-century (Lukas et al. 2014). Climate models, however, predict Colorado would warm by 4 °F (-15 °C) by 2050, relative to the 1950-1999 baseline (Lukas et al. 2014).

3.5.2 Environmental Impacts

Impacts of WAPA's Proposed Action

WAPA's Proposed Action would generate minimal, localized, short-term emissions from vehicles and equipment during construction of the interconnection facilities. Over the long-term, minimal vehicular emissions associated with O&M of Midway Substation or its transmission lines would be released. WAPA's Proposed Action would have minimal temporary effects on air quality in the Project Study Area and El Paso County.

Impacts of Midway Solar's Proposed Project

The proposed Project would generate minimal, localized, short-term emissions from vehicles and equipment during construction of the solar and gen-tie facilities. Localized short-term dust pollution from ground-disturbing activities associated with construction is likely, but would not affect ambient air quality attainment status designated by the EPA. Midway Solar plans to use water for dust abatement during construction, and construction vehicles and equipment would have state-required air emissions control devices. Because of the limited time associated with proposed Project construction and the use of dust suppression practices, impacts associated with construction on air quality would be minimal and temporary.

Over the long-term, minimal vehicular emissions associated with O&M would be released. The O&M vehicles and equipment would have state-required air emissions control devices. Permanent impacts to air quality associated with the O&M of the solar facility would be negligible to minimal.

Beneficial long-term impacts to air quality and climate change would occur through the implementation of the proposed Project in that solar development would likely lead to a reduction in the reliance on the production of electricity from pollution-generating fossil fuels. No greenhouse gases are associated with the generation of electricity from solar energy. However, emissions are associated with the manufacturing, transportation of materials, and decommissioning of solar energy facilities (Union of Concerned Scientists of the United States of America [UCSUSA] 2013).

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore air quality and climate impacts associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

In general, the extent of cumulative impacts on air quality depends on emission source characteristics, pollutant types, emission rates, and meteorological and topographic conditions. For the proposed Project, the air pollutant emissions would primarily occur during construction. The potential for Project-related air quality effects, combined with air quality effects from other nearby sources, would be short-term and minimal.

3.6 Soils and Geology

3.6.1 Affected Environment

The proposed Project was located within the Colorado Piedmont, a sub-province of the Great Plains Physiographic province (USDA NRCS 2015). The surficial soil deposits mapped within the boundary of the Project Study Area consisted of eolian deposits, older gravels, and alluviums of Quaternary age, approximately 2.6 million years old to present (USDA NRCS 2015). The dominant soil series within the Project Study Area was the Wilid silt loam soil unit, which forms as windblown deposits on plains and between stream valleys. Approximately 71% of the Project Study Area was covered in this very deep and well-drained soil type (USDA NRCS 2015). Wilid soils on site were generally described as being on slopes of zero to 8% and as had a moderately high-to-high hydraulic conductivity. Within a 2-mile radius of the Project Study Area, the Wilid soil series was found to be the dominant soil type present, covering approximately 22% of the land area (USDA NRCS 2015).

The Fort soil series comprised the second largest soil type mapped in the Project Study Area with around 15% coverage (USDA NRCS 2015). Fort soils were also very deep, well-drained soils with a moderately high hydraulic conductivity. Fort soils within the Project Study Area were generally found in flat areas of the 1% to 5% slopes on the east, south, and central portions (ibid).

The third-most common soil series in the Project Study Area was the Kim series (USDA NRCS 2015). Kim soils were well drained and considered very deep and moderately permeable. Kim soils were also found in relatively flat (1% to 8% slope) areas in the northeastern and southeastern portions of the Project Study Area. Kim soil series only composed about 7.5% of the surficial soils on the Project Study Area, but made up nearly 16% of soils within two miles (ibid).

The final surface soil mapped on-site was the Schamber-Razor complex (USDA NRCS 2015). This soil complex was found on the steep banks (8% to 50% slope) of erosion features and ephemeral washes in the Project Study Area (ibid). These well-drained soils covered about 5.5% of the Project Study Area and approximately 11% of the area coverage within two miles of the proposed solar facility (ibid).

Soil disturbances near the Project Study Area were the result of road grading, residential, commercial, and industrial development and activities. Graded roads in the Project Study Area included Rancho Colorado Boulevard, La Huerta View, Boca Raton Heights, and La Questa View. There were three existing electrical infrastructure facilities in the proposed Project vicinity, including WAPA's Midway Substation, a PSCo substation east of WAPA's Midway Substation, and a small peaker generation facility owned by Southwest Generation to the south of the PSCo substation. On the northeast corner of the Project Study Area a single parcel contained a horse boarding facility and an automotive maintenance, restoration, and sales operation located on the west frontage road of I-25. This single parcel was identified by El Paso County Assessor's Office as having at least 38 permitted improvements on the property, including but not limited to: an automotive center, numerous utility buildings, livestock barns/sheds, horse arenas, residential dwellings, offices, and stables. Between the proposed Project and I-25 was a small-scale quarry operation just north of Rancho Colorado Boulevard. The quarry operations appeared to be directly influencing approximately 37 acres of the 152.77-acres parcel. South of the proposed solar facility was the Midway Landfill and GCC's used tire storage facility. GCC appeared to have disturbed approximately 43.5 acres as part of their used tire storage operation, while Midway Landfill had impacted over 260 acres. Further south beyond the landfill and to the west and northwest were numerous rural residential lots, both vacant and occupied, with associated dirt roads.

An area of disturbance and debris had been documented near the intersection of Rancho Colorado Boulevard and La Huerta View near the southeast corner of the Project Study Area. This area was identified as a former outside storage facility and included a dirt road, abandoned vehicles and trailers, soil stockpiles, and debris. Two Phase I Environmental Site Assessments (Phase I) were performed by Terracon Consulting Engineers and Scientist (Terracon) in support

of Midway Solar's proposed solar facility, included the area of disturbance. Terracon identified four potential Recognized Environmental Conditions (RECs) in the area of disturbance and recommended "additional investigation to evaluate and characterize the identified RECs" (Terracon 2014). Recognized environmental conditions identified included gold mill tailings, stained 5-gallon buckets and 55-gallon drums, piles of building debris, and piles of unknown debris. Midway Solar intends to avoid the area for development of the proposed Project.

3.6.2 Environmental Consequences

Impacts of WAPA's Proposed Action

WAPA's Proposed Action would be limited to existing disturbances within the footprint of Midway Substation and WAPA's transmission line ROW. Because of this, WAPA's Proposed Action would have negligible, if any, effect to native undisturbed soils. WAPA maintains a bare-earth standard within, and a 5-ft bare earth apron around, their substations, so impacts to soils would not occur within Midway Substation. Ground disturbance associated with the installation of WAPA's gen-tie substation entry structure within their existing ROW would likely minimally affect soil resources by slightly increasing the exposure of less than an acre of soil to water or wind erosion.

Impacts of Midway Solar's Proposed Project

The construction of the proposed Project would require disking and rolling of the entire Proposed Solar Facility Area, which would result in disrupting the top few inches of the soil profile. Construction would occur in a phased approach that would reduce the amount of soil that would be exposed to wind and water erosion at any given time during construction activities. Midway Solar would incorporate industry standard BMPs to minimize soil erosion potential during construction activities and promote an on-site vegetative community compatible with the proposed solar facility's operation for the duration of operations at the facility. This may include the use of dust palliatives, the implementation of an integrated vegetation management strategy, or other techniques and technologies that are readily available.

Midway Solar's construction traffic, including passenger vehicles and heavy equipment, may cross all portions of the Proposed Solar Facility Area during construction, damaging or destroying plants and compacting surface soils. Soil compaction may occur prior or post disking and rolling; however, the natural climatic and geologic cycles would return soil conditions to their natural state over the course of time after construction is complete. Soils within the Proposed Solar Facility Area that would not be disturbed tend to be at least slightly plastic and sticky, minimizing the potential for wind erosion; these same soils are also generally well drained, minimizing the risk of runoff during periods of rain (USDA NRCS 2015). Additionally, areas that would be graded or disked to achieve acceptable surface or proper elevation for solar array installation and associated equipment operation would be revegetated with an approved ground cover seed mix as part of the Midway Solar's revegetation plan. Since proposed construction would occur in less than one year, Midway Solar would use industry standard BMPs to stabilize soils to allow time for revegetation of disturbed areas to occur. Initial soil stabilization practice may include use of hydro mulch or erosion control mats. The BMPs would be decided once final engineering and Project layout has been determined. Total area with the potential to be

temporarily disturbed by construction activities, the Proposed Solar Facility Area, is approximately 911 acres. Areas of permanent impacts to soils include O&M access roads, solar array pylons or posts, gen-tie line structures, and the area of disturbance for the solar facility collection substation, and account for approximately 52 acres.

Areas identified within Phase I reports on the southeast corner of the Project Study Area and that have possible RECs would not be disturbed. Current preliminary site layouts and future final designs would only utilize this portion of the Project Study Area for access via Rancho Colorado Boulevard.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts to soils associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

The area of cumulative analysis for soil resources includes the soil map units associated with the Project Study Area. Past, present, and reasonably foreseeable future projects within the region would likely add to cumulative effects to soil resources, though impacts to soil resources are generally localized and do not result in regional cumulative effects. Soil types and conditions vary significantly over short distances, effectively limiting the geographic range of impacts on soil resources. The implementation of the proposed Project along with other past, present, and reasonably foreseeable future projects would have minimal cumulative impacts to soil resources.

3.7 Water Resources

3.7.1 Affected Environment

Water resources were very limited within the Project Study Area. An on-site survey for waterbodies was conducted to determine if any waterbodies regulated under the Clean Water Act (WEST 2015) were present. Areas were investigated that would likely, topographically, drain water but none of these drainages had physical features of flowing water, such as a bed, bank, or ordinary high water mark. One drainage was dammed to create a stock pond in the north-central part of the Project Study Area (Figure 3.2). The stock pond contained water at the time of the survey, as well as an unvegetated, muddy shoreline (Figure 3.3). No other surface water features occurred in the Project Study Area.

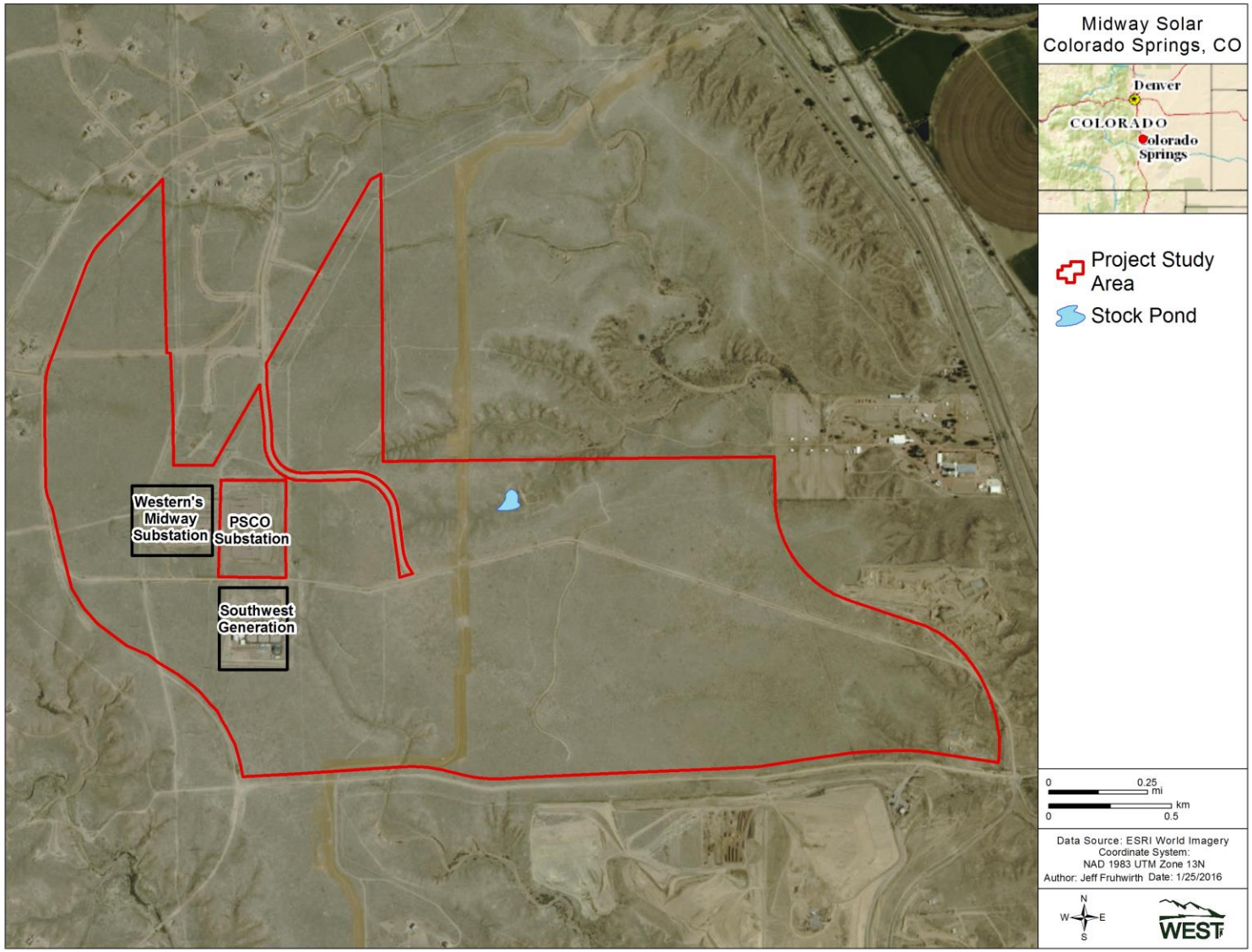


Figure 3.2 Location of a dammed waterway in the proposed Midway Solar Interconnection Project.

Figure 3.3 Stock pond at the proposed Midway Solar Interconnection Project.

According to the US Geological Survey (USGS) topographic map for the area, the nearest named drainage, located south of the Project Study Area, was Sand Creek. Sand Creek flows east to Fountain Creek, which flows to the south along the east side of I-25 to Pueblo, where it joins the Arkansas River.

According to the Phase I Environmental Site Assessments conducted for the proposed Project, the estimated depth to first occurrence of groundwater in the Project Study Area was 20 to 40 ft deep (Terracon 2013, 2014). The Web Soil Survey reported the depth to water table as “more than 6.5 ft” for the four soil series that occurred in the Project Study Area (USDA NRCS 2015). The hydrogeological gradient (i.e., the groundwater flow direction) was inferred to be parallel to the topographic gradient, which is primarily to the east. El Paso County Policy Plan (EPCPP) identified these shallow first occurrences of ground water as sporadic and not proven to be dependable sources of water. The EPCPP suggested that reliable aquifers in the Project Study Area are only available at depths of 2,000−4,500 ft (El Paso County 1997).

3.7.2 Environmental Consequences

Impacts of WAPA’s Proposed Action

Because no surface water resources were located in or near the footprint of WAPA’s Midway Substation and transmission line ROW, no surface waters would be impacted. In the event of a spill or leak during construction or operation of the substation, impacts to groundwater would be

unlikely because the depth to groundwater is at least six ft, and potentially up to 2,000 to 4,500 ft. WAPA also abides by their Construction Standard 13, Environmental Quality Protection (Appendix B). This Standard, specifically Standard 13.11, outlines measures that WAPA would commit to take to prevent spills of pollutants and respond immediately if a spill occurs. With no surface water observed within or near the footprint of WAPA's Midway Substation or transmission line ROW and the implementation of BMPs, impacts to water resources would be negligible.

Impacts of Midway Solar's Proposed Project

The documented stock pond located within the Study Area was excluded from the Proposed Solar Facility Area due to its slope. Because no other surface water resources were documented within the Proposed Solar Facility Area, no surface waters would likely be impacted due to Midway Solar's proposed Project (Figures 1.3 and 3.2). Midway Solar estimated use of up to one AF of water during construction. The primary use for this water would be for dust control; therefore, none of this water would enter or impact waterbodies in or near the Project Study Area. Areas where the topography would allow water to drain from the Project Study Area in the event of a large storm (these areas otherwise have no surface water or physical features of flowing water) have been excluded from development based on their slope (Figure 1.3). Surface runoff from the Project Study Area would likely enter these drainages in response to a large storm event, and potentially reach Sand Creek and waterbodies downstream (e.g., Fountain Creek and the Arkansas River) or the stock pond. In the event of a large storm, surface runoff would contain particulate matter from exposed soil during construction or from dust on the solar panels during operation. In such an event, however, impacts would be minimized by Midway Solar's commitment to BMPs and preparation and implementation of an associated Storm Water Pollution Prevention Plan (SWPPP).

In the event of a spill or leak of a substance that could potentially pollute water resources at Midway Solar's proposed Project, it is likely to have negligible effects on surface or ground water resources. No surface water is present within the Proposed Solar Facility Area and the first occurrences of ground water is at least six ft, and potentially up to 20 to 40 ft below the surface. Furthermore, El Paso County has suggested that the depth to consistent aquifers ranges from 2,000−4,500 ft (EPCPP; El Paso County 1997). Additionally, Midway Solar would implement a SWPPP and BMPs to further minimize potential impacts on water resources.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore any potential impacts to water resources associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

The Proposed Action and proposed Project would not demonstrably impact surface or groundwater, and Project-related impacts would be negligible when added cumulatively to water resource impacts from other past, present, and reasonably foreseeable future actions.

3.8 Vegetation

3.8.1 Affected Environment

The dominant vegetation type found within the Project Study Area was short-grass prairie as indicated by the USGS National Land Cover Database (NLCD). The primary cover type found within the Project Study Area was grassland/herbaceous with a small area of scrub/shrub (USGS NLCD 2011, Homer et al. 2015). The scrub/shrub classification included areas dominated by shrubs less than 16 ft tall with a shrub canopy cover typically greater than 20% of total vegetation. This class included true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions. During a June 10, 2015, site visit, cane cholla (*Cylindropuntia imbricata*) was observed to be common throughout most of the grassland in the Project Study Area, and juniper (*Juniperus scopulorum*) trees were observed scattered in some of the drainages in the northwest portion of the Project Study Area (WEST 2015).

The vegetation observed within the Project Study Area has been affected by past and current land use practices, such as livestock grazing, pipelines, power lines, WAPA's Midway Substation, PSCo's existing substation, and Southwest Generation's power generation station. The roads around and through the Proposed Solar Facility Area also affect the existing vegetation both directly and indirectly (e.g., vehicles often transport seeds, including weedy species). Weedy species were observed along some of the roads and in some of the drainages, notably along La Huerta View along the southern border of the Project Study Area.

3.8.2 Environmental Consequences

<u>Impacts of WAPA's Proposed Action</u>

WAPA's Proposed Action would be limited to disturbances within the footprint of the Midway Substation and WAPA's transmission line ROW. WAPA maintains a bare earth standard within, and a 5-ft bare earth apron around, their substations, so no new direct impacts to vegetation would occur within and around Midway Substation. Indirect impacts, such as the introduction of weed seeds on equipment and vehicles associated with the installation of WAPA's gen-tie substation entry structure within their existing ROW, could potentially occur. However, these potential impacts would be negligible because WAPA's Construction Standard 13.6 states that WAPA maintains a "clean vehicle policy" while entering and leaving construction areas to prevent transport of noxious weed plants or seeds (Appendix B). WAPA transports only construction vehicles that are free of mud and vegetation debris to staging areas and the Project ROW. Furthermore, if weeds become established, Standard 13.6 also provides for noxious weed control in compliance with federal, state and local noxious weed control regulations. If weed control would be needed, an El Paso County Forestry and Noxious Weed Inspector can provide technical assistance for determining appropriate noxious weed control methods. Because of WAPAs bare earth standard and their Construction Standard 13.6, impacts from WAPAs Proposed Action would be negligible.

<u>Impacts of Midway Solar's Proposed Project</u>

The entire Proposed Solar Facility Area would be disked and rolled to accommodate the installation of solar panels. Midway Solar would incorporate industry standard BMPs to minimize

soil erosion potential and promote an on-site vegetative community compatible with the proposed solar facility's operation. This may include the use of hydro mulching, planting cover vegetation, and the implementation of an integrated vegetation management strategy. The entire Proposed Solar Facility Area, 911 acres, has the potential to be temporarily disturbed by construction activities. Areas of permanent impacts to soils include O&M access roads, solar array pylons or post, gen-tie line structures and the area of disturbance for the solar facility collection substation, an area of approximately 52 acres. The area of temporary impacts would be revegetated under Midway Solar's revegetation plan. The revegetation plan along with other BMPs would be determined after final solar facility engineering and layout is complete.

If weed control were needed, Midway Solar would seek technical assistance for determining appropriate noxious weed control methods from an El Paso County Forestry and Noxious Weed Inspector. Temporary, high-level direct impacts would occur in areas that are graded to achieve proper slope or elevation for solar array installation. These impacts would be considered temporary because graded areas would be revegetated with an approved ground cover seed mix as part of the Midway Solar revegetation plan. Temporary impacts to vegetation would be minimal.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the vegetation impacts associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

The proposed Project would contribute minimally to the effects of past, present, and foreseeable future projects, resulting in additional ground disturbance and vegetation loss. Ground disturbance creates opportunity for noxious and invasive weeds, thus weeds in the area would likely increase, along with the cost of their control. Impacts from noxious and invasive weeds would be minimal.

3.9 Wildlife

3.9.1 Affected Environment

Wildlife resources that may occur in the grassland habitat found in the Project Study Area included pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), ground squirrels (e.g., Sciuridae: *Spermophilus* and *Tamius* spp.), snakes, lizards, mice, and black-tailed prairie dog (*Cynomys ludovicianus*; El Paso County 1988). Black-tailed prairie dogs were observed during a habitat assessment conducted in the Project Study Area in June 2015 (WEST 2015). Bird species that could likely occur included raptors, such as Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), great horned owl (*Bubo virginianus*), and golden eagle (*Aquila chrysaetos*); game birds such as pheasant (*Phasianus colchicus*) and quail (e.g., *Callipepla* spp.); and numerous species of song birds (El Paso County 1988).

Habitat within the Project Study Area was relatively undisturbed compared to habitats on adjacent lands, which appeared disturbed by developments such as the landfill, the gravel pit, housing, transmission line and pipeline infrastructure, and others. Activities associated with Project development, such as traffic, also affect the quality of the habitat in the vicinity. The stock pond in the north part of the Project Study Area was likely to attract wildlife, and the scattered trees likely provided shelter or perching opportunities. The prairie dog population, located in the north-central portion of the Project Study Area, likely attracted predators, such as coyotes and raptors, and their burrows had the potential to provide habitat for burrowing owls (*Athene cunicularia*). Potential Project effects to burrowing owl, a state threatened species, is addressed in the following section.

3.9.2 Environmental Consequences

Impacts of WAPA's Proposed Action

The impacts of WAPA's Proposed Action to wildlife would be negligible. No wildlife habitat occurs at WAPA's Midway substation as vegetation there has been previously cleared. However, during construction, noise and activity might temporarily displace individual animals near the Project Study Area. This displacement of wildlife would have a temporary negligible impact on wildlife with no long-term effects on wildlife.

Impacts of Midway Solar's Proposed Project

The impacts of disking and rolling the Proposed Solar Facility Area would temporarily remove habitat for burrowing and ground-nesting species. During construction, wildlife that occupied or used the Project Study Area would likely be displaced. Some individuals that are unable to avoid construction equipment could be harmed or killed, but such impacts would be minimal since most individuals are likely to avoid construction equipment. Although grass and forb cover would recover after construction, the quality of habitat would be diminished due to the presence of the solar panels. Small ground-dwelling species might continue to use the habitat available under the panels, but larger predators would likely avoid the Project Study Area. For example, the panels would prevent raptors from hunting in the Proposed Solar Facility Area. Midway Solar would maintain a plant community that is devoid of taller plants such as cholla and junipers. This would eliminate opportunities for perching by birds, and shelter for small mammals and other species. As a result of diminished habitat quality and quantity, species abundance may decline. Impacts to wildlife from the proposed Project include loss of grassland habitat, displacement and disturbance, and potential for direct mortality.

Birds and bats would also likely be impacted directly through potential collisions with the gen-tie line, solar panels, and other proposed Project structures. The risk of collision is highest during times of poor visibility and near areas where high numbers of birds either take off or land, such as roost sites, ponds, or concentrated food sources. The Project Study Area does not have features that might attract high numbers of birds, except for the stock pond in the northern portion of the Project Study Area. Because the pond has been excluded from development due to its slope (Figure 2.1), birds using the pond are unlikely to collide with Project features. Electrical components can create an electrocution risk to birds. Multiple transmission lines enter/exit the Midway Substation or PSCo substation, and the gen-tie lines would be routed in

the same area. Siting multiple transmission lines near each other can reduce collision risk by creating a greater visual cue for birds and bats to avoid. If the clearance between energized and grounded components on the gen-tie line is greater than the wingspan of birds, the potential for electrocution is greatly reduced (Avian Power Line Interaction Committee [APLIC] 2006). The potential impacts on birds and bats related to collision risk would likely be negligible as a result of existing electrical infrastructure in the vicinity. A more detailed discussion of potential impacts with solar panels and potential "lake effect hypothesis," is included in Section 3.10.2 below; however, impacts with solar panels by birds or bats would be minimal.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts on wildlife associated with the Proposed Action and proposed Project as described above would not occur.

Cumulative Impacts

The proposed Project would contribute incrementally to the effects of past, present, and foreseeable future projects on area wildlife. Loss of grassland habitat and disturbance from increased human activity would prompt avoidance of the Proposed Solar Facility Area and surrounding area by some wildlife. The potential impacts on birds and bats related to collision risk would likely be negligible as a result of existing electrical infrastructure in the vicinity.

3.10 Special Status Species

Species that are federally listed as threatened or endangered are protected by the Endangered Species Act of 1973 as amended (ESA, 16 US Code [USC] 1531 et seq.). In accordance with the ESA, projects with a federal action that have a potential effect on federally-listed species or their habitats require a consultation under Section 7 of the ESA with the US Fish and Wildlife Service (Service or USFWS). Effects to candidate species are not required to undergo a Section 7 consultation unless the species becomes listed during project planning and construction.

Colorado state law (Colorado Revised Statutes [CRS] Annotated [Ann.] §§ 33-2-102-106), requires that the State maintain a list of species that have been determined to be endangered or threatened within the State. Colorado State Statute 33 authorizes the Colorado Division of Parks and Wildlife (CPW) to regulate and protect the State's listed wildlife species. Additionally, Colorado Senate Bill 40 (SB40) requires that any state agency obtain a wildlife certificate from the CPW if an agency plans construction or maintenance activities that may impact the bed or banks of a stream or its tributaries (CRS §§ 33-5-101-107).

The Fish and Wildlife Coordination Act (16 USC §§ 661-667e) requires consultation between the agency in charge of the federal action and the CPW as it relates to the conservation of species of concern resources for federal projects that results in changes to specific features of a body of water. State-listed species would also be considered should any consultation occur.

3.10.1 Affected Environment

Special status species evaluated in this EA included federal and state listed threatened and endangered species that had the potential to occur or were known to occur in El Paso County, and state species of special concern (Table 3.3). The list of species evaluated was based on correspondence between Midway Solar, the Service and CPW. In their response letter dated July 29, 2014 (Appendix C), the Service suggested an on-site habitat assessment for federally listed species be completed; this assessment was conducted in June 2015 by WEST for Midway Solar (WEST 2015). The assessment consisted of a survey of the Project Study Area to determine the habitat types present, and if habitats present in the Project Study Area might support listed threatened, endangered, and species of special concern (Table 3.4). The survey was conducted by walking transects and driving roads in and around the Project Study Area and making observations. The substation properties in the middle of the Project Study Area were included in the visual evaluation.

Table 3.3 Federal and state threatened, endangered, and species of special concern listed for El Paso County, Colorado.

Common Name	Scientific Name	State Status[1]	Federal Status[2]
Mexican spotted owl	*Strix occidentalis lucida*	Endangered	Threatened
Arkansas darter	*Etheostoma cragini*	Threatened	Candidate Threatened
greenback cutthroat trout	*Oncorhynchus clarki stomias*	Threatened	Threatened
Ute ladies'-tresses	*Spiranthes diluvialis*	None	Threatened
Pawnee montane skipper	*Hesperia leonardus montana*	None	Threatened
black-footed ferret	*Mustela nigripes*	Endangered	EXP*
North American wolverine	*Gulo gulo luscus*	Endangered	Proposed Threatened
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Threatened	Threatened
least tern	*Sterna antillarum*	Endangered	Endangered
piping plover	*Charadrius melodus*	Threatened	Threatened
whooping crane	*Grus americana*	Endangered	Endangered
pallid sturgeon	*Scaphirhynchus albus*	None	Endangered
plains sharp-tailed grouse	*Tympanuchus phasianellus jamesii*	Endangered	None
burrowing owl	*Athene cunicularia*	Threatened	None
lesser prairie-chicken	*Tympanuchus pallidicinctus*	Threatened	Proposed Threatened
river otter	*Lontra canadensis*	Threatened	None
prairie dog	*Cynomys* spp.	Species of Special Concern	None (black-tailed prairie dog)
swift fox	*Vulpes velox*	Species of Special Concern	None

Common Name	Scientific Name	State Status[1]	Federal Status[2]
mountain plover	*Charadrius montanus*	Species of Special Concern	None
Townsend's big-eared bat	*Corynorhinus townsendii*	Species of Special Concern	None
northern leopard frog	*Lithobates pipiens*	Species of Special Concern	None

* Experimental
[1] Colorado Natural Heritage Program (2014)
[2] USFWS Endangered Species Mountain Prairie Region (USFWS 2015)

Table 3.4 Impacts to sensitive species from WAPA's Proposed Action and Midway Solar's Proposed Project.

Common Name	State Status	Federal Status	Impacts from WAPA's Proposed Action	Impacts from Midway Solar's Proposed Project
Mexican spotted owl	Endangered	Threatened	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
Arkansas darter	Threatened	Candidate Threatened	No impact – potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
greenback cutthroat trout	Threatened	Threatened	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
Ute ladies'-tresses	None	Threatened	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
Pawnee montane skipper	None	Threatened	No impact: the Project is outside of the range of the species and habitat is not present.	No impact: the Project is outside of the range of the species and habitat is not present.
black-footed ferret	Endangered	Experimental	No impact: El Paso County has been block-cleared by the Service[1].	No impact: El Paso County has been block-cleared by the Service[1].
North American wolverine	Endangered	Proposed Threatened	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
Preble's meadow jumping mouse	Threatened	Threatened	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
least tern	Endangered	Endangered	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is a minor collision risk with the substation equipment.	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is a minor collision risk with the gen-tie line and solar panels.
piping plover	Threatened	Threatened	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is a minor collision risk the with substation equipment.	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is a minor collision risk with the gen-tie line and solar panels.
whooping crane	Endangered	Endangered	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is potential for collision with substation equipment.	Unlikely to impact: nesting habitat is not present, but there is the potential for individuals to fly over the Project study area during migration. There is a minor collision risk with the gen-tie line and solar panels.

Common Name	State Status	Federal Status	Impacts from WAPA's Proposed Action	Impacts from Midway Solar's Proposed Project
pallid sturgeon	None	Endangered	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area.
plains sharp-tailed grouse	Endangered	None	Unlikely to impact: preferred habitat features are not present in the Project study area, but individuals have the potential to occur. Potential for collision with substation equipment or vehicles is possible.	Unlikely to impact: preferred habitat features are not present in the Project study area, but individuals have the potential to occur. Potential for collision with Project facilities or vehicles is possible.
burrowing owl	Threatened	None	Unlikely to impact: nesting habitat is not present at WAPA's substation. There is a minor risk of collision with substation equipment or vehicles if individuals occur in the area.	Potential for impact if nesting at the on-site prairie dog town during construction. Compliance with CPW survey protocols and actions would minimize potential for direct impact to nesting owls. There is a minor risk of collision with Project facilities or vehicles if individuals occur in the area. Potential nesting habitat would be lost with removal of prairie dogs and their burrows.
lesser prairie-chicken	Threatened	Proposed Threatened	Unlikely to impact: preferred habitat features are not present in the Project study area, but individuals have the potential to occur. There is potential for collision with the substation equipment or vehicles.	Unlikely to impact: preferred habitat features are not present in the Project study area, but individuals have the potential to occur. Potential for collision with Project facilities or vehicles is possible.
river otter	Threatened	None	No impact: potential habitat is not present in the Project study area.	No impact: potential habitat is not present in the Project study area
prairie dog	Species of Special Concern	None (black-tailed prairie dog)	Unlikely to impact: black-tailed prairie dogs occur near WAPA's substation where Project -related activities would occur, but these activities are unlikely to impact black-tailed prairie dogs.	Likely to impact: black-tailed prairie dogs occur in the Project study area and would be impacted by Project construction. CPW recommends they be either moved alive to another location or humanely killed before earth-moving occurs.

Common Name	State Status	Federal Status	Impacts from WAPA's Proposed Action	Impacts from Midway Solar's Proposed Project
swift fox	Species of Special Concern	None	Unlikely to impact: Project-related activities that would occur at WAPA's existing substation are unlikely to impact swift fox because the substation is fenced and swift fox is very unlikely to occur there.	Likely to impact habitat: the Project study area includes habitat suitable for swift fox, including denning habitat in the prairie dog burrows. Removal of prairie dogs and their burrows would eliminate denning habitat and Project construction would eliminate up to 911 acre of suitable habitat. Individuals would likely be displaced if they occur in the Project study area.
mountain plover	Species of Special Concern	None	Unlikely to impact: Project-related activities that would occur at WAPA's existing substation are unlikely to impact mountain plover because the substation is not suitable habitat. There is a minor risk of collision with substation equipment or vehicles if individuals occur in the area.	Likely to impact habitat: the Project study area has the potential to be used by mountain plover, although the habitat is not high-quality due to vegetative cover and structure. Up to 911 acre of low-quality habitat would be eliminated. Individuals would likely be displaced if they occur in the Project study area, and there is the potential for collision with the gen-tie line and solar panels.
Townsend's big-eared bat	Species of Special Concern	None	Unlikely to impact: roosting habitat is not present in the Project study area. Bats are unlikely to occur at or near WAPA's substation where upgrades associated with the Project would occur because no habitat features exist that are likely to attract them (such as water). There is a minor risk of collision with substation equipment if individuals occur in the area.	Unlikely to impact: roosting habitat is not present in the Project study area. The species is known to occur within a 5-mile radius of the Project and individuals could potentially use the Project study area for foraging or water (stock pond). The stock pond would not be affected by the Project and would continue to provide foraging opportunities and a water source. Impact to bats is unlikely.
northern leopard frog	Species of Special Concern	None	No impact: the Project is outside of the range of the species and potential habitat is not present.	No impact: the Project is outside of the range of the species and potential habitat is not present.

3.10.2 Environmental Consequences

Impacts of WAPA's Proposed Action

The impacts of WAPA's Proposed Action to species of concern would be negligible. No suitable habitat for the species identified above occurs at WAPA's Midway Substation. The addition of a new 230-kV bay at Midway Substation would not likely affect any threatened, endangered, or special status species.

Impacts of Midway Solar's Proposed Project

The concern over injuries and deaths of water birds at solar facilities is centered on the theory that these species may potentially mistake the extensive solar arrays for water features on which the birds can land; this theory has been coined the "lake effect hypothesis." Such collisions, which also occur at features like parking lots and train yards, both of which resemble water bodies at night; often do not result in direct mortality because the angle of the collision is relatively shallow. However, birds may not be able to take off after collisions because they are adapted to take off from water, not dry land, or because they may suffer injuries from the collision. A study of a southern California solar PV facility (Kagan et al. 2014) suggested a link between panel-related impact trauma and predation of birds that make their primary habitat on water. However, Kagan et al. (2014) and other studies (Argonne National Laboratories [Argonne] 2015, WEST 2014) have inferred that the presence of open water ponds in the vicinity of the PV facility may have influenced the results, identifying a smaller percentage of water bird mortality at other solar facilities without open water available to waterfowl and shorebirds. Argonne (2015) further suggested waterfowl that are more dependent on water for their landing surface, such as grebes, coots, and loons, are more likely to be susceptible to collisions with solar panels. Recent studies have concluded that no empirical evidence exists that PV facilities lead to distinct changes in water bird or waterfowl risk or mortality and that additional structured studies of utility scale PV facilities are necessary before a statistically significant conclusions about avian risk and mortality can be drawn (Argonne 2015, WEST 2014).

The normal habits and behaviors of these birds would likely reduce the tendency for piping plovers (*Charadrius melodus*), least terns (*Sterna antillarum*), and whooping cranes (*Grus americana*) to experience impacts with Project PV panels. The flight behaviors of shorebirds such as killdeer (*Charadrius vociferus*), sandpipers, and plovers, are such that these birds typically use solid ground for their landing and take-off surface, minimizing the risk of traumatic impacts with the PV solar panels due to the lake effect. When plovers do land in water, it is in the shallows, as the bird makes a low and slow approach before making contact with the muddy or sandy bottom of the water body where they are landing. Similarly, gulls and terns generally land and take off from solid ground or the shallows of water bodies. The least tern does have a feeding habit similar to gulls in that the tern will plunge into water to capture small fish; however, least terns identify their prey first and do not blindly dive into the water. The behavior of locating their prey prior to dipping into the water will reduce the potential of least terns colliding with Project panels in attempts to capture prey. Whopping cranes are not dependent on water for landing and take-off. Like other crane species, whopping cranes can often be found feeding in

grain fields and are well adapted to land, loaf, and depart from solid ground. Even when cranes do land on water, their long legs require the crane approach slowly and touchdown in the shallows, with the crane's feet touching the solid substrate below the water's surface as the bird remains standing. The general behavior of terns, plovers, and cranes to land on solid ground or shallow water requires these birds to approach slowly and identify the substrate they will touch upon, which would greatly reduce the potential for these species to impact PV panels. The least tern's general conduct of identifying fish before diving into water to feed will further limit the likelihood of the least turn blindly crashing into the proposed solar arrays. According to CPW, whooping cranes have not been documented in Colorado since 2005. While this is not to say the species is not present in the state, it does support the assumption that if low numbers of whooping cranes are present, low enough not be documented in a decade, then there is likely a very low probability for impacts on whooping cranes as a result of Midway Solar's proposed Project. Finally, as noted in Table 3.4 above, WEST did not observed suitable nesting habitat for least terns, piping plovers, and whopping cranes during visits to the Project Study Area. In general, a low number of waterfowl/shorebird species would use the area near the proposed Project during any part of the year, whether for breeding or during migration. Therefore, even if there was a potential for lake effect hypothesis impacts to occur at the Midway Solar PV solar facility, the proposed Project would pose a low risk to least terns, piping plovers, and whopping cranes, as well as other birds.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts on species status species, including least terns, piping plovers, and whooping cranes, would not occur.

Cumulative Impacts

The Proposed Action and proposed Project would contribute incrementally to the effects of past, present, and foreseeable future projects on habitat loss, including some habitat used by listed threatened, endangered, or special status species. The listed species mostly likely to be affected cumulatively include black-tailed prairie dog, burrowing owl, swift fox (*Vulpes velox*), and mountain plover (*Charadrius montanus*); habitat for these species is present in the Project Study Area. The proposed Project would result in loss of this habitat, and if other past, present, and foreseeable future projects also result in habitat loss for these species, the effect would be a cumulative loss in the general region. All of these species have large ranges, so the cumulative loss of habitat in and near the Project Study Area would not likely affect the status of these species.

3.11 Cultural Resources

This section describes the area of potential effects (APE), as defined in 36 CFR 800.16, for cultural resources and examines the potential effects including damage, loss, degradation, or other disturbance to cultural resources under the Proposed Action, proposed Project and No Action Alternative. The term "cultural resources," refers to broad category of resources that may include prehistoric or historic artifacts, sites, structures (whole or partial), and landscape features such as dams, berms, terraces, or canals. It can also refer to items or places

associated with advancements in technology, science, art, historical figures, or activities. Cultural resources can also reference places or items of significant traditional or religious meaning of a culture or community.

The National Historic Preservation Act of 1966, as amended (NHPA; 16 USC 470 et seq.), declares that historic preservation is a national policy and authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places (NRHP) that includes properties of national, state and local historical significance. It also established the Advisory Council on Historic Preservation (ACHP) and State Historic Preservation Offices (SHPOs). Section 106 of the NHPA requires that federal agencies consider the effects of their actions on *historic properties*, properties that are listed in or eligible for listing in the NRHP; that they consult with the SHPO; and that they afford the ACHP with the opportunity to comment on proposed Project. In addition to the NHPA, a number of other federal regulations afford protection to cultural resources. These regulations include, but are not limited to the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, and Executive Order 13007 of 1996.

For inclusion on the NRHP, a property must meet the criteria set forth within 36 CFR 60.4.

- Criteria A: associated with events that have made a significant contribution to the broad patterns of history; or
- Criteria B: associated with the lives of persons significant in our past; or
- Criteria C: embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
- Criteria D: that yields, or likely to yield, information in prehistory or history.

In addition, a property must maintain its significance through the retention of specific aspects of integrity, such as location, design, materials, setting, workmanship, feeling, and association. In general, properties less than 50 years of age, unless of exceptional importance, are not eligible for listing in the NRHP.

The Colorado Office of Archeology and Historical Preservation (OAHP) and the Colorado Council of Professional Archeologists have produced a series of guidance documents for historic and prehistoric context. The documents suggest pertinent research themes and deficiencies in existing historic and prehistoric databases. Sites possessing traits that may yield information about the identified research themes and that have suitable physical integrity are highly likely to be considered eligible for the NRHP.

3.11.1 Affected Environment

Centennial Archeology (CA) performed an intensive Class III Cultural Resources Inventory of the Midway Solar Project Study Area (CA 2015). The area of the Class III Cultural Resources Inventory investigation was limited to the Midway Solar portion of the Project Study Area as shown in Figure 1.2, excluding existing electrical infrastructure present. The survey resulted in the identification of six sites and 32 isolated finds; all six sites were newly recorded by CA. The isolated finds were considered prehistoric in nature and consisted of either single occurrences or small quantities of debitage. Debitage is defined as the material produced as the result of manufacturing chipped stone tools and lithics reduction. Two sites, 5EP7625 and 5EP7632, were determined by CA to be potentially eligible for listing on the NRHP. However, these two sites needed more data and CA recommended that these sites be avoided by Project activities. The remaining four sites and isolated finds were deemed ineligible by CA for NRHP listing, and CA recommended no further investigation of these items.

At the request of WAPA, an additional 2-mile radial buffer was assessed around the Project Study Area as part of the Class I file review and analysis. This additional analysis was to assess the potential visual impacts to NRHP-listed or potentially eligible cultural resources within two miles of the Proposed Action of WAPA and the proposed Project. This analysis evaluated potential impacts to standing structures or landmarks near the Project Study Area. Results of the additional analysis are discussed below under *Impacts of Midway Solar's Proposed Project.*

3.11.2 Environmental Consequences

<u>Impacts of WAPA's Proposed Action</u>

WAPA's Proposed Action would be limited to the approval of the interconnection, a new 230-kV substation bay within existing footprint of the Midway Substation, and the gen-tie entry structure located outside the substation but within the WAPA's existing ROW. WAPA may also need to modify existing transmission lines entering and exiting the Midway Substation to accommodate the gen-tie line. If this is deemed necessary after final Project design and engineering, WAPA would design and construct any modifications to be within their existing ROW, similarly to the gen-tie entry structure.

Access to WAPA's Midway Substation was not granted to CA for safety reasons and CA was therefore unable to assess the footprint of the substation for the cultural resources investigation. WAPA purchased the land for Midway Substation in 1965, and the substation was constructed between 1965 and 1966. This pre-dates NEPA (signed into law in January 1970), but the construction of the substation may not have pre-dated the NHPA (signed into law in October 1966), therefore it is possible that a cultural resources review and clearance was obtained prior to construction. Furthermore, during the construction of a substation, substantial ground disturbing activities are necessary. Installation of structural foundations for control buildings, bus work, and transformers, cable trays, underground conduits, grounding mesh or grid, and other electrical infrastructure all required some level of ground disturbance. According to CA's Class I records search (C. Kinneer, CA, pers. comm., September 9, 2015), the most recent cultural resources survey that included WAPA's Midway Substation was a 2011 investigation performed

by Tetra Tech, Inc. (Tetra Tech). Tetra Tech's survey report, *Midway to Geesen OPGW Installation Project Class III Cultural Resources Inventory*, suggests only minimal debitage was found near WAPA's Midway Substation. Furthermore, Tetra Tech classified these debitages as isolated finds requiring no further action for Tetra Tech's clients. CA investigated the areas immediately surrounding the Midway Substation, including WAPA's existing transmission line ROW, as part of the Class III inventory which revealed no NRHP-listed or eligible cultural resources within these areas.

Therefore, WAPA's Proposed Action would not result in impacts to cultural resources. Additionally, WAPA's Proposed Action would result in no visual impacts to cultural sites within the 2-mile buffer around the substation as assessed in the Class I file review.

Impacts of Midway Solar's Proposed Project

The Cultural Resource Inventory completed for the Project Study Area documented six sites and 32 isolated finds (CA 2015); sites, 5EP7625 and 5EP7632, were determined to be potentially eligible. CA concluded that the proposed Project's current design, these two sites would not be impacted, so additional testing was not recommended. However, if the Project design changes and either of the sites would be unavoidably disturbed, CA suggested additional testing of these sites be performed to more thoroughly assess potential subsurface archeological deposits for NRHP eligibility.

In general, CA recommended cultural resources clearance for all actions outside the Midway Substation, assuming cultural sites 5EP7625 and 5EP7632 are avoided (C. Kinneer, pers. comm.). However, in the event that previously undocumented cultural resources are encountered during construction, all work would cease in the immediate area, and the items discovered would be protected until a qualified archaeologist can assess their cultural or historical significance.

In letter dated September 11, 2015 (Appendix D), the State Historic Preservation Officer (SHP Officer) concurred with CA findings and conclusions that sites 5EP7625 and 5EP7632 are potentially eligible for listing; however, the SHP Officer requested further information as to how these resources would be preserved in place as simple avoidance of a site is not the same as preservation. Midway Solar proposed the following measures that the SHPO accepted in a letter dated December 1, 2015 (Appendix D):

- A permanent fence would be erected around the boundaries of the solar array facility. Sites 5EP7625 and 5EP7632 would be excluded from the disturbance area with this fenceline.
- No construction or ground disturbing activities would occur within 100 feet of the site boundaries.
- WAPA would provide a map that graphically shows the locations of the proposed permanent fence and sites 5EP7625 and 5EP7632.

- Archaeological monitoring would occur during construction of the facility boundary fence to assure that the sites are not impacted.
- Post construction, the project proponent would instruct their operations and maintenance staff to avoid the buffered site areas.

With these assurances, the proposed Project would have no impact to known protected cultural resources.

In addition to the Class III inventory for the Project, CA analyzed the potential visual impacts to NRHP-listed or potentially eligible cultural resources within two miles of the proposed solar facility (CA 2015). Six resources, including five linear resources (5EP1003.8, 5EP2181.10, 5EP3936.2, 5EP3937.2, and 5EP6911.1) and one prehistoric site (5EP4726) were identified in the visual impact area. However, no standing structures or landmarks were identified in this analysis, so no impacts to these features would occur.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts on cultural resources associated with the Proposed Action and proposed Project would not occur. Midway Solar's agreement to protect two cultural resources sites would also not occur allowing for the possibility of future actions at the Project Study Area to impact these sites.

Cumulative Impacts

The Proposed Action and proposed Project, as described above, would not contribute to the cumulative impacts of cultural resources in the region. Midway Solar would avoid identified cultural features and would work with WAPA and Colorado SHPO to properly preserve two sites located within the Project Study Area.

3.12 Visual Resources

This section addresses the affected environment associated with visual resources, including visual resource management objectives, observation points, and visibility related to the construction, operation, and maintenance of the Proposed Actions and proposed Project. The visual resource analysis addresses the potential visual effects of the Proposed Action and proposed Project on landscape scenic quality and observation points, with respect to distance zones; foreground/middleground (zero to three miles) and background (three to five miles).

The El Paso County South Central Comprehensive Plan was reviewed for general land use regulation and limitation, including visual resources. The South Central Comprehensive Plan identified visual quality as an overall goal for development in this portion of El Paso County (El Paso County 1988). Specifically, the plan called attention to transmission lines and recommends that major visual intrusions should be consolidated as much as possible (El Paso County 1988). The plan further stated that new facilities should be sited to minimize visual effects to existing residential developments or to mountain views (El Paso County 1988).

3.12.1 Affected Environment

Project Setting

The Project Study Area was within the Piedmont Plains and Tablelands level IV ecoregion of the Southwestern Tableland level III ecoregion of Colorado (Chapman et. al. 2006). The Piedmont Plains and Tablelands ecoregion is a vast area of irregular and dissected plains of shortgrass prairie consisting of buffalo grass (*Bouteloua dactyloides*), blue grama (*Bouteloua gracilis*), western wheatgrass (*Pascopyrum smithii*), sand dropseed (*Sporobolus cryptandrus*), sideoats grama (*Bouteloua curtipendula*), and yuccas (Yucca spp.) (Chapman et. al. 2006). Timber Mountain is located 9.8 miles west of the proposed Project with Booth Mountain and Blue Mountain 10.5 miles southwest and 14.5 miles northwest of the Project, respectively. Anthropomorphic influences on the natural landscape include electrical infrastructure, roads, residential developments, I-25, and various agricultural, commercial and industrial developments. These modifications contribute to the aesthetics and visual setting of the Project Study Area.

Residential Views

There were approximately 25 residential viewers dispersed within a mile of the existing WAPA's Midway Substation; all residents were located to the west and north of the substation. Residential viewers were considered potentially sensitive due to long-viewing durations. Typical residences would have relatively level, but screened, views of the new 230-kV bay within the Midway Substation (see Section 2.1.1) due to low vegetation and flat topography observed with the area; however, the existing substation and electrical utility infrastructure would lie between residences and the proposed new 230-kV substation bay. These views of the Proposed Action were considered in the foreground-to-middleground for local residences.

There were approximately 110 residential viewers dispersed within one mile of the Proposed Solar Facility Area with most residents located to the west and north. Residences within one mile of the Proposed Solar Facility Area would have level-to-downgradient or -upgradient, and an unobstructed-to-screened view of the proposed solar facility due to variable vegetation, topography, and existing infrastructure within the 1-mile radius of the Proposed Solar Facility Area. Residential views of the proposed Project were considered in the foreground-to-middleground for local residences.

Travel Route Views

Travelers heading north and south along I-25, at a moderate-to-high rate of speed (I-25 has a 75-mile per hour (mph) speed limit), would have little-to-minimal concern with changes in the landscape as they travel this corridor. Travelers on I-25 would have an obstructed view, if any view at all, of WAPA's Midway Substation or the Proposed Solar Facility Area as a ridgeline generally ran adjacent to the highway at an elevation 40 to 70 ft higher than I-25's pavement grade. There were a few breaks in the ridgeline, such as at Cactus Creek Horse boarding facility, where views of the Proposed Solar Facility Area for travelers may be observed in the foreground-to-middleground; however, at speeds in excess of 70 mph, these views would be very short in duration.

There were several local roads in the vicinity of the Project Study Area (Figure 2.1) including Rancho Colorado Boulevard, Boca Raton Heights, La Huerta View, and La Questa View. Travelers on these roads would have a minimal-to-moderate concern with changes in the landscape, due to travelers' potential exposure to views while traveling at the posted speed limit of 30 mph (El Paso County 1996). Travelers' views of the Proposed Action and proposed Project would vary greatly depending on the individual's driving route and construction or operational phase at the time. Views may be in the foreground to the middleground, unobscured-to-fully screened, and at-grade to above or below grade. The size of the proposed solar facility coupled with over 8.5 miles of local roads in the immediate vicinity, would likely result in visual impacts being variable for local drivers.

The proposed Project would alter the visual character of the landscape by introducing solar panels and associated electrical utility infrastructure to the area. The effects of these changes on the visual environment are described below. The primary viewpoints of the proposed Project would be from residences and vehicle traffic in the vicinity of the Project Study Area.

3.12.2 Environmental Consequences

Impacts of WAPA's Proposed Action

WAPA's proposed construction would occur within the existing substation or transmission line corridors, which would be in general conformance with the South Central Comprehensive Plan's recommendation to consolidate utility infrastructure (see El Paso County 1988). Construction activities would also be temporary, lasting only a few months.

During construction, equipment, generally larger than the average passenger vehicle, would be used at the substation for the installation of proposed equipment. This construction equipment may draw the attention of local residents and vehicle traffic in the immediate vicinity. The closest resident was located approximately 0.5 mile northwest of the substation and topographically slightly upgradient. The new substation bay would likely be installed on the south side of the existing Midway Substation. Furthermore, WAPA's construction would take place during normal business hours, while residents would be at their places of work. With the residents' locations, timing of constructions, and existing substation infrastructure acting as a man-made screen, WAPA's construction activities at the existing Midway Substation would be minimally observed by local residents.

Vehicular traffic near the Project Study Area would be able to view WAPA's construction activities. The closest road to the proposed WAPA construction was Rancho Colorado Boulevard, roughly 0.10 mile south of the substation. La Questa View was approximately 0.26 mile northwest of the substation and Boca Raton Heights was about 0.37 mile west. Vehicles on Rancho Colorado Boulevard would presumably have the best view of construction as they travel on the south side of the substation where the new substation bay would be constructed. Construction at the substation, however, would likely appear to the casual driver and passengers as normal routine electrical system maintenance. Vehicles traveling on either Boca Raton Heights or La Questa View would be over 1,000 ft from the proposed construction and existing substation infrastructure would shield the views. Vehicular observations of the proposed

construction at Midway Substation would be minimal. In general, the temporary visual impacts associated with WAPA's proposed construction activities from either residents or vehicles would be minimal.

O&M practices at Midway Substation would not change measurably because of the proposed additional 230-kV bay. WAPA's proposed new substation bay, associated substation infrastructure and gen-tie entry structure would be located in or immediately adjacent to the existing substation. The proposed new 230-kV substation bay would not be noticeably different in appearance to the general public in comparison to existing substation infrastructure, regardless of their view. WAPA's Proposed Action would result in weak contrast for residential and traveler viewers of the proposed solar facility. The proposed gen-tie entry structure and new substation bay introduced into the landscape would be similar in size, shape, and color to existing structures and would be seen in the context of the existing transmission lines and substation facilities, thus lowering visual impacts. WAPA's Proposed Action would have a negligible-to-minimal impact to visual resources of the area.

Impacts of Midway Solar's Proposed Project

During construction, equipment, generally larger than the average passenger vehicle, would be used to grade portions of the Proposed Solar Facility Area and remove excessive vegetation. In addition, the installation of solar panels and gen-tie line support structures would require specialized equipment to secure these support structures in the ground. Finally, excavation for foundations of solar facility collection substation equipment would require the use of excavation-specific machinery. This construction equipment would likely draw the attention of local residents and vehicle traffic in the immediate vicinity. The closest resident would be less than 300 ft away from the west edge of the Proposed Solar Facility Area with four other residents within 500 ft. Vehicle traffic in the vicinity of the Proposed Solar Facility Area would likely to be able to view the construction activities as Midway Solar intended to extend the proposed solar facility up to road ROWs in the area. Construction would take place during normal business hours, while most residents would also be at their places of work and residential traffic in the area would be light; however, after construction activities end for a day or week, construction equipment would be parked and visible after hours and over weekends. Considering the size of the proposed disturbance and the close proximity of some residents and local roads in the area, a limited number of people may be affected by the change in the view resulting from construction activities. These potential impacts would occur only during construction activities and would be temporary.

Localized impacts on the visual character of the area around the proposed Project would occur from the development of the PV panel fields, substation, and perimeter fencing. The solar field would consist of 8-ft long glass PV panels mounted on steel structures and would be enclosed by 6-ft high chain link fencing with security barbed wire stretched across the top of the fencing. The 3-acre solar facility collection substation would include a number of components, including a control building and approximately 40-ft high steel support structures. From the solar facility collection substation, a 230-kv gen-tie line would interconnect the Midway Solar facility to

WAPA's Midway Substation. For assessing visual impacts, each element of the solar facility is analyzed individually below.

Midway Solar's solar facility collection substation would likely be east of the existing WAPA Midway Substation and PSCo substation. The solar facility collection substation would be three acres in area while the two existing substation encompass nearly 21 acre. In addition, the Southwest Generation natural gas fueled electric generation facility, located to the south of the existing substations, occupies over 11 acres. The solar facility collection substation would be most obvious to travelers on La Questa View, while viewers west of the Project Study Area may not even recognize the new infrastructure through the screening of the existing substations. The solar facility collection substation would be consistent in appearance with infrastructure in the immediate area with no discernable contrast with the surroundings. Negligible-to-minor impacts to the visual resources would result from the solar facility collection substation for both residential and traveler viewers of the proposed Project.

The gen-tie line, as described previously, would be a slightly less than one mile long transmission line connecting the proposed solar facility to WAPA's Midway Substation. The gen-tie line would be located within existing transmission line corridors and in close proximity to existing transmission lines. This co-locating of the gen-tie line with transmission lines complies with the South Central Comprehensive Plan's recommendation to consolidate utility infrastructure (El Paso County 1988). The inclusion of a new overhead power line near existing transmission lines would have a negligible impact on the visual resources of the Project Study Area.

While these developments, the gen-tie line and solar facility collection substation, represent a substantial visual change over existing undeveloped conditions, these changes would likely be viewed as negligible to minimal compared to the altered state of the existing substations, transmission line corridors, and natural gas fueled electric generation facilities in the area. The overwhelming majority of the proposed Project, however, includes the development of 911 acres of solar field. The solar field would consist of 8-ft high glass PV panels mounted on steel structures and would be enclosed by 6-ft high chain link fencing. The proposed solar field would span over two miles east to west and nearly 1.5 miles north to south. The solar field would not be a homogenous rectangle of panels, but would include a large surface area that would be visible for a considerable distance. The solar field would be located in the vicinity of existing electric utility infrastructure, but the size of the solar field would far exceed the current visual limits of the existing infrastructure. Furthermore, solar panels can have a highly reflective surface depending on the technology used for the system. Based on the size of the proposed solar facility, proximity of residents and passenger traffic, and the potential for solar panels to be highly reflective, Midway Solar's proposed solar field would have a minor-to-moderate impact on the views and visual resources.

<u>Glare</u>

Glare can be defined as a semi-continuous and sustained presence of light that may appear to sparkle from viewing locations. The effects of glare can vary from insignificant, momentary

blinding, to temporary seeing spots or after images, or if intense enough or of a long enough duration, glare can cause permanent vision damage. The potential glare hazard of the proposed PV arrays to vehicular traffic in the vicinity was analyzed using Sandia National Laboratories' (Sandia) Solar Glare Hazard Analysis Tool (SGHAT; Sandia 2015; WEST 2015). The proposed solar facility would likely use a single axis tracking system to align the solar arrays. The Project is located in the Mountain Time zone or minus seven hours from Coordinated Universal Time (UTC). The general locations of the proposed solar arrays were diagramed for the SGHAT. However, due to several unknowns concerning specific project engineering and technology, WEST made several assumptions for the analysis. Based on common solar array design, the panels would likely be on a 35° tilt and the tracking system would point the panels due south at solar noon. Other assumptions included maximum panel height, shape and texture of the panels, and observational height. Panel height was determined to be a maximum of 13 feet. Furthermore, an example of a solar field constructed by Midway Solar in Georgia showed the use of smooth glass panels without an arc (Figure 3.4), so this design feature too was used for the proposed application. Finally, Sandia's analysis requested observational locations and heights to determine potential glare hazards. As the elevation and location of residents in their homes would be highly variable, depending on individual's height, finished floor elevations, furniture size, possible window locations, etc., WEST chose to the use the SGHAT for only vehicular traffic. WEST reviewed the roof heights of four commonly sold sedans in 2015: Honda Accord, Toyota Camry, Ford Taurus, and Chevrolet Impala. WEST averaged the roof heights of these four vehicles and subtracted 10 inches below the exterior average roofline to be the observational height of four ft above road elevation. WEST then needed to choose several observation locations for the analysis. Assessing only vehicular traffic, two I-25 locations were selected (one southbound and one northbound), the intersection of Rancho Colorado Boulevard and La Huerta View, the intersection of Rancho Colorado Boulevard and La Questa View, the intersection of Boca Raton Heights and Indian Village Heights, the intersection of Boca Raton Heights and Ocatillo View and finally two observational points at the intersection of Boca Raton Heights and La Huerta View were identified.

Figure 3.4 Example of smooth glass solar panels without an arc.

Sandia's SGHAT results (Appendix E) indicated only one observation point at the indicated height to have a potential for after image or causing the effect of seeing spots due to glare. The intersection of Rancho Colorado Boulevard and La Questa View had the potential in mid-April and mid-August to be impacted by temporary after-image glare at approximately 6:30 AM. As no residential or commercial development was located on Rancho Colorado Boulevard and the few residential developments off La Questa View were located north of this intersection, traffic in general at the intersection of these two roads would be light as there was no obvious need to travel this corridor by a large number of drivers. Furthermore, vehicle traffic at this intersection would be low at 6:30 AM. Remaining locations were identified to have a low potential for temporary after-image glare as a result of the proposed solar field. The Sandia SGHAT results suggest glare associated with the proposed solar facility would have a negligible to minor impact on vehicle traffic near Project Study Area.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts to visual resources associated with the Propose Action and Project as described above would not occur.

Cumulative Impacts

Implementation of the proposed Project would introduce new electrical infrastructure into the region. Visually, some features, such as the gen-tie line, solar facility collection substation, and new substation bay, would have little contrast to existing conditions including existing electric utility infrastructure and therefore would not impact views in the area. The potential installation of 911 acres of new solar arrays would alter the visual resources of the area noticeably. Future

additional visual impacts within the area would most likely be associated with residential home building; however, development of residential lands in the area would likely occur one home at a time, which would slowly influence the views of the region. While additional electric utility infrastructure development may occur in the vicinity of the Proposed Action and proposed Project in the future, it would likely blend in with the existing and proposed infrastructure, thus limiting future utilities impacts on visual resources. When considering current visual setting and future development that potentially would influence the visual character of the area, WAPA's Proposed Action and the proposed Project would have minor-to-moderate impacts on the visual quality in the vicinity.

3.13 Transportation

3.13.1 Affected Environment

Exit 119 off I-25 provided primary access to the proposed solar facility, which is located approximately 0.25 miles east of the Project Study Area. The remaining access routes to the Project vicinity were unpaved but county-maintained roads, including Ranch Colorado Boulevard, La Huerta View, La Questa View, and Boca Raton Heights.

The Burlington Northern/Santa Fe and Denver and Rio Grande railway ran parallel to I-25 approximately 0.5 miles east of the proposed Project Study Area. The closest airport to the proposed Project was the Butts Army Air Field on Fort Carson, approximately 7.5 miles north/northwest, while the nearest airport to offer commercial commuter service was Peterson Field in Colorado Springs, approximately 15.5 miles north/northeast of the proposed Project. The South Central Comprehensive Plan (El Paso County 1988) identified the County's goal was a well-integrated and balanced transportation system, and the plan sought to maximize efficiency, comfort, safety, and economy in the County's transportation planning.

3.13.2 Environmental Consequences

<u>Impacts of WAPA's Proposed Action</u>

Minimal impacts to traffic through implementation of WAPA's Proposed Action would occur. A negligible temporary increase in traffic volume of up to 10 round trips per day on existing transportation facilities may occur during construction and maintenance of facilities at Midway Substation, but would require no upgrades or improvements to transportation facilities. Road closures would not be required during construction.

<u>Impacts of Midway Solar's Proposed Project</u>

Negligible-to-minimal impacts to traffic would occur through implementation of the proposed Project. A temporary increase in traffic volume of up to 200 round trips per day on existing transportation facilities would occur during construction of the proposed solar facility components. An increase in traffic volume up to 10 round trips per day on existing transportation facilities would occur during O&M of the facility. The Project would not require improvements to existing transportation facilities nor are any road closures necessary. Midway Solar would construct or improve existing roads within the Project Study Area. Once constructed or improved, Midway Solar would regularly maintain access roads associated with the proposed

Project. The exact number, locations, and length of those roads would be determined during final engineering and site layout design. Midway Solar, at the time of this report, was planning 28 different access road segments totaling over 20 miles of roadways (Figure 2.1).

No impacts to rail service or air traffic would occur as a result of the Midway Solar's proposed Project.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the impacts on transportation associated with the Proposed Action and Project would not occur.

Cumulative Impacts

Growth in El Paso County, specifically around Colorado Springs, had increased traffic congestion along I-25 in the years prior to this report. The South Central Comprehensive Plan (see El Paso County 1988) suggested that El Paso County was committed to maintaining a level of service, efficiency, comfort, and safety on all county roads to the benefit its residents' quality of life as well as travelers' safety. The proposed Project along with identified past, present, and reasonably foreseeable future developments would result in negligible to minor cumulative effects to traffic and transportation as construction traffic would be temporary and permanent impacts to traffic would only increase incrementally as a result of the proposed Project.

3.14 Public Health and Safety

3.14.1 Affected Environment

The El Paso County Sheriff's Office would provide law enforcement for the proposed Project, as they patrolled the unincorporated areas of the County and coordinate with the City of Fountain Police Department, the closest incorporated city to the Project Study Area. The Hanover Fire Protection District would provide fire and emergency services for the proposed Project.

The El Paso County Office of Emergency Management (OEM) provided coordination and direction of activities relating to disaster prevention, preparedness, response, and recovery to protect the lives of the citizens in the community. The Board of County Commissioners established the Local Emergency Planning Commission (LEPC) to assist in the development and review of chemical emergency response plans and to collect information about the use and storage of hazardous chemicals in El Paso County. The LEPC used this information to help fire and hazardous materials (HAZMAT) officers plan and safely respond to HAZMAT incidents, and to help citizens exercise their rights under the Federal Emergency Planning and Community Right-to-Know Act. Since mid-2013, 24 local governments have worked together to update and improve the El Paso County Hazard Mitigation Plan (HMP) under the coordination of the OEM and the Board of County Commissioners. The updated 2015 El Paso County HMP was a multi-jurisdictional plan that represents the concerns of the unincorporated county, as well as those of

participating incorporated municipalities and special districts (El Paso County 2015). The HMP was a tool to help a community reduce its risk from natural and human-caused hazards.

Electric and Magnetic Fields

The presence of high voltage electrical equipment tends to increase public concerns related to electric and magnetic fields (electromagnetic fields, or EMFs). These EMFs are physical fields produced by electrically charged objects. Both electric and magnetic fields occur together with the flow of electricity and thus considered together in terms of exposure. All electrical devices and equipment, including common household appliances, computers, and cell phones, produce EMFs that decrease rapidly with distance from the source. The nearest potential receptors of EMFs were residences to the west, approximately 260 ft to 360 ft from proposed solar arrays.

Different types of electricity produce different types of magnetic fields. Alternating current (AC), or electricity that oscillates directions, produces *power frequency* magnetic fields. The type of electricity that flows into our homes and powers most of our electrical appliances inside the home is AC. Direct current (DC), or electricity that flows in only one direction, produces magnetic fields that are referred to as *static* magnetic field, because they do not oscillate or change over time. DC is the electric energy associated with batteries, and occasionally with ultra-high voltage transmission lines (usually 500-kV or higher in the US) that transmit electricity over long distances. Direct current is also the electricity produced by PV solar panels. An important difference in magnetic fields is that power frequency magnetic fields, if sufficiently strong enough to induce an electrical current in humans, while static magnetic fields do not. Since static magnetic fields cannot induce a current in humans, static magnetic fields are generally considered not be a health concern.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) established a continuous magnetic field exposure limit of 833 milliGauss (mG) for AC power frequency magnetic fields, four million mG for DC static magnetic fields, and a continuous electric field exposure limit of 4.2-kV per meter (kV/m) for members of the general public (ICNIRP 2009). No federal or Colorado state laws or policies regulate exposure levels of EMF.

Hazardous Material

Colorado Department of Public Health and Environment, the agency that manages hazardous waste in Colorado (under the authority of CRS 25-15 Parts1-3), defines hazardous waste and the applicable regulations for Colorado. Construction, operation, maintenance, and decommissioning of the Project would utilize current industry standards and practices and would adhere to all regulatory codes, regulations, and guidelines applicable.

Two Phase I assessments were performed by Terracon for a large portion of the proposed Project, including the southeast corner where a former outdoor storage facility was located (Terracon 2013, 2014). In the Phase I that addressed this area, Terracon identified four potential recognized environmental conditions (as defined by ASTM standard E1527-13) or RECs and recommended additional investigation to evaluate and characterize the identified RECs. The four RECs identified included: gold mill tailings; stained 5-gallon buckets and 55-

gallon drums, piles of building debris, and piles of unknown debris. Midway Solar would avoid the southeast corner area for development of the proposed solar facilities.

Intact solar panels emit no hazardous waste. However, hazardous materials potentially housed and used during the construction, operation, or maintenance include small quantities (less than 55 gallons, 500 pounds, or 200 cubic ft (ft^3) of janitorial supplies, office supplies, laboratory supplies, paint, degreasers, herbicides, refrigerant or air conditioning fluids, fuels, and hydraulic fluid. These materials would be stored in the facility control building or stored off site. Furthermore, flammable materials (e.g., paints and solvents) kept on-site would be stored in flammable material storage cabinet(s).

3.14.2 Environmental Consequences

Impacts of WAPA's Proposed Action

WAPA's Proposed Action would be limited to a new 230-kV substation bay within the existing footprint of the Midway Substation and the gen-tie entry structure located outside the substation but within the WAPA's existing ROW. WAPA may also need to modify existing transmission lines entering and exiting the Midway Substation to accommodate the gen-tie line. If deemed necessary after final Project design and engineering, WAPA would design and construct any modification to lie within their existing ROW, similarly to the gen-tie entry structure.

All construction activities would be performed by licensed, experienced contractors and would be carried out in compliance with Occupational Safety and Health Administration (OSHA) and WAPA Construction Standards (Appendix B) to minimize the risk of construction-related accidents or injuries. Possible scenarios that have the potential to expose personnel to injury during construction included, but are not limited to, electrocution, the movement of construction vehicles, equipment, and materials, and accidents (such as slips, trips, or falls). The risk of construction-related injury would be minimized through careful safety planning, regular safety training and meetings, and use of appropriate safety equipment.

WAPA construction activities would be temporary. The installation of substation infrastructure, bus work, transformers, metering, etc., would be confined to WAPA's existing Midway Substation. The single gen-tie line entry structure would be erected in WAPA's existing ROW and require relative little disturbance. The primary conceivable threat to public health comes from particulate matter, dust, and emissions from vehicles and equipment. Construction emissions can vary from day-to-day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. These emissions would be primarily fugitive dust emissions from earthmoving and construction vehicle exhaust emissions. WAPA would abide by their construction standards and would maintain dust-control measures to minimize fugitive dust. Furthermore, equipment and vehicles to be used during construction would be properly maintained to limit emissions during construction. Lastly, the nearest public receptors for potential health impacts are generally located west of WAPA's Proposed Action. Prevailing winds generally blow out of the west, which would help further minimize public impacts due to fugitive dust and vehicle and equipment emissions.

Public health and safety concerns associated with operation of the proposed solar facility were associated with electric and magnetic fields, hazardous materials management, and employee safety. Operations at the WAPA's Midway Substation would not change demonstrably after construction of the Proposed Action and proposed Project. As a result, there would be no additional demand from emergency services. Any potential additional hazardous material that may be required as a result of the new substation bay construction would be addressed in a revised WAPA SPCC plan. Additionally, EMF effects would be address through engineering controls to provide sufficient distance between new substation equipment and potential public access outside the substation to allow EMFs to subside. Furthermore, there are no receptors, houses, schools, offices, etc., within nearly 2,000 ft of the Midway Substation.

WAPA's Proposed Action would result in negligible public health and safety impacts associated with EMFs, worker safety, or hazardous materials due to the temporary timeframe of construction activities. Over the long term, minimal vehicular emissions associated with maintenance and repair of substation equipment would be released. Short-term construction activities or subsequent operation and maintenance associated with WAPA's Proposed Action would not measurably affect public health.

Impacts of Midway Solar's Proposed Project

The construction phase for the proposed Project would last far longer and involve more activity than construction activities associated with WAPA's proposed Action. Impacts associated with Midway Solar's construction activities would include fugitive dust and vehicle and equipment emissions. Dust and exhaust would likely temporarily degrade local air quality during construction and local sensitive receptors (e.g., hospitals, schools, etc.), the elderly, infants, and people with pre-existing respiratory issues may experience additional difficulties breathing as a result of construction. The severity of the impacts would depend on the health of the individuals affected. Construction crews would use water trucks to minimize fugitive dust and equipment would meet emission standards set by the State.

Licensed, experienced contractors would construct the proposed solar facility and carried out construction in accordance with OSHA Administration, WAPA Construction Standards (Appendix B), and the standard operating procedures of the selected construction firm to minimize the risk of construction-related accidents or injuries. Again, possible situations that may expose personnel to injury during construction included, but was not limited to, electrocution, the movement of construction vehicles, equipment, and materials, and accidents (such as slips, trips, or falls). The risk of construction-related injury would be minimized through careful safety planning, regular safety training and meetings, and use of appropriate safety equipment. While construction crews may vary in size and tasks, construction of the proposed Project would not place an unreasonable additional demand on police or emergency services.

As previously mentioned, Terracon identified four potential RECs and recommended additional investigation to evaluate and characterize the identified RECs. Midway Solar intends to avoid the southeast corner area for development of the proposed solar facilities. Additionally, hazardous materials would not be stored on site during construction until a secure location can

be established; however, fuels, lubricants, coolants, insulating materials, fireproofing, degreaser, and other potentially hazardous materials may be used or may be present during construction. All waste streams generated, including potential hazardous materials, would be disposed of off-site at a material-appropriate facility or recycled in accordance with federal, state, and local regulations, or according to manufacturers' recommendations.

The operation of the proposed Project would require at least one person on site monitoring daily operations. In general, the operation of this proposed facility would negligibly affect workers health and should not place additional demand on police or public emergency resources. Site maintenance and other requisite visits would result in negligible additional vehicle emissions or fugitive dust releases. Potential additional hazardous materials that may be stored or used on site would be addressed in a SPCC plan.

Intact solar panels emit no hazardous waste; however, cracked or broken panels have the potential to leech carcinogenic chemicals depending on the PV technology selected. All waste streams generated during operation and maintenance of the solar facilities would be disposed of off-site at a material-appropriate facility or recycled in accordance with federal, state, and local regulations, or in accordance with manufacturers' recommendations.

Operation of solar arrays and associated equipment, electrical collections systems, the gen-tie line, and Midway Solar's solar facility collection substation would generate EMFs. Potential EMFs associated with electrical equipment is directly associated to the voltage and current of the specific electrical source. The 230-kV gen-tie line, acting similarly to a 230-kV transmission line, would generate a maximum magnetic field magnitude of approximately 118 mG (Public Service Commission of Wisconsin [PSCW] 2013) and an electric field magnitude of approximately 2.1-kV/m (US EPA 1980) as measured at the center of the right-of-way. At approximately 50 ft away from a 230-kVtransmission line, electric field magnitude drops to about 40 mG (PSCW 2013), a reduction of 66%. Magnetic field magnitude drops more dramatically to about 0.4 kV/m (US EPA 1980), or around 80%, at 50 ft from the source. As indicated above, the ICNIRP has established a continuous magnetic field exposure limit of 833 mG and a continuous electric field exposure limit of 4.2 kV/m for members of the general public (ICNIRP 2009). The closest possible receptors for EMFs are residential properties located 250 ft to 360 ft to the west of the Project Study Area. As the distance from the source fields increases, the magnitudes of those fields decrease dramatically. At 250 ft away, the distance to the closest residential property, EMFs from a 230-kV transmission line would be negligible if distinguishable at all from background EMF levels, similar to the EMF emitted from a dishwasher at two ft (PSCW 2013). In addition, the 230-kV gen-tie line and solar facility collection substation would be located in close proximity to WAPA's Midway Substation, over 1,000 ft, to the nearest sensitive receptors and further weakening the effects of new EMFs on residential occupants.

Electrical assets in closest proximity to residences would consist of solar panels and inverters. Solar panels, again depending on technology used for this application, only produce in the order of 12 to 48 volts per panel as a maximum, far less than the 230-kV or 230,000 volts transferred through the proposed gen-tie line. In addition, current produced in the solar arrays would be DC.

Direct currents produce a different kind of magnetic field, a *static* field, since the current is not fluctuating. In most circumstances, static magnetic fields do not induce electric current in humans and are not generally considered a health concern. Studies performed by Pacific Gas and Electric in cooperation with the DOE, suggests a solar array would produce less than one mG of static magnetic field at the back of the array (array output of 11-15 kW; Chang and Jennings 1994). The ICNRP suggested constant exposure limit for static magnetic field magnitude of four million mG for the general public. As a result, EMFs produced by solar panels would not be considered a public health concern (Chang and Jennings 1994).

Inverters are used to take the low-voltage DC produced by the solar panels and convert that power to AC, while simultaneously stepping up the voltage to a level efficient to transmit to the associated solar facility collection substation. Inverters typically produce the strongest potential magnitude EMF within a solar field. Again, as exact technology to be used at the Midway Solar facility was not known at the time of this report, the specification of the inverters, including potential EMF, is unknown at this time. Based on published data by the Good Company in cooperation with the Oregon Department of Transportation (Good Company 2010), inverters used at the West Linn Solar Highway Project were determined to theoretically produce a magnetic field of 344 mG at a distance of three ft. This magnetic field was further estimated to maintain a magnitude of 3.0 mG at a distance of 10 ft. Assuming similar magnetic fields can be generated from inverters used at Midway Solar's solar facility, magnetic fields of 344 mG is less than half of the ICNIRP exposure limit guidelines for the public. Additionally, as described previously, the nearest receptors at residences are over 200 ft from the Project Study Area, further minimizing the magnitude of the magnetic fields. If inverters used in solar facilities can produce a magnetic field of 3.0 mG at a distance of 10 ft, the magnitude of that field would likely be negligible if discernable at all from background EMF at residential dwelling 250 to 360 ft away from the inverters.

Potential EMF impacts would further be minimized by design modifications, such as arrangement of conductors, transformers, and inverters. Therefore, there would be negligible differences in EMF magnitudes in the immediate area of potential receptors, namely residential properties. The magnitude of EMFs on site during operations and maintenance would be measureable. However, individuals working at the solar facility would not be required to remain within areas of higher EMFs for extended periods of time, thereby reducing their potential exposure to these fields. Effects caused by EMFs for the general public and workers at the solar facility would be negligible.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the public health and safety impacts associated with the Proposed Action and Project as described above would not occur.

Cumulative Impacts

Construction activities, combined with an increase in traffic in the county, would exacerbate the public health impacts resulting from new development. However, due to the rural nature of the

proposed Project and distance to population centers in the county, the proposed Project would have negligible to minimal impacts, combined with past, present, and future development.

Collectively, the impacts associated with the construction, operation, and maintenance of the proposed solar facility would not cause or contribute to cumulative effects relating to hazardous materials management. This is because of the nature of the materials proposed, the Project's compliance with applicable laws and regulations, and the engineering and administrative controls that WAPA and Midway Solar would implement to prevent and control accidental releases of hazardous materials. Proper facility design and the development and implementation of safe material handling programs for the solar facility would reduce the potential for cumulative impacts from release of hazardous materials on the environment. Each reasonably foreseeable future project would be required to comply independently with hazardous materials regulations, depending on the circumstances of each project.

Cumulative impacts to public health and safety would occur only if impacts of the proposed Project, combined with impacts of the foreseeable future projects, occurred at the same time and in close proximity. Due to the negligible and temporary nature of the impacts of the Proposed Action and proposed Project, such events are unlikely. Therefore, the Proposed Action and proposed Project would not result in cumulative impacts to public health and safety.

3.15 Intentional Destructive Acts

3.15.1 Affected Environment

The DOE Office of NEPA Policy and Compliance issued guidance calling for explicit consideration of intentional acts of destruction (e.g., sabotage, terrorism, vandalism) within NEPA documents (US DOE 2006). The nation's power grid has been identified as critical infrastructure and a possible target of intentional acts of destruction. Possible agitators included terrorists who may target energy facilities to cause disruption and fear in the region or the country as a whole, or activists protesting the facility, company, or other reasons. The most likely scenario would be acts of copper theft, vandalism and opportunity, such as the shooting of insulators, conductors, or solar panels.

3.15.2 Environmental Consequences

<u>Impacts of WAPA's Proposed Action</u>

WAPA's transmission system and substation facilities near and within the Midway Substation may be the target of intentional acts of destruction. Intentionally destroying or damaging transmission line structures, conductors, or substation apparatus has the potential to disrupt electrical service to utility customers and end users, but the extent and duration of the outage would be dependent upon the degree and type of damage incurred. As opposed to terroristic acts, vandalism and theft are far more likely destructive acts. While sometimes costly and time consuming to repair, vandalism and theft does not usually result in long-term disruption of service or have apparent environmental consequences.

Federal and other utilities use physical deterrents, such as fencing, cameras, warning signs, and rewards, to help prevent theft, vandalism, and unauthorized access to facilities. In addition, through its Crime Witness Program, WAPA offers up to $25,000 for information that leads to the arrest and conviction of individuals committing crimes against WAPA facilities. Anyone having such information can call WAPA's Crime Witness Hotline at (800) 209-8962. The line is confidential and rewards are issued in such a way that the caller's identity remains confidential.

An incident of intentional destruction has the potential to occur at the WAPA's existing substation and transmission line facilities. If any such incident were to happen, it would likely only result in negligible-to-minor environmental impacts. The Proposed Action is not likely to increase the potential for intentional destructive acts being carried out against WAPA's Midway Substation as the existing substation is currently a target of opportunity for vandals and theft.

Impacts of Midway Solar's Proposed Project

Similar to any electric grid infrastructure, intentional destructive acts have the potential to be directed at the proposed solar facility or gen-tie line. Similar to the environmental impacts associated with WAPA's Proposed Action described above, the destruction of electrical equipment of any sort may result in temporary disturbance of electrical service to customers or end users. The extent and duration of the service interruption would be contingent on the type of equipment damaged and the degree of damage inflicted. Again, while a terrorist attack is possible, destruction due to vandalism and theft is far more probable. While it would likely be costly to repair, intentional destructive acts would not likely have substantial effects on the environment.

The proposed Project would likely increase the likelihood for intentional acts of destruction, as new infrastructure, namely hundreds of acres of solar panels, would increase prospective targets of opportunity.

Impacts of the No Action Alternative

The No Action Alternative would result in the proposed Project not being constructed, and therefore the potential for intentional destructive acts rendered against the proposed solar facility would not occur.

Cumulative Impacts

Under the No Action Alternative, WAPA's Midway Substation, PSCo's substation, Southwest Generation's natural gas fueled electric generation facility, and the associated transmission and distribution electrical lines in the vicinity would remain potential targets for intentional destructive acts. In addition, the small (less than 4,200 ft^2) Mountain States Telephone and Telegraph Company facility east of the substations may also be targeted for intentional acts of vandalism or destruction. However, the electrical and telecommunication facilities have some degree of security to deter such acts from occurring.

Implementation of the proposed Project would introduce new infrastructure into the region that would likely be viewed as a target for destructive acts. However, the solar facility would also include security measures to assist in deterring these intentional destructive acts from occurring.

4.0 LIST OF PREPARERS

Table 4.1 Summary of the preparers of this document.

Name	Agency or Company	Title
Andrew Montaño	Western Area Power Administration	NEPA Project Manager
Scott Zeimetz	Front Range-Midway Solar Project LLC	
James Tervo	Front Range-Midway Solar Project LLC	
Amber Zuhlke	Front Range-Midway Solar Project LLC	
Christopher Kinneer	Centennial Archaeology	Project Manager/Principal Investigator
Todd Mattson	WEST Inc.	Senior Project Manager
Gretchen Norman	WEST Inc.	Project Manager
Elizabeth Lack	WEST Inc.	Ecologist
David Taylor	WEST Inc.	Ecologist

5.0 List of Agencies Contacted

This section identifies the agencies that were contacted during the preparation of this EA.

5.1 Federal

US Department of the Army, Fort Carson Colorado

US Department of Energy Western Area Power Administration Rocky Mountain Region, P.O. Box 3700, Loveland Colorado

US Fish and Wildlife Service, Ecological Services, Colorado Field Office, Denver Colorado

5.2 Tribal

Northern Arapaho Tribe of the Wind River Reservation, Ms. Darlene Conrad Tribal Historic Preservation Officer, P.O. Box 396, Fort Washakie, Wyoming

Northern Arapaho Tribe of the Wind River Reservation, Honorable Darryll O'Neal , Sr., Northern Arapaho Business Council, P.O. Box 396, Fort Washakie, Wyoming

Shoshone Tribe, Honorable Darwin St. Clair Jr. Chairman, Shoshone Business Council, P.O. Box 538, Fort Washakie, Wyoming

Shoshone Tribe, Mr. Wilford Ferris III Tribal Historic Preservation Officer, P.O. Box 538Fort Washakie, Wyoming

Southern Ute Indian Tribe, Honorable Jimmy Newton, Jr. Chairman, 356 Ouray Drive, Ignacio, Colorado

Southern Ute Indian Tribe, Mr. Alden B. Naranjo NAGPRA Coordinator, P.O. Box 737, Ignacio Colorado

Ute Indian Tribe, Betsy Chapoose Director of Cultural Rights and Protection, P.O. Box 190, Fort Duchesne, Utah

Ute Indian Tribe, Honorable Gordon Howell Chairman, Uintah and Ouray Tribal Business Committee, P.O. Box 190, Fort Duchesne, Utah

Ute Mountain Ute Tribe, Chairman Gary Hayes, P.O. Box 248 Towaoc, Colorado

Ute Mountain Ute Tribe, NAGPRA Representative / THPO, P.O. Box 468, Towaoc, Colorado

5.3 State

Colorado Department of Parks and Wildlife, Southeast Region, 4255 Sinton Road Colorado Springs, Colorado

History Colorado, 1200 Broadway, Denver Colorado

5.4 Local

El Paso County Administration, 200 South Cascade Ave, Suite 100, Colorado Springs, Colorado

El Paso County Attorney Lori Seago, 200 South Cascade Avenue, Suite 200, Colorado Springs, Colorado

El Paso County Commissioner District 2 Any Lathen, 200 South Cascade Avenue, Colorado Springs, Colorado

El Paso County Commissioner District 4 Dennis Hisey, 200 South Cascade Avenue, Colorado Springs, Colorado

El Paso County Development Services, 2880 International Circle, Suite 110, Colorado Springs, Colorado

6.0 LITERATURE CITED

6.1 References

Argonne National Laboratories (Argonne). 2015. A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities. April 2015. Available online at: http://www.evs.anl.gov/downloads/ANL-EVS_15-2.pdf

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Public Interest Energy Research Program (PIER) Final Project Report CEC-500-2006-022. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, California.

Centennial Archaeology (CA). 2015. A Class III Cultural Resources Inventory for the Front Range Midway Solar Project in El Paso County, Colorado (Draft). July 2015.

Chang, G. J. and C. Jennings. 1994. Magnetic Field Survey at PG&E Photovoltaic Sites. Pacific Gas and Electric Research and Development Department Report 007.5-94.6. August 1994.

Chapman, S.S., Griffith, G.E., Omernik, J.M, Price, A.B., Freeouf, J., and Schrupp, D.L. 2006. Ecoregions of Colorado (color poster with Map, descriptive text, summary tables, and photographs); Reston, Virginia, US Geological Survey (map scale 1:1,200,000).

Colorado Department of Public Health and Environment. 2015. Colorado Department of Public Health and Environment website. Accessed October 2014. Information available online at: https://www.colorado.gov/cdphe

Colorado Natural Heritage Program. 2014. Tracked Species. Updated September 2014. Bird species list: http://www.cnhp.colostate.edu/download/list/birds.asp; mammals: http://www.cnhp.colostate.edu/download/list/mammals.asp; amphibians and reptiles: http://www.cnhp.colostate.edu/download/list/amphibians_reptiles.asp; fish: http://www.cnhp.colostate.edu/download/list/fish.asp; arthropods and insects: http://www.cnhp.colostate.edu/download/list/arthropods_insects.asp; vascular plants: http://www.cnhp.colostate.edu/download/list/vascular.asp

El Paso County. 1988. El Paso County Land Use Department, South Central Comprehensive Plan. . El Paso County, Colorado. November 15, 1988.

El Paso County. 1996. Ordinance No. 96- 1: The Board of County Commissioners of the County of El Paso, Colorado an Ordinance Pertaining to the Control and Regulation of the Movement and Parking of Motor Vehicles on Public Property in the Unincorporated Territory of El Paso County. Effective 1996. Available online at: http://car2.elpasoco.com/clerkboard/doc/96-1.htm

El Paso County. 1997. EL Paso County Policy Plan. Accessed March 31, 2016. Avaialble online at: http://adm2.elpasoco.com/Planning/Policy-plan/page4.htm

El Paso County. 2013. El Paso County Development Services Department Land Development Code. Accessed August 4, 5, and 14, 2015. Available online at: http://adm.elpasoco.com/Development%20Services/Pages/LandDevelopmentCode.aspx

El Paso County. 2015. El Paso County Multi-Jurisdictional Hazard Mitigation Plan. Prepared by El Paso County, Colorado Public Services Department, Office of Emergency Management.

El Paso County. No date. El Paso County, Colorado, Consolidated Plan 2012-2016: A Five Year Housing and Community Development Strategy. Prepared by El Paso County, Colorado, Budget and Economic Development Department.

ESRI. 2015. Geographic Information System (GIS) Online Topographic Base Map and World Imagery Map. ESRI, producers of ArcGIS software. Redlands, California.

Federal Emergency Management Agency (FEMA). 1997. Flood Insurance Rate Map: El Paso County, Colorado and Incorporated Areas. Map No. 08041C1170F.

Good Company. 2010. Scaling Public Concerns of Electromagnetic Fields Produced by Solar Photovoltaic Arrays. Prepared for the Oregon Department of Transportation's West Linn Solar Project. Information available online at: http://www.oregon.gov/ODOT/HWY/OIPP/pages/slr_westlinn.aspx; Good Company report available at: http://www.oregon.gov/ODOT/HWY/OIPP/docs/emfconcerns.pdf

Homer, C. G., J. A. Dewitz, L. Yang, S. Jin, P. Danielson, G. Xian, J. Coulston, N. D. Herold, J. D. Wickham, and K. Megown. 2015. Completion of the 2011 National Land Cover Database for the Conterminous United States-Representing a Decade of Land Cover Change Information. Photogrammetric Engineering and Remote Sensing 81(5): 345-354. Available online from: http://www.mrlc.gov/nlcd2011.php

International Commission on Non-Ionizing Radiation Protection (ICNIRP). 2009. ICNIRP Statement on the "Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)". Published in Health Physics. 2009. 97(3):257-258. Available online at: http://www.icnirp.org/cms/upload/publications/ICNIRPStatementEMF.pdf

Kagan, R. A., T. C. Viner, P. W. Trail, and E. O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory, US Fish and Wildlife Service (USFWS), Ashland, Oregon. April 2014. Available online at: http://docketpublic.energy.ca.gov/publicdocuments/09-afc-07c/tn202538_20140623t154647_exh_3107_kagan_et_al_2014.pdf

Lukas, J., J. Barsugli, N. Doesken, I. Rangwala, and K. Wolter. 2014. Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation. A Report for the Colorado Water Conservation Board. Western Water Assessment.

North American Datum (NAD). 1983. NAD83 Geodetic Datum.

Public Service Commision of Wisconsin (PSCW). 2013. EMF Electric and Magnetic Fields. Availabe at: http://psc.wi.gov/thelibrary/publications/electric/electric12.pdf . Accessed April 11, 2016.

Sandia National Laboratories (Sandia). 2015. Solar Glare Hazard Analysis Tool (SGHAT). Sandia National Laboratories, managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the US Department of Energy (DOE) National Nuclear Security Administration, DE-AC04-94AL85000. Sandia, Livermore, California. Available online from: http://www.sandia.gov/

Terracon Consulting Engineers and Scientist (Terracon). 2013. Phase I Environmental Site Assessment, Front Range-Midway Solar Project, LLC. Easement Property 9070 and 9310 Rancho Colorado Boulevard, Fountain, El Paso County, Colorado. Terracon Project No. 23137729. December 3, 2013.

Terracon Consulting Engineers and Scientist (Terracon). 2014. Phase I Environmental Site Assessment, Front Range-Midway Solar Project, LLC. Easement Property 9070 and 9310 Rancho Colorado Boulevard, Fountain, El Paso County, Colorado. Terracon Project No. 23147702. February 5, 2014.

Tetra Tech, Inc. (Tetra Tech). 2011. Midway to Geesen OPGW Installation Project Class III Cultural Resources Inventory. Tri-State G&T, Midway to Geesen OPGW Installation Project El Paso County, Colorado. July 2011.

Union of Concerned Scientists of the United States of America (UCSUSA). 2013. Environmental Impacts of Solar Power. Last revised March 5, 2013. Available online at: http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/environmental-impacts-solar-power.html#.VjlQiWtp5Zg

US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS). 2015. Web Soil Survey. Accessed August 5 and 6, 2015. Available online at: http://websoilsurvey.nrcs.usda.gov

US Department of Energy (US DOE). 2006. Need to Consider Intentional Destructive Acts in NEPA Documents. US DOE Office of NEPA Policy and Compliance. Accessed August 5, 2015. Available online at: http://energy.gov/nepa/downloads/need-consider-intentional-destructive-acts-nepa-documents

US Environmental Protection Agency (US EPA).1980. Electric Fields Under Power Lines (Supplement to "An Examination of Electric Field Under EHV Overhead Power tansmission Lines). Information available at: http://nepis.epa.gov/Exe/ZyNET.exe/9100FL3V.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1976+Thru+1980&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C76thru80%5CTxt%5C00000015%5C9100FL3V.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL# . Accessed on April 11, 2016.

US Environmental Protection Agency (US EPA). 2012a. National Ambient Air Quality Standards (NAAQS). Air and Radiation. US EPA, Washington, D.C. Updated December 14, 2012. Information available online at: http://www.epa.gov/air/criteria.html

US Environmental Protection Agency (US EPA). 2012b. Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter. EPA-452/R-12-005. US EPA, Office of Air Quality Planning and Standards, Health and Environmental Impacts Division, Research Triangle Park, North Carolina. December 2012.

US Environmental Protection Agency (US EPA). 2013. The 2011 National Emissions Inventory. Version 1 (released September 30, 2013). Technology Transfer Network, Clearinghouse for Inventories and Emissions Factors. US EPA, Washington, D.C. Available online at: http://www.epa.gov/ttnchie1/net/2011inventory.html

US Fish and Wildlife Service (USFWS). 2015. Endangered Species. Region 6, Mountain-Prairie Region: Montana, Wyoming, Utah, Colorado, North Dakota, South Dakota, Nebraska, and Kansas. USFWS, Denver, Colorado. Updated April 15, 2015. Information available online at: http://www.fws.gov/mountain-prairie/es/endangered.php

US Geological Survey (USGS). 2011. National Land Cover Database 2011 (NLCD 2011). Multi-Resolution Land Characteristics Consortium (MRLC), National Land Cover Database (NLCD). USGS Earth Resources Observation and Science (EROS) Center, Sioux Falls, South Dakota. Information available online at: http://www.mrlc.gov/nlcd2011.php; Legend information available at: http://www.mrlc.gov/nlcd11_leg.php

USA Topo. 2015. USA Topo Maps. US Geological Survey (USGS) topographical maps for the United States. ArcGIS. ESRI, producers of ArcGIS software. Redlands, California.

Warren, Bradley S, Senior Vice President and Regional Manager. 2015. Memeorandum to Carol M Borgstrom, GC-54, Washinton, DC Director, Office of NEPA Policy and Compliance. Subject: Environemtnal Assesment for teh Front Range Midway Solar Project, LLC.

Western EcoSystems Technology, Inc. (WEST). 2014. Sources of Avian Mortality and Risk Factors Based on Empirical Data from Three Photovoltaic Solar Facilities. Technical report prepared for First Solar. June 2014.

Western EcoSystems Technology, Inc. (WEST). 2015. Front Range Midway Solar Project Wetlands, Waterbodies, and Threatened, Endangered, and Species of Special Concern Survey Report. Prepared for Front Range Midway Solar, LLC. July 23, 2015.

6.2 Laws, Acts, and Regulations

16 United States Code (USC) 470 et seq. 1966. Title 16 - Conservation; Chapter 1a - Historic Sites, Buildings, Objects, and Antiquities; Subchapter II - National Historic Preservation; Sections (§§) 470 et seq. 16 USC 470 et seq.

16 United States Code (USC) 661-667e. 1958. Title 16 - Conservation; Chapter 5a - Protection and Conservation of Wildlife; Subchapter I - Game, Fur-Bearing Animals, and Fish; Sections (§§) 661-667e. 16 USC 661-667e. [Act of March 10, 1934; Chapter (Chap.) 55; 48 Statute (Stat.) 401, as amended by the Act of June 24, 1936, Ch. 764, 49 Stat. 913; the Act of August 14, 1946, Ch. 965, 60 Stat. 1080; the Act of August 5, 1947, Ch. 489, 61 Stat. 770; the Act of May 19, 1948, Ch. 310, 62 Stat. 240; Public Law (P.L.) 325, October 6, 1949, 63 Stat. 708; P.L. 85-624, August 12, 1958, 72 Stat. 563; and P.L. 89-72, 79 Stat. 216, July 9, 1965.].

16 United States Code (USC) 1531-1544. 1973. Title 16 - Conservation; Chapter 35 - Endangered Species; Sections (§§) 1531-1544. 16 USC 1531-1544.

36 Code of Federal Regulations (CFR) 60.4. 2011. Title 36 - Parks, Forests, and Public Property; Chapter I - National Park Service, Department of the Interior; Part 60 - National Register of Historic Places; Section 60.4 - Criteria for Evaluation. 36 CFR 60.4. Available online at: http://www.gpo.gov/fdsys/pkg/CFR-2012-title36-vol1/pdf/CFR-2012-title36-vol1-sec60-4.pdf

36 Code of Federal Regulations (CFR) 800.16. 2000. Title 36 - Parks, Forests, and Public Property; Chapter VIII - Advisory Council on Historic Preservation; Part 800 - Protection of Historic Properties; Subpart C - Program Alternatives; Section 800.16 - Definitions. 36 CFR 800.16. [65 Federal Register (FR) 77725, December 12, 2000, as amended at 69 FR 40555, July 6, 2004]. Available online at: http://www.gpo.gov/fdsys/pkg/CFR-2011-title36-vol3/pdf/CFR-2011-title36-vol3-sec800-16.pdf

40 Code of Federal Regulations (CFR) 112. 1973. Title 40 - Spill Prevention Control and Countermeasure Plans: Part 112 - Oil Pollution Prevention. 40 CFR 112. [33 United States Code (USC) 1251 et seq. 38 Federal Register (FR) 34165, December 11, 1973, unless otherwise noted.]. Available online at: http://www.ecfr.gov/cgi-bin/text-idx?SID=c66ae9c672de1d7813795d85d426b757&mc=true&node=pt40.22.112&rgn=div5

American Indian Religious Freedom Act. 1978. Title 42 - the Public Health and Welfare; Chapter 21 - Civil Rights; Subchapter I - Generally; Section 1996 - Protection and Preservation of Traditional Religions of Native Americans. 42 United States Code (USC) 1996. [Pub. L. 95-341, §1, Aug. 11, 1978, 92 Stat. 469.]. Available online at: http://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap21-subchapI-sec1996.pdf

Archaeological Resources Protection Act (ARPA). 1979. 16 United States Code (USC) §§ 470aa-470mm. October 31, 1979.

Clean Air Act (CAA). 1970. 42 United States Code (USC) §§ 7401-7671q.

Clean Water Act. 1972. 33 United States Code § 1251-1387. October 18, 1972.

Colorado Revised Statutes (CRS) 25-15, Parts 1-3. 1979. Title 25. Health; Article 15. Hazardous Waste; Parts 1-3. CRS 25-15, Parts 1-3. Information available online at: http://www.lexisnexis.com/hottopics/Colorado/

Colorado Revised Statutes (CRS) 33-2-101. 1985. Title 33. Parks and Wildlife; Article 2. Nongame and Endangered Species Conservation; Section 101. Colorado Nongame, Endangered, or Threatened Species Conservation Act. CRS 33-2-101. [L. 84: Entire article R&RE, p. 862, § 1, effective January 1, 1985.]. Information available online at: http://www.lexisnexis.com/hottopics/Colorado/

Colorado Revised Statutes (CRS) 33-5-101-107. 1963. Title 33. Parks and Wildlife; Article 5. 5. Protection of Fishing Streams; §§ 101-107. CRS 33-2-101 - 107. [L. 69: p. 458, § 7. CRS 1963: § 62-14-7]. Information available online at: http://www.lexisnexis.com/hottopics/Colorado/

Colorado State Statute 33. Title 33. Parks and Wildlife. Colorado Revised Statutes (CRS) Annotated (Ann.). CRS 33, Articles 1-60. Information available online at: http://www.lexisnexis.com/hottopics/Colorado/

Colorado Revised Statutes (CRS) 33-2-102 -106. 1985. Title 33. Parks and Wildlife; Article 2. Nongame and Endangered Species Conservation; §§ 102-106. CRS 33-2-102 - 106. [L. 84: Entire article R&RE, p. 862, § 1, effective January 1, 1985.]. Information available online at: http://www.lexisnexis.com/hottopics/Colorado/

Colorado Senate Bill 40 (SB40). Senate Bill 40: Colorado Revised Statutes (CRS) 33-5-101-107, as amended.

Endangered Species Act (ESA). 1973. 16 United States Code (USC) §§ 1531-1544, Public Law (PL) 93-205, December 28, 1973, as amended, PL 100-478 [16 USC 1531 *et seq.*]; 50 Code of Federal Regulations (CFR) 402.

Executive Order 13007. 1996. Indian Sacred Sites. 61 Federal Register (FR) 104. May 24, 1996.

Federal Emergency Planning and Community Right-to-Know Act. 1986. Title 42 - the Public Health and Welfare; Chapter 116 - Emergency Planning and Community Right-to-Know. 42 United States Code (USC) 116. [Pub. L. 99–499, Title III, §301, October 17, 1986, 100 Stat. 1729.]. Available online at: http://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/html/USCODE-2010-title42-chap116.htm

Federal Power Act. 1920. Federal Regulation and Development of Power, June 10, 1920. 16 United States Code (USC) 12 §§ 791-828c; Chapter 285, June 10, 1920; 41 Statute [Stat.] 1063.) as amended by: Chapter 129, March 3, 1921; 41 Stat. 1353.; Chapter 572, June 23, 1930; 46 Stat. 799.; Chapter 687, August 26, 1935; 49 Stat. 803.; Chapter 782, October 28, 1949; 63 Stat. 954.; Public Law (P.L.) 247, October 31, 1951; 65 Stat. 701.; P.L. 87-647, September 7, 1962; 76 Stat. 447.; P.L. 95-617, November 9, 1978; 92 Stat. 3117.; P.L. 96-294, June 30, 1980; 94 Stat. 611.; P.L. 97-375, December 21, 1982; 96 Stat. 1819.; P.L. 99-495, October 16, 1986; 100 Stat. 1243.; P.L. 102-486, October 24, 1992; 106 Stat. 3097.; P.L. 103-347, November 2, 1994; 108 Stat. 4585.; P.L. 104-66, December 21, 1995; 109 Stat. 718.

Land Development Code of El Paso County, Colorado. Authority including, but not limited to the CRS §§22-32-124 et seq. (Zoning, Planning and Building Code Duties of School Boards); §§ 24-65-101-106 et seq. (Colorado Planning Act) Repealed June 1, 2005; §§ 24-65.1-101 et seq. (Areas of State Interest); §§ 24-67-101 et seq. (Planned Unit Development); §§ 24.68-101 et seq. (Vested Rights); §§ 29-20-101 et seq. (Local Government and Land Use Control Enabling Act); §§ 30-11-101 et seq. (County Powers and Functions); §§ 30-15-101 et seq. (County Regulations Under Police Powers); §§ 30-20-100.5 et seq. (Solid Wastes Disposal Sites and Facilities); §§ 30-28-101 et seq. (County Planning, Zoning, Subdivision); §§ 31-12-101 et seq. (Municipal Annexation); §§ 32-1-101 et seq. (Special District Act/Provisions); §§ 33-1-101 et seq. (Wildlife); §§ 33-2-101 et seq. (Endangered Species Conservation); §§ 34-1-301 et seq. (Preservation of Commercial Mineral Deposits); §§ 38-30.5-101 et seq. (Conservation Easements); §§ 41-4-101 et seq. (Airports); §§ 43-2-101 et seq. (Highways). Updated October 2015. Available online at: http://adm.elpasoco.com/Development%20Services/Pages/LandDevelopmentCode2015.aspx

Land Development Code of El Paso County, Colorado. Guidelines and Regulations for Areas and Activities of State Interest. Authority Colorado Regulatory Statutes (CRS) §§24-65.1-101 et seq.; CRS §§ 30-28-101 et seq.; CRS §§ 30-28-201 et seq.; CRS §§ 29-20-101 et seq. Adopted June 6, 2013. Available online at: http://adm.elpasoco.com/Development%20Services/Documents/1041%20Regulations/4-8-15%20Areas%20Activities%20State%20Int.pdf

National Environmental Policy Act (NEPA). 1970. 42 United States Code (USC) 4321-4370h. Public Law 91–190, § 2, January 1, 1970, 83 Statute 852.

National Historic Preservation Act (NHPA). 1966. 16 United States Code §§ 470 et seq. October 15, 1966.

Native American Graves Protection and Repatriation Act (NAGPRA). 1990. 25 United States Code (USC) §§ 3001-3013. November 16, 1990.

Appendix A: Front Range Midway Solar Project Community Announcement and Information Guide

Front Range-Midway Solar, LLC &
Tradewind Energy, Inc.

Contact Us:

Front Range-Midway Solar Project, LLC.
c/o Tradewind Energy, Inc.

Learn more at www.tradewindenergy.com

For more information from the project developer:

Scott Zeimetz
Development Manager
913-956-4080
szeimetz@tradewindenergy.com

To provide comments to Western on the NEPA process, please email or submit written comments to:

MidwaySolarScoping@west-inc.com

WEST, Inc.

Attn: Front Range-Midway Solar Project Scoping

415 W. 17th Street, Suite 200

Cheyenne, WY 82001

Comments must be submitted by September 10, 2015

WEST, Inc. is the third party contractor assisting Western and Front Range-Midway Solar, LLC in preparation of the EA.

Front Range-Midway Solar Project, LLC.
16105 W 113th Street STE 105
Lenexa, KS 66219

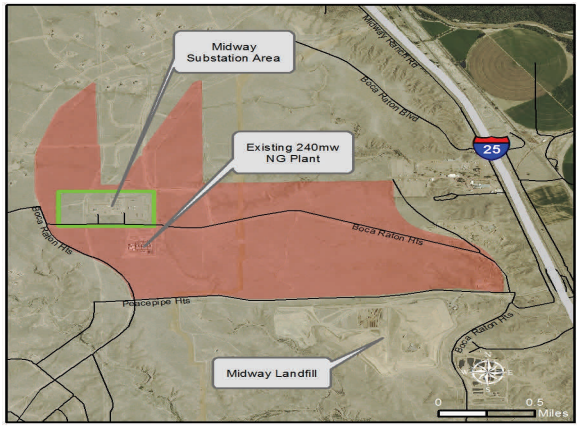
The Front Range-Midway Solar Project

Community Announcement and Information Guide

The Front Range-Midway Solar Project, LLC, a subsidiary of Tradewind Energy, Inc. is planning a 100-megawatt solar array in southern El Paso County and is seeking your feedback.

Basic Facts about the Front Range-Midway Project:

- **Energy Output:** 100 MW of Solar Energy
- **Project Area:** Approximately 1,000 Acres
- **Location:** El Paso County, approximately 10 mi south of Fountain, CO
- **Technology:** Ground-mounted photovoltaic (PV) panels, up to 10 feet in height
- **New Infrastructure:** PV panels, electric collection system, substation, and power line
- **Power Interconnection:** Existing Western Area Power Administration or PSCo Substations located adjacent to Project Area.
- **Timeline:** Construction anticipated for a 2016 commercial operation date
- **Water Friendly Energy:** Solar energy uses a fraction of the water that conventional sources need to generate power



Land being studied as part of NEPA process

Project Benefits

The project will generate revenues for the local community in the form of property tax and landowner payments and will create both temporary construction jobs as well as several full-time employee positions

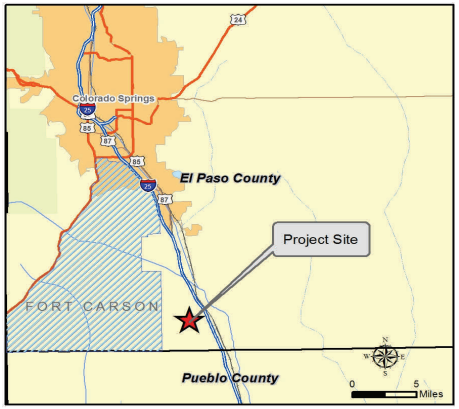
- **4 Full Time Jobs**
- **200 Construction Jobs**
- **Over $8 Million in tax revenue will be created from the facility. A large portion of these dollars will flow to the local school district.**

About Front Range-Midway Solar

- **Sustainable energy for all:** The company developing this project is one of the largest wind and solar project development companies in the U.S. We deliver long-term projects that tap into nature's resources to produce sustainable energy for our nation - real power that keeps our energy costs low.
- **Beyond the business:** We strive to be a committed partner to the communities where we work. Our projects are not just investments in sustainable electricity generation; they are investments in towns, counties, and the amazing people we have the privilege to work with.

National Environmental Policy Act and Public Input

- **Interconnection:** Front Range-Midway Solar is working with Western Area Power Administration to obtain an interconnection agreement
- **NEPA:** As a Federal power-marketing agency, Western must comply with the National Environmental Policy Act (NEPA)
- **Environmental Assessment:** Preparation of an Environmental Assessment (EA) is a requirement of the NEPA process
- **Public Input:** In preparing the EA, Front Range-Midway Solar and Western are seeking public comments on the Project which will be incorporated into the EA. In addition, a Draft EA will be released for public review and comment late in 2015. Notice of the Draft EA's availability for comment will be published in the Colorado Springs Gazette.
- **Comments:** Comments from the public help in identifying issues and concerns about the proposed project
- **Comment Deadline:** Comments must be submitted via mail or email by September 10, 2015 using the contact information located on the **Contact Us** page of this brochure.



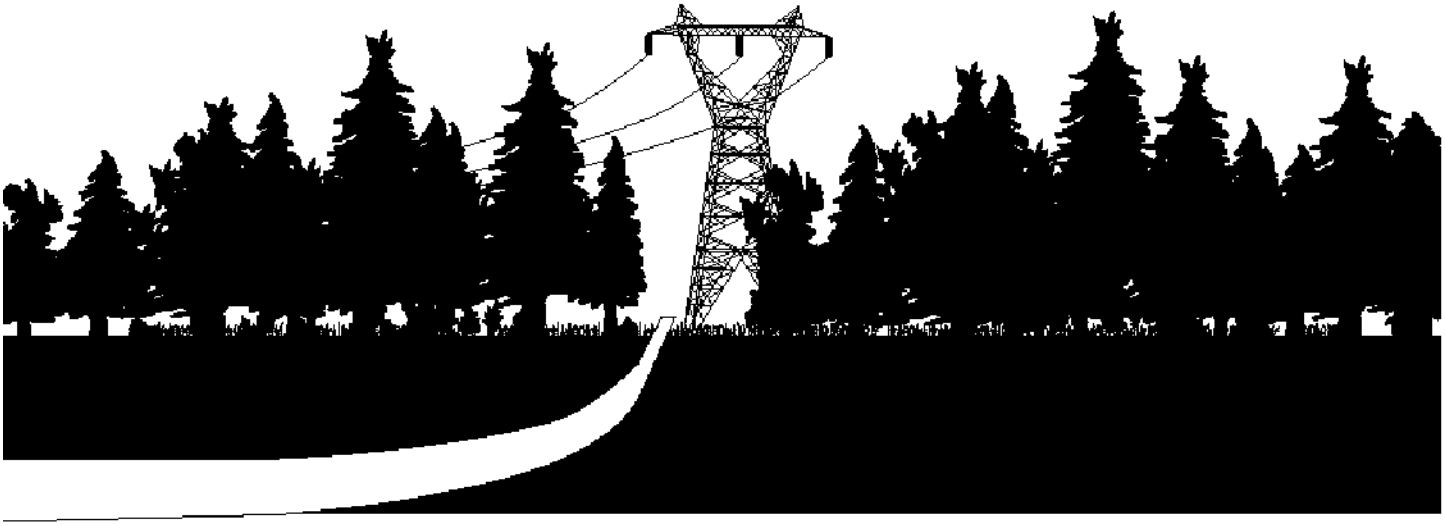
Appendix B: Western Area Power Administration's Construction Standards, Standard 13 Environmental Quality Protection

Western
AREA POWER
ADMINISTRATION

CONSTRUCTION STANDARDS

STANDARD 13

ENVIRONMENTAL QUALITY PROTECTION



July 2009

SAFETY
A HABIT TO LIVE BY

TABLE OF CONTENTS

Page Number

SECTION 13.1--CONTRACTOR FURNISHED DATA

1. RECYCLED MATERIAL QUANTITY REPORT: Submit quantities for recycled material listed in Section 13.6, "Recycled Material Quantities", to the COR after completion and prior to submittal of final invoice.

2. RECOVERED MATERIAL AND BIOBASED PRODUCTS REPORT: Provide the COR the following information for purchases of items listed in Section 13.7, "Use of Recovered Material And Biobased Products":

   (1) Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content after completion and prior to submittal of final invoice.

3. RECLAIMED REFRIGERANT RECEIPT: A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR after completion and prior to submittal of final invoice in accordance with Section 13.8.5, —Refrigerants And Receipts".

4. WASTE MATERIAL QUANTITY REPORT: Submit quantities of total project waste material disposal as listed below to the COR after completion and prior to submittal of final invoice in accordance with Section 13.8.8, —Waste Material Quantity Report".

   (1) Sanitary Wastes: Volume in cubic yards or weight in pounds.

   (2) Hazardous or Universal Wastes: Weight in pounds.

   (3) PCB Wastes: Weight in pounds.

   (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

5. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan): Submit the Plan as described in Section 13.10.2, "Spill Prevention Notification and Cleanup Plan", to the COR for approval 14 days prior to start of work. Approval of the Plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

6. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN: Submit the Plan as described in Section 13.10.3, "Tanker Oil Spill Prevention and Response Plan", to the COR for approval 14 days prior to start of work. Approval of the Plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

7. PESTICIDE USE PLAN: Submit two copies of a pesticide use plan as described in Section 13.11.3, —Pesticide Use Plan", to the COR for approval 14 days prior to use. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after application, submit a written report in accordance with Standard 2 – Sitework, Section 2.1.1.5, —Soil-Applied Herbicide".

8. TREATED WOOD POLE AND MEMBERS RECYCLING CONSUMER INFORMATION RECEIPT: Submit treated wood pole and members consumer receipt forms to the COR after completion and prior to submittal of final invoice (see 13.12, —Treated Wood Poles and Members Recycling or Disposal").

9. PREVENTION OF AIR POLLUTION: Submit a copy of permits, if required, from Federal, State, or local agencies to the COR 14 days prior to the start of work.

10. ASBESTOS LICENSES OR CERTIFICATIONS: Submit a copy of licenses and/or certifications for asbestos work as described in 13.14, —Handling and Management of Asbestos Containing Material" paragraph a., to the COR prior to work. Submit copies of certificates of disposal and/or receipts for waste to the COR after completion and prior to submittal of final invoice.

11. LEAD PAINT NOTICES: Submit a copy of lead paint notices as described in 13.15, —Material with Lead-based Paint" paragraph b., to the COR upon completion and prior to submittal of final invoice. Submit copies of certificates of disposal and/or receipts for waste to the COR after completion and prior to submittal of final invoice.

12. WATER POLLUTION PERMITS: Submit copies of any water pollution permits as described in 13.16, —Prevention of Water Pollution" paragraph b., to the COR prior to work.

13. PCB TEST REPORT: Submit a PCB test report as described in 13.17, —Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment" paragraph b., prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.

14. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed as described in 13.17, —Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment", to the COR upon completion and prior to submittal of final invoice.

15. OSHA PCB TRAINING RECORDS: Submit employee training documentation records to the COR 14 days prior to the start of work as described in 13.18.1.

16. CLEANUP WORK MANAGEMENT PLAN: Submit a Cleanup Work Management Plan as described in 13.18, —Removal of Oil-contaminated Material" paragraph b., to the COR for approval 14 days prior to the start of work. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

17. POST CLEANUP REPORT: Submit a Post-Cleanup Report as described in 13.18, —Removal of Oil-contaminated Material" paragraph g., to the COR upon completion and prior to submittal of final invoice.

SECTION 13.2--ENVIRONMENTAL REQUIREMENTS

Comply with Federal, State, and local environmental laws and regulations. The sections in this Standard further specify the requirements.

SECTION 13.3--LANDSCAPE PRESERVATION

1. GENERAL: Preserve landscape features in accordance with the contract clause titled —Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements.‖

2. CONSTRUCTION ROADS: Location, alignment, and grade of construction roads shall be subject to the COR's approval. When no longer required, construction roads shall be restored to their original condition. Surfaces of construction roads shall be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion. If re-vegetation is required, use regionally native plants.

3. CONSTRUCTION FACILITIES: Shop, office, and yard areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent and prevent impact on sensitive riparian areas and flood plains. Storage and construction buildings, including concrete footings and slabs, shall be removed from the site prior to contract completion. The area shall be re-graded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion or transport of sediment and pollutants. If re-vegetation is required, use regionally native plants.

SECTION 13.4--PRESERVATION OF CULTURAL AND PALEONTOLOGICAL RESOURCES

1. GENERAL: Do not remove or alter cultural artifacts or paleontological resources (fossils). Cultural artifacts may be of scientific or cultural importance and include bones, pottery, glass, projectile points (arrowheads), other stone or metal tools, historic buildings, and features. Paleontological resources can be of scientific importance and include mineralized animals and plants or trace fossils such as footprints. Both cultural and paleontological resources are protected by Federal Regulations during Federal construction projects. Contractor must always stay within Western's right-of-way and/or easement.

2. KNOWN CULTURAL OR PALEONTOLOGICAL SITES: Following issuance of notice to proceed, Western will provide two sets of plan and profile drawings showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground in a manner approved by the COR. Instruct employees, subcontractors, and others that vehicular or equipment access to these areas is prohibited. If access is absolutely necessary, first obtain approval from the COR. Western will remove the markings during or following final cleanup. For some project work, Western will require an archaeological, paleontological or tribal monitor at or near cultural or paleontological site locations. The contractor shall work with the monitor to insure that sensitive locations are avoided. Where monitors are required, the monitor shall meet with the crew each morning to go over the day's work. The monitor will also conduct awareness training for all contractors prior to any work in the field. Untrained personnel shall not be allowed in the construction area. For areas designated as sensitive and requiring a monitor, the contractor may not access those areas without a monitor being present.

3. UNKNOWN CULTURAL OR PALEONTOLOGICAL SITES: On rare occasions cultural or paleontological sites may be discovered during excavation or other earth-moving activities.

   (1) Reporting: If evidence of a cultural or paleontological site is discovered, cease work in the area immediately and notify the COR of the location and nature of the findings. If a monitor is present, the monitor should also be notified. Stop all activities within a 200-foot radius of the discovery and do not proceed with work within that radius until directed to do so by the COR.

   (2) Care of Evidence: Protect the area. Do not remove, handle, alter, or damage artifacts or fossils uncovered during construction.

SECTION 13.5--NOXIOUS WEED CONTROL

1. GENERAL: Comply with Federal, state, and local noxious weed control regulations. Provide a "clean vehicle policy" while entering and leaving construction areas to prevent transport of noxious weed plants and/or seed. Transport only construction vehicles that are free of mud and vegetation debris to staging areas and the project right-of-way.

SECTION 13.6--RECYCLED MATERIAL QUANTITIES

1. GENERAL: Record quantities of the following material by category that is salvaged, recycled, reused, or reprocessed:

    (1) Transformers, Breakers: Weight without oil.

    (2) Electrical Conductors: Length in feet and Type (for example, ACSR, Copper, and gauge).

    (3) Steel: Weight in pounds or tons.

    (4) Aluminum: Weight in pounds or tons

    (5) Copper: Weight in pounds or tons..

    (6) Other Metals: Weight in pounds or tons.

    (7) Oil: Gallons (separate by type - less than 2 ppm PCB, 2 to 50 ppm PCB, and 50 or greater ppm PCB).

    (8) Gravel, Asphalt, Or Concrete: Weight in pounds or tons.

    (9) Batteries: Weight in pounds.

    (10) Wood Poles and Crossarms: Weight in pounds.

    (11) Wood construction material: Weight in pounds.

    (12) Cardboard: Weight in pounds.

    (13) Porcelain insulators: Weight in pounds.

2. RECYCLED MATERIAL QUANTITY REPORT: Submit quantities for recycled material listed above to the COR after completion and prior to submittal of final invoice.

SECTION 13.7--USE OF RECOVERED MATERIAL AND BIOBASED PRODUCTS

1. RECOVERED MATERIAL PRODUCTS: If the products listed below are obtained as part of this project, purchase the items with the highest recovered material content possible unless recovered material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

(1) Construction Products:

1) Building Insulation Products.

2) Carpet.

3) Carpet cushion.

4) Cement and concrete containing coal fly ash, ground granulated blast furnace slag, cenospheres, or silica fume.

5) Consolidated and reprocessed latex paint.

6) Floor Tiles.

7) Flowable fill.

8) Laminated Paperboard.

9) Modular threshold ramps.

10) Nonpressure pipe.

11) Patio Blocks.

12) Railroad grade crossing surfaces.

13) Roofing materials.

14) Shower and restroom dividers/partitions.

15) Structural Fiberboard.

(2) Landscaping Products:

1) Compost made from yard trimmings or food waste.
2) Garden and soaker hoses.
3) Hydraulic Mulch.
4) Lawn and garden edging.
5) Plastic lumber landscaping timbers and posts.

(3) Non-paper Office Products:

1) Binders, clipboards, file folders, clip portfolios, and presentation folders.
2) Office furniture.
3) Office recycling containers.
4) Office waste receptacles.
5) Plastic desktop accessories.

6) Plastic envelopes.
7) Plastic trash bags.
8) Printer ribbons.
9) Toner cartridges.

(4) Paper and Paper Products:

1) Commercial/industrial sanitary tissue products.
2) Miscellaneous papers.
3) Newsprint.
4) Paperboard and packaging products.
5) Printing and writing papers.

(5) Park and Recreation Products:

1) Park benches and picnic tables.
2) Plastic fencing.
3) Playground equipment.
4) Playground surfaces.
5) Running tracks.

(6) Transportation Products:

1) Channelizers.
2) Delineators.
3) Flexible delineators.
4) Parking stops.
5) Traffic barricades.
6) Traffic cones.

(7) Vehicular Products:

1) Engine coolants.
2) Rebuilt Vehicular Parts.
3) Re-refined lubricating oils.
4) Retread tires.

(8) Miscellaneous Products:

1) Awards and plaques.
2) Bike racks.
3) Blasting grit.
4) Industrial drums.
5) Manual-grade strapping.
6) Mats.
7) Pallets.
8) Signage.
9) Sorbents.

(9) For a complete listing of products and recommendations for recovered content, see http://www.epa.gov/cpg/products.htm

2. BIOBASED PRODUCTS: If the products listed below are obtained as part of this project, purchase the items with the highest biobased content possible and no less than the percent indicated for each product unless biobased products are not available: 1) competitively within a reasonable

time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

(1) Mobile Equipment Hydraulic Fluids (minimum 24% biobased content).

(2) Urethane Roof Coatings (minimum 62% biobased content).

(3) Water Tank Coatings (minimum 62% biobased content).

(4) Diesel Fuel Additives (minimum 93% biobased content).

(5) Penetrating Lubricants (minimum 71% biobased content).

(6) Bedding, Bed Linens, and Towels (minimum 18% biobased content).

(7) Adhesive and mastic removers 58%.

(8) Plastic insulating foam for residential and commercial construction 7%.

(9) Hand cleaners and sanitizers.

1) Hand cleaners—64 %
2) Hand sanitizers (including hand cleaners and sanitizers)—73 %

(10) Composite panels.

1) Plastic lumber composite panels—23 %
2) Acoustical composite panels—37 %
3) Interior panels—55 %
4) Structural interior panels—89 %
5) Structural wall panels—94 %

(11) Fluid-filled transformers.

1) Synthetic ester-based fluid-filled transformers—66 %
2) Vegetable oil-based fluid-filled transformers—95 %

(12) Disposable containers 72%.

(13) Fertilizers 71%.

(14) Sorbents 89%.

(15) Graffiti and grease removers 34%.

(16) 2-Cycle engine oils 34%.

(17) Lip care products 82%.

(18) Films (used in packaging, wrappings, linings, and other similar applications).

1) Semi-durable films—45%
2) Non-durable films—85%

(19) Stationary equipment hydraulic Fluids 44%.

(20) Disposable cutlery 48%.

(21) Glass cleaners 49%.

(22) Greases.

1) Food grade grease—42%
2) Multipurpose grease—72%
3) Rail track grease—30%
4) Truck grease—71%
5) Greases not elsewhere specified—75%

(23) Dust suppressants 85%.

(24) Carpets 7%.

(25) Carpet and upholstery cleaners.

1) General purpose cleaners—54%
2) Spot removers—7%

(26) Bathroom and spa cleaners 74%.

(27) Concrete and asphalt release fluids 87%.

(28) General purpose de-icers 93%.

(29) Firearm lubricants 49%.

(30) Floor strippers 78%.

(31) Laundry products.

1) Pretreatment/spot removers—46%
2) General purpose laundry products—34%

(32) Metalworking fluids.

1) Straight oils—66%
2) General purpose soluble, semisynthetic, and synthetic oils—57%
3) High performance soluble, semisynthetic, and synthetic oils—40%

(33) Wood and concrete sealers.

1) Penetrating liquids—79%
2) Membrane concrete sealers—11%

For additional information regarding biobased products, see **http://www.biobased.oce.usda.gov**

3. RECOVERED MATERIAL AND BIOBASED PRODUCTS REPORT: Provide the COR the following information for purchases of those items listed above:

(1) Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content after completion and prior to submittal of final invoice.

(2) Written justification 7 work days prior to purchase of listed items if recovered material or biobased products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

SECTION 13.8--DISPOSAL OF WASTE MATERIAL

1. GENERAL: Dispose or recycle waste material in accordance with applicable Federal, State and Local regulations and ordinances. In addition to the requirements of the Contract Clause —Cleaning Up‖, remove all waste material from the construction site. No waste shall be left on Western property, right-of-way, or easement. Burning or burying of waste material is not permitted.

2. HAZARDOUS, UNIVERSAL, AND NON-HAZARDOUS WASTES: Manage hazardous, universal, and non-hazardous wastes in accordance with State and Federal regulations.

3. USED OIL: Used oil generated from the Contractor activities shall be managed in accordance with used oil regulations.

4. RECYCLABLE MATERIAL: Reduce wastes, including excess Western material, by recycling, reusing, or reprocessing. Examples of recycling, reusing, or reprocessing include reprocessing of solvents; recycling cardboard; and salvaging scrap metals.

5. REFRIGERANTS AND RECEIPTS: Refrigerants from air conditioners, water coolers, refrigerators, ice machines and vehicles shall be reclaimed with certified equipment operated by certified technicians if the item is to be disposed. Refrigerants shall be reclaimed and not vented to the atmosphere. A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR after completion and prior to submittal of final invoice.

6. HALONS: Equipment containing halons that must be tested, maintained, serviced, repaired, or disposed must be handled according to EPA requirements and by technicians trained according to those requirements.

7. SULFUR HEXAFLOURIDE (SF_6): SF_6 shall be reclaimed and not vented to the atmosphere.

8. WASTE MATERIAL QUANTITY REPORT: Submit quantities of total project waste material disposal as listed below to the COR after completion and prior to submittal of final invoice.

   (1) Sanitary Wastes: Volume in cubic yards or weight in pounds.

   (2) Hazardous or Universal Wastes: Weight in pounds.

   (3) PCB Wastes: Weight in pounds.

   (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

SECTION 13.9--CONTRACTOR'S LIABILITY FOR REGULATED MATERIAL INCIDENTS

1. GENERAL: The Contractor is solely liable for all expenses related to spills, mishandling, or incidents of regulated material attributable to his actions or the actions of his subcontractors. This includes all response, investigation, cleanup, disposal, permitting, reporting, and requirements from applicable environmental regulation agencies.

2. SUPERVISION: The actions of the Contractor employees, agents, and subcontractors shall be properly managed at all times on Western property or while transporting Western's (or previously owned by Western) regulated material and equipment.

SECTION 13.10--POLLUTANT SPILL PREVENTION, NOTIFICATION, AND CLEANUP

1. GENERAL: Provide measures to prevent spills of pollutants and respond appropriately if a spill occurs. A pollutant includes any hazardous or non-hazardous substance that when spilled, will contaminate soil, surface water, or ground water. This includes any solvent, fuel, oil, paint, pesticide, engine coolants, and similar substances.

2. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan): Provide the Plan to the COR for approval 14 days prior to start of work. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Include the following in the Plan:

   (1) Spill Prevention measures. Describe the work practices or precautions that will be used at the job site to prevent spills. These may include engineered or manufactured techniques such as installation of berms around fuel and oil tanks; Storage of fuels, paints, and other substances in spill proof containers; and management techniques such as requiring workers to handle material in certain ways.

   (2) Notification. Most States and the Environmental Protection Agency require by regulation, that anyone who spills certain types of pollutants in certain quantities notify them of the spill within a specific time period. Some of these agencies require written follow up reports and cleanup reports. Include in the Plan, the types of spills for which notification would be made, the agencies notified, the information the agency requires during the notification, and the telephone numbers for notification.

   (3) Employee Awareness Training. Describe employee awareness training procedures that will be implemented to ensure personnel are knowledgeable about the contents of the Plan and the need for notification.

   (4) Commitment of Manpower, Equipment and Material. Identify the arrangements made to respond to spills, including the commitment of manpower, equipment and material.

   (5) If applicable, address all requirements of 40CFR112 pertaining to Spill Prevention, Control and Countermeasures Plans.

3. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN: Provide a Tanker Oil Spill Prevention and Response Plan as required by the Department of Transportation if oil tankers with volume of 3,500 gallons or more are used as part of the project. Submit the Tanker Oil Spill Prevention and Response Plan to the COR for approval 14 days prior to start of work. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

SECTION 13.11--PESTICIDES

1. GENERAL: The term —pesticide" includes herbicides, insecticides, rodenticides and fungicides. Pesticides shall only be used in accordance with their labeling and applied by appropriately certified applicators.

2. ENVIRONMENTAL PROTECTION AGENCY REGISTRATION: Use EPA registered pesticides that are approved for the intended use.

3. PESTICIDE USE PLAN: The plan shall contain: 1) a description of the pesticide to be used, 2) where it is to be applied, 3) the application rate, 4) a copy of the label, and 5) a copy of required applicator certifications. Submit two copies of the pesticide use plan to the COR for approval 14 days prior to the date of intended application. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after application, submit a written report, including the pesticide applicators report, in accordance with Standard 2 – Sitework, Section 2.1.1.5, —Soil-Applied Herbicide".

SECTION 13.12--TREATED WOOD POLES AND MEMBERS RECYCLING OR DISPOSAL

Whenever practicable, treated wood poles and members removed during the project shall be recycled or transferred to the public for some uses. Treated wood poles and members transferred to a recycler, landfill, or the public shall be accompanied by a written consumer information sheet on treated wood as provided by Western. Obtain a receipt form, part of the consumer information sheet, from the recipient indicating that they have received, read, and understand the consumer information sheet. Treated wood products transferred to right-of-way landowners shall be moved off the right-of-way. Treated wood product scrap or poles and members that cannot be donated or reused shall be properly disposed in a landfill that accepts treated wood and has signed Western's consumer information sheet receipt. Submit treated wood pole and members consumer receipt forms to the COR after completion and prior to submittal of final invoice.

SECTION 13.13--PREVENTION OF AIR POLLUTION

1. GENERAL: Ensure that construction activities and the operation of equipment are undertaken to reduce the emission of air pollutants. Submit a copy of permits, if required, from Federal, State, or local agencies to the COR 14 days prior to the start of work.

2. MACHINERY AIR EMISSIONS: The Contractor and subcontractor machinery shall have, and shall use the air emissions control devices required by Federal, State or Local Regulation or ordinance.

3. DUST ABATEMENT: Dust shall be controlled. Oil shall not be used as a dust suppressant. Dust suppressants shall be approved by the COR prior to use.

SECTION 13.14--HANDLING AND MANAGEMENT OF ASBESTOS CONTAINING MATERIAL

1. GENERAL: Obtain the appropriate Federal, State, Tribal or local licenses or certifications prior to disturbing any regulated asbestos-containing material. If a building or portion of a building will be demolished or renovated, obtain an Asbestos Notice of and Permit for Demolition and Renovation from the State or Tribal Department of Environmental Quality, Division of Air Quality (or equivalent). The building(s) shall be inspected by a State-Certified or Tribal accepted Asbestos Building Inspector and the inspector shall certify the presence and condition of asbestos on site as directed on the State or Tribal Demolition and Renovation Notice/Permit. The inspections shall be performed and notifications shall be submitted whether asbestos is present or not. Submit a copy of licenses, certifications, Demolition and Renovation Notifications and Permits for asbestos work to the COR 14 days prior to work. Ensure: 1) worker and public safety requirements are fully implemented and 2) proper handling, transportation, and disposal of asbestos containing material.

2. TRANSPORTATION OF ASBESTOS WASTE: Comply with Department of Transportation, Environmental Protection Agency, and State and Local requirements when transporting asbestos wastes.

3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificates of disposal for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR after completion and prior to submittal of final invoice.

SECTION 13.15--MATERIAL WITH LEAD-BASED PAINT

1. GENERAL: Comply with all applicable Federal, State and local regulations concerning work with lead-based paint, disposal of material painted with lead-based paint, and management of these material. OSHA and General Industry Standards apply to worker safety and right-to-know issues. Federal EPA and State agencies regulate waste disposal and air quality issues.

2. TRANSFER OF PROPERTY: If lead-based paint containing equipment or material is to be given away or sold for reuse, scrap, or reclaiming, a written notice shall be provided to the recipient of the material stating that the material contains lead-based paint and the Hazardous Waste regulations may apply to the waste or the paint in some circumstances. The new owner must also be notified that they may be responsible for compliance with OSHA requirements if the material is to be cut, sanded, abraded, or stripped of paint. Submit a copy of lead paint notices to the COR upon completion and prior to submittal of final invoice.

3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificate of disposals for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR after completion and prior to submittal of final invoice.

SECTION 13.16--PREVENTION OF WATER POLLUTION

1. GENERAL: Ensure that surface and ground water is protected from pollution caused by construction activities and comply with applicable regulations and requirements. Ensure that streams, waterways and other courses are not obstructed or impaired unless the appropriate Federal, State or local permits have been obtained.

2. PERMITS: Ensure that:

   (1) A National Pollutant Discharge Elimination System (NPDES) permit is obtained from the US Environmental Protection Agency or State as appropriate if the disturbed construction area equals 1 acre or more. Disturbed areas include staging, parking, fueling, stockpiling, and any other construction related activities. Refer to www.epa.gov/npdes/stormwater for directions and forms.

   (2) A dewatering permit is obtained from the appropriate agency if required for construction dewatering activities.

   (3) Copies of permits and plans, approved by the appropriate regulating agencies, are submitted to the COR 14 days prior to start of work.

3. EXCAVATED MATERIAL AND OTHER CONTAMINANT SOURCES: Control runoff from excavated areas and piles of excavated material, construction material or wastes (to include truck washing and concrete wastes), and chemical products such as oil, grease, solvents, fuels, pesticides, and pole treatment compounds. Excavated material or other construction material shall not be stockpiled or deposited near or on streambanks, lake shorelines, ditches, irrigation canals, or other areas where run-off could impact the environment.

4. MANAGEMENT OF WASTE CONCRETE OR WASHING OF CONCRETE TRUCKS: Do not permit the washing of concrete trucks or disposal of excess concrete in any ditch, canal, stream, or other surface water. Concrete wastes shall be disposed in accordance with all Federal, State, and local regulations. Concrete wastes shall not be disposed on any Western property, right-of-way, or easement; nor on any streets, roads, or property without the owner's consent.

5. STREAM CROSSINGS: Crossing of any stream or other waterway shall be done in compliance with Federal, State, and local regulations. Crossing of some waterways may be prohibited by landowners, State or Federal agencies or require permits.

SECTION 13.17--TESTING, DRAINING, REMOVAL, AND DISPOSAL OF OIL-FILLED ELECTRICAL EQUIPMENT

1. SAMPLING AND TESTING OF INSULATING OIL FOR PCB CONTENT: Sample and analyze the oil of electrical equipment (which includes storage tanks) for PCB's. Use analytical methods approved by EPA and applicable State regulations. Decontaminate sampling equipment according to documented good laboratory practices (these can be contractor developed or EPA standards). Use only laboratories approved by Western. The COR will furnish a list of approved laboratories.

2. PCB TEST REPORT: Provide PCB test reports that contain the information below for disposing of oil-filled electrical equipment. Submit the PCB test report prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.

   (1) Name and address of the laboratory.

   (2) Description of the electrical equipment (e.g. transformer, breaker).

   (3) Serial number for the electrical equipment.

   (4) Date sampled.

   (5) Date tested.

   (6) PCB contents in parts per million (ppm).

   (7) Unique identification number of container into which the oil was drained (i.e., number of drum, tank, tanker, etc.)

3. OIL CONTAINING PCB: Comply with the Federal regulations pertaining to PCBs found at Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).

4. REMOVAL AND DISPOSAL OF INSULATING OIL AND OIL-FILLED ELECTRICAL EQUIPMENT: Once the PCB content of the oil has been identified from laboratory results, the oil shall be transported and disposed, recycled, or reprocessed according to 40 CFR 761 (if applicable), Resource Conservation and Recovery Act (RCRA) —used oil", and other applicable regulations. Used oil may be transported only by EPA-registered used oil transporters. The oil must be stored in containers that are labeled —Used Oil." Use only U.S. transporters and disposal sites approved by Western.

5. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed to the COR upon completion and prior to submittal of final invoice.

SECTION 13.18--REMOVAL OF OIL-CONTAMINATED MATERIAL

1. GENERAL: Removing oil-contaminated material includes excavating, stockpiling, testing, transporting, cleaning, and disposing of these material. Personnel working with PCBs shall be trained in accordance with OSHA requirements. Submit employee training documentation records to the COR 14 days prior to the start of work.

2. CLEANUP WORK MANAGEMENT PLAN: Provide a Cleanup Work Management Plan that has been approved by applicable Federal, State, or Local environmental regulation agencies. Submit the plan to the COR for approval 14 days prior to the start of work. Approval of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. The plan shall address on-site excavation of contaminated soil and debris and include the following:

   (1) Identification of contaminants and areas to be excavated.
   (2) Method of excavation.
   (3) Level of personnel/subcontractor training.
   (4) Safety and health provisions.
   (5) Sampling requirements including quality control, laboratory to be used.
   (6) Management of excavated soils and debris.
   (7) Disposal methods, including transportation to disposal.

3. EXCAVATION AND CLEANUP: Comply with the requirements of Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).

4. TEMPORARY STOCKPILING: Excavated material, temporarily stockpiled on site, shall be stored on heavy plastic and covered to prevent wind and rain erosion at a location designated by the COR.

5. SAMPLING AND TESTING: Sample contaminated debris and areas of excavation to ensure that contamination is removed. Use personnel with experience in sampling and, in particular, with experience in PCB cleanup if PCBs are involved. Use analytical methods approved by EPA and applicable State regulations.

6. TRANSPORTION AND DISPOSAL OF CONTAMINATED MATERIAL: The Contractor shall be responsible and liable for the proper loading, transportation, and disposal of contaminated material according to Federal, State, and local requirements. Use only U.S. transporters and disposal sites approved by Western.

7. POST CLEANUP REPORT: Provide a Post-Cleanup Report that describes the cleanup of contaminated soils and debris. Submit the report to the COR upon completion and prior to submittal of final invoice. The report shall contain the following information:

   (1) Site map showing the areas cleaned.

   (2) Description of the operations involved in excavating, storing, sampling, and testing, and disposal.

   (3) - Sampling and analysis results including:

      1) Name and address of the laboratory;
      2) sample locations;
      3) sample dates;
      4) analysis dates;
      5) contents of contaminant (e.g., PCB or total petroleum hydrocarbons) in parts per million (ppm).

(4) Certification by the Contractor that the cleanup requirements were met.

(5) Copies of any manifests, bills of lading, and disposal certificates.

(6) Copies of correspondence with regulatory agencies that support completion of the cleanup.

SECTION 13.19--CONSERVATION OF NATURAL RESOURCES

1. GENERAL: Federal law prohibits the taking of endangered, threatened, proposed or candidate wildlife and plants, and destruction or adverse modification of designated Critical Habitat. Federal law also prohibits the taking of birds protected by the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. —Take‖ means to pursue, hunt, shoot, wound, kill, trap, capture or collect a protected animal or any part thereof, or attempt to do any of those things. The Contractor will take reasonable precaution to avoid harming other wildlife species. Contractor must always stay within Western's right-of-way and/or easement.

2. KNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT: Following issuance of the notice to proceed, and prior to the start of construction, Western will provide training to all contractor and subcontractor personnel involved in the construction activity. Untrained personnel shall not be allowed in the construction area. Western will provide two sets of plan and profile drawings showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground in a manner approved by the COR. If access is absolutely necessary, the contractor shall first obtain permission from the COR, noting that a Western and/or other government or tribal agency biologist may be required to accompany personnel and equipment. Ground markings shall be maintained through the duration of the contract. Western will remove the markings during or following final inspection of the project.

3. UNKNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT: If evidence of a protected species is found in the project area, the contractor shall immediately notify the COR and provide the location and nature of the findings. The contractor shall stop all activity in the vicinity of the protected species or habitat and not proceed until directed to do so by the COR.

Appendix C: US Fish and Wildlife Service (Service) Response Letter, Dated July 29, 2014

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
P.O. Box 25486, DFC (65412)
Denver, Colorado 80225-0486

IN REPLY REFER TO:
ES/CO: Solar Energy / El Paso County / Front Range-Midway Solar Project
TAILS: 06E24000-2014-TA-0805

JUL 29 2014

Ida Kitchen-Greenwell
Trade Wind Energy Inc.
16150 West 113th Street suite 105
Lenexa, KS 66219

Dear Ms. Kitchen-Greenwell:

Thank you for your email and letter to the U.S. Fish and Wildlife Service (Service) received July 16, 2014, regarding Trade Wind Energy's proposed Front Range-Midway solar photovoltaic (PV) project (project) located west of I-25 about 20 miles south of downtown Colorado Springs in El Paso County, Colorado.

Trade Wind Energy proposes to install and operate a solar array with capable of generating up to 100 MW of solar capacity on approximately 800 acres of vacant land, which is currently surrounded by infrastructure, including a regional landfill and a large electrical substation near the town of Fountain.

The PV panels will be affixed to a ground-mounted racking system supported by steel pylons driven into the ground. Light duty gravel service roads will be constructed within the solar array to provide access for ongoing maintenance. The solar array will be approximately 3 feet off ground surface and 1- feet in height, and will cover approximately 80% of the project area.

In preparation for a NEPA process and development of an Environmental Assessment you evaluated potential for threatened and endangered species to occur within the project area. Your report recommends that a habitat assessment be conducted to determine with greater certainty whether any T or E species habitats may be present in the area.

In response to your letter, we provide the following comments regarding:

1. Federally listed species;
2. Migratory birds;
3. Electrical transmission and distribution lines; and
4. State species of special concern, specifically the Gunnison's prairie dog.

The Service provides recommendations for threatened and endangered species under the authority of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*).

Protective measures for migratory birds are provided under the authority of the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 *et seq.*), and the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 *et seq.*). We consider other fish and wildlife resources under the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*) and the Fish and Wildlife Act (16 U.S.C. 742 *et seq.*).

1. Federally Listed Species

The proposed project is located within a developed area near the town of Fountain, Colorado. The primary vegetation type is grassland/herbaceous, which correlates to short-grass prairie with some scrub/shrub land cover. Given the land cover types, we would agree that an on-site habitat assessment should be conducted.

2. Migratory Birds and Bald and Golden Eagles

Activities associated with solar energy projects often include the removal of vegetation, underground burrows, or other structures used by migratory birds and eagles for nesting, roosting, perching, or foraging. During operation, solar energy facilities and their transmission lines may impact migratory birds by interrupting movements or by killing birds during collisions. Disturbed agricultural areas often provide foraging or ground nesting habitats for several migratory birds, such as the mountain plover (*Charadrius montanus*), and their conversion to solar farms may reduce or fragment available habitats. Therefore, we highlight the relevance of the MBTA and BGEPA to your project and provide recommendations intended to limit your project's impacts on migratory birds and eagles.

The Migratory Bird Treaty Act (MBTA):

The MBTA protects migratory birds, nests, and eggs from possession, sale, purchase, barter, transport, import, export, and take. Under the MBTA, it is unlawful unless permitted by regulations to pursue, hunt, take, capture, kill, or attempt to pursue, hunt, take, capture, or kill any migratory birds by any means or in any manner. The MBTA applies to 1,007 species of migratory birds identified in 50 CFR. § 10.13 and "take" is defined in 50 CFR § 10.12. The MBTA does not require intent to be proven, there is no incidental take statement, and the ESA does not absolve individuals or companies from liability under the MBTA. Unless permitted by the Service, the MBTA prohibits any intentional or unintentional activity that results in the take of migratory birds. Although the MBTA does not protect the habitats of migratory birds, activities that affect habitats and result in take of migratory birds do violate the MBTA.

The Bald and Golden Eagle Protection Act (BGEPA):

The BGEPA prohibits individuals and companies from knowingly, or with wanton disregard for the consequences of the Act, taking any bald or golden eagles or their body parts, nests, chicks, or eggs, which includes collection, molestation, disturbance, or killing. The BGEPA affords eagles additional protections beyond those provided by the MBTA by making it unlawful to "disturb" eagles. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, injury to an eagle or decreases its productivity or results in nest abandonment due to interference with breeding, feeding, or sheltering behaviors. A permitting

process provides limited exceptions to the BGEPA's prohibitions and the Service has issued regulations concerning the permit procedures in 50 CFR Part 22.

Removing nests, destroying nests, or causing nest abandonment may constitute a violation of the MBTA and BGEPA. Removal of any active migratory bird nest or nest tree is prohibited. For golden eagles, permits for inactive nests are restricted to activities involving resource extraction for human health and safety. No permits will be issued for any active nest of any migratory bird species, unless removal of the active nest is necessary for reasons of human health and safety. Therefore, if nesting migratory birds are present within or near the project area, timing of activities is a significant consideration and should be addressed in the early phases of project planning. Nest manipulation is not allowed without a permit. If a permit cannot be issued, your project may need to be modified to ensure that take of any migratory bird, eagle, young, eggs, or nests will not occur.

Recommendations for migratory birds and eagles:

To minimize impacts to migratory birds, the Service recommends that construction occur outside the typical breeding season for migratory birds. Although the provisions of the MBTA apply year-round, most nesting activity occurs between April 1 and July 15. However, some migratory birds nest outside of this loosely defined period. If proposed activities must occur during the nesting season, or at any other time that may result in the take of migratory birds or eagles, the Service recommends that qualified biologists conduct pre-work field surveys of the affected habitats or structures, during the nesting season, to verify the presence or absence of migratory birds and eagles. Contact the Service's Colorado Field Office for guidance if surveys identify birds or nests that may be affected by project activities.

Enclosed, please find a copy of Colorado Parks and Wildlife's "Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors" (2008). We recommend reviewing these guidelines and incorporating the seasonal and buffer restrictions into your project design to avoid and minimize impacts to raptors and other migratory birds protected by the MBTA.

While adoption of these recommendations is voluntary, we remind Trade Wind Energy that the MBTA and BGEPA prohibit the take of migratory birds and eagles unless permitted by regulations. As mandated by our trust responsibilities, we immediately notify the Service's Office of Law Enforcement of any incidents of take at energy facilities.

It is not possible to absolve individuals, companies, or agencies from liability under the MBTA or BGEPA, even if they implement the guidelines or similar protective measures at their facilities. However, the Service's Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable prudent and effective measures to avoid that take. It remains the applicant's responsibility to minimize the effects of their projects on migratory birds and other resources. For more information on MBTA and BGEPA regulations and their relevance to your project, please contact Craig Hansen of the Colorado Field Office at (303) 236–4749.

3. Electrical Transmission and Distribution Lines:

Solar energy facilities often require the development of new transmission and distribution lines. Overhead electrical lines concern the Service because published studies indicate that power lines can negatively affect wildlife. Collisions with power lines, power poles, and associated infrastructure often electrocute and kill birds, bats, and other wildlife. Projects may also permanently displace wildlife when activities alter or remove key components of important habitats. Early planning, coordination, and the strategic placement of power lines and associated facilities can avoid or reduce these impacts.

The Avian Power Line Interaction Committee (APLIC) developed guidelines and resources intended to address and mitigate electrocutions and collisions between wildlife and power lines. We recommend that you review and consider implementing these guidelines during the construction and operation of your electrical facilities. APLIC resources are available online at the following address:

http://www.aplic.org/mission

In Colorado, electrocutions at power lines are a serious threat to the ferruginous hawk (*Buteo regalis*), the golden eagle (*Aquila chrysaetos*), and other large raptors. In open prairies or agricultural fields, electrical poles often provide suitable perches or nest sites for birds of prey. As birds perch or build nests on power poles, their long wingspans easily touch electrical lines and complete circuits, effectively disrupting electrical service and often fatally electrocuting the bird. Undergrounding electrical lines eliminates the threat of electrocution and avian-caused power outages. Therefore, the Service recommends undergrounding electrical facilities whenever possible.

However, if undergrounding any overhead electrical line is not possible, we recommend that the proponents build overhead electrical lines with at least 10-foot cross arms on 3 phase lines, or at least 5 feet of spacing between electrical phases. Larger distances better accommodate long wingspans and may reduce electrocutions and power outages caused by birds at your power lines. APLIC provides additional recommendations to prevent electrocutions and power outages by discouraging perching and nesting.

4. State Species of Concern:

Our comments address federally listed species, federally designated critical habitats, and migratory birds. Please contact Colorado Parks and Wildlife (CPW) at (303) 297–1192 regarding any State species of special designation in Colorado that are not federally listed and that may occur within your project area. For example, the open areas within your project area may support colonies of the black-tailed prairie dog (*Cynomys ludovicianus*), a State species of special concern in Colorado.

The black-tailed prairie dog is a ground dwelling squirrel that lives in grasslands, including those in urban areas, disturbed right-of-ways, agricultural fields, and road or utility easements. Many grassland species, such as the burrowing owl (*Athene cunicularia*) depend on the underground burrows and colonies built by black-tailed prairie dogs. Due to their important value to the

prairie ecosystem and the many species that rely on them, we strongly encourage the conservation of prairie dogs.

To avoid and minimize impacts to prairie dogs or their dependent species, we recommend conducting preconstruction surveys for prairie dogs and their associated species. Design the project to avoid disturbing active colonies. If the project cannot avoid active colonies, relocate prairie dogs or consider donating them to a black-footed ferret or raptor recovery program. Contact CPW for more information on the regulations and guidelines that address the capture, transportation, and relocation of prairie dogs in Colorado.

The Service appreciates the opportunity to work with Trade Wind Energy on the proposed solar PV project. If we can be of any additional assistance, please contact the Colorado Field Office at 303-236-4773. Thank you for your concern endangered species and other natural resources.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

Enclosure: CPW's recommended buffer zones and guidelines for raptors (2008)
Available online: http://bit.ly/WXJYEh

RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS FOR COLORADO RAPTORS

Tolerance limits to disturbance vary among as well as within raptor species. As a general rule, Ferruginous Hawks and Golden Eagles respond to human activities at greater distances than do Ospreys and America Kestrels. Some individuals within a species also habituate and tolerate human activity at a proximity that would cause the majority of the group to abandon their nests. Other individuals become sensitized to repeated encroachment and react at greater distances. The tolerance of a particular pair may change when a mate is replaced with a less tolerant individual and this may cause the pair to react to activities that were previously ignored. Responses will also vary depending upon the reproductive stage. Although the level of stress is the same, the pair may be more secretive during egg laying and incubation and more demonstrative when the chicks hatch.

The term "disturbance" is ambiguous and experts disagree on what actually constitutes a disturbance Reactions may be as subtle as elevated pulse rate or as obvious as vigorous defense or abandonment. Impacts of disturbance may not be immediately evident. A pair of raptors may respond to human intrusion by defending the nest, but well after the disturbance has passed, the male may remain in the vicinity for protection rather than forage to feed the nestlings. Golden eagles rarely defend their nests, but merely fly a half mile or more away and perch and watch. Chilling and over heating of eggs or chicks and starvation of nestlings can result from human activities that appeared not to have caused an immediate response.

A 'holistic' approach is recommended when protecting raptor habitats. While it is important for land managers to focus on protecting nest sites, equal attention should focus on defining important foraging areas that support the pair's nesting effort. Hunting habitats of many raptor species are extensive and may necessitate interagency cooperation to assure the continued nest occupancy. Unfortunately, basic knowledge of habitat use is lacking and may require documentation through telemetry investigations or intensive observation. Telemetry is expensive and may be disruptive so a more practical approach is to assume that current open space is important and should be protected.

Although there are exceptions, the buffer areas and seasonal restrictions suggested here reflect an informed opinion that if implemented, should assure that the majority of individuals within a species will continue to occupy the area. Additional factors, such as intervening terrain, vegetation screens, and the cumulative impacts of activities should be considered.

These guidelines were originally developed by CDOW raptor biologist Gerald R. Craig (retired) in December 2002. To provide additional clarity in guidance, incorporate new information, and update the conservation status of some species, the guidelines were revised in January 2008. Further revisions of this document may become necessary as additional information becomes available.

RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS

BALD EAGLE

Nest Site:

No surface occupancy (beyond that which historically occurred in the area; see 'Definitions' below) within ¼ mile radius of active nests (see 'Definitions' below). Seasonal restriction to human encroachment (see 'Definitions' below) within ½ mile radius of active nests from October 15 through July 31. This closure is more extensive than the National Bald Eagle Management Guidelines (USFWS 2007) due to the generally open habitat used by Colorado's nesting bald eagles.

Winter Night Roost:

No human encroachment from November 15 through March 15 within ¼ mile radius of an active winter night roost (see 'Definitions' below) if there is no direct line of sight between the roost and the encroachment activities. No human encroachment from November 15 through March 15 within ½ mile radius of an active winter night roost if there is a direct line of sight between the roost and the encroachment activities. If periodic visits (such as oil well maintenance work) are required within the buffer zone after development, activity should be restricted to the period between 1000 and 1400 hours from November 15 to March 15.

Hunting Perch:

Diurnal hunting perches (see 'Definitions' below) associated with important foraging areas should also be protected from human encroachment. Preferred perches may be at varying distances from human encroachment and buffer areas will vary. Consult the Colorado Division of Wildlife for recommendations for specific hunting perches.

GOLDEN EAGLE

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from December 15 through July 15.

OSPREY

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ¼ mile radius of active nests from April 1 through August 31. Some osprey populations have habituated and are tolerant to human activity in the immediate vicinity of their nests.

FERRUGINOUS HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from February 1 through July 15. This species is especially prone to nest abandonment during incubation if disturbed.

RED-TAILED HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within 1/3 mile radius of active nests. Seasonal restriction to human encroachment within 1/3 mile radius of active nests from February 15 through July 15. Some members of this species have adapted to urbanization and may

tolerate human habitation to within 200 yards of their nest. Development that encroaches on rural sites is likely to cause abandonment.

SWAINSON'S HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ¼ mile radius of active nests from April 1 through July 15. Some members of this species have adapted to urbanization and may tolerate human habitation to within 100 yards of their nest.

PEREGRINE FALCON

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile of the nest cliff(s) from March 15 to July 31. Due to propensity to relocate nest sites, sometimes up to ½ mile along cliff faces, it is more appropriate to designate 'Nesting Areas' that encompass the cliff system and a ½ mile buffer around the cliff complex.

PRAIRIE FALCON

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from March 15 through July 15.

NORTHERN GOSHAWK

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from March 1 through September 15.

BURROWING OWL

Nest Site:

No human encroachment within 150 feet of the nest site from March 15 through October 31. Although Burrowing Owls may not be actively nesting during this entire period, they may be present at burrows up to a month before egg laying and several months after young have fledged. Therefore it is recommended that efforts to eradicate prairie dogs or destroy abandoned towns not occur between March 15 and October 31 when owls may be present. Because nesting Burrowing Owls may not be easily visible, it is recommended that targeted surveys be implemented to determine if burrows are occupied. More detailed recommendations are available in a document entitled "Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls" which is available from the Colorado Division of Wildlife

Recommended Buffer Zones and Seasonal Restrictions Around Raptor Use Sites

Species and Use	Buffer	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Bald Eagle													
ACTIVE NEST - No Surface Occupancy	¼ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
ACTIVE WINTER NIGHT ROOST without a direct line of sight- No Human Encroachment	¼ Mile												
ACTIVE WINTER NIGHT ROOST with a direct line of sight - No Human Encroachment	½ Mile												
HUNTING PERCH - No Human Encroachment	Contact CDOW												
Golden Eagle													
ACTIVE NEST - No Surface Occupancy	¼ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
Osprey													
ACTIVE NEST - No Surface Occupancy	¼ Mile												
ACTIVE NEST - No Human Encroachment	¼ Mile												
Ferruginous Hawk													
ACTIVE NEST - No Surface Occupancy	½ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
Red-tailed Hawk													
ACTIVE NEST - No Surface Occupancy	1/3 Mile												
ACTIVE NEST - No Human Encroachment	1/3 Mile												
Swainson's Hawk													
ACTIVE NEST - No Surface Occupancy	¼ Mile												
ACTIVE NEST - No Human Encroachment	¼ Mile												
Peregrine Falcon													
ACTIVE NEST - No Surface Occupancy	½ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
Prairie Falcon													
ACTIVE NEST - No Surface Occupancy	½ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
Northern Goshawk													
ACTIVE NEST - No Surface Occupancy	½ Mile												
ACTIVE NEST - No Human Encroachment	½ Mile												
Burrowing Owl													
ACTIVE NEST - No Human Encroachment	150 feet												

= time period for which seasonal restrictions are in place.

DEFINITIONS

Active nest – Any nest that is frequented or occupied by a raptor during the breeding season, or which has been active in any of the five previous breeding seasons. Many raptors use alternate nests in various years. Thus, a nest may be active even if it is not occupied in a given year.

Active winter night roost – Areas where Bald Eagles gather and perch overnight, and sometimes during the day in the event of inclement weather. Communal roost sites are usually in large trees (live or dead) that are relatively sheltered from wind and are generally in close proximity to foraging areas. These roosts may also serve a social purpose for pair bond formation and communication among eagles. Many roost sites are used year after year.

Human encroachment – Any activity that brings humans in the area. Examples include driving, facilities maintenance, boating, trail access (e.g., hiking, biking), etc.

Hunting perch – Any structure on which a raptor perches for the purpose of hunting for prey. Hunting perches provide a view of suitable foraging habitat. Trees are often used as hunting perches, but other structures may also be used (utility poles, buildings, etc.).

Surface occupancy – Any physical object that is intended to remain on the landscape permanently or for a significant amount of time. Examples include houses, oil and gas wells, tanks, wind turbines, roads, tracks, etc.

CONTACT

For further information contact:

David Klute
Bird Conservation Coordinator
Colorado Division of Wildlife
6060 Broadway
Denver, CO 80216
Phone: 303-291-7320
Email: david.klute@state.co.us

REFERENCES

Bechard, M.J., and J.K. Schmutz. 1995. Ferruginous Hawk (*Buteo regalis*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/172

Buehler, D.A. 2000. Bald Eagle (*Haliaeetus leucocephalus*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/506

Call, M. 1979. Habitat management guides for birds of prey. Technical Note No.338, U.S. Bureau of Land Management, Denver Service Center, Denver, CO. 69pp

Energy Research and Development Administration (ERDA). 1977. EIA for CUI Venture application for geothermal loan guarantee (Beryl and Lund, Utah). EIA/GE/77-8. Washington, D.C. 109pp.

England, A.S., M.J. Bechard, and C.S. Houston. 1997. Swainson's Hawk (*Buteo swainsoni*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/265

Greater Yellowstone Bald Eagle Working Group. 1996. Greater Yellowstone bald eagle management plan: 1995 update. Greater Yellowstone Bald Eagle Working Group, Wyoming Game & Fish Dept., Lander WY 82520. 47p

Grier, J.W., F.J. Gramlich, J. Mattisson, J.E. Mathisen, J.V. Kussman, J.B. Elder, and N.F. Green. 1983. The bald eagle in the northern United States. Bird Cons. 144-66.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. Burrowing Owl (*Athene cunicularia*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/061

Holmes, Tamara L. 1993. Behavioral responses of grassland raptors to human disturbance. MS Thesis. Colo. State Univ., Fort Collins. 62pp.

Holthuijzen, A.M.A., W.G. Eastland, A.R. Ansell, M.N. Kochert, R.D. Williams, and L.S. Young. 1990. Effects of blasting on behavior and productivity of nesting prairie falcons. Wildl. Soc. Bull. 18:270-281.

Kochert, M. N., K. Steenhof, C. L. McIntyre, and E. H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/684

Martin, D.J. 1973. Selected aspects of burrowing owl ecology and behavior. Condor 75:446-456.

Northern States Bald Eagle Recovery Team. 1983. Northern States Bald Eagle Recovery Plan. U.S. Fish and Wildlife Service. 75pp.

Olendorff, R. R., and W.D. Zeedyk. 1978. Land management for the conservation of endangered birds. Pages 419-428 in S.A. Temple, ed. *Endangered birds*. University of Wisconsin Press, Madison, Wisconsin.

Poole, A.F., R.O. Bierregaard, and M.S. Martell. 2002. Osprey (*Pandion haliaetus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/683

Preston, C.R., and R.D. Beane. 1993. Red-tailed Hawk (*Buteo jamaicensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/052

Reynolds, R., R.T. Graham, H.M. Reiser. 1992. Management recommendations for the northern goshawk in the southwestern United States. Gen. Tech. Rep. RM-217. Fort Collins, CO. U.S. Dept of Agri., Forest Service, Rocky Mountain Forest and Range Experiment Station. 90pp.

Richardson, C.T. and C.K. Miller. 1997. Recommendations for protecting raptors from human disturbance: a review. Wildl. Soc. Bull. 25(3):634-638.

Rocky Mountain/Southwest Peregrine Falcon Recovery Team. 1984. American peregrine falcon Rocky Mountain/Southwest population recovery plan. U.S. Fish and Wildlife Serv. 105pp.

Squires, J.R., S.H. Anderson, and R. Oakleaf. 1993. Home range size and habitat-use patterns of nesting prairie falcons near oil developments in northeastern Wyoming. J. Field Ornithol. 64:1-10.

Steenhof, Karen. 1998. Prairie Falcon (*Falco mexicanus*), The Birds of North America Online Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/346

Squires, J.R., and R.T. Reynolds. 1997. Northern Goshawk (*Accipiter gentilis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/298

Suter, G.W. and J.L. Joness. 1981. Criteria for Golden Eagle, Ferruginous Hawk, and Prairie Falcon nest site protection. J. Raptor Res. 15(1):12-18.

Swenson, J.E. 1979. Factors affecting status and reproduction of ospreys in Yellowstone National Park. J. Wildl. Manage. 43:595-601.

Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland Municipal Airport. Condor 73:177-192.

U.S. Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf

White, C.M., N.J. Clum, T.J. Cade, and W.G. Hunt. 2002. Peregrine Falcon (*Falco peregrinus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/660

Revised 02/2008

Appendix D: Letters from History Colorado

HISTORY Colorado

September 11, 2015

Stephen Tromley
Federal Preservation Officer and Tribal Liaison
Department of Energy
Western Area Power Administration
Rocky Mountain Region
P.O. Box 281213
Lakewood, Colorado 80228-8213

Re: Midway Solar Project, El Paso County, Colorado (HC #68419)

Dear Mr. Tromley:

Thank you for your correspondence dated September 2, 2015 (received September 4, 2015) regarding the above referenced undertaking.

After review of the documentation provided, we concur with your determination that sites 5EP7625 and 5EP7632 are potentially eligible (need data) for listing to the National Register of Historic Places (National Register) under criterion d for significant information that may be present within buried cultural contexts. We concur with your determination that sites 5EP7621, 5EP7623, 5EP7627 and 5EP7640 are not eligible for listing to the National Register under any criteria. Likewise, we concur with your determination that isolated finds 5EP7613, 5EP7614, 5EP7615, 5EP7616, 5EP7617, 5EP7618, 5EP7619, 5EP7620, 5EP7622, 5EP7624, 5EP7626, 5EP7628, 5EP7629, 5EP7630, 5EP7631, 5EP7633, 5EP7634, 5EP7635, 5EP7636, 5EP7637, 5EP7638, 5EP7639, 5EP7641, 5EP7642, 5EP7643, 5EP7644, 5EP7645, 5EP7646, 5EP7647, 5EP7648, 5EP7649 and 5EP7650 are not eligible for listing to the National Register.

In order for our office to comment on your assessment of effects to historic properties, we request additional information. Specifically and additionally, it is unclear from the provided documentation how Western will ensure preservation in place for sites 5EP7625 and 5EP7632. As noted by the Advisory Council on Historic Preservation within its *Recommended Approach for Consultation of Significant Information from Archaeological Sites* "simple avoidance of a site is not the same as preservation". We look forward to receiving your response.

The consultation process does involve other consulting parties such as local governments and Tribes, which as stipulated in 36 CFR 800.3 are required to be notified of the undertaking. Additional information provided by these and other consulting parties may cause our office to re-evaluate our comments and recommendations. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If we may be of further assistance, please contact Mark Tobias, Section 106 Compliance Manager, at (303) 866-4674 or mark.tobias@state.co.us.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer
ECN/mt

HISTORY Colorado

December 1, 2015

Matthew D. Blevins
Acting, Federal Preservation Officer and Tribal Liaison
Department of Energy
Western Area Power Administration
Rocky Mountain Region
P.O. Box 281213
Lakewood, Colorado 80228-8213

Re: Front Range-Midway Solar Project, El Paso County, Colorado (HC #68419) – Finding of No Adverse Effect

Dear Mr. Blevins:

Thank you for your correspondence dated November 23, 2015 (received by our office on November 27, 2015) provided as part of our ongoing Section 106 consultation the above referenced undertaking.

We find acceptable the proposed management recommendations as outlined within your letter for sites 5EP7625 and 5EP7632. Assuming that these measures are implemented as described, we concur that a finding of no adverse effect is appropriate for the proposed undertaking pursuant to 36 CFR 800.5(b)

The Section 106 consultation process does involve other consulting parties such as local governments and Tribes, which as stipulated in 36 CFR 800.3 are required to be notified of the undertaking. Additional information provided by the local government, Tribes or other consulting parties may cause our office to re-evaluate our comments and recommendations. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with our office.

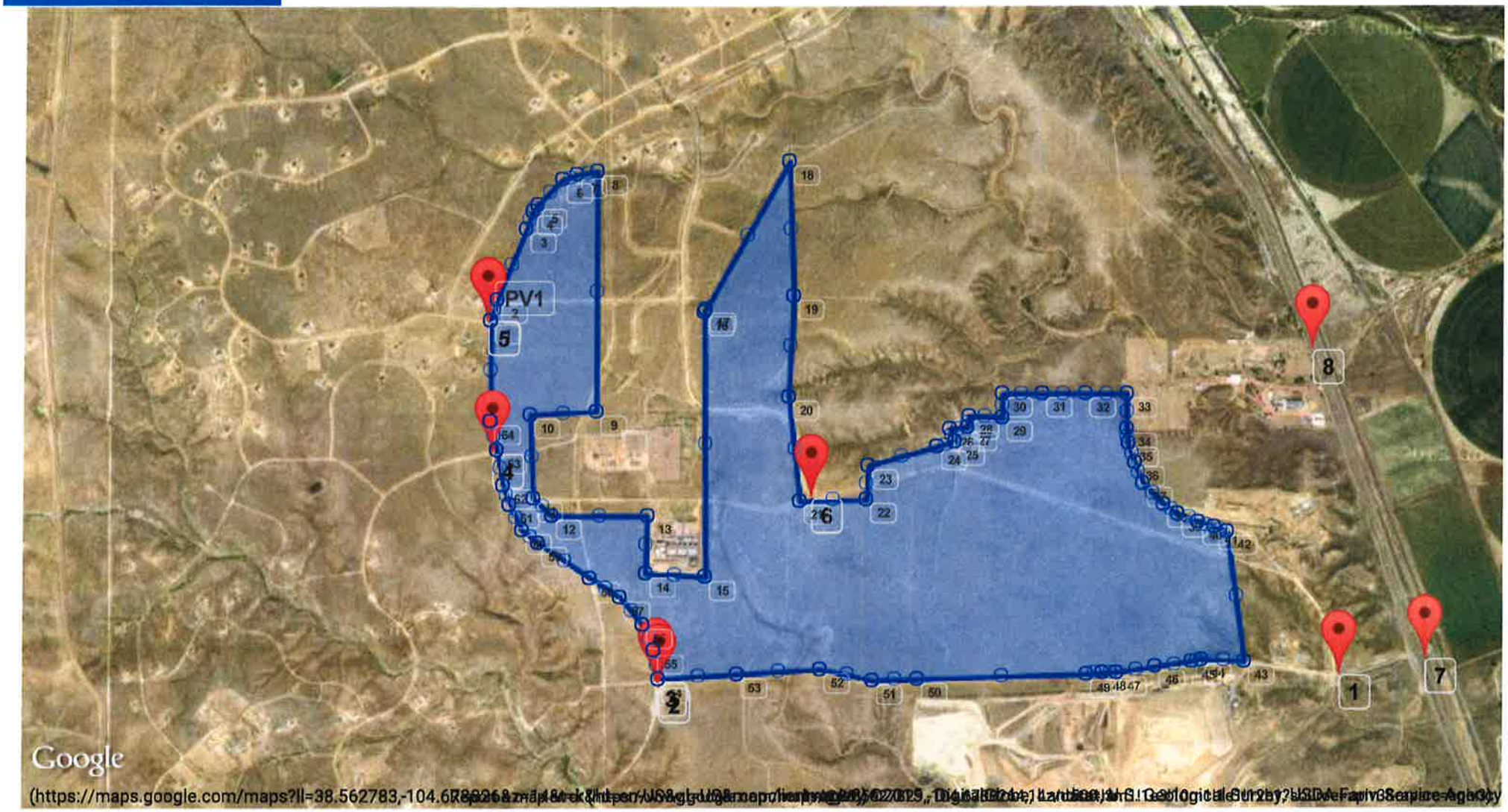
Thank you for the opportunity to comment. If we may be of further assistance, please contact Mark Tobias, Section 106 Compliance Manager, at (303) 866-4674 or mark.tobias@state.co.us.

Sincerely,

for Steve Turner, AIA
State Historic Preservation Officer
ST/mt

Appendix E: Sandia National Laboratories' Solar Glare Hazard Analysis Tool Results

Sandia National Laboratories (http://www.sandia.gov/index.html)



(https://maps.google.com/maps?ll=38.562783,-104.6 [illegible] Geological Survey, USDA Farm Service Agency)

UTC-7:00 ▾

PV Array | Observation | Flight Path | Animation

Submit for analysis

PV Array

Array name

Midway 3.1

Description

minimal PV

Axis tracking

Single

Tilt of tracking axis

35 deg

Orientation of tracking axis

180 deg

Offset angle of module

4 deg

☐ Limit the rotation angle?

Rated power

22 kW

Module surface material

Smooth glass without ARC

☑ Reflectivity varies with incidence angle (view data) (/phlux/sghat/reflectivity-data/)

☑ Correlate slope error to module surface type (view data) (/phlux/sghat/reflectivity-data/)

Vertices click to expand/collapse

id	Latitude	Longitude	Ground Elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	38.56642	-104.69777	5528.08	10	5538.08
2	38.56733	-104.69742	5528.31	10	5538.31
3	38.57028	-104.69588	5516.47	10	5526.47

4	38.571	-104.69553	5511.01	10	5521.01
5	38.57127	-104.69528	5508.33	10	5518.33
6	38.57233	-104.69386	5483.8	10	5493.8
7	38.57253	-104.69307	5474.81	10	5484.81
8	38.5727	-104.69197	5459.96	10	5469.96
9	38.56256	-104.692	5507.96	10	5517.96
10	38.56248	-104.69561	5522.64	10	5532.64
11	38.55897	-104.69544	5509.51	10	5519.51
12	38.55825	-104.6944	5507.53	10	5517.53
13	38.55824	-104.68928	5491.77	10	5501.77
14	38.55583	104.68934	5505.13	10	5515.13
15	38.55572	-104.68617	5477.86	10	5487.86
16	38.56674	-104.6862	5504.55	10	5514.55
17	38.56691	-104.68611	5503.12	10	5513.12
18	38.57308	-104.68167	5457.9	10	5467.9

19	38.56739	-104.68145	5484.4	10	5494.4
20	38.56323	-104.6817	5483.24	10	5493.24
21	38.55885	-104.68105	5492	10	5502
22	38.55889	-104.67749	5480.2	10	5490.2
23	38.5603	-104.6774	5466.53	10	5476.53
24	38.5611	-104.6737	5445.82	10	5455.82
25	38.56131	-104.6728	5447.03	10	5457.03
26	38.56184	-104.67302	5440.99	10	5450.99
27	38.56192	-104.67207	5446.98	10	5456.98
28	38.5624	-104.67202	5443.84	10	5453.84
29	38.56234	-104.67017	5417.89	10	5427.89
30	38.56337	-104.67021	5401.52	10	5411.52
31	38.56337	-104.66807	5383.15	10	5393.15
32	38.56337	-104.66575	5380.06	10	5390.06
33	38.56335	-104.66348	5354.55	10	5364.55

34	38.56184	-104.6635	5370.4	10	5380.4
35	38.56122	-104.66343	5382.76	10	5392.76
36	38.56045	-104.66309	5384.93	10	5394.93
37	38.55958	-104.66262	5388.12	10	5398.12
38	38.55872	-104.66154	5386.49	10	5396.49
39	38.55833	-104.66071	5383.17	10	5393.17
40	38.55797	-104.65963	5378.57	10	5388.57
41	38.55775	-104.65873	5375.28	10	5385.28
42	38.55758	-104.65807	5372.44	10	5382.44
43	38.55216	-104.65714	5343.16	10	5353.16
44	38.55218	-104.65944	5356.86	10	5366.86
45	38.55213	-104.65994	5364.87	10	5374.87
46	38.55191	-104.66191	5389.95	10	5399.95
47	38.55166	-104.66401	5407.25	10	5417.25
48	38.55166	-104.66476	5411.33	10	5421.33

49	38.55162	-104.66566	5416.83	10	5426.83
50	38.55139	-104.67476	5464.78	10	5474.78
51	38.55132	-104.67711	5466.05	10	5476.05
52	38.55182	-104.67999	5460.94	10	5470.94
53	38.55162	-104.68441	5465.87	10	5475.87
54	38.55142	-104.68866	5472.52	10	5482.52
55	38.5526	-104.68887	5477.23	10	5487.23
56	38.55367	-104.68947	5481.75	10	5491.75
57	38.55481	-104.69067	5496.21	10	5506.21
58	38.55565	-104.69235	5502.95	10	5512.95
59	38.55709	-104.69514	5497.63	10	5507.63
60	38.55763	-104.69599	5502.75	10	5512.75
61	38.5587	-104.69672	5506.94	10	5516.94
62	38.55951	-104.69702	5520.62	10	5530.62
63	38.56099	-104.69741	5521.83	10	5531.83

64	38.56223	-104.69771	5525.89	10	5535.89

Flight Path(s)

Solo Observation Point(s)

name	latitude deg	longitude deg	ground elevation ft	Eye-level height above ground ft	
1	38.55161	-104.65206	5327.01	4	✖
2	38.55105	-104.6886	5470.83	4	✖

3	38.55132	-104.6888	5471.89	4	✖
4	38.56088	-104.69761	5522.48	4	✖
5	38.56642	-104.69794	5528.43	4	✖
6	38.55899	-104.68049	5491.46	4	✖
7	38.55223	-104.64746	5280.31	4	✖
8	38.56525	-104.65356	5303.44	4	✖

Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:46 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	MIdway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

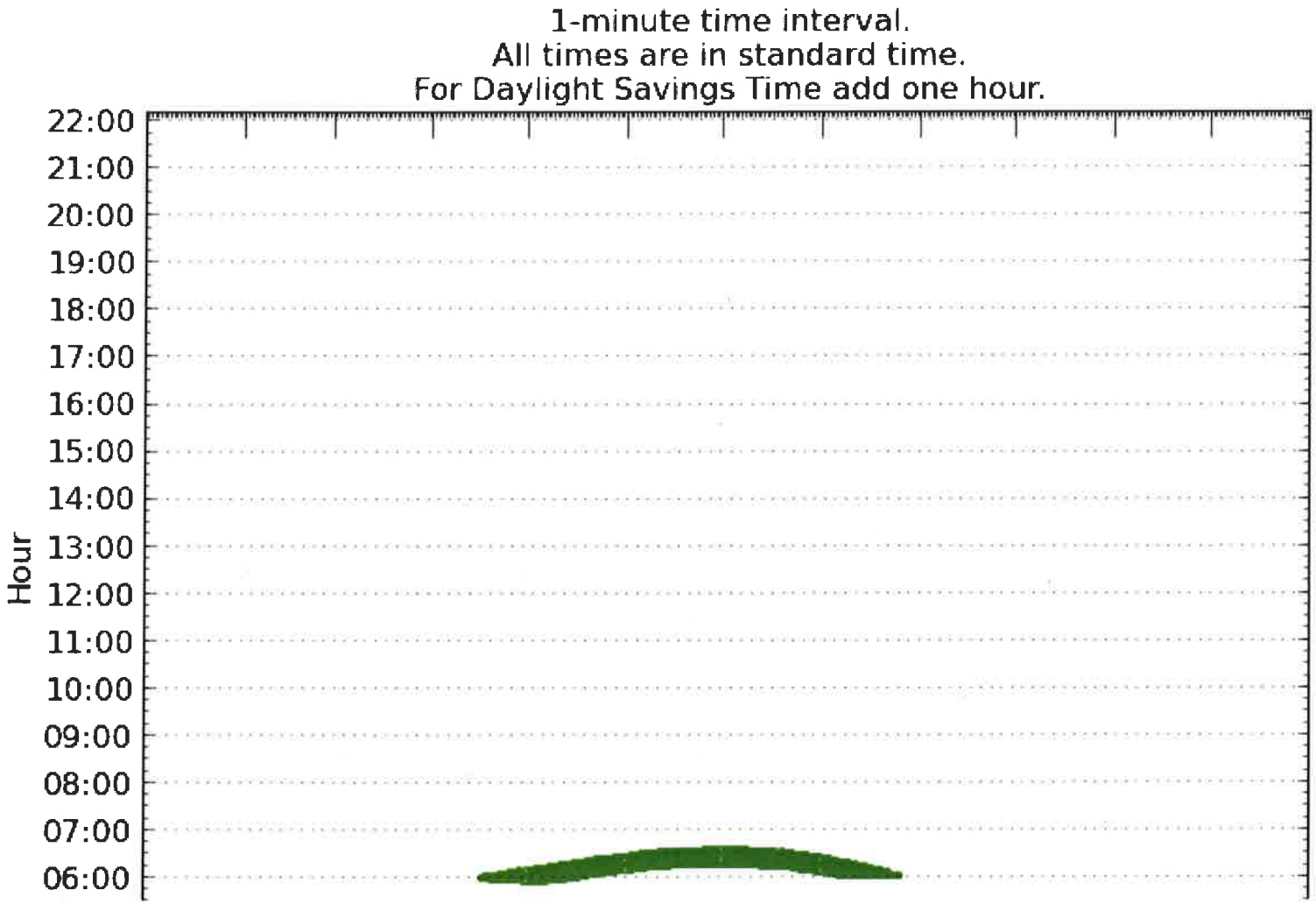
Observation Points

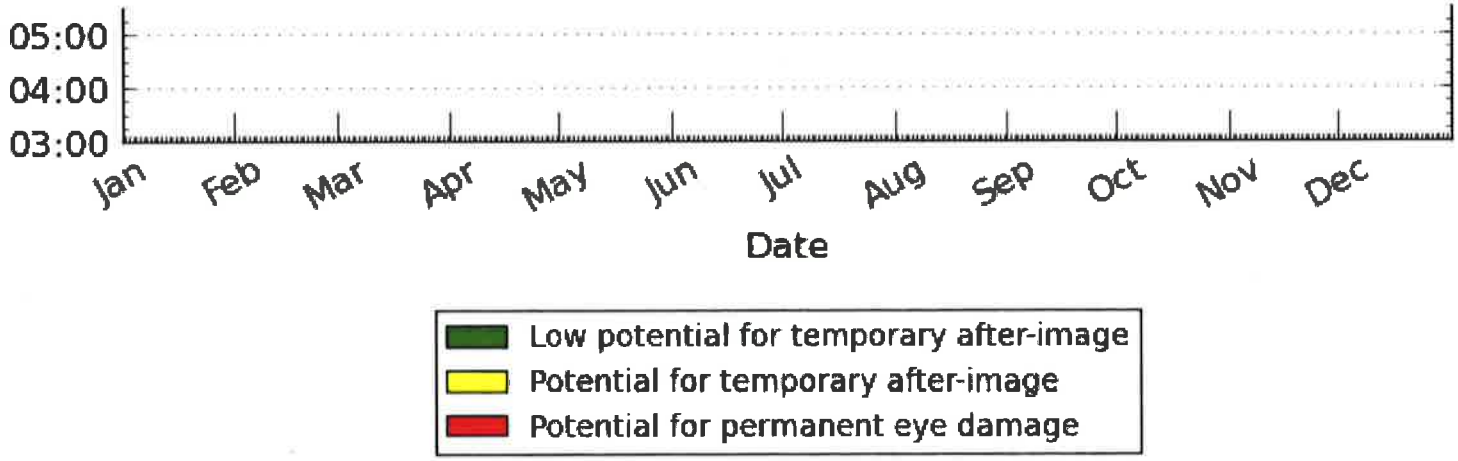
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

1	38.5516055922	-104.65206027	5327.01	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:46 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	Midway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

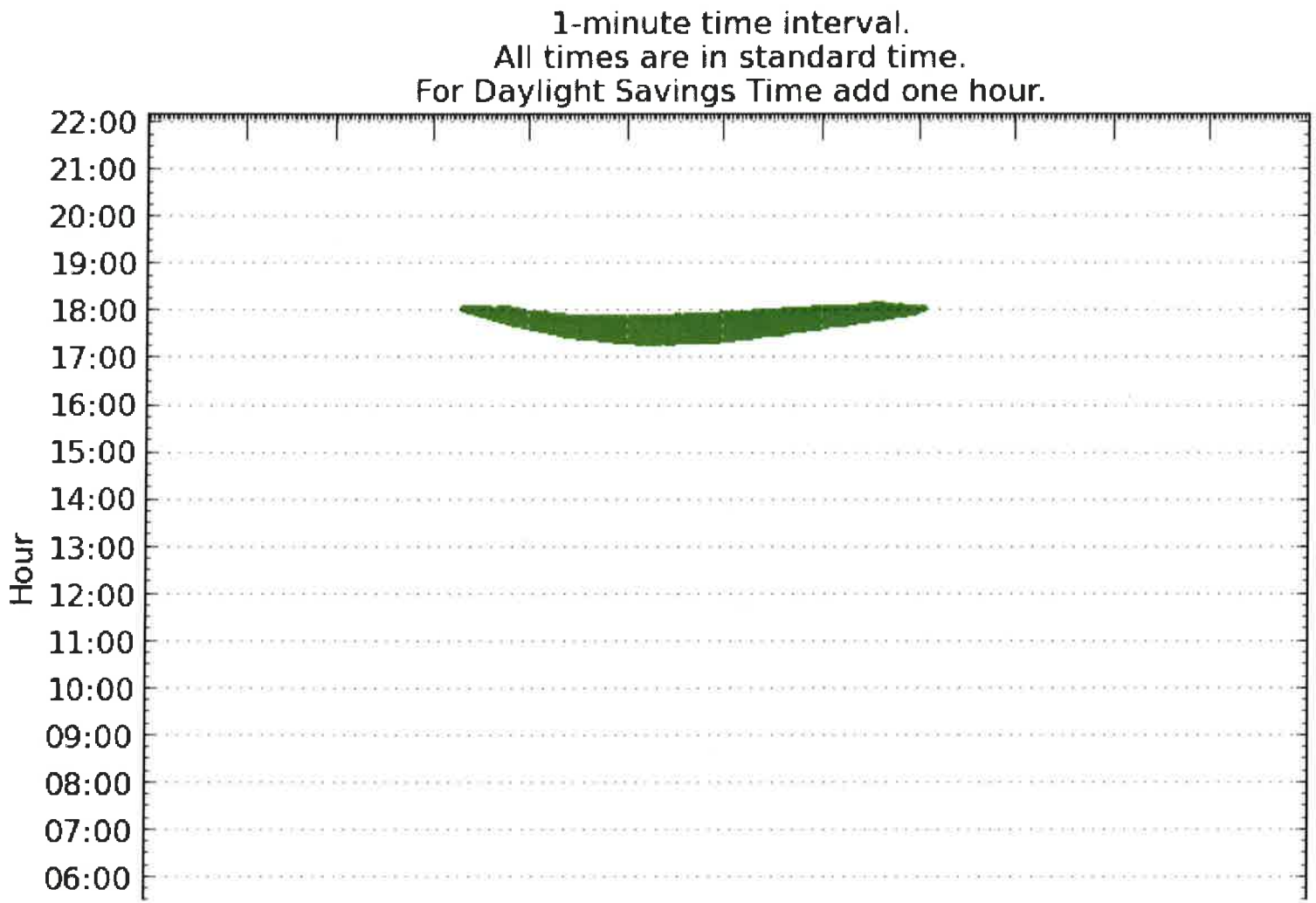
Observation Points

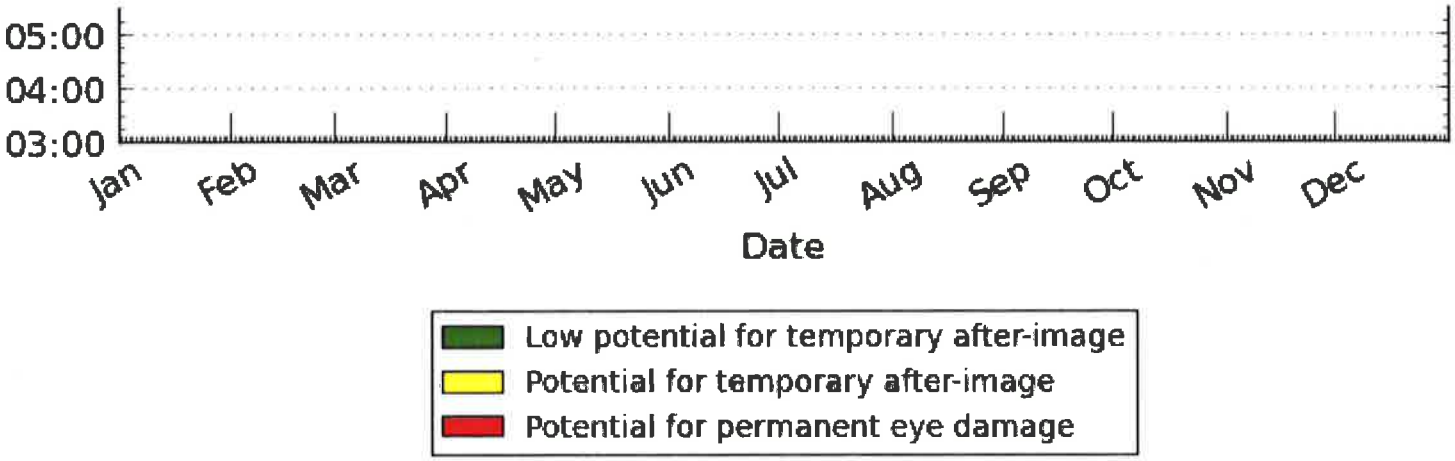
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

2	38.55105182	-104.688602686	5470.83	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 26, 2015, 11:30 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	Midway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

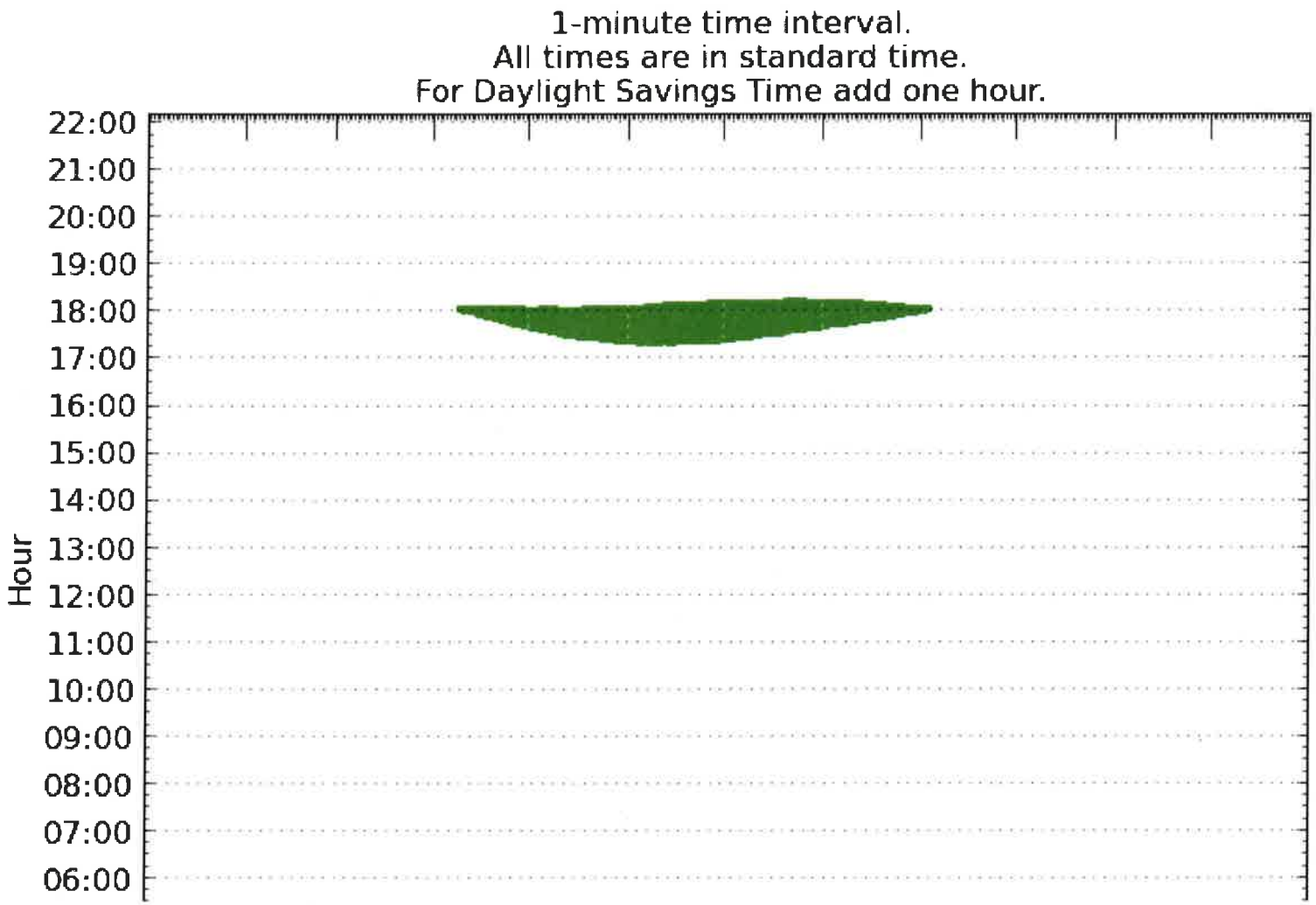
Observation Points

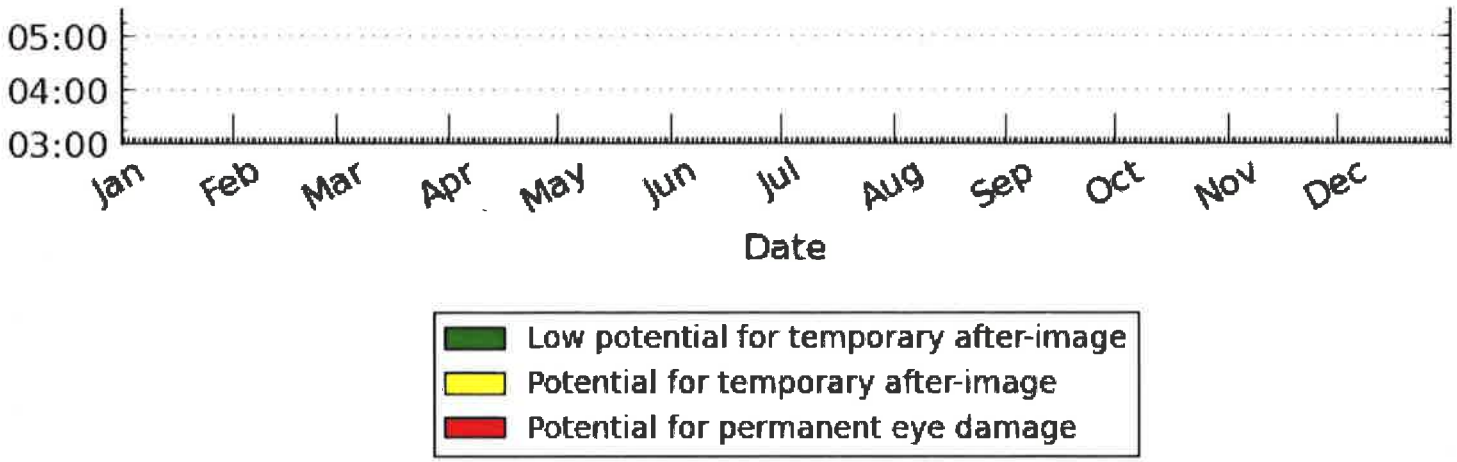
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

3	38.5513203161	-104.688795805	5471.89	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:45 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	Midway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

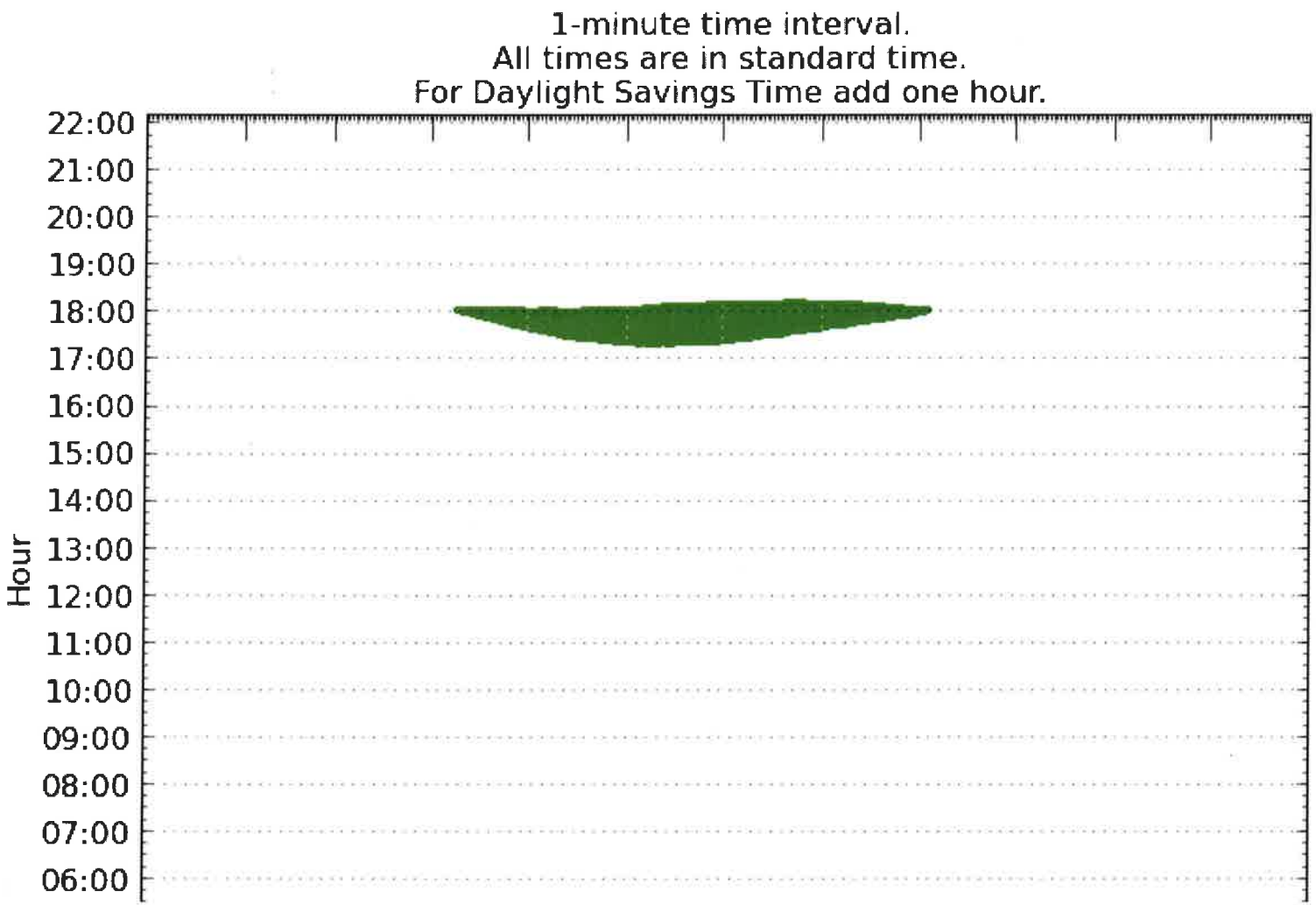
Observation Points

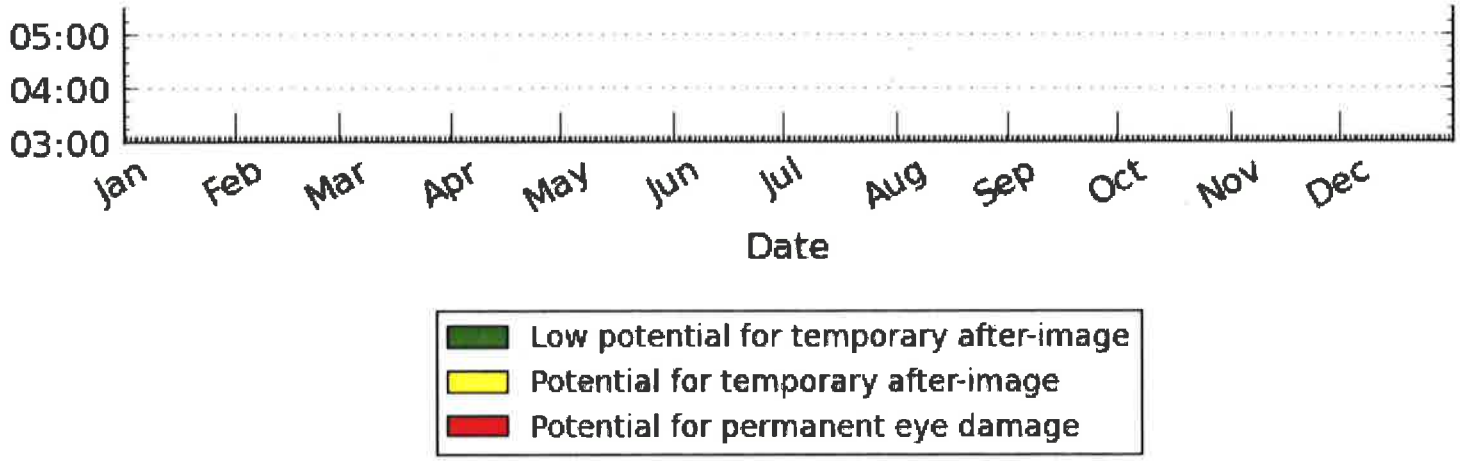
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

4	38.5608848372	-104.697614908	5522.48	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:45 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	MIdway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

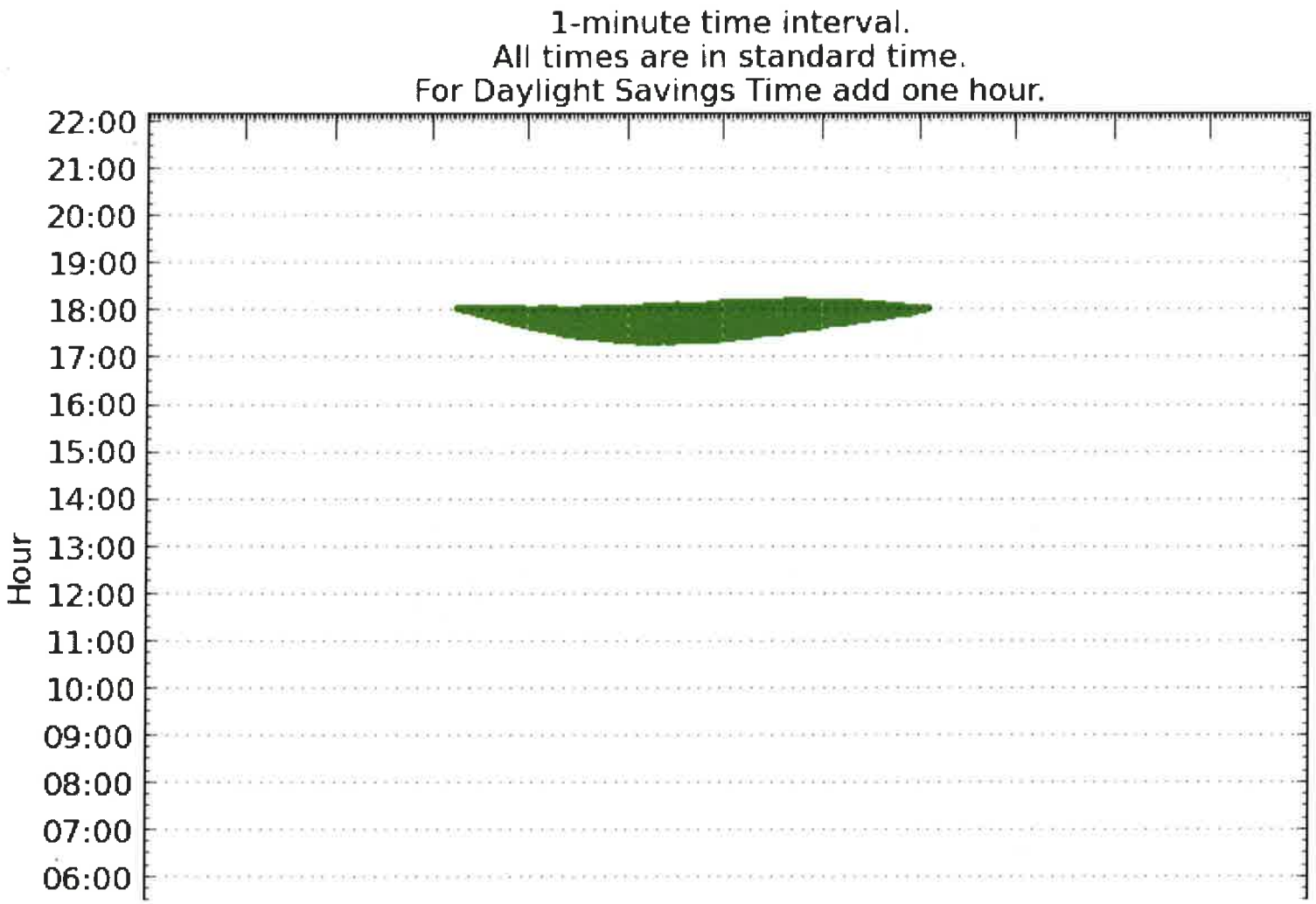
Observation Points

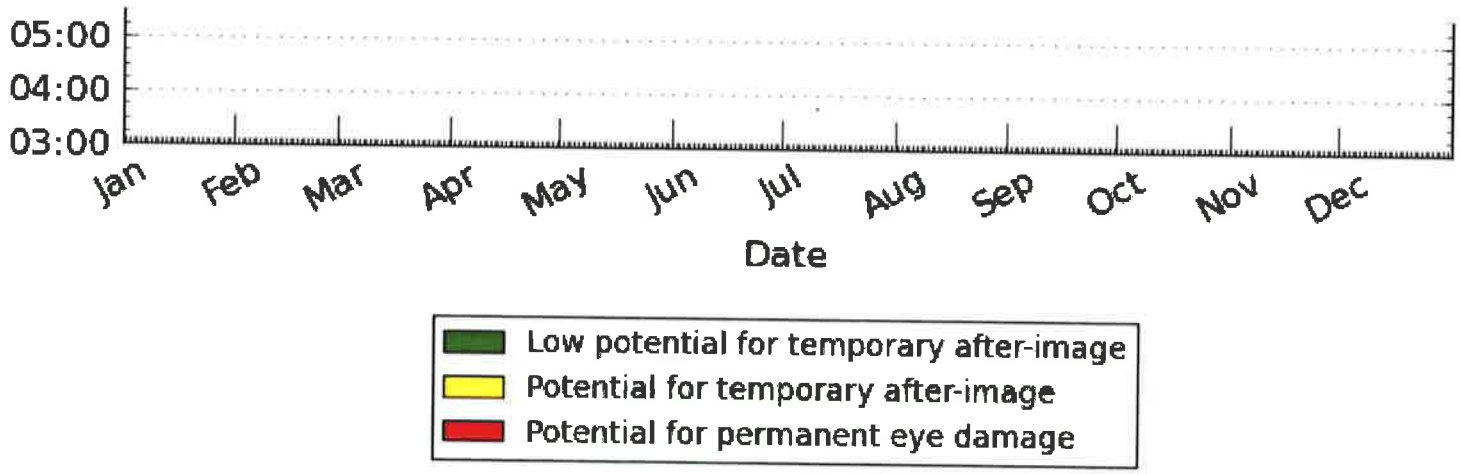
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

5	38.5664216099	-104.697936773	5528.43	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:45 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	MIdway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

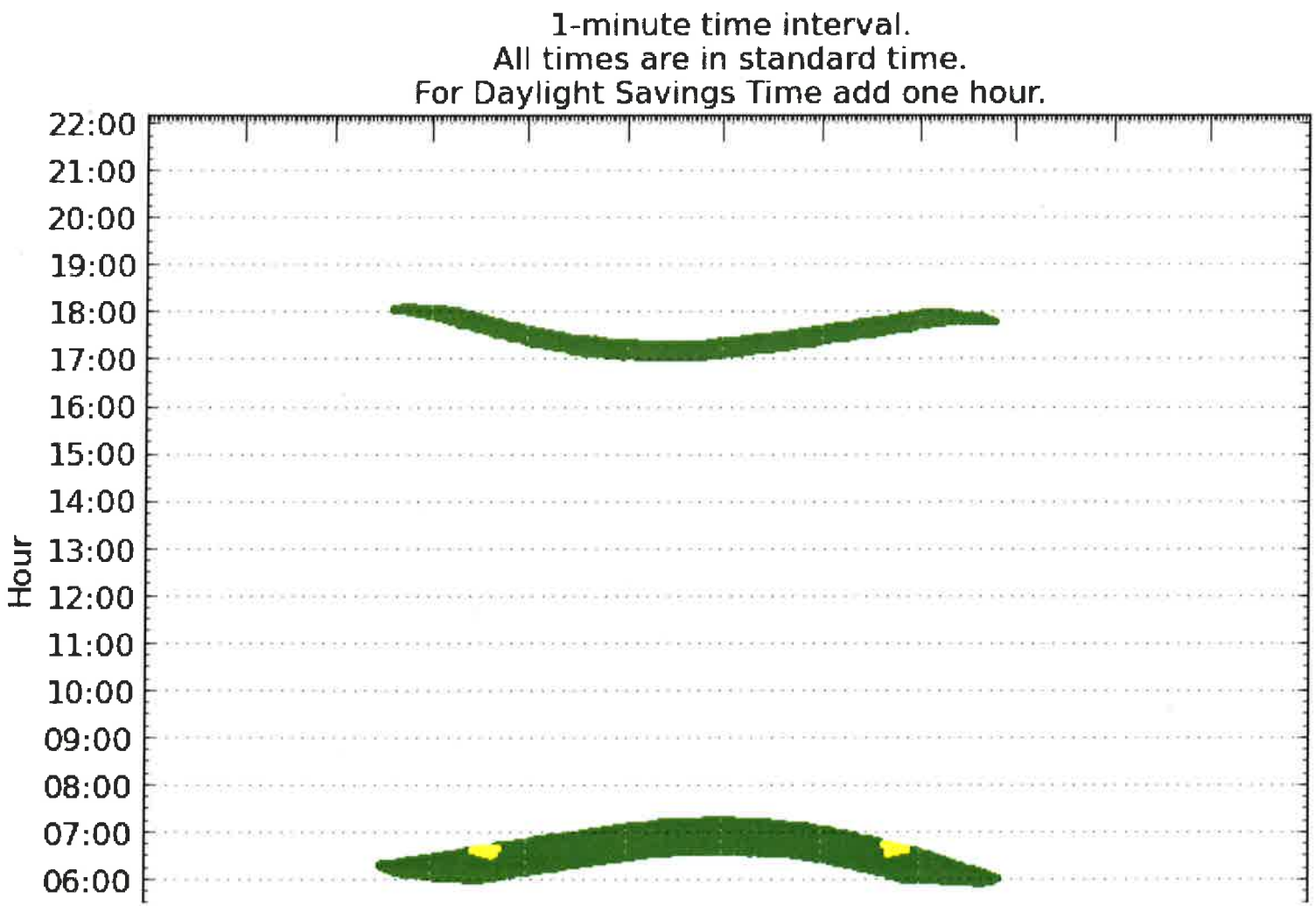
Observation Points

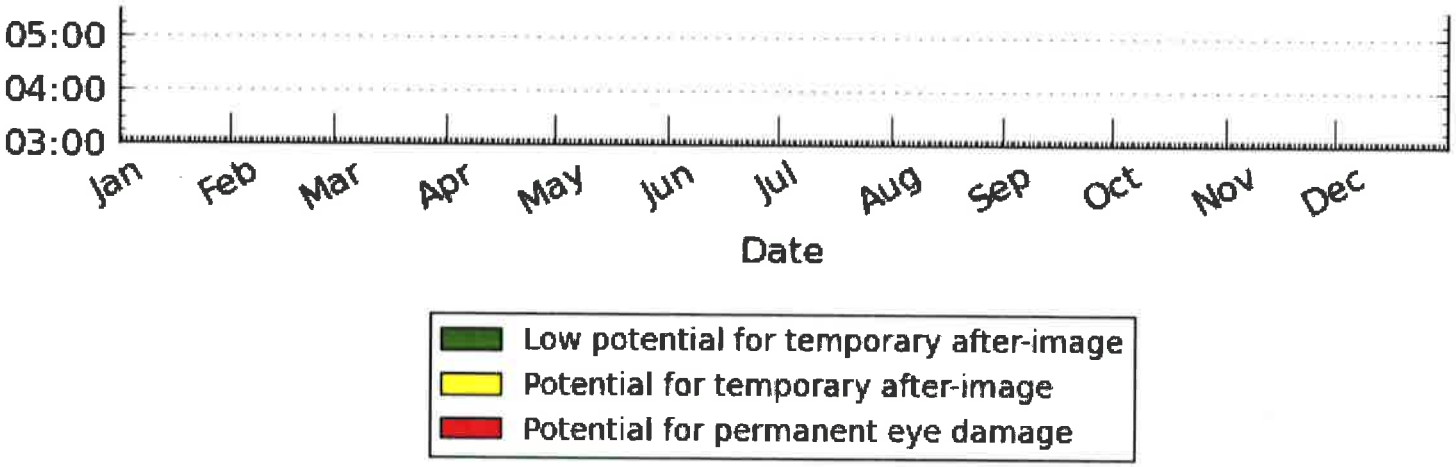
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

6	38.558988814	-104.680491686	5491.46	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:44 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	MIdway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

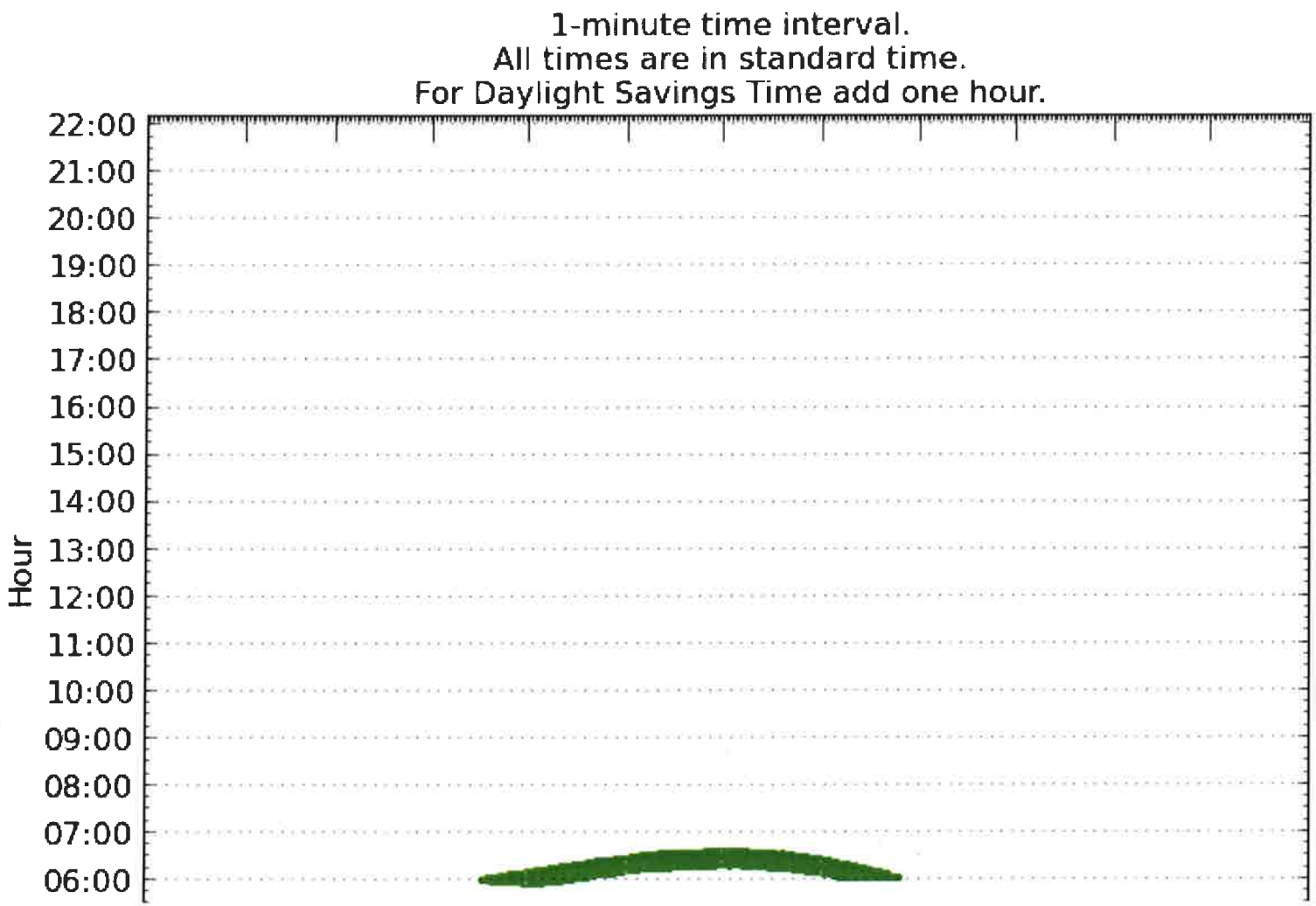
Observation Points

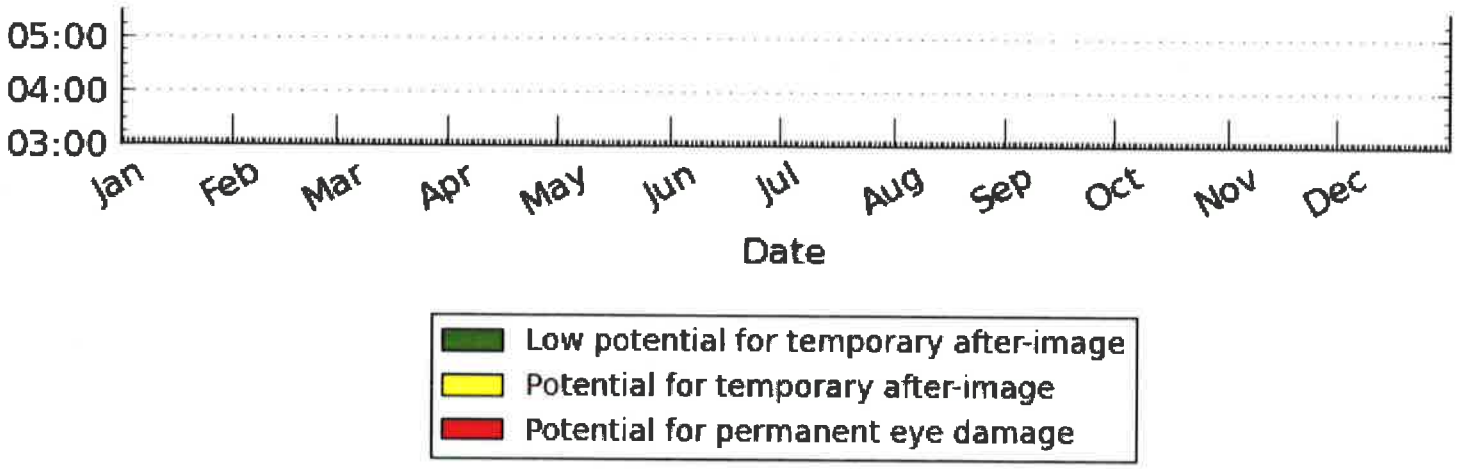
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

7	38.5522264832	-104.6474576	5280.31	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Solar Glare Hazard Analysis Report

Generated Aug. 25, 2015, 8:44 a.m.

Glare found

Print

Google Map

Inputs

Analysis name	MIdway 3
PV array axis tracking	single
Tilt of tracking axis (deg)	35.0
Orientation of tracking axis (deg)	180.0
Offset angle of module (deg)	4.0
Limit rotation angle?	False

Rated power (kW)	22.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m^2)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Correlate slope error with material	True
Slope error (mrad)	6.55

PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	38.5664216099	-104.697765112	5528.08	10.0	5538.08

2	38.5673275866	-104.697421789	5528.31	10.0	5538.31
3	38.5702803204	-104.695876837	5516.47	10.0	5526.47
4	38.5710017085	-104.695533514	5511.01	10.0	5521.01
5	38.5712701301	-104.695276022	5508.33	10.0	5518.33
6	38.5723270305	-104.693859816	5483.8	10.0	5493.8
7	38.5725283431	-104.693065882	5474.81	10.0	5484.81
8	38.5726961032	-104.69197154	5459.96	10.0	5469.96
9	38.5625626922	-104.692003727	5507.96	10.0	5517.96
10	38.5624788003	-104.695608616	5522.64	10.0	5532.64
11	38.5589720348	-104.695436954	5509.51	10.0	5519.51
12	38.5582547208	-104.694396257	5507.53	10.0	5517.53
13	38.5582421362	-104.689278603	5491.77	10.0	5501.77
14	38.5558342574	-104.689342976	5505.13	10.0	5515.13
15	38.5557167979	-104.68616724	5477.86	10.0	5487.86
16	38.5667403808	-104.686199427	5504.55	10.0	5514.55
17	38.5669081544	-104.686113596	5503.12	10.0	5513.12
18	38.5730819499	-104.681671858	5457.9	10.0	5467.9

19	38.5673946955	-104.681446552	5484.4	10.0	5494.4
20	38.5632338232	-104.681704044	5483.24	10.0	5493.24
21	38.5588545804	-104.681049585	5492.0	10.0	5502.0
22	38.5588881388	-104.677487612	5480.2	10.0	5490.2
23	38.5602975787	-104.677401781	5466.53	10.0	5476.53
24	38.5611029606	-104.673700333	5445.82	10.0	5455.82
25	38.5613084993	-104.67279911	5447.03	10.0	5457.03
26	38.561839122	-104.673024416	5440.99	10.0	5450.99
27	38.5619167226	-104.67206955	5446.98	10.0	5456.98
28	38.5624032976	-104.672015905	5443.84	10.0	5453.84
29	38.5623445732	-104.670170546	5417.89	10.0	5427.89
30	38.5633680486	-104.670213461	5401.52	10.0	5411.52
31	38.5633680486	-104.668067694	5383.15	10.0	5393.15
32	38.5633680486	-104.665750265	5380.06	10.0	5390.06
33	38.5633512704	-104.663475752	5354.55	10.0	5364.55
34	38.5618412193	-104.66349721	5370.4	10.0	5380.4

35	38.5612204113	-104.663432837	5382.76	10.0	5392.76
36	38.5604485885	-104.663089514	5384.93	10.0	5394.93
37	38.5595760832	-104.662617445	5388.12	10.0	5398.12
38	38.5587203465	-104.661544561	5386.49	10.0	5396.49
39	38.5583344227	-104.660707712	5383.17	10.0	5393.17
40	38.5579652762	-104.659634829	5378.57	10.0	5388.57
41	38.5577471434	-104.658733606	5375.28	10.0	5385.28
42	38.5575793484	-104.658068419	5372.44	10.0	5382.44
43	38.5521593601	-104.657140374	5343.16	10.0	5353.16
44	38.5521761409	-104.65944171	5356.86	10.0	5366.86
45	38.5521257985	-104.659935236	5364.87	10.0	5374.87
46	38.5519076479	-104.661909342	5389.95	10.0	5399.95
47	38.5516559349	-104.664012194	5407.25	10.0	5417.25
48	38.5516559349	-104.664763212	5411.33	10.0	5421.33
49	38.5516223731	-104.665664434	5416.83	10.0	5426.83
50	38.55138744	-104.674762487	5464.78	10.0	5474.78
51	38.5513203161	-104.677112103	5466.05	10.0	5476.05

52	38.5518237437	-104.679987431	5460.94	10.0	5470.94
53	38.5516223731	-104.684407711	5465.87	10.0	5475.87
54	38.5514210019	-104.68865633	5472.52	10.0	5482.52
55	38.5525956591	-104.688870907	5477.23	10.0	5487.23
56	38.5536696146	-104.689471722	5481.75	10.0	5491.75
57	38.5548106748	-104.690673351	5496.21	10.0	5506.21
58	38.555649678	-104.69234705	5502.95	10.0	5512.95
59	38.5570927407	-104.695136547	5497.63	10.0	5507.63
60	38.5576296869	-104.695994854	5502.75	10.0	5512.75
61	38.5587035672	-104.696724415	5506.94	10.0	5516.94
62	38.5595089669	-104.697024822	5520.62	10.0	5530.62
63	38.5609855096	-104.69741106	5521.83	10.0	5531.83
64	38.5622271243	-104.697711468	5525.89	10.0	5535.89

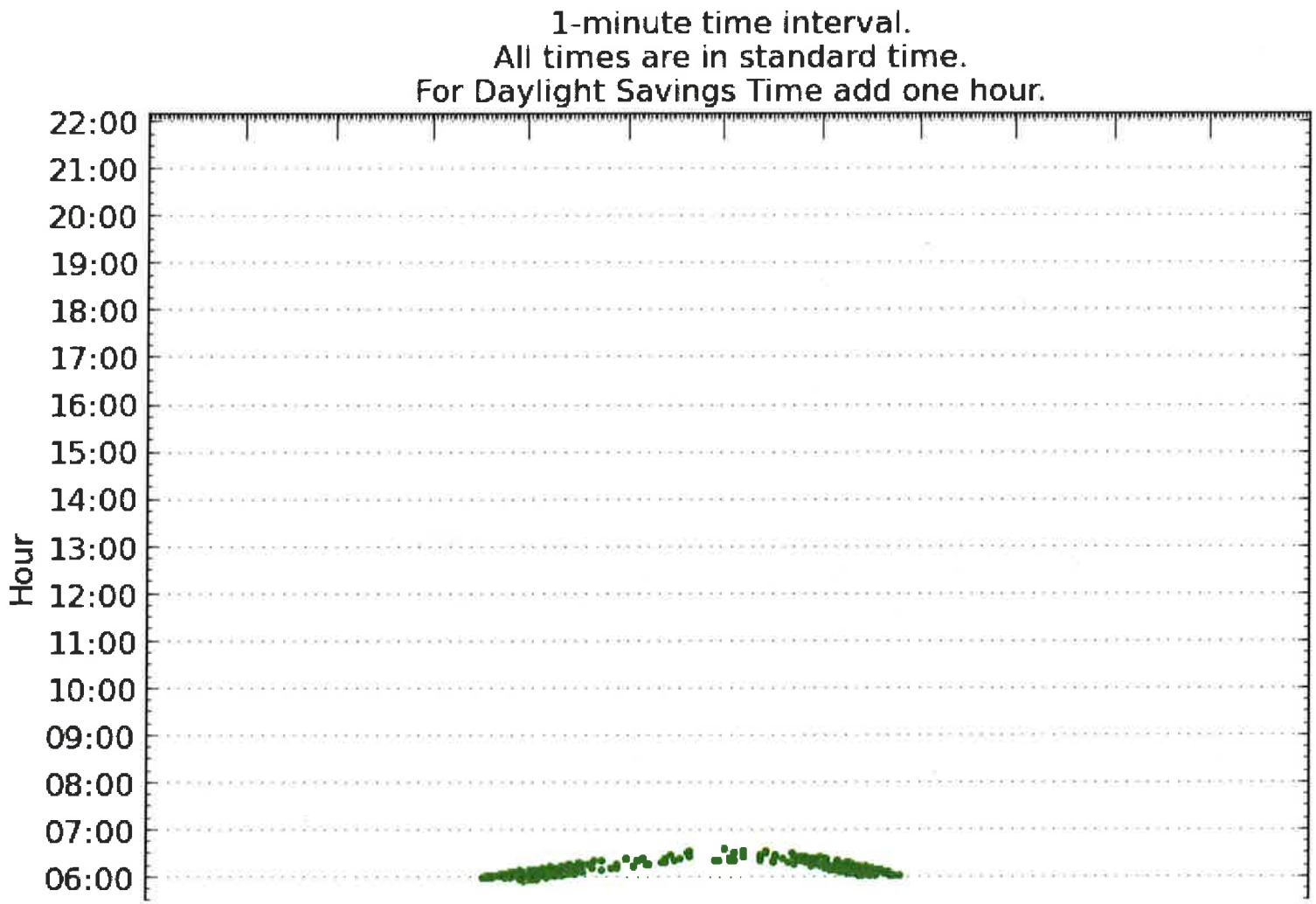
Observation Points

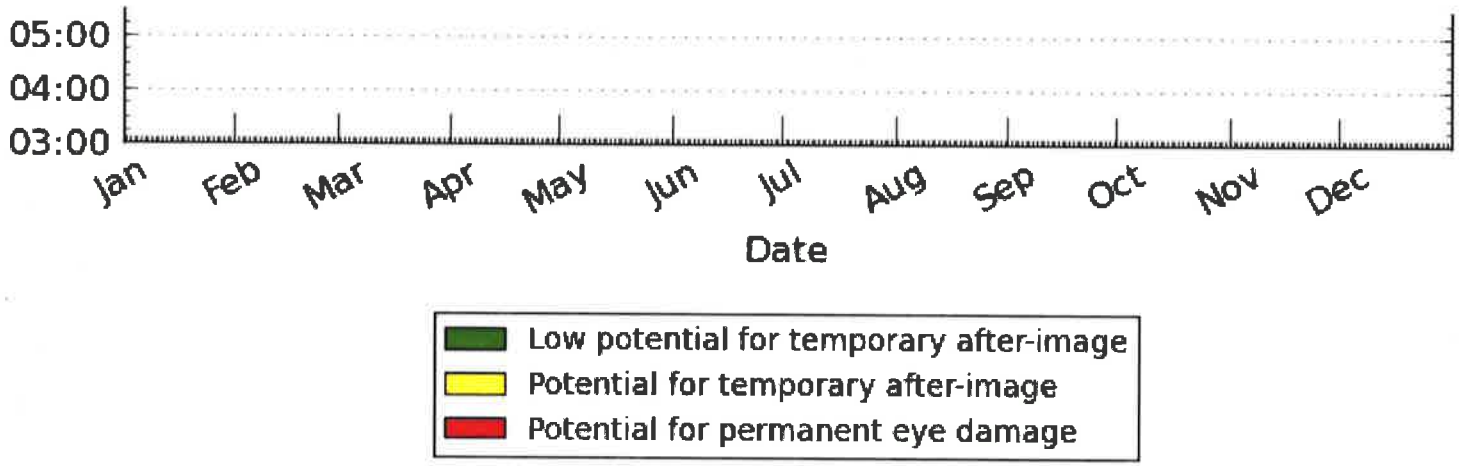
Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)

8	38.5652471786	-104.653562307	5303.44	4.0

Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.





Attachment L

CENTENNIAL ARCHAEOLOGY

A CLASS III CULTURAL RESOURCE INVENTORY FOR THE FRONT RANGE-MIDWAY SOLAR PROJECT IN EL PASO COUNTY, COLORADO

Western Area Power Administration

by

Christopher C. Kinneer
Eva M. Donkin
Kristin A. Gensmer
Benjamin F. Perlmutter
Rosemarie L. Pavel

July 2015

For Official Use Only: Disclosure of Site Locations Prohibited (43 CFR 7.18)

A CLASS III CULTURAL RESOURCE INVENTORY FOR THE FRONT RANGE-MIDWAY SOLAR PROJECT IN EL PASO COUNTY, COLORADO

Western Area Power Administration

by

Christopher C. Kinneer
Eva M. Donkin
Kristin A. Gensmer
Benjamin F. Perlmutter
and
Rosemarie L. Pavel

Submitted to:

Western Ecosystems Technology, Inc.
Cheyenne, Wyoming
and
Front Range-Midway Solar Project, LLC
Lenexa, Kansas

Submitted by:

Centennial Archaeology, LLC.
Fort Collins, Colorado

Principal Investigator: Christopher C. Kinneer

All Work Performed under the Terms and Conditions of State of Colorado Archaeological Permit No. 2015-44

July 2015

OAHP1421

Colorado Historical Society - Office of Archaeology and Historic Preservation

COLORADO CULTURAL RESOURCE SURVEY

Cultural Resource Survey Management Information Form

I. PROJECT SIZE

Total federal acres in project	0	Total federal acres surveyed	0
Total state acres in project	0	Total state acres surveyed	0
Total private acres in project	1,162.16	Total private acres surveyed	1,109.52
Total other acres in project	0	Total other acres surveyed	0

II. PROJECT LOCATION

County: El Paso

USGS Quad Map: Buttes (1994)

Principal Meridian: 6th

NOTE: The legal location information below is meant to summarize the location of the survey and does not need to be precise.

Township: 17S Range: 65W Sec: 17, and 20-22

III. SITES

Smithsonian Number	Resource Type				Eligibility						Management Recommendations						
	Prehistoric	Historic	Paleontological	Unknown	Eligible	Not Eligible	Need Data	Supporting	Non Supporting	Contributes to a District	No Further Work	Preserve / Avoid	Monitor	Test	Excavate	Archival Research	Other
5EP7621	X					X					X						
5EP7623	X					X					X						
5EP7625	X						X					X					
5EP7627	X					X					X						
5EP7632	X						X					X					
5EP7640	X					X					X						

IV. Isolated Finds

Smithsonian Number	Resource Type			
	Prehistoric	Historic	Paleontological	Unknown
5EP7613	X			
5EP7614	X			
5EP7615	X			
5EP7616	X			
5EP7617	X			
5EP7618	X			
5EP7619	X			
5EP7620	X			
5EP7622	X			
5EP7624	X			
5EP7626	X			
5EP7628	X			
5EP7629	X			
5EP7630	X			
5EP7631	X			
5EP7633	X			

Smithsonian Number	Resource Type			
	Prehistoric	Historic	Paleontological	Unknown
5EP7634	X			
5EP7635	X			
5EP7636	X			
5EP7637	X			
5EP7638	X			
5EP7639	X			
5EP7641	X			
5EP7642	X			
5EP7643	X			
5EP7644	X			
5EP7645	X			
5EP7646	X			
5EP7647	X			
5EP7648	X			
5EP7649	X			
5EP7650	X			

ABSTRACT

Centennial Archaeology LLC (Centennial) conducted a Class III cultural resource inventory for the Front Range - Midway Solar project, El Paso County, Colorado for Front Range - Midway Solar Project, LLC. The goal of the project is to construct a solar power generation facility adjacent to the existing Midway substation. Project oversight was provided by the Western Area Power Administration. The project area encompasses an area of 1,162.16 acres, all of which are privately held. Two parcels within the project were not included in the inventory because they are electrical facilities. Total pedestrian survey acreage was 1,109.52. The surrounding area within a two-mile buffer of the project boundary was subjected to a Class I file search and analyzed to determine if any NRHP-listed or eligible sites would incur visual impacts from the proposed solar project.

A total of six sites and 32 isolated finds (IFs) were documented within the project area, all six sites were newly recorded by Centennial. All of the sites and IFs are prehistoric. Five sites are open lithic scatters, and one consisted of a possible hearth. The IFs all consist of either single occurrences or small quantities of prehistoric debitage. Two sites (5EP7625 and 5EP7632) require additional information to determine eligibility recommendations, but will be avoided by the proposed project. The four remaining sites and all of the IFs are assessed as not eligible for the NRHP, and no further work is recommended. The visual impact analysis did not identify any sites that could be potentially impacted within the two-mile buffer.

TABLE OF CONTENTS

Section **Page**

LIST OF FIGURES

Figures **Page**

LIST OF TABLES

Table **Page**

CHAPTER 1
INTRODUCTION

Project Description

Centennial Archaeology LLC (Centennial) performed a Class III cultural resource inventory of the proposed Front Range - Midway Solar (FRMS) project area in El Paso County, Colorado for Front Range - Midway Solar Project, LLC. The project area is located east of the Front Range foothills and approximately nine miles south of the City of Fountain, Colorado. The FRMS project proposes the construction of a solar power generation facility adjacent to the existing Midway substation. The project would generate an estimated 100 megawatts, and could deliver solar energy to multiple Colorado utilities. Federal permitting and oversight for the project was provided by the Western Area Power Administration (Western). The project area encompasses 1,162.16 acres, of which 1,109.52 was subjected to a pedestrian inventory. The remaining 52.64 acres lies within two small inaccessible parcels, including the Southwest Generation - Fountain Valley Facility and the Midway Substation. All of the property within the inventory is privately held.

Administrative Data

The work described in this report was conducted under a contract with Western Ecosystems Technology (WEST) for Front Range - Midway Solar Project, LLC. The project manager for WEST, and Centennial's day-to-day contact, was Gretchen Norman. Christopher C. Kinneer served as the principal investigator and project director for Centennial. Kristin A. Gensmer acted as the technical editor. Graphics and maps were produced by Rosemarie L. Pavel and Mr. Kinneer. The field investigation was conducted by Mr. Kinneer, Ms. Pavel, Benjamin F. Perlmutter, Eva M. Donkin, and K. Talle Hogrefe. Stephen Tromly and Cynthia Adornetto, administered the project for Western. File search information was collected on March 18 and July 7, 2015 through the Colorado Office of Archaeology and Historic Preservation (OAHP). The field investigation was conducted between May 27 and July 6, 2015. One piece of obsidian was collected for X-ray florescence analysis, and limited shovel probing was conducted at sites 5EP7621, 5EP7623, and 5EP7640. The single collected artifact was returned to the collection location; no permanent curation was required. Project administrative records and digital files of photographs are reposited permanently at the Centennial office in Fort Collins, Colorado.

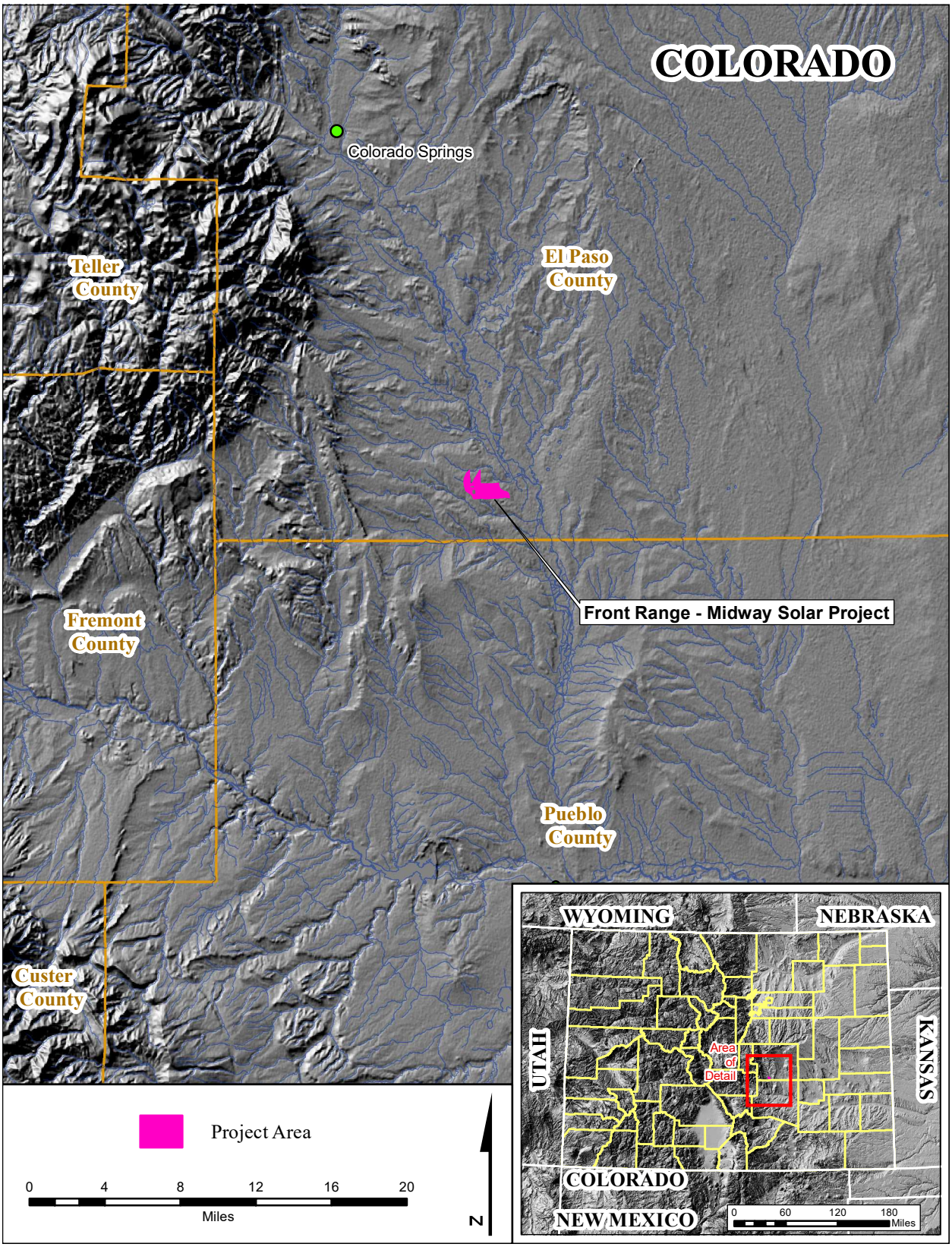


Figure 1. Map of central Colorado showing the Front Range - Midway Solar study area.

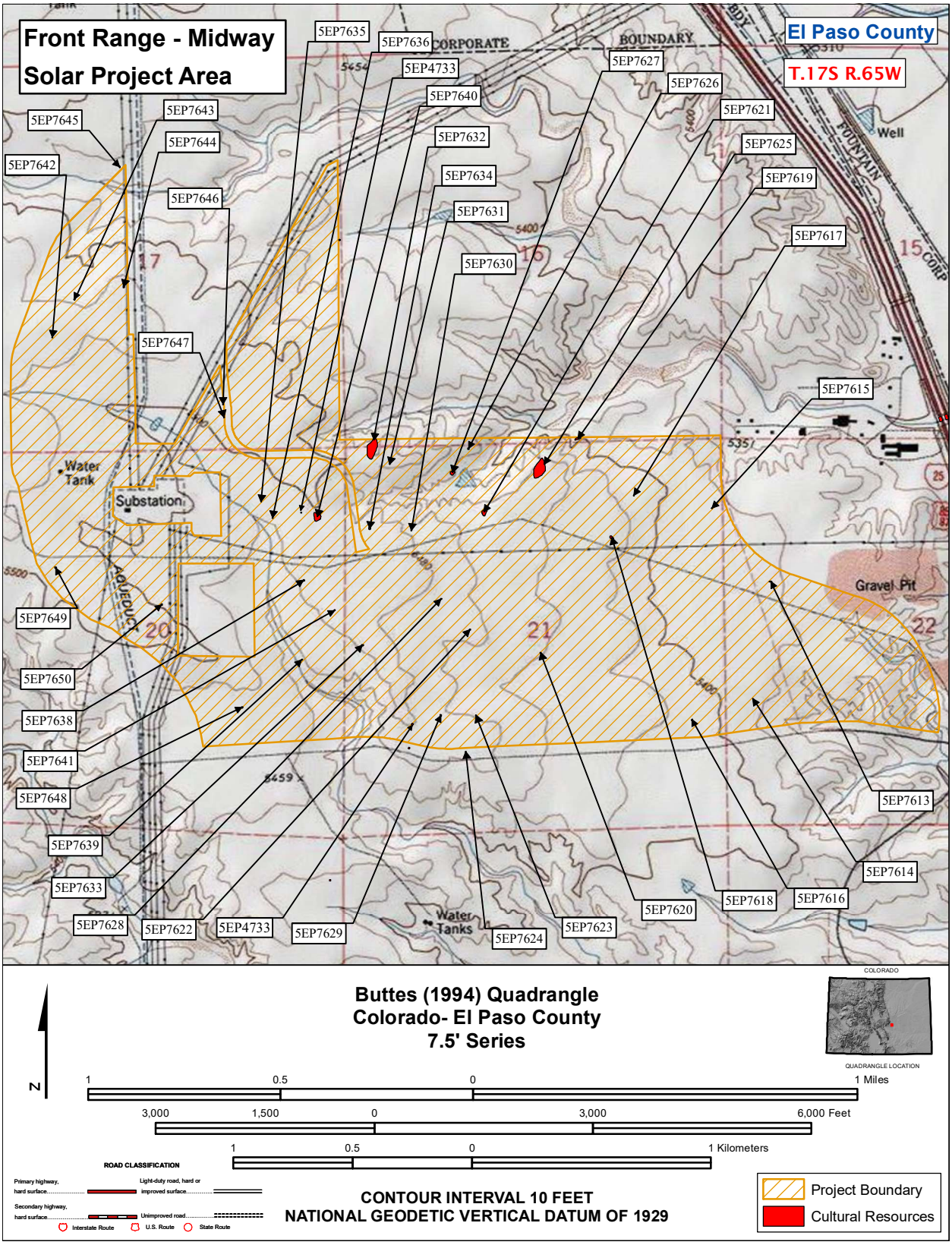


Figure 2. USGS 1:24,000 scale map showing the Front Range - Midway Solar project area.

CHAPTER 2

ENVIRONMENTAL SETTING

Physiography, Geology and Hydrology

The FRMS Project is situated within El Paso County, and is roughly equidistant from the cities of Colorado Springs and Pueblo. Located west of Interstate 25 (I-25) and south of the City of Fountain, the project encompasses an area of 1,109.52 acres. The project area is largely undeveloped despite its proximity to I-25 (Figures 3 and 4). However, gravel pits are present to the east and the Fountain Valley Power Plant (Southwest Generation), and associated infrastructure including transmission lines and an aqueduct is encompassed by the western portion of the project area. A partially developed residential community is located to the west and northwest of the survey area. Although a few houses were constructed and appear occupied, many of the streets and cul-de-sacs installed as part of the development appear abandoned and unused. Construction associated with the development does not appear to continuing. Terrain within the project area is a gently undulating grassland incised with unnamed intermittent drainages that flow into Fountain Creek to the east and Sand Creek to the south. Sand Creek is a tributary of Fountain Creek, which is included within the drainage basin of the Arkansas River. A gentle rise is present in the central portion of the survey area. Small finger ridges radiate out from the rise. Elevation in the area ranges from 5,530 ft to 5,450 ft.

The project is situated entirely within the Colorado Piedmont section of the Great Plains physiographic province. This section is differentiated from the High Plains to the east by the absence of mantling Tertiary rock, which was removed as a result of Quaternary erosion by the South Platte and Arkansas Rivers and their tributaries (Thornbury 1965:310-312; Morrison 1987:170). The Colorado Piedmont exhibits gentle terrain when compared to the Raton Basin to the south, and includes the broad valley of the Arkansas River, the lower reaches of tributaries on both sides of the valley, and dissected, low-relief uplands. Cretaceous sedimentary formations are exposed here, as is Pierre Shale to the north of the Arkansas River. In addition, significant Late Pleistocene and Holocene alluvial deposition is present along the Arkansas River, and Quaternary eolian and alluvial sediments mantle much of the surface north of the river (Tweto 1979).

Climate

The southeastern Colorado climate is semi-arid and continental, and as such is characterized by wide annual and diurnal fluctuations in temperature and precipitation. Climatic conditions are affected by a number of interrelated variables such as the movement of major air masses, topography, latitude, elevation, and local storm track patterns (Painter et al. 1999:8-10; Kalasz et al. 2007:13). Foothill settings such as those characterizing the project area experience interrupted airflow as a result of high mountains to the west, and are less prone to climactic extremes. However, the area may be described generally as exhibiting hot summers, cold winters, and frequent winds. Long-term temperature and precipitation records for the nearby City of Fountain were examined to provide an overview of climactic conditions in the area (Weatherbase 2015). The warmest month of the year is July with an average temperature of 86.1º F. The average

Figure 3. View of study area, facing west.

Figure 4. View of study area, facing east.

yearly precipitation is 14.3 inches, most of which falls between April and June (combination rainfall and snow in most years) and again in July and August (thunderstorms). The period October through February is extremely dry throughout the Colorado Piedmont.

Flora and Fauna

The project area is situated within a temperate grassland vegetation zone. While this zone extends through much of the central United States, and is therefore subject to variation, the grasslands of southeastern Colorado are dominated by drought-resistant grass species that tolerate low humidity, limited rainfall, and high winds, most notably blue grama, galleta, alkali sacaton, needle-and-thread, and western wheatgrass (Mutel and Emerick 1984). Vegetation in the project area includes stands of cholla interspersed with prickly pear cactus, various forbs, and assorted short-to-medium grasses.

The exposed and unprotected nature of the grassland environment tends to limit mammalian habitation to species that have the ability to move quickly or to live underground (Painter et al. 1999:10). Large species inhabiting high plains grasslands include pronghorn antelope, bison (formerly), and, in certain ecological niches, elk, mule deer, and whitetail deer. Small and medium-size mammals include jackrabbit, eastern cottontail, red and swift foxes, coyote, bobcat, raccoon, badger, spotted and striped skunks, blacktail prairie dog, and a various smaller rodent species including shrews, mice, voles, and rats. Larger species of grassland animals were not observed in the project area. Snakes observed during survey include common garter snakes, coachwhips, and prairie rattlesnakes.

CHAPTER 3
Culture-Historical Context

Prehistoric Narrative

The Arkansas River Basin, which coincides with the lower southeastern portion of the state of Colorado, has been subjected to archeological research for over 50 years. This section is intended to review and update briefly the more important aspects of previous work. The information is presented within the framework of the taxonomic scheme provided in the most recent prehistoric research contexts for the Arkansas River Basin (Zier and Kalasz 1999). Human occupation extending back to at least 11,500 years before present (B.P.) has been documented in this region. Three major stages are defined: Paleoindian, Archaic, and Late Prehistoric. Taxa or shorter duration, termed periods, are identified within the respective stages. The following taxonomic nomenclature follows a simple, hierarchical stage/period/phase scheme to alleviate confusion and helps to display fundamental patterns seen throughout the prehistory of the area.

Paleoindian Stage	<11,500 – 7800 B.P.
Pre-Clovis	<11,500 B.P.
Clovis Period	11,500 – 10,950 B.P.
Folsom Period	10,950 – 10,250 B.P.
Plano Period	10,250 – 7800 B.P.
Archaic Stage	7800 – 1850 B.P. (A.D. 100)
Early Archaic Period	7800 – 5000 B.P.
Middle Archaic Period	5000 – 3000 B.P
Late Archaic Period	3000 – 1850 B.P.
Late Prehistoric Stage	1850 – 225 B.P. (A.D. 100 – 1725 A.D.)
Developmental Period	1850 – 900 B.P. (A.D. 100 – 1050)
Diversification Period	900 – 500 B.P. (A.D. 1050 -1450)
Apishapa Phase	900 – 500 B.P. (A.D. 1050-1450)
Sopris Phase	900 – 750 B.P. (A.D. 1050 – 1200)
Protohistoric Period	500 – 225 B.P. (A.D. 1450 – 1725)

Paleoindian Era (11,500-7800 B.P.)

The earliest evidence of human occupation in the Arkansas River Basin defines this particular taxon. Paleoindian adaptation corresponds with ameliorating climatic conditions attendant with the late Pleistocene and early Holocene. The warming trend seen throughout the Paleoindian stage culminates in the arid, essentially modern climate of the Plano period. There is at present little evidence of Paleoindian occupation in the Arkansas River Basin. Although isolated surface finds are not unusual, only the Olsen-Chubbuck site (located on the eastern plains) and the Runberg site (situated in the high mountains) have produced comprehensive excavation data.

Paleoindian populations preferred the surrounding environments, factors such as less intensive levels of investigation and decreased archaeological visibility due to geomorphic conditions probably account for the differences in the known numbers of sites.

Pre-Clovis sites are yet to be found in southeastern Colorado. However, possible Pre-Clovis components are noted at three sites in northeastern Colorado and one site located at the Kansas-Colorado border near Interstate 70: Dutton, Selby, Lamb Springs, and Kanorado respectfully. Pre-Clovis attributes are largely limited to indications of intentional bone breakage, including the production of bone cores and flakes (Stanford 1983; Mandel et al.; 2005; Zier 1999a:77). Currently, there is a notable absence of diagnostic artifacts that clearly define this period.

The Clovis, Folsom, and Plano periods exhibit the oft-cited hallmarks of the Paleoindian stage, i.e., an emphasis on big-game hunting and flaked stone tool kits that showcase large, finely crafted lanceolate points. A marked preference for stone of the highest quality is noted among sites dating to these periods. The Hahn site (5EP1), consisting of surface materials situated near the northern boundary of the Arkansas River Basin on the Palmer Divide, is the only recorded Clovis site in southeastern Colorado (Zier 1999a:80). Information pertaining to this period must, therefore, be gleaned from other regions. The highly mobile Clovis period bands are strongly identified with a distinctive, bifacially fluted, lanceolate dart point found in dramatic association with mammoth bone. However, the more current and fuller view of Clovis adaptive strategy emphasizes a varied tool assemblage and a concomitantly diverse economy that includes plants and smaller game (Zier 1999a:81-82).

The succeeding Folsom and Plano periods are more strongly reflected in the archaeological record, and these taxa have a larger representation in the Colorado database. The Lindenmeier site in northeastern Colorado and Stewart's Cattle Guard, Zapata, and Linger sites in the Rio Grande River Basin are highly significant Folsom components (Gilmore et al. 1999; Martorano et al. 1999). As is the case with Clovis period remains, southeastern Colorado is minimally represented by Folsom occupations. Surface lithic scatters in the Mesa de Mayo vicinity of Las Animas County (5LA57 and 5LA986), and the previously mentioned Hahn site, are the only recorded Folsom sites in southeastern Colorado. The subsequent Plano period is characterized by a much broader time span than the Clovis and Folsom periods and, accordingly, is represented by a larger site sample (Zier 1999a:91-93). Still, most of the Plano period evidence in southeastern Colorado consists of spare albeit widely distributed remains found in isolated surface contexts (Anderson 1989). Two Plano components have been excavated in the Arkansas River Basin: the Olsen-Chubbuck site in the eastern plains, and the Runberg site and 5LK372 in mountain/foothill settings along the basin's western margin (Arthur 1981; Black 1986; Wheat 1972; Zier 1999a:91).

As with the Clovis period, our current understanding of Folsom and Plano existence is derived largely from sites within a broad geographical range outside the Arkansas River Basin. Whereas the Folsom period witnessed a continuation of a fluted point morphology initiated in Clovis times, the Plano period is associated with a series of temporally and spatially overlapping, non-fluted projectile point traditions. The latter include Agate Basin, Alberta, Cody (or Cody/Kersey), Eden, and Hell Gap. Similar to the more recent Clovis studies, the traditional view of Folsom and Plano economy as one which emphasized the procurement of extinct and modern

bison species is currently undergoing significant modification (Kuehn 1998, Zier 1999a:90). More recent data suggest a wider subsistence base that, in addition to bison, included vegetal processing and the exploitation of small and medium-sized game animals. However, Folsom adaptive strategy is often distinguishable from that of the Plano period on the basis of the level of cooperation among bands in hunting large game. Specifically, the dramatic shift from the small-scale hunts of the Folsom period to the communal Plano procurement efforts is believed to be a significant factor in differentiating the two taxa (Zier 1999a:95). This shift is probably a response to the arid environmental conditions of the Plano period that prompted the development of larger and more widely distributed bison herds.

Archaic Stage (7800 – 1850 B.P.)

The Archaic stage, further divided into Early, Middle, and Late periods, witnessed a continuation of the band-level hunting and gathering tradition initiated in the Paleoindian stage. However, this taxon is marked by a more varied subsistence base, a large and diverse feature assemblage, and a range of morphologically disparate, primarily non-lanceolate point styles.

The Arkansas River Basin has produced scant archaeological data pertaining to the Early Archaic period (7800-5000 B.P.). There was, as of 1999, a complete absence of radiometric assays in the Arkansas River Basin that date between 7740 B.P. and 4930 B.P. (Zier and Kalasz 1999:Figure 4-2). The presence of Early Archaic bands in southeastern Colorado is known entirely through the recovery of diagnostic projectile points. On the plains these are generally large, stemmed specimens with low, shallow side-notches. They are often termed "Hawken-like" because of similarities with Hawken Side-notched points of the Northwestern Plains (Frison 1991; Zier 1999b:105). High altitude sites also include stemmed-indented base points (Metcalf and Black 1991:92-98; Zier 1999b:105). Interestingly, this particular period is associated with the pronounced early Holocene warming and drying trend known as the Altithermal climatic episode. Previous studies have posited that the relatively hot and arid conditions of the Altithermal greatly affected Early Archaic settlement/subsistence strategies (Reeves 1973; Benedict 1978). Most notably, lowland regions were abandoned in favor of mountain/foothill niches sometimes termed refugia. However, other researchers have noted that the exploitation and occupation of these niches was firmly established by Mountain tradition populations prior to the onset of the Altithermal (Black 1991). Rather than a massive migration to higher elevations, the "reduction in occupation of the plains and basins is best explained as a simple diminution in human population" (Zier 1999b:105).

The Middle Archaic period (5000-3000 B.P.) witnessed a widespread reversion to more mesic (wetter and cooler) climatic conditions following the close of the Altithermal. This period represents the earliest portion of the southeastern Colorado prehistoric sequence that is associated with a substantial archaeological database (Zier 1999b:113). That the two preceding statements are related must be considered, given the broad range of ecological settings within which Middle Archaic sites are found. The small hunter-gatherer bands of the period developed a diverse economy featuring exploitation of a variety of wild plant and game resources. Even in southeastern Colorado, the lanceolate and stemmed-indented dart points typically ascribed to the McKean complex of the Northwestern Plains are the prevalent diagnostic artifact form. Large, side-notched Mallory points are also present. Although McKean and Mallory are manifestations derived from

Northwestern Plains contexts, it is acknowledged that similar point morphologies and radiometric dates are associated with the Pinto Series of the Great Basin. Edge serration, regardless of point form, is believed to be more prevalent in high country Middle Archaic sites. Examples of Middle Archaic architecture, in both simple and complex forms, make their first pronounced appearance, primarily in regions adjacent to the Arkansas River Basin (Shields 1998:Table 2; Zier 1999b:120). A morphologically variable assemblage of thermal features recorded in Middle Archaic contexts likely served functions ranging from simple hearths to more complex slab-lined "earth ovens" (Zier 1999b:120-121). The pervasiveness of cooking features corresponds with an attendant increase in the sheer number of ground stone artifacts. A storage feature at Wolf Spider Shelter near Trinidad yielding abundant charred wild plant seeds further attests to the escalation of plant processing during the Middle Archaic period (Hand and Jepson 1996).

Sites of the Late Archaic period (3000-1850 B.P.) in the Arkansas River Basin are more abundant and widespread than those of previous Archaic stage periods, but there is little to suggest that sweeping modifications in adaptive strategy occurred. The band-level hunter-gatherer strategy continued to be emphasized, but there are indications that populations expanded from previous Middle Archaic levels. Within sites where both Middle and Late Archaic components are present, the latter appear to represent much more intensive occupations (Zier 1999b:130). Although there is an increased sample of radiocarbon assays from the Late Archaic period, issues such as greater archaeological visibility and geomorphological conditions must be considered when interpreting these data. Simply put, the depositional contexts available for archaeological investigation likely favor the more recent occupations. Although subsistence practices focused on a variety of game and wild plant resources, there is firm evidence that some southeastern Colorado groups began to cultivate small patches of maize (corn), or perhaps obtained corn through trade. Use of the atl-atl continued, but the morphological trends seen among Late Archaic point assemblages differ notably from those of the Middle Archaic period. Lanceolate and stemmed-indented base styles in particular give way to large, corner-notched dart points. Late Archaic architecture is sparsely represented in southeastern Colorado, but the presence of structures at the McEndree Ranch site and 5LA2190 demonstrates that the tradition of constructing basin house shelters remained in place (Rood 1990; Shields 1980).

Late Prehistoric Stage (1850 – 225 B.P.)

This taxon, further divided into the Developmental, Diversification, and Protohistoric periods, is associated with the greatest number of chronometrically dated sites in the Arkansas River Basin (Zier and Kalasz 1999:Figure 4-1). As stated previously, the use of these data to posit population growth must be tempered with geoarchaeological considerations of site visibility. Still, the sheer number of Late Prehistoric age assays provides considerable interpretive weight to support such a premise. Furthermore, the time span between A.D. 100 and A.D. 1725 in southeastern Colorado witnessed profound changes in settlement, subsistence, technology, trade, interregional relationships, and demographics. It is becoming increasingly apparent, however, that at least until the inception of the Protohistoric period there was no significant replacement of the widespread, indigenous hunter-gatherer population that flourished during the Archaic stage (Kalasz et al. 1999:146).

The Developmental period (1850-900 B.P. [A.D. 100-1050]) spans roughly the first half of the Late Prehistoric stage, and was characterized by new technologies superimposed on a well-established Archaic stage mode of existence (Kalasz et al. 1999:141). Initially, it was the bow and arrow that supplanted, perhaps gradually, the use of the atl-atl. The launch of such technology is gauged by a dramatic reduction in the size, if not the overall form, of projectile points; i.e., the large, corner-notched dart point gives way to the small, triangular, corner-notched arrow point. The scant temporal data pertaining to the arrival of pottery indicate that ceramic technology was adopted by Developmental period groups in the Arkansas River Basin approximately 200-300 years after the appearance of the bow and arrow (Kalasz et al. 1999:Table 7-1). Local cord-marked wares indicative of stylistic influences from the Central Plains are virtually indistinguishable from those manufactured in the succeeding Diversification period. In addition, plain pottery described as thick, crude, oxidized, and sand-tempered has also been recovered from both Developmental period and Sopris phase contexts in the Trinidad District of the Park Plateau (Kalasz et al. 1999:173). Habitation structures are better represented than in the preceding Late Archaic period, and are recorded in both open and rock shelter settings. Several examples of complex architecture requiring considerable investment of time and effort for construction were exposed in Developmental period contexts (Hunt 1975; Loendorf et al. 1996). The more elaborate structures are free-standing basin houses with interior hearths, storage features, postholes, and stone slab foundational elements. Although such structures suggest increasing levels of sedentism, other characteristics associated with the same sites, e.g., a lack of substantial middens, are indicative of the temporary seasonal residences typical of hunter-gatherers. Furthermore, although maize was a consistent if not significant dietary item, wild faunal and floral resources continued to dominate the Developmental period subsistence base. Other than projectile point morphology, the Developmental period lithic assemblages do not differ significantly from those of the Archaic stage. Bedrock and/or boulder grinding surfaces are believed to be more commonplace, but these are often difficult to assign reliable dates. Also of note are indications that a bone and shell tool/ornament industry becomes increasingly prominent in the Developmental period. Several elaborate Late Prehistoric stage burials decorated with exotic bone and shell ornaments have been excavated along the Front Range (Black et al. 1991; Black 1997; Buckles et al. 1963; Jepson and Hand 1999). The presence of grave goods provides at least a tentative basis for inferring that greater levels of social organization and status differentiation were in place during the Developmental period.

The Diversification period (900-500 B.P. [A.D. 1050-1450]) is distinguished by the region's first well-defined occurrences of directional change in Late Prehistoric stage adaptive strategy. Such change permits discrimination of Apishapa phase sites from those assignable to the Sopris phase. Although both Apishapa and Sopris phase populations are probably derived from common Developmental period origins and overlap considerably in terms of overall adaptive strategy, they are perceived as geographically and culturally distinct manifestations. In general, the Diversification period is marked by the construction of multi-room architectural settlements (often referred to as hamlets or villages) that are larger and more complex, and were possibly occupied for longer durations, than those of the Developmental period.

Evidence of the Apishapa phase is widely distributed through the canyons and major watercourses exiting the Rocky Mountains between Colorado Springs and the Dry Cimarron River valley of northeastern New Mexico. Sites were initially identified by the "stone enclosure"

structures recorded in the 1930s along the Apishapa River north of Trinidad, Colorado. The Apishapa phase is most often viewed as the westernmost representation of the Plains Village tradition. However, rather than the sedentary, horticultural settlements of the Plains Villagers, the Apishapa populations retained the decided hunter-gatherer emphasis initiated by their Archaic ancestors. Maize is commonly recovered from Apishapa components, but generally in small quantities. Substantial numbers of cobs, i.e., 200-250 specimens, were associated with only two known sites, Medina and Pyeatt rock shelters (Campbell 1969). Located in the Purgatoire River vicinity, both were possible storage facilities. By far the greatest portion of the Apishapa phase subsistence base was comprised of a wide variety of faunal and wild plant resources. The notion that the Apishapa populations were more sedentary than their Developmental period antecedents is evidenced by "...unique and sometimes massive stone masonry architecture, often clustering in numbers suggestive of settlements or hamlets" (Kalasz et al. 1999:198). Eastern influences such as cord-marked pottery and semi-subterranean houses with circular foundations are predominant attributes of the Apishapa phase. However, this taxon is believed to be a unique manifestation that developed from well-established ancestral roots in the Rocky Mountain region; there are no indications that the Apishapa phase is derived from Southern or Central Plains groups that moved into the area.

Whereas the Apishapa phase exhibits influences primarily from Plains cultures to the east, Sopris phase groups established relationships with Rio Grande Puebloans near the end of the Developmental period (Kalasz et al. 1999:221-239). Furthermore, the Sopris phase in Colorado is restricted to the eastern slope of the Sangre de Cristo Mountains, primarily along the upper Purgatoire River in the Park Plateau region. Maize was evidently a more important resource in Sopris phase subsistence, but the long-lived hunting and gathering tradition remained a critical economic component. Intensive interaction with the northern Rio Grande Valley Pueblos is believed to account for the rectangular/subrectangular, multi-room, stone masonry architecture and various Taos culinary wares that are prominently represented at Sopris phase sites. The structures served as residences for distinct households and generally incorporated storage structures. In contrast to the Apishapa phase, there is considerable evidence for highly formalized mortuary practices among the Sopris phase populations. This evidence provides some basis for inferring that Sopris phase populations were generally more sedentary than those of the Apishapa phase.

The Protohistoric period (500-225 B.P. [A.D. 1450-1725]) encompasses the decidedly "gray area" of archaeological research that spans the traditional concepts of prehistory and history. Significantly, some of the events that transpired during this period are elucidated by documentary evidence. These documents were generated through Spanish expeditions into southeastern Colorado that began as early as the late sixteenth century. The onset of the Protohistoric period, ca. A.D. 1450, is defined by the possibly overlapping dates associated with Apishapa phase abandonment and the purported arrival of Athapaskan (also referred to as "Apachean") groups from the north (Kalasz et al. 1999:250). It is acknowledged that the timing and extent of the Southwestern Athapaskan entrada remains controversial, particularly as it applies to the Arkansas River Basin. The A.D. 1725 date offered recently as the Protohistoric period terminus is based on historical accounts from Spanish expeditions that describe the withdrawal of Athapaskan bands in response to Comanche and Ute incursions (Kalasz et al. 1999:250).

Evidence of Protohistoric occupation in the Arkansas River Basin is restricted to the aforementioned historical accounts and scant archaeological data recovered from sites associated with various micaceous wares. Large settlements are, to date, unknown archaeologically in the region. Most southeastern Colorado sites identified as Protohistoric are associated with small rock shelters and/or the enigmatic, circular, spaced stone foundations typically labeled "tipi rings" (Kalasz et al. 1999:252). These occupations appear to be representative of temporary, seasonal encampments used by nomadic bands traveling through the region. Research conducted by Brunswig (1995) indicates that the sites were affiliated with Apachean "hypothetical culture pattern variants," i.e., western Dismal River aspect and Sangre de Cristo or Jicarilla Apaches (Kalasz et al. 1999:255-256). Whereas the western Dismal River variant was believed to be influenced by Shoshonean groups of the western Rocky Mountains, the Sangre de Cristo or Jicarilla Apache is distinguished by significant interaction with Rio Grande Puebloans. However, these affiliations are based on assumptions derived from limited analysis of micaceous pottery. The difficulties involved in assigning micaceous pottery to specific culture groups are well-documented (Gulley 2000; Hummer 1989; Kalasz et al. 1999:255-256). Moreover, the concept of the Dismal River aspect as strictly an Apachean manifestation has recently been questioned (Gulley 2000).

Documents derived from Spanish explorations of the region provide intriguing narrative pertaining to the latter portion of the Protohistoric period (Hanson and Chirinos 1989; Jones et al. 1998; K. Weber 1990; Kalasz et al. 1999:256-257). Ethnohistoric accounts, such as those of the Ulibarri expedition of 1706, attest to Penxaye and Cuartelejo Apaches living in horticultural villages along the Purgatoire and Arkansas Rivers in southeastern Colorado. However, archaeological remains that demonstrate such a presence are yet to be found.

Historic Narrative

Spanish Exploration, Early Settlement, and Native-American Trade: The history of southeastern Colorado began over 400 years ago with the Spanish effort to colonize the "New World." In search of silver, Francisco Vasquez de Coronado began to explore the area in the 1530s. By the end of the 16th century his exploration, along with many others, resulted in the establishment of lucrative hunting grounds and trade networks with a number of Native American cultures. This initial trade carried out by both groups was generally a simple exchange, and was centered primarily on the trade of New Mexican Valley game, horses, hides, and guns. By the late 18th century the Spanish established small settlements in large portions of the American Southwest including Colorado (League of Revolutionary Struggle 2015). As a result of increased settlement much of the previous, symbiotic trade ceased. In the end, the Spanish were successful in creating a new trade system brought about by the differential access to the buffalo, the primary resource. Production, which was no longer limited to local needs, refocused on what the national and international markets could absorb. Indian tribes became competing and consuming economic groups locked into, and increasingly dependent upon, an external trade network over which they had no control. These previously self-sufficient societies became both the initial producers of items such as hides, leather, dried meats, and slaves and the ultimate consumers of guns, sword blades for lances, axes, wool blankets, agricultural products, and horse gear (Nebraska Studies.org 2015). The Spanish, and shortly thereafter the Mexicans and Anglo-Americans, took hold of the

region eliminating key fundamental processes of Native American culture, power, and ultimately traditional ways of life (K. Weber 1990).

Mexican Sovereignty and Settlement: The Spanish Empire was challenged in 1876 by the Anglo-Spanish War (1796-1808). In an attempt to defeat the British, Spain began to harshly tax Mexicans who occupied portions of North American including the American Southwest. The Mexican people moved for independence. By 1821 the Mexican revolutionary army successfully captured and forced the Spanish viceroy to resign and the Mexicans took political control over portions of the American Southwest (League of Revolutionary Struggle 2015).

In southeastern Colorado, the Arkansas River remained the international boundary, with Mexico controlling the south bank the U.S. controlling the north bank. The Mexican period in this area endured only through the close of the Mexican-American War of 1846-1848, which culminated in the Treaty of Guadalupe-Hidalgo. By the terms of this treaty Mexico ceded vast portions of the southern plains, Southwest, Rocky Mountains, and California to the United States. Lands in southeastern Colorado south of the Arkansas River became part of the U.S. at this time (D. Weber 1982; Boyer 2001:497-498).

With Mexican independence came a repeal of trade barriers on the New Mexican frontier that had been put in place by the Spanish government. The Santa Fe Trail, pioneered by William Becknell, was established immediately along common Indian, Spanish, and Mexican trade routes, connecting Missouri with the Mexican territorial capital of Santa Fe. The Santa Fe Trail, which passed through southeastern Colorado, was more a trail system than a trail. Unlike its northern counterpart the Oregon Trail, which served mainly as an emigrant route, the Santa Fe Trail was a freight road over which goods were hauled between the U.S. and Mexico (Lamar 1977:832).

The success of trade during the initial ten years of Mexican independence resulted in the construction of Bent's Fort by the Bent, St. Vrain and Company on the north (American) side of the Arkansas River in the early 1830s. During the fur trade era three principal routes to Santa Fe were established. Probably the oldest route was the Trappers or Taos Trail, which led from the upper Arkansas River along the Huerfano River and over Sangre de Cristo Pass into the San Luis Valley, then south along the Rio Grande into Taos in northern Mexican territory. The Cimarron Cutoff went southwest from the Arkansas River to the Cimarron and Canadian Rivers and then into Santa Fe over Glorieta Pass. The last route, known as the Mountain Branch of the Santa Fe Trail, departed the Arkansas River at Bent's Fort, ascended Timpas Creek parallel to and west of the Purgatoire River, crossed Raton Pass, and then rejoined the Cimarron Cutoff at the Mora River (Friedman 1985).

Lecompte (1978:55-56) argues convincingly that, prior to 1846, the majority of the trappers and traders employed by Bent, St. Vrain and Company used the Taos Trail when traveling between the fort and the Mexican settlements using pack animals. The traffic over the Mountain Branch was not heavy prior to 1845 because of the difficulties involved in crossing Raton Pass. To facilitate the northern invasion of Mexico by Stephen Watts Kearney's Army of the West, extensive improvements were made to the trail in 1846, and from that point on the Mountain Branch was used regularly by wagon traffic.

Early American Settlement: Several small Anglo-American settlements were started on the upper Arkansas River during the Mexican period. In 1842 a small community was founded at present-day Pueblo near the mouth of Fountain Creek by George Simpson, a former Bent employee. Also in 1844, a farming community was started by Simpson on Hardscrabble Creek. Named for the creek, this settlement was the first to be built on the south side of the Arkansas River in Mexican territory. The following year another community was established on Mexican soil by Anglo-American mountain men. The settlement, called Greenhorn, lay a short distance south of Pueblo. These communities represent the first agricultural settlements in southeastern Colorado. The Anglo-Americans who settled in Mexican territory squatted in these areas without official Mexican sanction, but the New Mexican governor was powerless to stop them (Friedman 1985:51-52; Lecompte 1978).

The post-war era beginning in 1849 brought several important changes to southern Colorado that led to permanent occupation of the region. Among these changes were the removal of the indigenous populations and the establishment of a stage line. After Kearney's Army of the West had destroyed the pasture surrounding Bent's Fort, William Bent attempted to sell the fort to the United States. However, the government's offer was considered unsatisfactory, and in August of 1849 Bent abandoned and blew up his fort before moving downriver to Big Timbers near present-day Lamar to continue trading activities. During the winter of 1852-1853 he built a stone fort called Bent's New Fort where he operated a freighting business and continued trading with the Indians (Friedman 1985:60-61; Moore 1973).

At the beginning of Anglo-American control of the area there were only a few non-Hispanic settlers in southern Colorado. The settlements in the Arkansas River Valley were restricted primarily to the area of present Pueblo. In the early 1850s one of the settlers was Richens "Uncle Dick" Wootten. He claimed that in 1853 he had a ranch consisting of a log house and stockade. His nearest neighbors were Joseph Doyle, who had settled in the region in the early 1850s, and Charles Autobees, who settled on the Huerfano River in 1853. There was also a group of mountain farming on the St. Charles River. The settlements did not endure. A Ute Indian massacre of the residents of the Pueblo fort at the mouth of Fountain Creek in 1854 drove most of the settlers out of the area; Hardscrabble and Greenhorn were abandoned by 1856 (Friedman 1985:61-62).

Gold Rush, Politics, and Statehood: It can be argued that the solidification of Anglo-American settlement within the region did not occur until after the gold rush in the mid-19th century. Although gold had been discovered in 1858, it was in the spring of 1859 that the first of approximately 100,000 gold-seekers began the trek to the Rocky Mountain region. The activity was short-lived, however, and of those who eventually set out approximately 60,000 turned back before arriving. Between April and October of 1859 about 25,000 people entered the mountains in the areas such as those near Colorado Springs. Crude homes were built, as were stores, hotels, and saloons. The newly established businesses were supplied with merchandise and equipped by wagon trains. The growth occurred not only in Denver but also in other locations along the Colorado Front Range and adjacent mountain areas. These settlements were the origins of such towns as Boulder, Central City, Fort Collins, Colorado Springs, and Pueblo (Hafen 1948:176-177; Carrillo et al. 1993). In the spring of 1859 immigrants began to demand the creation of a new state or territory in Pikes Peak country. It was thought that a legally constituted government would

serve to provide effective local control over the area. In addition, Colorado, as a territory, could unite all the mining districts under one administrative unit. Until the territory was established, the mining districts in northeastern Colorado north of the 40th parallel were under the jurisdiction of Nebraska territory but beyond its effective control. The early settlers therefore established the territory of Jefferson. The newly established government – essentially an extralegal territory – had considerable support from its members as it assured stability and order in the region. The Jefferson territory served as the initial step toward the creation of the Colorado territory (Mehls 1984:30-40). In December of 1860 Congress acted on Colorado's request for territorial status; the measure was finally passed in late February 1861 (Hafen 1948:199-221; Mehls 1984:40).

Homesteading in Southern Colorado: Further facilitating the Anglo-American inhabitance in the area was homesteading which began in Colorado in mid-1860s. Early homesteading in the American West including Colorado was an immediate result of the passage of the Homestead Act of 1862. Under this act a settler could claim a 160-acre plot of undeveloped land outside of the original 13 colonies. If the homesteader occupied the land for five years and made adequate improvements, he or she could apply for a patent, or deed of title to the land. Most of the early homesteaders in southern Colorado during the mid-1800s were Hispanics from northern New Mexico and Anglo-Americans from the U.S. and Ireland. Droughts and blizzards, however, forced many of the initial homesteaders out of the region in the 1880s (Friedman 1985:73-101). Homesteading from 1891 to 1915 witnessed the failure of a number of homesteads, and consolidation of land holding was held by a limited number of individuals, primarily Anglo-Americans. Large ranches tended to dominate the open range and controlled major water sources.

The passage of the Enlarged Homestead Act of 1909, which allowed settlers to claim 320 acres, resulted in an influx of homesteaders in the early 20th century. Similarly, starting in 1916 with the passage of the Stock-Raising Homestead Act of 1916 and ending in 1930, the United States government provided successful homesteaders with 640-acre parcels. The inflow of settlers that began at this time was supported and encouraged by several factors: improvements in dryland farming techniques, a stretch of several consecutive years with above-average rainfall, high demand for agricultural products resulting from World War I, and improved transport of products through the railroad system (Carrillo 1990:XVIII-34 – 35). An economic recession in the early 1920s followed by an intensifying drought on the southern and central plains culminated in the Dust Bowl, resulted in the failure of many homesteads and the vast majority of settlers abandoned their claims by 1930s. Many of the homesteaded parcels of land reverted to government ownership while others were bought out by more successful neighbors. Consolidation of land holdings ultimately concluded in land ownership patterns that prevail in the area to this day.

CHAPTER 4
Class I File Search Data

A Class I file search was conducted in July of 2015 through the OAHP. Information from OAHP was requested as GIS shapefiles clipped to sites and surveys situated within a two mile buffer of the study area. Supplemental information about each resources and investigation was acquired using the Compass database maintained by the OAHP. OAPH file search information includes records of past cultural resource investigations as well as all cultural resources that have been previously recorded. Background research was conducted for all or parts of Township 17 South – Range 65 West (T17S – R65W), Sections 4, 9-11, 15-17, 20-22, 26-29, and 31-35 and all or parts of Township 17 South – Range 66 West (T17S – R 66W), Sections 12-13, 24-25 and 36. In addition, historic General Land Office (GLO) records available through the Bureau of Land Management (BLM) website were examined to determine if trails, transportation routes, homesteads, utilities, or other resources are present in the project area. These maps were then compared to 1:24,000 scale topographic maps produced by the USGS and aerial imagery to determine if any resources portrayed in the GLO maps still existed. Survey plats from July of 1862 (T17S – R66W) and January of 1864 (T17S – R65W) show that the Canon City Road once traversed portions of Sections 20, 16, and 9 of T17S – R66W, and an unnamed road ran through Sections 8, 9, and 15 of the same map. The unnamed road intersected the Canyon City Road in the SW ¼ of Section 9 and continued northwest through the SW ¼ of Section 6. Neither road appears on modern maps or aerial imagery, and no evidence of the roads was found during the current survey project. Although property boundaries were drawn on the historic GLO maps, no buildings are depicted and no historic-era cultural materials were encountered during survey.

The OAHP search revealed that 28 prior investigations have been conducted within a two mile radius of the current project area. These projects include road and bridge improvements, utility line right-of-way clearance and facility developments, highway realignments, and a settlement survey for the Fort Carson Military Reservation. These investigations resulted in the documentation of 35 sites and 22 IFs. Three previously recorded IFs are situated within the present project area. These three IFs are prehistoric in age and consist of two pieces of lithic debitage (5EP2100 and 5EP6909) and a flaked stone tool (5EP4733). They were not relocated during the current survey project. The previous investigations (Table 1) and known cultural resources (Table 2) are summarized below.

Table 1
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
EP.CH.NR5	Cultural Resources Survey of Project IR 025-2(202), Sand Creek - 1 Mile North of El Paso County Line, Colorado	Wallace, Steven M.	11/01/1985	Colorado Department of Highways

Table 1 (Continued)
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
EP.CH.NR11	Cultural Resources Survey of Project BRO 0004(4), Bridge Replacement on Old Pueblo Highway, El Paso County, Colorado	Baugh, Susan T.	09/01/1986	Colorado Department of Highways
EP.CH.NR20	Cultural Resources Survey of Old Pueblo Highway - Fountain Creek, El Paso County, Colorado (BRO 0004(4))	Pearce, Sally	07/12/1988	Colorado Department of Highways
EP.CH.NR63	Archaeological Survey of Project IR 025-2(192), El Paso County, Colorado	Chocol, Barbara and Steven M. Wallace	12/03/1984	Archaeologist for Colorado Department of Highways
EP.CH.R1	Archaeological Survey of Project IR 025-2(203), 2 Miles North of Pueblo, El Paso County Line, Colorado	Wallace, Steven M.	11/01/1985	Colorado Department of Highways
EP.CM.R1	Cultural Resources Survey of Midway Ranches Water Line, El Paso County, Colorado	Arbogast, William R.	03/12/1993	William Arbogast for Colorado Mined Land Reclamation
EP.DA.NR47	No Information Available	No Information Available	No Information Available	No Information Available
EP.E.NR2	A Cultural Resources Inventory for Moving One Wood Pole Structure at the Midway Substation, El Paso County, Colorado	Barger, Mary	09/06/1996	Western Area Power Administration
EP.E.R5	Colorado Interstate Gas Company Midway Pipeline Intensive Inventory for Cultural Resources El Paso County, Colorado. (Original and Addendums)	Barclay, Dulaney	11/2000	Metcalf Archaeological Consultants for the Department of Energy

Table 1 (Continued)
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
EP.R.R1	Southern Delivery System Geotechnical Corridor - Report 12: Class II Cultural Resource Inventory of Approximately 159 Acres in Eagle County, Colorado	Chambellan, Collette C.	05/09/2005	Western Cultural Resource Management, Inc. for the Bureau of Reclamation
EP.R.R3	Southern Delivery System Geotechnical Corridor - Report 11: Class II Cultural Resource Inventory of Approximately 142 Acres in El Paso County, Colorado (MWH-TDK5/03-B-065)	Chambellan, Collette C.	05/06/2005	Western Cultural Resource Management, Inc. for the Bureau of Reclamation
EP.R.R10	Cultural Resource Inventory of Teepee Buttes Pipeline Alignment Southern Delivery System Project El Paso County, Colorado	Briggs, Clive and Jessica Gabriel	12/2011	ERO Resources Corporation for Colorado Springs Utilities on Behalf of the Bureau of Reclamation
EP.R.R21	No Information Available	No Information Available	No Information Available	No Information Available
EP.RE.R1	Midway to Geesen OPGW Installation Project Class III Cultural Resource Inventory	Anderson, Stephen	08/2011	Tetra Tech for the Rural Utilities Service
EP.SC.NR3	K-5 Farms, Colorado, El Paso County Emergency Watershed Protection Program (EWP)	Sims, Marsha	07/20/1999	Natural Resources Conservation Service

Table 1 (Continued)
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
EP.SC.NR35	El Paso County Limited Results Cultural Resource Survey Report on Private Lands (Sundance Investment)	Gohlke, Barbara	05/02/2012	USDA Natural Resources Conservation Service (NRCS)
MC.DA.NR19	Memorandum for Record: Archaeological Survey for the 13MP Upgrade Communication System on Fort Carson, El Paso and Pueblo Counties, Colorado (REC2006-161)	Cowen, Pamela	11/10/2006	Department of Defense - Fort Carson
MC.DA.NR21	No Information Available	No Information Available	No Information Available	No Information Available
MC.DA.R22	A Settlement Survey of the Fort Carson Military Reservation, El Paso, Fremont and Pueblo Counties, Colorado (Volumes 1 and 2) (1978-001)	Alexander, Robert K., John D. Hartley, Thomas F. Babcock, James V. Sciscenti, Dorothy M. Griffiths, et. al.	08/29/1983	Grand River Consultants for the United States Army
MC.DA.R32	Memorandum for Record: Cultural Resources Survey and Evaluation for 2007 DECAM FCMR Prescribed Burn Survey, El Paso and Pueblo Counties, Colorado (2007-196)	Cowen, Pamela	12/06/2007	Department of Defense - Fort Carson
MC.E.R27	Cultural Resources Survey of the Poncha-Midway Transmission Line Access Roads & Tower Locations Chaffee, Fremont, Pueblo & El Paso Counties, Colorado. (Original and Addendum) (1997-010)	Taylor, Melissa L. and Ted Hoefer III	05/04/1998	Foothill Engineering Consultants, Inc.

Table 1 (Continued)
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
MC.FH.R1	Class III Cultural Resource Inventory of Lincoln to Midway 230kV Transmission Line, Lincoln, Elbert, and El Paso Counties, Colorado	Wunderlich, Robert, Eric Hendrickson and David Killam	12/2009	RMC Consultants, Inc. for the USDA Rural Development
MC.NP.R46	An Intensive Archaeological Inventory of the Multi-Purpose Range Complex Water Pipeline Right of Way, Fort Carson Military Reservation, El Paso and Pueblo Counties, Colorado (1985-005)	Zier, Christian J.	01/01/1986	Centennial Archaeology for the National Park Service and Fort Carson
MC.R.R58	Southern Delivery System Geotechnical Corridor - Report 13: Class III Cultural Resource Inventory of Approximately 151 Acres in El Paso and Pueblo Counties, Colorado (MWH-TKD5/03-B-065)	Chambella, Collette C.	05/09/2005	Western Cultural Resource Management, Inc. for the Bureau of Reclamation
MC.CH.NR27	An Intensive Cultural Resource Survey Along Interstate 25 in the Vicinity of Pinon, El Paso and Pueblo Counties, Colorado	Hand, O.D.	12/1998	Colorado Department of Transportation, Archaeological Unit
MC.CH.R22	Cultural Resource Survey of Several Locations Near Pueblo, El Paso, Pueblo, and Huerfano Counties, Colorado (M2-90-3)	Unspecified	11/15/1990	Colorado Department of Highway, Archaeological Unit

Table 1 (Continued)
Class I File Search Data: Previous Cultural Resource Inventories Conducted within Two Miles of Project Area

Survey ID	Survey Name	Author(s)	Date	Contractor
MC.R.R81	Bureau of Reclamation and Colorado Springs Utilities Southern Delivery System Geotechnical Corridor Report 14: Class III Cultural Resources Inventory of Approximately 50 Acres in El Paso and Pueblo Counties, Colorado	Chambella, Collette, Robert Fiske, Amie Gray and Steven Mehls	08/2005	Western Cultural Resource Management, Inc. for the Bureau of Reclamation
MC.R.R82	Historic Resources Survey Report: Towner to NA JCT. Union Pacific/Missouri Pacific Railroad Line	Norgren, Barbara	06/15/1998	Historian for Sugnet and Associates on Behalf of the Colorado Department of Transportation

Table 2
Class I File Search Results: Previous Cultural Resources within Two Miles of Project Area

Site No.	Description	Recorder	NRHP Eligibility	Distance from Project Area
5EP592	Wilson Cemetery – Butte Cemetery	Unknown	Field Not Eligible	3.2 kilometers northeast
5EP607	Late Prehistoric – Open Lithic Scatter	Centennial Archeology, Inc.	Officially Needs Data	2.0 kilometers southeast
5EP801	Debitage **(IF)**	Wallace, Steven M.	Field Not Eligible	800 meters east
5EP814	Unspecified **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.5 kilometers northwest
5EP815	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.5 kilometers northwest
5EP816	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.5 kilometers southwest

Table 2 (Continued)
Class I File Search Results: Previous Cultural Resources within Two Miles of Project Area

Site No.	Description	Recorder	NRHP Eligibility	Distance from Project Area
5EP817	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.8 kilometers southwest
5EP1003.8	Denver and Santa Fe, Atchison Topeka and Santa Fe, Burlington Northern and Santa Fe Railroad (Segment)	RMC Consultants, Inc.	Officially Needs Data	2.0 kilometers north
5EP1985	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	3.2 kilometers northwest
5EP1986	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.0 kilometers west
5EP2099	Prehistoric Open Camp	Western Cultural Resource Management, Inc.	Officially Eligible	1.5 kilometers
5EP2100	Debitage **(IF)**	Arbogast, William R.	Field Not Eligible	In Project Area
5EP2101	Mano **(IF)**	Arbogast, William R.	Field Not Eligible	500 meters south
5EP2102	Debitage **(IF)**	Arbogast, William R.	Field Not Eligible	2.0 kilometers south
5EP2103	Debitage **(IF)**	Arbogast, William R.	Field Not Eligible	700 meters northeast
5EP2181.10	Denver and Rio Grande, Denver and Rio Grande Western Railroad, Burlington Northern and Rio Grande Western (Segment)	RMC Consultants, Inc.	Officially Needs Data	2.0 kilometers north
5EP3298.2	Owen and Hall Ditch / Ditch No. 8	Western Cultural Resource Management, Inc.	Officially Not Eligible	2.0 kilometers southeast
5EP3367	Historic Trash Dump	Centennial Archaeology, Inc.	Officially Not Eligible	2.25 kilometers
5EP3368	Debitage **(IF)**	Centennial Archaeology, Inc.	Field Not Eligible	2.0 kilometers north
5EP3611	Culvert, J-18-AH	Fraser Design	Officially Not Eligible	500 meters east

Table 2 (Continued)
Class I File Search Results: Previous Cultural Resources within Two Miles of Project Area

Site No.	Description	Recorder	NRHP Eligibility	Distance from Project Area
5EP3618	Sand Creek Bridge, J-18-F	Fraser Design	Officially Not Eligible	2.25 kilometers southeast
5EP3619	Rock Creek Bridge, J-18-G	Fraser Design	Officially Not Eligible	3.0 kilometers north
5EP3620	Bridge, J-18-I	Fraser Design	Officially Not Eligible	800 meters northeast
5EP3621	Sand Creek Bridge, J-18-J	Fraser Design	Officially Not Eligible	2.3 kilometers southeast
5EP3622	Bridge, J-18-K	Fraser Design	Officially Not Eligible	800 meters northeast
5EP3623	Bridge, J-18-L	Fraser Design	Officially Not Eligible	1.7 kilometers northeast
5EP3625	County Road Overpass, J-18-P	Fraser Design	Officially Not Eligible	1.7 kilometers northeast
5EP3628	Rock Creek Bridge, J-18-U	Fraser Design	Officially Not Eligible	3.0 kilometers north
5EP3629	Bridge, J-18-V	Fraser Design	Officially Not Eligible	1.7 kilometers northeast
5EP3620	Bridge, J-18-I	Fraser Design	Officially Not Eligible	800 meters northeast
5EP3630	Bridge, J-18-W	Fraser Design	Officially Not Eligible	1.8 kilometers north
.5EP3633	Underpass, J-18-R Minor	Fraser Design	Officially Not Eligible	450 meters east
5EP3936.1	Talcott and Cotton Ditch, Ditch No. 20	Western Cultural Resource Management, Inc.	Officially Not Eligible	3.0 kilometers northeast
5EP3936.2	Talcott and Cotton Ditch	ERO Resources Corporation	Officially Needs Data	3.0 kilometers northeast
5EP3937.1	Liston and Love Ditch, Ditch No. 14	Western Cultural Resource Management, Inc.	Officially Not Eligible	3.0 kilometers northeast
5EP3937.2	Liston and Love Ditch, Ditch No. 14 - Segment	ERO Resources Corporation	Supports - Linear	3.0 kilometers northeast

Table 2 (Continued)
Class I File Search Results: Previous Cultural Resources within Two Miles of Project Area

Site No.	Description	Recorder	NRHP Eligibility	Distance from Project Area
5EP4718	Historic Trash Dump	Western Cultural Resource Management, Inc.	Officially Not Eligible	2.0 kilometers northeast
5EP4722	Historic Trash **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	2.5 kilometers northeast
5EP4724	Archaic, Late Prehistoric Open Camp	Western Cultural Resource Management, Inc.	Officially Eligible	3.1 kilometers south
5EP4725	Prehistoric Open Lithic Scatter	Western Cultural Resource Management, Inc.	Officially Not Eligible	2.0 kilometers south
5EP4726	Prehistoric Open Camp, Burial	Western Cultural Resource Management, Inc.	Officially Eligible	1.5 kilometers south
5EP4728	Historic Animal Control Structure	Western Cultural Resource Management, Inc.	Officially Not Eligible	1.8 kilometers north
5EP4731	Debitage **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	1.0 kilometers south
5EP4732	Core/Tested Cobble **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	17 meters south
5EP4733	Core, Flake **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	In Project Area
5EP4734	Debitage **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	1.2 kilometers northeast
5EP4735	Historic Artifact **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	2.5 kilometers northeast
5EP4736.1	Tom Wanlass Ditch Segment	Western Cultural Resource Management, Inc.	Officially Not Eligible	2.0 kilometers northeast
5EP4737	Prehistoric Open Camp	Western Cultural Resource Management, Inc.	Officially Not Eligible	1.7 kilometers south

Table 2 (Continued)
Class I File Search Results: Previous Cultural Resources within Two Miles of Project Area

Site No.	Description	Recorder	NRHP Eligibility	Distance from Project Area
5EP4738	Historic Structure/Foundation/ Alignment	Western Cultural Resource Management, Inc.	Officially Not Eligible	1.5 kilometers south
5EP4739	Core/Tested Cobble **(IF)**	Western Cultural Resource Management, Inc.	Field Not Eligible	1.3 kilometers south
5EP5025	Prehistoric Open Lithic Scatter	DECAM Fort Carson Military Facility	Officially Not Eligible	2.0 kilometers west
5EP5026	Prehistoric Open Camp	DECAM Fort Carson Military Facility	Officially Not Eligible	2.0 kilometers southwest
5EP5027	Prehistoric Open Lithic Scatter	DECAM Fort Carson Military Facility	Officially Not Eligible	2.0 kilometers southwest
5EP4738	Historic Structure/Foundation/ Alignment	Western Cultural Resource Management, Inc.	Officially Not Eligible	1.5 kilometers south
5EP4737	Prehistoric Open Camp	Western Cultural Resource Management, Inc.	Officially Not Eligible	1.7 kilometers south
5EP6595	Range 119 - Building 199B - Multi-Purpose Machine Gun Range	Fort Carson Cultural Resource Management Program	Officially Not Eligible	2.7 kilometers west
5EP6909	Debitage **(IF)**	Tetra Tech EC, Inc.	Field Not Eligible	In Project Area
5EP6911.1	Unnamed Ditch Segment	Tetra Tech EC, Inc.	Supports - Linear	1.7 kilometers northeast
5EP.6925	Biface **(IF)**	ERO Resources Corporation	Field Not Eligible	2.7 kilometers northeast

CHAPTER 5
SIGNIFICANCE CRITERIA AND FIELD METHODS

Criteria for Significance Evaluation

Cultural resources are regarded as significant if they are enrolled in, or meet the eligibility criteria of, the NRHP. NRHP eligibility criteria are enumerated in 36 CFR 60 and are described as follows:

> The quality of *significance* in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, *and*:
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or,
>
> (b) that are associated with the lives of persons significant in our past; or,
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history.

To qualify for NRHP eligibility then, a property must exhibit integrity in at least one of the areas cited above, and it must meet one or more of the four additional criteria. The National Historic Preservation Act (NHPA) of 1966 (as amended) makes clear that a site need not be of national historic significance to be considered eligible; sites of local, state, and regional importance may also be listed, and thus are significant in the legal sense. The phrasing of the NHPA is critical with respect to actual management of cultural resources. A site does not have to be included on the NRHP to receive protection under the law, but must simply meet the requirements of eligibility.

In order to bring the NRHP evaluation process into better focus, the OAHP and Colorado Council of Professional Archaeologists have produced a series of historic and prehistoric contexts. These documents identify pertinent research themes and attendant deficiencies in current historic and prehistoric databases. Sites that have the potential to yield information important to one or more research themes, and that exhibit physical integrity, are most likely to be judged eligible for the NRHP. The research contexts that apply to the current project are *Colorado Prehistory: A Context for the Arkansas River Basin* (Zier and Kalasz 1999) and *Colorado History: A Context for Historical Archaeology* (Church et al. 2007).

Field Methods

A prehistoric site is defined as any locality exhibiting at least one structure or feature (for example, a stone circle or hearth), or having five or more artifacts in apparent association with one another and occurring within a restricted area. A locality with fewer than five artifacts may also be regarded as a site if the potential exists for buried materials, or if the area is disturbed and other materials are likely to have been removed. Prehistoric IFs are nonstructural remains and consist of four or fewer artifacts. Historic sites are defined minimally as any structure or structural remnant (for example, house, outbuilding, root cellar), any trash concentration or scatter suggesting residential or industrial use of the area, or any linear feature suggesting sustained or long-term use (for example, transportation corridors such as old roads or railroad line, electrical conveyance lines, or irrigation canals). Historic IFs are individual historic artifacts or small clusters of artifacts that do not represent established refuse dumps. The minimum age criterion for historic sites and isolates is 50 years.

Prior to commencement of fieldwork, the boundaries of the project corridor were uploaded to a hand-held Garmin 60CSx and Trimble GeoXT GPS units. The Garmin units were then used for navigation within the boundaries of the project area. The field survey was conducted by four archaeologists walking parallel transects spaced at 15 m intervals throughout the project area. Parcels within the project boundaries where right-of-entry was denied by land owners were avoided. GPS track logs were maintained for all survey transects.

The survey was halted for the discovery of any cultural materials and an intensive inspection of the immediate area was initiated to determine if additional artifacts and/or features were present. Efforts focused on defining the spatial limits of the resource. The sites, which were assigned a unique field number with a "CA" (Centennial Archaeology) prefix, were recorded on Colorado Cultural Resource Survey Forms. Sites and IFs were mapped with Trimble GeoXT - GeoExplorer 2008/2006 Series - Handheld GPS units loaded with ArcPad ver. 10. The types of information collected during the mapping process included, but were not limited to, the datum location, site boundaries, locations of features, tools, artifact concentrations, and diagnostic artifacts, prominent topographic features of the immediate site area, drainage channels, and recent man-made features such as roads, fences, and electrical lines. During final map preparation contour lines were generated in ESRI ArcGIS 10.2 software using spatial analyst and 10-meter National Elevation Dataset (NED) files. The sites were further documented through digital photography. Artifact collection was limited to the temporary removal of an obsidian flake for non-destructive X-ray florescence analysis. The specimen was returned to the point of collection. No permanent curation was required.

Some sites required shovel probing to aid in the delineation of site boundaries and to assess potential for NRHP eligibility. Shovel test units measuring approximately 40 cm in diameter were excavated across the sites at 5 m intervals in two perpendicular lines bisecting the sites along cardinal directions. Shovel tests were excavated to depths ranging from 60 cm to 100 cm below the ground surface. The soil from each shove test location was backfilled, and no artifacts were collected during testing.

CHAPTER 6
CLASS III INVENTORY RESULTS

The cultural resource inventory for the FRMS project resulted in the recording of 38 newly identified cultural resources including six sites and 32 IFs. All of the sites and IFs are prehistoric. Descriptive and locational information for these resources is presented in Table 3.

Table 3
Cultural Resource Summary Data for the Front Range - Midway Solar Project

Site No.	General Age	Brief Resource Description	Location (T/R/Sec.)	NRHP
Newly Recorded Sites				
5EP7621	Prehistoric	Open lithic scatter	T17S/R65W/Sec 21	Field Not Eligible
5EP7623	Prehistoric	Possible Hearth feature with lithics	T17S/R65W/Sec 21	Field Not Eligible
5EP7625	Prehistoric	Open lithic scatter	T17S/R65W/Sec 21	Need Data
5EP7627	Prehistoric	Open lithic scatter	T17S/R65W/Sec 21	Field Not Eligible
5EP7632	Prehistoric	Open lithic scatter	T17S/R65W/Sec 21	Need Data
5EP7640	Prehistoric	Open lithic scatter	T17S/R65W/Sec 20	Field Not Eligible
Isolated Finds				
5EP7613	Prehistoric	Lithic debris – secondary flake and chalcedony shatter	T17S/R65W/Sec 22	Field Not Eligible
5EP7614	Prehistoric	Lithic debris – chert shatter	T17S/R65W/Sec 22	Field Not Eligible
5EP7615	Prehistoric	Lithic debris – chert tertiary flake	T17S/R65W/Sec 21	Field Not Eligible
5EP7616	Prehistoric	Lithic debris – quartz cobble and chert shatter	T17S/R65W/Sec 21	Field Not Eligible
5EP7617	Prehistoric	Lithic debris – petrified wood flake	T17S/R65W/Sec 21	Field Not Eligible
5EP7618	Prehistoric	Lithic debris – three flakes and one cortical shatter	T17S/R65W/Sec 21	Field Not Eligible
5EP7619	Prehistoric	Lithic debris – two flakes	T17S/R65W/Sec 21	Field Not Eligible
5EP7620	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 21	Field Not Eligible
5EP7622	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 21	Field Not Eligible
5EP7624	Prehistoric	Lithic debris – core and two flakes	T17S/R65W/Sec 21	Field Not Eligible
5EP7626	Prehistoric	Lithic debris – two chert angular debris	T17S/R65W/Sec 21	Field Not Eligible
5EP7628	Prehistoric	Lithic debris – two flakes	T17S/R65W/Sec 21	Field Not Eligible
5EP7629	Prehistoric	Lithic debris – quartzite flake	T17S/R65W/Sec 21	Field Not Eligible
5EP7630	Prehistoric	Lithic debris – two chert flakes	T17S/R65W/Sec 21	Field Not Eligible
5EP7631	Prehistoric	Lithic debris – chert shatter	T17S/R65W/Sec 21	Field Not Eligible
5EP7633	Prehistoric	Lithic debris –chert flake and tested pebble	T17S/R65W/Sec 21	Field Not Eligible

Table 3
Cultural Resource Summary Data for the Front Range - Midway Solar Project

Isolated Finds (Continued)				
Site No.	**General Age**	**Brief Resource Description**	**Location (T/R/Sec.)**	**NRHP**
5EP7634	Prehistoric	Lithic debris – chert shatter and two chert flakes	T17S/R65W/Sec 21	Field Not Eligible
5EP7635	Prehistoric	Lithic debris – obsidian flake	T17S/R65W/Sec 20	Field Not Eligible
5EP7636	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 20	Field Not Eligible
5EP7637	Prehistoric	Lithic debris – chert shatter	T17S/R65W/Sec 20	Field Not Eligible
5EP7638	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 20	Field Not Eligible
5EP7639	Prehistoric	Lithic debris – tertiary thinning flake	T17S/R65W/Sec 20	Field Not Eligible
5EP7641	Prehistoric	Lithic debris – two chert flakes	T17S/R65W/Sec 20	Field Not Eligible
5EP7642	Prehistoric	Lithic debris – two chert flakes	T17S/R65W/Sec 17	Field Not Eligible
5EP7643	Prehistoric	Lithic debris – chert tested cobble	T17S/R65W/Sec 17	Field Not Eligible
5EP7644	Prehistoric	Lithic debris – chert core and cortical flake	T17S/R65W/Sec 17	Field Not Eligible
5EP7645	Prehistoric	Lithic debris – petrified wood flake	T17S/R65W/Sec 17	Field Not Eligible
5EP7646	Prehistoric	Lithic debris – chert core	T17S/R65W/Sec 17	Field Not Eligible
5EP7647	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 17	Field Not Eligible
5EP7648	Prehistoric	Lithic debris – chert reduction fragment	T17S/R65W/Sec 20	Field Not Eligible
5EP7649	Prehistoric	Lithic debris – chert flake	T17S/R65W/Sec 20	Field Not Eligible
5EP7650	Prehistoric	Lithic debris – chert shatter	T17S/R65W/Sec 20	Field Not Eligible

Sites

Site 5EP7621 (CA7190) (Figure 5)

Setting: Site 5EP7621 is situated on the upper edge of a broad, rolling plain overlooking a dry gulch that descends to the north and east toward an unnamed intermittent stream. The terrain is open to the north, east, and south. Large mountain peaks, including Booth Mountain and Timber Mountain, are visible to the west of the site. Elevation is 5,446 ft above sea level. Boca Raton Heights Road can be seen to the southeast, and power distribution lines from the Fountain Valley Power Plant flank the locale to the north and south. Vegetation includes sagebrush, mixed grasses, and succulents such as cholla and prickly pear cactus. A man-made earthen berm is located on the

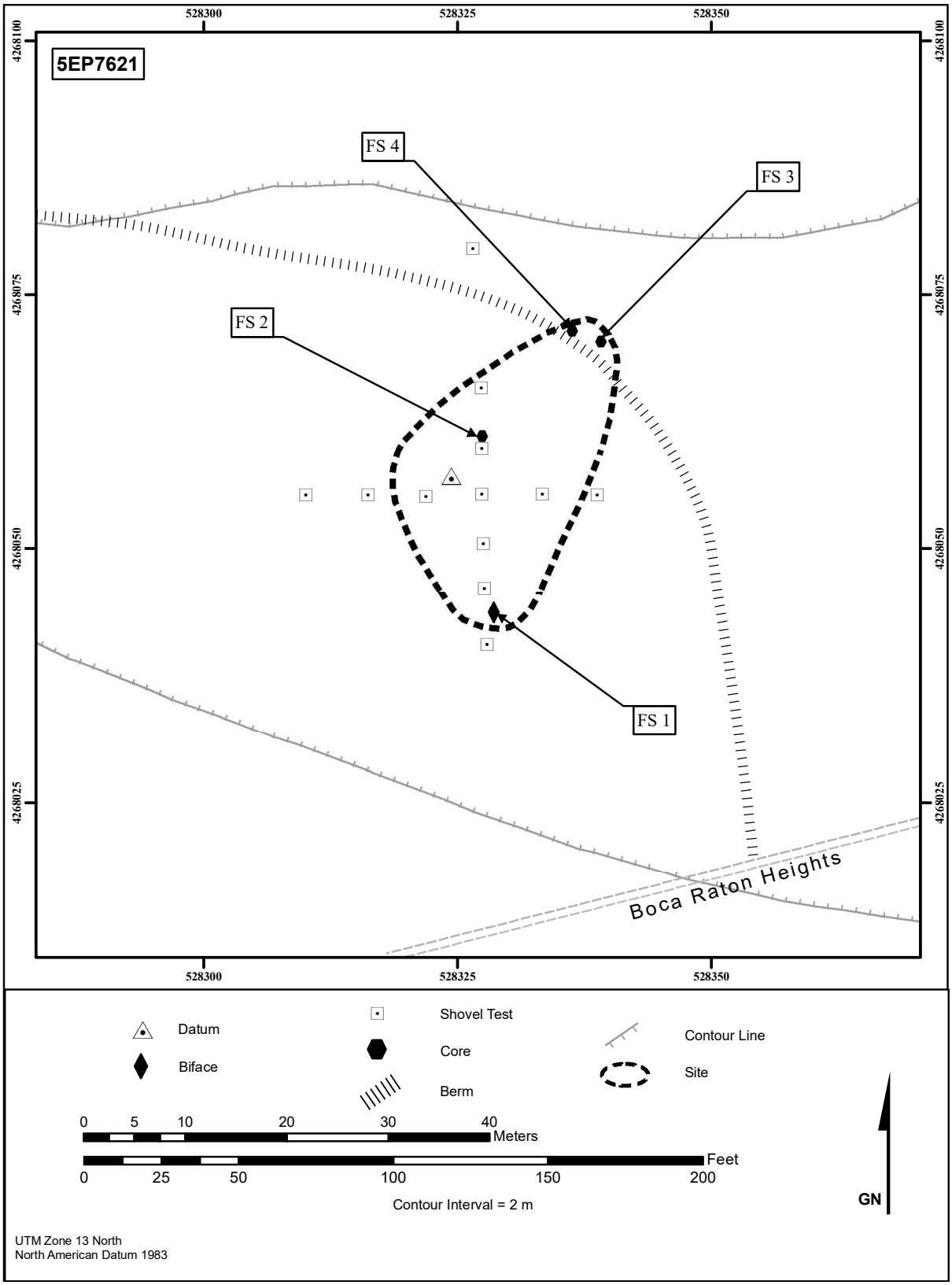


Figure 5. Site 5EP7621 plan map.

north and east margins of the locale, and likely conceals or obscures a portion of the site. Soil consists of sandy silt with pea gravel and cobbles sparsely distributed across the landscape. The deposition is alluvial with evidence of recent outwash, and soil depth is thought to be 1-2 m based on cutback and rodent holes. Ground visibility ranges from 30 to 80 percent with an average of approximately 50 percent.

Description: The site is a low density surface scatter of prehistoric lithic artifacts, and measures 32 m (SW/NE) x 20 m (NW/SE), covering 425 m^2. The artifact assemblage includes three multi-directional cores made of white and yellow chert (FS 2, FS 3, and FS 4), an early stage biface with cortex covering roughly 10 percent of the dorsal surface and measuring 4 cm x 3 cm x 1.5 cm (FS 1), and a light-gray quartzite primarily flake with 20 percent dorsal cortex and a flat platform. The flake measures 3.6 cm in length. Two of the cores (FS 3 and FS 4) were found in a disturbed context in the northeast portion of the site area near a low man-made earthen berm.

Site boundary delineation was accomplished by excavating 13 shovel probes. The probes were excavated in two intersecting perpendicular rows oriented on cardinal directions. The depth of the shovel tests ranged from 70 cm to 100 cm. No artifacts or features were encountered in any of the probes.

Evaluation and Management Recommendation: Site 5EP7621 is a small concentration of prehistoric flakes and minimally reduced cores, and is interpreted as a low intensity lithic procurement site. Based on the results of the shovel testing, the site has low potential for significant buried cultural remains. It is unlikely to generate additional data important to history, and is assessed as not eligible for the NRHP. No further work is recommended.

Site 5EP7623 (CA7192) (Figure 6)

Setting: Site 5EP7623 is positioned on a shallow north-facing slope on an open, rolling plain south of Fountain, Colorado and east of Fort Carson. No named landforms are immediately adjacent to the site, but a grouping of large mountain peaks, including Booth Mountain, Timber Mountain, and Mount Pittsburg, is located to the northwest. The depositional environment is alluvial outwash, and soil is estimated to be at least one meter deep, based on an examination of rodent burrows in the vicinity. Soil is composed of sandy silt with pea gravel interspersed with cobbles and boulders made of quartz, granite, and quartzite. Sparse chert gravel is also present. Vegetation includes cholla, prickly pear cacti, sage, and an assortment of short and tall grasses, forbs, and shrubs. Ground visibility ranges from 30 to 80 percent, and averages 50 percent. Flanking the site to the west is a linear depression that may be associated with the installation of a fiber optic cable. Just northeast of the site boundary is a distribution line that trends roughly east/west. Elevation is 5,463 ft.

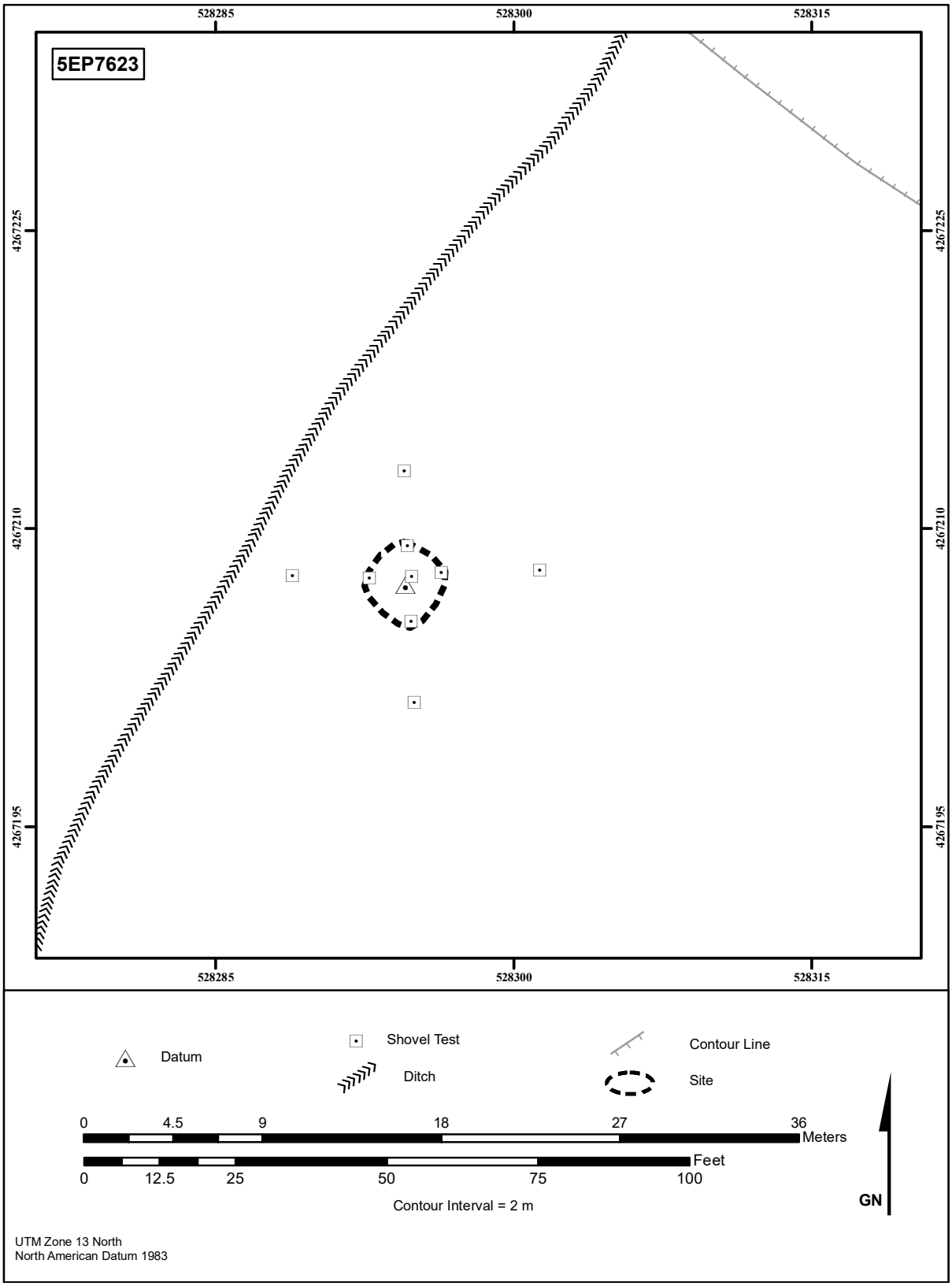


Figure 6. Site 5EP7623 plan map.

Description: The site includes a concentration of large cobbles arranged in a rough circular pattern and one piece of debitage. The cobbles range in size from 10-20 cm in length, and the cluster measures approximately 140 cm (E/W) x 120 cm (N/S). At least two of the cobbles show clear signs of thermal fracturing, and one is blackened. Fire cracked rock (FCR) was observed within a 2 m area surrounding the stone concentration. A single chert flake was identified on the ground surface. A linear depression marked by patterned vegetation runs southwest/northeast approximately 15 m north of the feature and indicates ground disturbance that may be associated with the installation of a fiber cable. The site measures approximately 4.33 m (north/south) x 3 m (east/west), and covers an area of 12 m^2.

The depth, horizontal extent, and potential for subsurface cultural and fire-related deposits were explored with eight shovel test probes placed in two intersecting transects oriented along the cardinal directions. No artifacts, cultural deposits, or charcoal staining were identified in these probes. An auger probe was placed within the center of the possible feature, but did not yield cultural deposits or staining.

Evaluation and Management Recommendation: The age and function of this site, which consists of a possible hearth and a single artifact, beyond activities related to lithic reduction, is unknown. The results of the shovel testing indicate that the site does not harbor subsurface cultural deposits, and has limited potential to offer additional significant information. The site is therefore assessed as not eligible for the NRHP under Criterion D, and no further work is recommended.

Site 5EP7625 (CA7194) (Figure 7)

Setting: Site 5EP7625 is located on a small terrace on an open, flat plain overlooking an unnamed intermittent drainage that extends northeast to Fountain Creek. A man-made linear berm and depression extends through the northern and eastern portions of the site. Cultural materials were observed in disturbed soil of the berm. Vegetation consists of mixed bunch grasses, sagebrush, forbs, prickly pear, and cholla. Ground visibility is good with over 50 percent of the surface exposed. Soil is a brown sandy clay that is at least 1 m deep, based on and examination of rodent holes. Elevation is 5,446 ft.

Description: The site is a prehistoric open lithic scatter with debitage and nine tools. It measures 89 m (SW/NE) x 48 m (SE/NW), and encompasses 2,745.1 m^2. Debitage consists of 40 flakes, which are associated with primary-stage reduction and range in size from 1 cm to 4 cm in length. Much of the debitage is chert, but quartz, quartzite, and petrified wood debitage was also observed. Tools consist of tested chert cobbles with almost 100 percent cortex (FS 3, FS 4, FS 5, FS 7, and FS 9). One tested quartzite cobble was also documented (FS 8). Other tools include an exhausted 3.2 mm x 3 mm x 1.5 mm brown chert core (FS 1), an early stage quartzite biface measuring 4 mm x 2.3 mm x 0.5 mm (FS 2), and a mottled, brown and yellow chert core (FS 6).

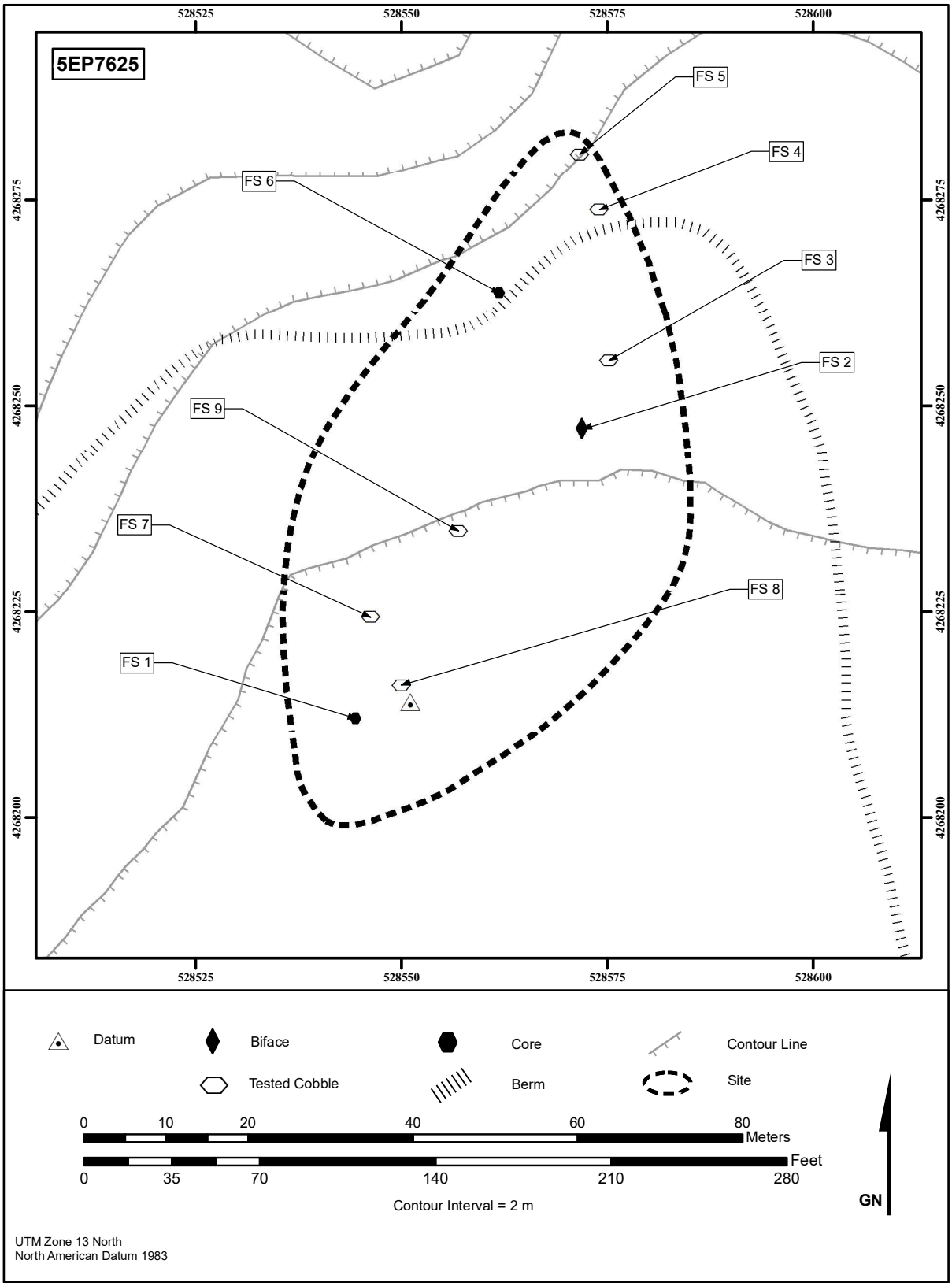


Figure 7. Site 5EP7625 plan map.

Evaluation and Management Recommendation: Activities inferred from this lithic scatter include core reduction, core procurement, and lithic raw material testing. Although part of the site has been disturbed by the construction of the berm, most of the site area remains undisturbed. Based on the presence of deep soil, the site is assessed as having potential for intact subsurface cultural deposits. Site 5EP7625 remains unevaluated with respect to the NRHP eligibility until test excavation can be conducted to determine the potential for buried cultural materials.

Site 5EP7627 (CA7196) (Figure 8)

Setting: This prehistoric open lithic scatter is situated on a low ridge that descends toward an unnamed intermittent drainage. The channel of the northeast/southwest flowing drainage is located 70 m south of the site. A small man-made dam and dry pond are located 95 m southeast of the site. The artifact scatter occurs in a denuded area that likely experiences sheet wash erosion. Ground visibility is good to excellent. Soils are predominantly sandy silt with angular cobbles and pebbles. Vegetation observed at the site includes mixed forbs, prickly pear, and sparse grasses. The elevation on site is 5,446 ft. Deposition is estimated to exceed 20 cm based on pin-flag probing. Based on the mantle of gravel and cobbles across the site surface, the site is considered to be heavily deflated.

Description: Site 5EP7627 is a low density lithic scatter that covers an area of roughly 257 m^2, and measures 20 m (NW/SW) x 17 m (N/S). The site includes two chert flakes, a chert core fragment with cortex (FS 1), and a tested chert cobble (FS 2). Also found within the boundaries of the site was a piece of chert shatter, a single piece of quartzite shatter, and two chert cores (FS 3 and FS 4). None of the artifacts are temporally or culturally diagnostic. The locale is likely associated with limited lithic procurement or testing based on the low density of debitage and the presence of two cores and one tested chert cobble.

Evaluation and Management Recommendation: The site was likely used for the procurement of lithic raw materials. It is located in a heavily deflated area with large exposed cobbles and gravels, and the potential for buried cultural remains is minimal. Further investigation of the site is unlikely to produce additional information important to the prehistory of the area. Centennial assesses the lithic scatter as not eligible under Criteria A, B, C, or D. No further work is recommended

Site 5EP7632 (CA7201) (Figure 9)

Setting: Site 5EP7632 is situated on an open, rolling plain and overlooks an unnamed intermittent tributary of Fountain Creek to the north. La Questa Drive is passes by the site 120 m to the southwest. The depositional environment is a combination of colluvial processes and sheet wash from the slopes to the west and eolian deposits caused by a lack of rainfall during the fall and winter months. The soil is brown silty loam with pea gravel deposits, and the depth of the soil is thought to exceed 20 cm based on rodent burrows. Vegetation includes low-growing sagebrush, bunch grasses, prickly pear cactus, forbs and cholla. The elevation is 5,482 ft. Ground surface visibility is approximately 50 percent.

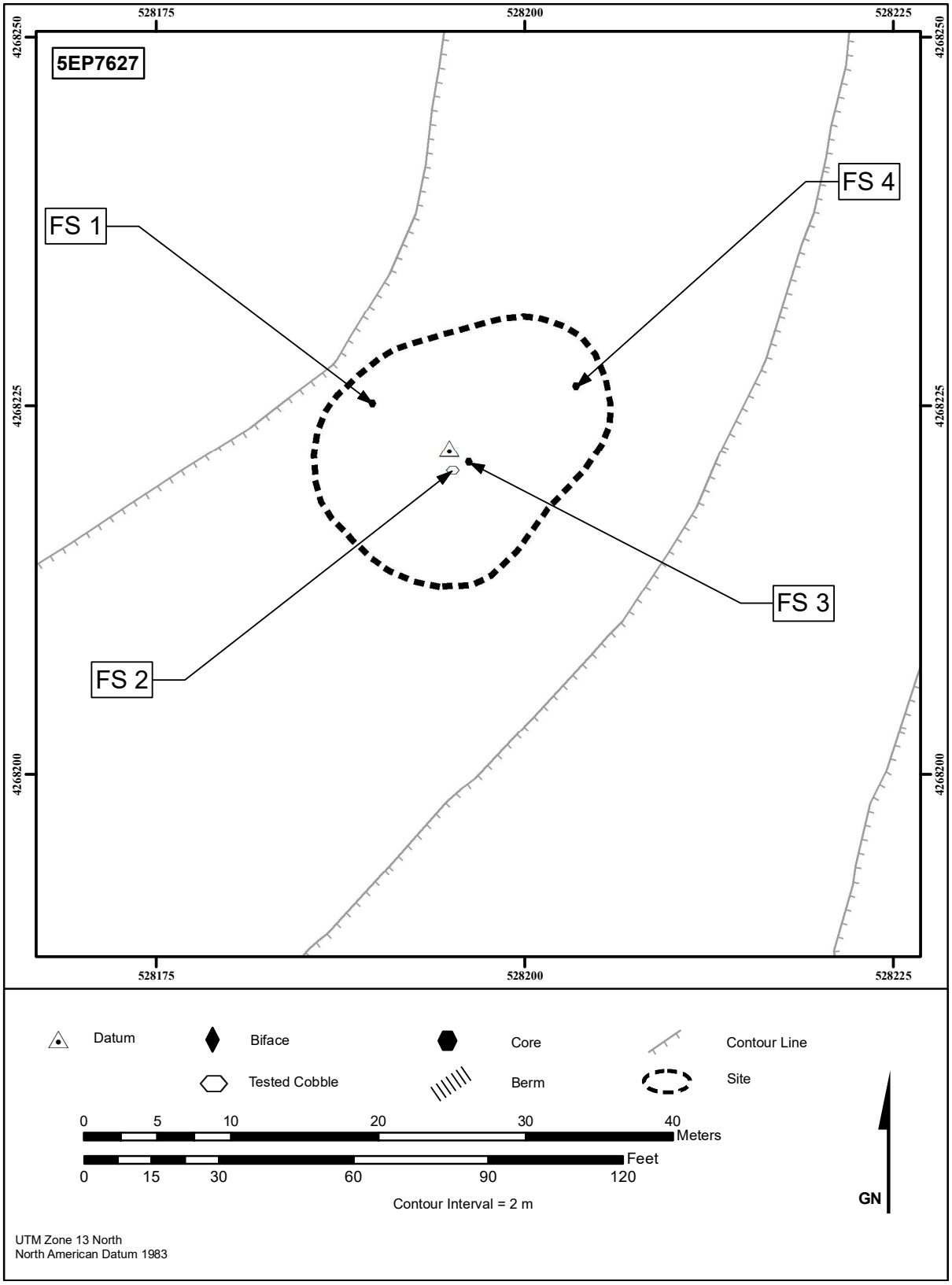


Figure 8. Site 5EP7627 plan map.

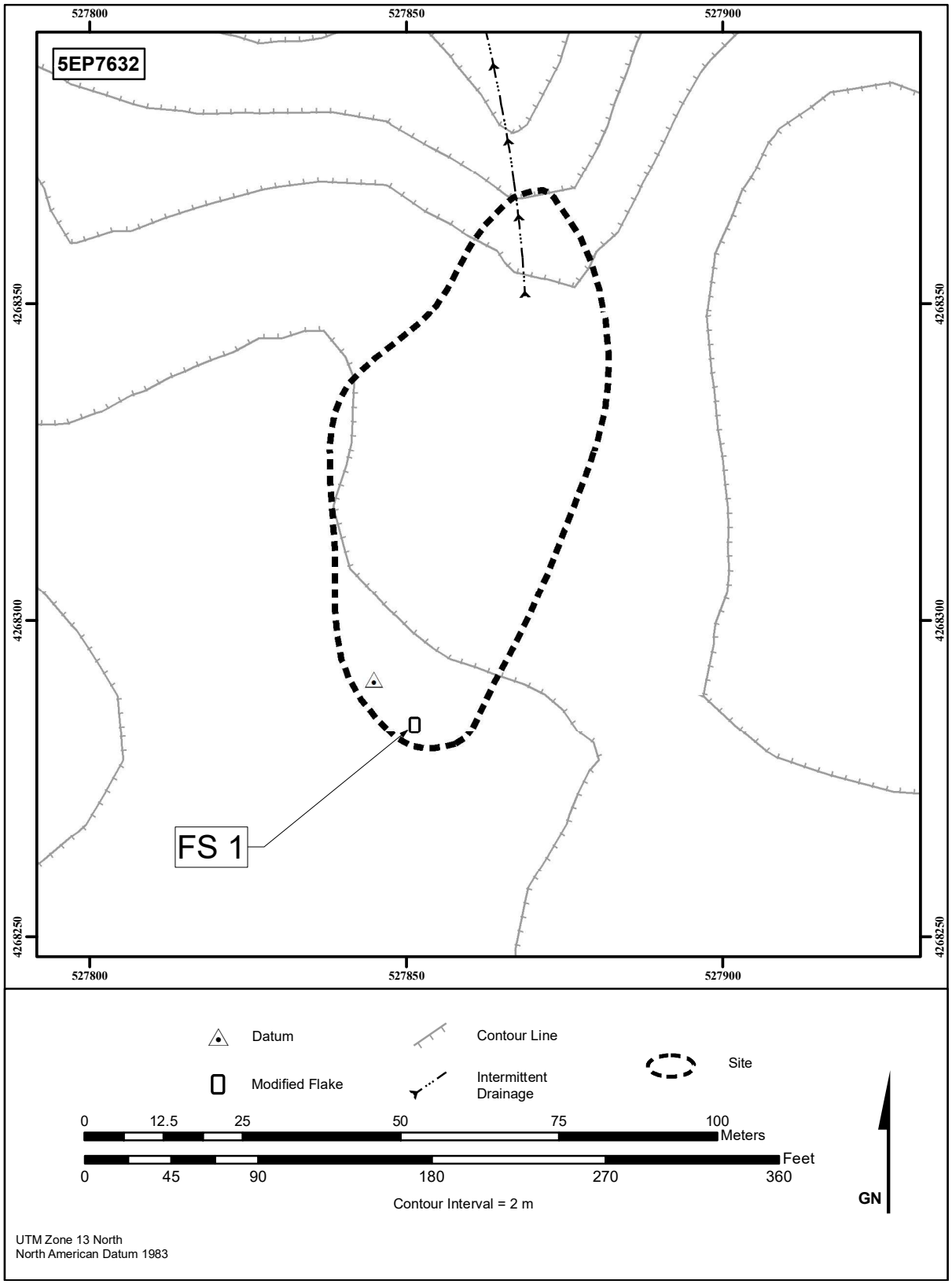


Figure 9. Site 5EP7632 plan map.

Description: Site 5EP7632 is a low-density lithic scatter that includes six chert flakes with maximum dimensions ranging from 4 cm to 5 cm, and one modified flake tool. All artifacts were observed within an area that measures 85 m (N/S) x 40 m (E/W), and encompasses approximately 2,600 m^2. The smallest, tan chert flake is situated at the north end of the site within an erosional cut, indicating that there is a potential for buried cultural materials. The modified flake (FS 1) consists of a small piece of chert with cortex covering the dorsal surface and flake scars along one lateral edge.

Evaluation and Management Recommendation: Based on the observed artifacts, the site functioned as a lithic reduction locale. Although the surface assemblage is sparse, the presence of artifacts in the actively eroding cut indicates a moderate potential for buried cultural materials. Site 5EP7632 remains unevaluated for the NRHP pending further investigation. Avoidance is recommended. If the site cannot be avoided, test excavation is recommended.

Site 5EP7640 (CA7209) (Figure 10)

Setting: This site is situated on an open, rolling plain with multiple finger ridges to the northwest/southeast. The terrain is incised with narrow cuts that drain to Sand Creek, which flows past the site to the northeast. The elevation on site is 5,495 ft. Deposition is alluvial with evidence of recent sheet wash erosion. Ground visibility is good with 50 to 60 percent of the surface exposed. Small forbs, prickly pear, cholla, and sparse grasses cover the site. Soil is light brown sandy silt with small gravel inclusions. Cobbles and pebbles mantle the surface of the site and the surrounding area. Soil depth is estimated to range from 1 m to 2 m based on examinations of erosional cuts and rodent holes.

Description: This lithic scatter measures 35 m (N/S) x 28 m (E/W), and encompasses an area of 792 m^2. The artifact assemblage is dominated by angular chert shatter with average sizes ranging from 2 cm to 3 cm. Tools consist of a late-stage chert biface (FS 1) and a multi-faceted chalcedony core (FS 2).

Shovel testing was conducted to delineate the site boundary and evaluate the potential for buried cultural deposits. A total of 15 shovel tests were excavated at 5 m intervals in two perpendicular rows oriented through the long and short axis of the site. Shovel tests were excavated to depths ranging from 60 cm to 1 m. All of the shovel tests were negative, and no anomalous soil horizons or staining was encountered suggesting limited potential for intact subsurface cultural deposits.

Evaluation and Management Recommendation: The absence of lithic remains associated with mid-to-late stage reduction indicates that activities at this site were limited to procurement and testing of raw material as well as small-scale tool manufacture. Based on the dearth of artifacts materials encountered on the ground surface and the negative shovel test results, the site is assessed as having low potential to offer additional significant information. The site is therefore assessed as not eligible for the NRHP. No additional work is recommended.

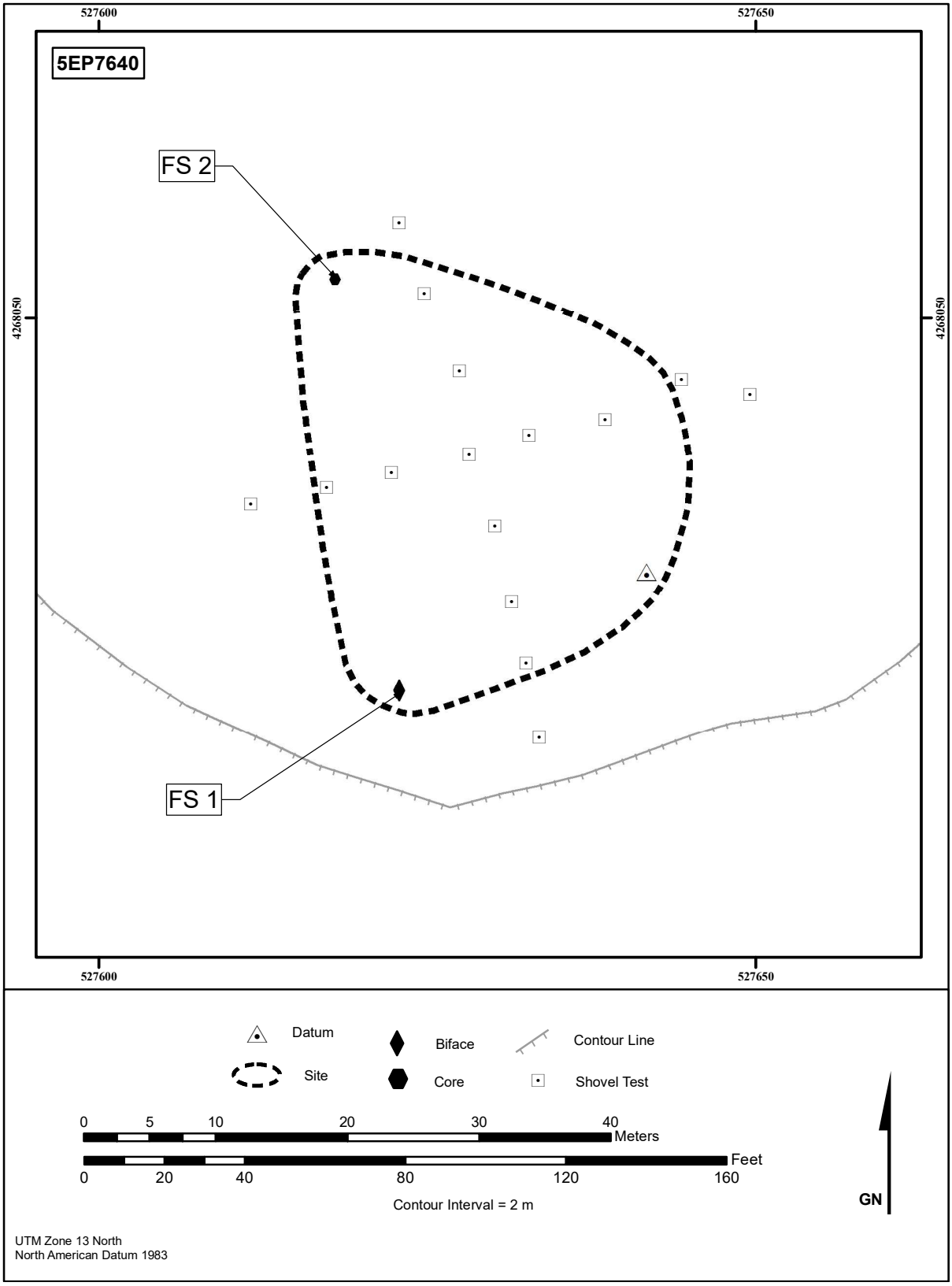


Figure 10. Site 5EP7640 plan map.

Isolated Finds

Thirty-two prehistoric IFs were recorded for the FRMS project (Table 3). These resources are primarily individual flakes (5EP7615, 5EP7617, 5EP7620, 5EP7622, 5EP7629, 5EP7635, 5EP7636, 5EP7638, 5EP7639, 5EP7645, 5EP7633, and 5EP7649), or small concentrations of two to three flakes (5EP7619, 5EP7628, 5EP7630, and 5EP7642). One of the individual flakes (5EP7635) is an obsidian artifact that was collected for sourcing. X-ray fluorescence analysis of the obsidian artifact indicates that the material was procured from Polvadera Peak in the Jemez Mountains of northern New Mexico (Appendix 1). This source is approximately 200 miles southwest of the project area. Other IFs are pieces of lithic shatter (5EP7614, 5EP7631, 5EP7637, 5EP7650) or angular debris associated with reduction (5EP7626, 5EP7647, and 5EP7648). Four IFs (5EP7613, 5EP7618, 5EP7634, 5EP7641) are flakes found with shatter or angular debris. IF 5EP7616 consists of a quartz cobble with flake scaring located roughly 4 m from a small piece of chert shatter. Four other IFs include cores or tested cobbles: the first (5EP7624) is a core with two associated flakes; the second (5EP7644) includes a grey chert core and a cortical grey chert flake; the third is a tested cobble (5EP7643); and the fourth is a chert core (5EP7646). Naturally occurring large gravels and cobbles are prevalent in the surrounding area, and these artifacts may represent casual materials testing or preliminary reduction. The IFs are neither temporally nor culturally diagnostic. Furthermore, none of the IFs are considered to have the potential to yield additional information important to the prehistory of the area. They are evaluated as not eligible for the NRHP, and no further work is necessary.

CHAPTER 6
PROJECT SUMMARY AND MANAGEMENT RECOMMENDATIONS

Survey Summary

An intensive Class III cultural resource inventory was undertaken of the proposed FRMS project area in El Paso County, Colorado for Front-Range-Midway Solar Project, LLC. The project includes the construction of a solar power generation facility next to the existing Midway substation. The project area consists of 1,162.16 privately owned acres, 1,109.52 of which were surveyed.

Thirty eight resources were recorded for this project, including six sites and 32 IFs. All resources documented during this survey were prehistoric in age. All of the sites are open lithic scatters with artifact assemblages that include debitage, cores, and flaked stone tools. A possible hearth with no evidence of charcoal was identified at one site. All of the IFs consisted of debitage or cores. Taken together, these resources reflect a lithic industry focused the expedient reduction of locally procured alluvial cobbles. No evidence of intensive camping or domestic activities were noted, and no temporally diagnostic artifacts were recorded to assign chronological affiliation to prehistoric occupation of the project area.

In addition to the Class III inventory for the FRMS project, Western requested an analysis of potential visual impacts to NRHP-listed or potentially eligible cultural resources. Specifically, this analysis was to investigate potential impacts to standing structures or landmarks in the vicinity of project area. Visual impacts analysis was conducted within a two-mile-wide buffered area surrounding the direct APE. Six resources, including five linear resources (5EP1003.8, 5EP2181.10, 5EP3936.2, 5EP3937.2, and 5EP6911.1) and one prehistoric site (5EP4726) were identified in the visual impact area. However, no standing structures or landmarks were identified in this analysis.

Significance Assessments and Management Recommendations

Prehistoric and historic sites are regarded as eligible for inclusion on the NRHP if they meet one or more of the four criteria for eligibility, and also exhibit integrity as defined in 36 CFR 60. Research potential and/or relationships with historically significant events, processes, or individuals (all of which indicate NRHP eligibility) may be identified by establishing associations between sites and specific research themes in prehistoric and historic context documents, particularly Zier and Kalasz (1999) and Church et al. (2007). The 32 IFs are, by definition, not NRHP eligible due to their low potential to yield additional data. Significance evaluations for the six sites are presented on a site-by-site basis above and are summarized in Table 3.

- Site 5EP7621 is a sparse open lithic scatter with a low density surface scatter of prehistoric artifacts. Shovel testing was conducted on the site to delineate the site boundaries, however no subsurface artifacts were recovered. This site has low potential to yield additional information and is evaluated as not eligible for the NRHP.
- Site 5EP7623 consists of an amorphous concentration of large cobbles, and one piece of debitage. Shovel testing was conducted on the site to delineate the site boundaries,

however, no subsurface artifacts were recovered. Soil probes placed in the rock concentration did not yield charcoal. This site has low potential to yield additional information and is evaluated as not eligible for the NRHP.

- Site 5EP7625 is a large, open lithic scatter featuring debitage and flaked stone tools. The depositional environment of the site suggests there is good potential for the site to contain additional subsurface cultural materials. This site is assessed as needs data until subsurface testing can be completed to evaluate for NRHP eligibility.
- Site 5EP7627 is a low density open lithic scatter featuring debitage and cores. The site is located on a deflated ridge with minimal potential to contain buried cultural deposits or yield additional data. The site is evaluated as not NRHP eligible.
- Site 5EP7632 is a small, open lithic scatter featuring debitage and one flaked stone tool. The depositional environment suggests that the site may harbor buried cultural materials. This site is assessed as needs data until subsurface testing can be completed to evaluate for NRHP eligibility
- Site 5EP7640 is a low density open lithic scatter featuring debitage and flaked stone tools. Shovel testing was conducted on the site to delineate the site boundaries, however no subsurface artifacts were found. This site has low potential to yield additional information and is evaluated as not NRHP eligible.

The primary management recommendation for sites 5EP7625 and 5EP7632 is avoidance by future development. The project, as it is currently designed, will not impact either of these two sites, so testing was not required for these locations. Should avoidance of these sites not be possible, additional testing should be conducted to assess the nature of any subsurface archaeological deposits on the site and evaluate for NRHP eligibility. No further work is recommended for the 32 IFs and sites 5EP7621, 5EP7623, 5EP7627, and 5EP7640.

Cultural resource clearance is recommended for the entire survey area based on the proposed avoidance of sites 5EP7625 and 5EP7632. Should the design shift or additional development be planned that would impact these two sites, clearance is recommended pending the results of testing or mitigative excavation. In the event that previously undocumented archaeological or historical materials are encountered during construction, all work should cease in the immediate area of the find, and the discovery locale should be protected until its significance can be assessed by a qualified archaeologist.

REFERENCES CITED

Abbott, Carl, Stephen Leonard, and David McComb
1982 *Colorado: A History of the Centennial State.* Colorado Associated University Press, Boulder.

Anderson, Jane L.
1985 Chronological Framework. In, *A Chronological Framework of the Fort Carson Pinon Canyon Maneuver Site*, Las Animas County, Colorado, edited by C. Lintz. U.S. Army Fort Carson Pinon Canyon Cultural Resources Project, *Contribution*, No. 2. Center for Archaeological Research, University of Denver, Denver, Colorado.

Arthur, Christopher
1981 Final Report of the Archaeological Testing of Two Prehistoric Sites in the Barlett Mountain Land Exchange. *Reports of the Laboratory of Public Archeology*, No. 60. Colorado State University, Fort Collins.

Benedict, James B.
1978 The Mount Albion Complex and the Altithermal. In *The Mount Albion Complex: A Study of Prehistoric Man and the Altithermal*, by J. B. Benedict and B. L. Olson, pp. 139-180. Research Report No. 1, Center for Mountain Archeology, Ward, Colorado.

Black, Kevin D.
1986 *Mitigative Archaeological Excavations at Two Sites for the Cottonwood Pass Project, Chaffee and Gunnison Counties, Colorado.* Metcalf Archaeological Consultants, Inc., Eagle, Colorado.

1991 Archaic Continuity in the Colorado Rockies: The Mountain Tradition. *Plains Anthropologist* 36(133):1-29.

1997 *Testing Tradition: Assemblage Attributes vs. Regional Studies on Archaic Period Adaptations in the Southern Rocky Mountains*. Paper presented at the 55 annual Plains Anthropological Conference in the symposium, "The View from Above: High Altitude Archaeology and the Mountain Tradition," Boulder, Colorado.

Black, Kevin D., Kimberly Spurr, and Diane L. France
1991 Two Ceramic Period Burials from Southeastern Colorado. *Southwestern Lore* 57(3):1-27.

Boyer, Paul S. (editor).
2001 *The Oxford Companion to United States History.* Oxford University Press, New York.

Buckles, William G., George H. Ewing, Nancy Buckles, George J. Armelagos, John J. Wood, James D. Haug, and John H. McCullough
1963 The Excavation of the Hazeltine Heights Site. *Southwestern Lore* 29(1):1-33.

Campbell, Robert G.
1969 *Prehistoric Panhandle Culture on the Chaquaqua Plateau, Southeast Colorado*. Ph.D. dissertation, University of Colorado, Boulder.

Carrillo, Richard F.
1990 Historic Overview. In, *An Introduction to the Archaeology of Pinon Canyon, Southeastern Colorado,* Volume III: Ethnohistory and History, edited by W. Andrefsky, Jr. Prepared for Department of the Army, Fort Carson Command, Environment, Energy and Natural Resources Division, Directorate of Engineering and Housing, and National Park Service, Interagency Archaeological Services – Denver, by Larson-Tibesar Associates, Inc., Laramie, Wyoming, and Centennial Archaeology, Inc., Fort Collins, Colorado.

Carrillo, Richard F., Sally Pierce, Stephen M. Kalasz, and Denial A. Jepson
1993 The Tremont House (5DV2954): The Historical Archaeological Investigations of an Early Hotel in Denver, Colorado. *Colorado Department of Transportation Archaeological Research Series,* No. 1. Colorado Department of Transportation, Office of Environmental Services, Denver.

Church, Minette C., Steven G. Baker, Bonnie J. Clark, Richard F. Carrillo, Jonathon C. Horn, Carl D. Späth, David R. Guilfoyle, and E. Steve Cassells
2007 *Colorado History: A Context for Historical Archaeology* (with contributions by Kathleen Corbett, Duane A. Smith, Martha Sullenberger-Fry, and Burr Neely). Colorado Council of Archaeology, Denver.

Friedman, Paul D.
1985 *Final Report of History and Oral History Studies of the Fort Carson – Pinon Canyon Maneuver Area, Las Animas County, Colorado.* Submitted to National Park Service, Rocky Mountain Regional Office, by Powers Elevation, Denver, Colorado.

Frison, George C.
1991 *Prehistoric Hunters of the High Plains*, Second Edition. Academic Press, New York.

Gilmore, Kevin. P., Marcia Tate, Mark L. Chenault, Bonnie Clark, Terri McBride, and Margaret Wood
1999 *Colorado Prehistory: A Context for the Platte River Basin*. Colorado Council of Professional Archaeologists, Denver.

Gulley, Cara C.
2000 *A Reanalysis of Dismal River Archaeology and Ceramic Typology*. Master's thesis, Department of Anthropology, University of Colorado, Boulder.

Hafen, Le Roy R.
1948 *Colorado and its People: A Narrative and Topical History of the Centennial State,* Volumes I and II. Lewis Historical Publishing Company, New York.

Hand, O D, and Daniel A. Jepson
1996 *Archaeological Investigation of Wolf Spider Shelter (5LA6197), Las Animas County, Colorado*. Research Series No. 5, Colorado Department of Transportation, Denver.

Hanson, Jeffery R., and Sally Chirinos
1989 Ethnohistory. In, *Nine Rock Art Sites in the Pinon Canyon Maneuver Site, Southeastern Colorado*, edited by L. L. Loendorf, pp. 18-37. Contribution No. 248, Department of Anthropology, University of North Dakota, Grand Forks.

Hummer, Anne G.
1989 Prehistoric Ceramics. In, *Temporal Assessment of Diagnostic Materials from the Pinon Canyon Maneuver Site*, edited by C. Lintz and J. L. Anderson, pp. 316-374. Memoirs of the Colorado Archaeological Society No. 4. Denver, Colorado.

Hunt, Grant Owen
1975 *Archaeology of the Belwood Site*. Unpublished Master's Thesis, Department of Anthropology, University of Denver.

Jepson, Daniel A., and O D Hand
1999 *The Salvage Excavation of Two Human Burials at the Lena Gulch Site (5JF1780), Jefferson County, Colorado*. Archaeological Research Series No. 6, in preparation. Colorado Department of Transportation, Denver.

Jones, Donald G., Martha Williams, Kathy Stemmler, Michael H. McGrath, and Elizabeth C. Winstead
1998 *Ethnohistoric and Ethnographic Information Related to the Fort Carson Military Reservation and Pinon Canyon Maneuver Site in Colorado*. Prepared for Department of the Army, Corps of Engineers, by R. Christopher Goodwin and Associates, Inc., Frederick, Maryland.

Kalasz, Stephen M., Cody M. Anderson, Bonnie K. Gibson, John D. Kennedy, Christopher C. Kinneer, Lawrence L. Loendorf, Cortney A. Wands
2007 *Archaeological Investigations at sites 5LA3186, 5LA3188, and 5LA3189 Along Burke Arroyo in the Pinon Canyon Maneuver Site, Las Animas County, Colorado.* Centennial Archaeology, Inc., Fort Collins, Colorado.

Kalasz, Steven M., Mark Mitchell, and Christian J. Zier
1999 Chapter 7 – Late Prehistoric Stage. In, Colorado Prehistory: A Context for the Arkansas River Baisin by Christian J. Zier and Stephen M. Kalasz (with contributions by Mary A. Painter, Mark Mitchell, Amy Holmes, and Michael McFaul). Colorado Council of Professional Archaeologists, Denver.

Kuehn, Steven R.
1998 New Evidence for Late Paleoindian-Early Archaic Subsistence Behavior in the Western Great Lakes. *American Antiquity* 63(3):457-476.

Lamar, Howard R.
1977 *The Reader's Encyclopedia of the American West.* Harper and Row, New York.

League of Revolutionary Struggle (Marxist-Leninist)
2015 History of the Chicano Liberation. Electronic document, https://www.marxists.org/history/erol/ncm-5/lrs-chicano/part-1.htm#fw02, accessed June 22, 2015.

Lecompte, Janet
1978 *Pueblo, Hardscrabble, Greenhorn: The Upper Arkansas, 1832 – 1856.* University of Oklahoma Press, Norman.

Loendorf, Lawrence L., Jeani L. Borchert, and Duane G. Klinner
1996 *Archaeological Investigations at Ceramic Stage Sites in the Pinon Canyon Maneuver Site, Colorado*. Contribution No. 308, Department of Anthropology, University of South Dakota, Grand Forks.

Mandel, Rolfe D., Steven Holen, and Jack L. Hofman
2005 Geoarchaeology of Clovis and Possible Pre-Clovis Cultural Deposits at the Kanorado Locality, Northwestern Kansas. *Current Research in Pleistocene* 22:56-57.

Martorano, Marilyn A., Ted Hoefer III, Margaret A. Jodry, Vince Spero, and Melissa L. Taylor
1999 *Colorado Prehistory: A Context for the Rio Grande Basin*. Colorado Council of Professional Archeologists, Denver.

Mehls, Steven F.
1984 The New Empire of the Rockies: A History of Northeast Colorado. *Cultural Resources Series,* No. 16. Colorado Bureau of Land Management, Denver.

Metcalf, Michael D., and Kevin D. Black
1991 Archaeological Excavations at the Yarmony Pit House Site, Eagle County, Colorado. *Cultural Resource Series*, No. 31. Colorado Bureau of Land Management, Lakewood.

Morrison, Roger B.
1987 Long-Term Perspective: Changing Rates and Types of Quaternary Surficial Processes: Erosion-Deposition-Stability Cycles. In, *Geomorphic Systems of North America,* Centennial Special Volume 2, edited by W. L. Graf, pp. 167-176. Geological Society of America, Boulder, Colorado.

Mutel, Cornelia Fleischer, and John C. Emerick
1984 *From Grassland to Glacier: The Natural History of Colorado and the Surrounding Region.* Johnson Printing, Boulder, Colorado.

Nebraska Studies.org
2015 Expanding Trade: 1541 Coronado Reaches "Quivera." Electronic document, http://www.nebraskastudies.org/0300/frameset_reset.html?http://www.nebraskastudies.org/0300/stories/0301_0110.html, accessed July 9, 2015.

Painter, Mary W., Amy Holmes, Michael McFaul, and Christian J. Zier
1999 Chapter 2 – Environmental Setting. In, *Colorado Prehistory: A Context for the Arkansas River Basin* by Christian J. Zier and Stephen M. Kalasz (with contributions by Mary W. Painter, Mark Mitchell, Amy Holmes, and Michael McFaul). Colorado Council of Professional Archaeologists, Denver.

Reeves, Brian O. K.
1973 The Concept of an Altithermal Cultural Hiatus in Northern Plains Prehistory. *American Anthropologist* 75(5):1221-1253.

Rood, Ronald J.
1990 Archaeological Excavations at 5LA2190: Evidence for Late Archaic Architecture in Southern Colorado. *Southwestern Lore* 56(3):22-29.

Shields, Wm. Lane
1980 Preliminary Investigation at the McEndree Ranch Site, 5BA30. *Southwestern Lore* 46(3):1-17.

1998 *Basin Houses in Colorado and Wyoming: Delineation of a Culture Area and Parsing Hunter-Gatherer Modeling*. Unpublished Master's thesis, University of Colorado, Boulder.

Stanford, Dennis
1983 Pre-Clovis Occupation South of the Ice Sheets. In *Early Man in the New World*, edited by R. Shutler, Jr., pp.65-72. Sage Publications, Beverly Hills, California.

Thornbury, William D.
1965 *Regional Geomorphology of the United States.* John Wiley & Sons, Inc., New York.

Tweto, Ogden
1979 *Geologic Map of Colorado.* U.S. Geological Survey, Denver, Colorado.

Weatherbase
2015 Summary - All Data: Fountain, Colorado. Electronic Document, http://www.weatherbase.com/weather, accessed June, 20015.

Weber, David J.
1982 *The Mexican Frontier, 1821 – 1846: The American Southwest under Mexico.* University of New Mexico Press, Albuquerque.

Weber, Kenneth R.
1990 Ethnohistory of the Pinon Canyon Maneuver Site. In, *An Introduction to the Archaeology of Pinon Canyon, Southeastern Colorado,* Volume III: Ethnohistory and History, edited by W. Andrefsky, Jr. Prepared for Department of the Army, Fort Carson Command, Environment, Energy and Natural Resources Division, Directorate of Engineering and Housing, and National Park Service, Interagency Archaeological Services – Denver, by Larson-Tibesar Associates, Inc., Laramie, Wyoming, and Centennial Archaeology, Inc., Fort Collins, Colorado.

Wheat, Joe Ben
1972 *The Olsen-Chubbock Site: A Paleo-Indian Bison Kill*. Society for American Archaeology Memoir No. 26. Washington D.C.

Zier, Christian J.
1999a Chapter 5 – Paleoindian Stage. In, *Colorado Prehistory: A Context for the Arkansas River Basin* by Christian J. Zier and Steven M. Kalasz (with contributions by Mary A. Painter, Mark Mitchell, Amy Holmes, and Michael McFaul). Colorado Council of Professional Archaeologists, Denver.

Zier, Christian J.
1999b Chapter 6 – Archaic Stage. In, *Colorado Prehistory: A Context for the Arkansas River Basin* by Christian J. Zier and Steven M. Kalasz (with contributions by Mary A. Painter, Mark Mitchell, Amy Holmes, and Michael McFaul). Colorado Council of Professional Archaeologists, Denver.

Zier, Christian J. and Stephen M. Kalasz
1999 *Colorado Prehistory: A Context for the Arkansas River Basin*. Colorado Council of Professional Archaeologists, Denver.

APPENDIX A

X-RAY FLUORESCENCE ANALYSIS REPORT

Geochemical Research Laboratory Letter Report 2015-52

Energy Dispersive X-ray Fluorescence Analysis of an Obsidian Artifact from 5EP7635, Central Colorado

July 17, 2015

Mr. Christopher C. Kinneer
Centennial Archaeology, Inc.
300 East Boardwalk, Building 4-C
Fort Collins, CO 80205

Dear Mr. Kinneer:

Enclosed with this letter you will find a table and figure presenting energy dispersive x-ray fluorescence (edxrf) data generated from the analysis of one obsidian artifact from archaeological site 5EP7635 located along the Front Range foothills in central Colorado. This research was conducted pursuant to you letter request of July 14, 2015.

Analyses of obsidian are performed at my laboratory on a QuanX-EC™ (Thermo Electron Corporation) edxrf spectrometer equipped with a silver (Ag) x-ray tube, a 50 kV x-ray generator, digital pulse processor with automated energy calibration, and a Peltier cooled solid state detector with 145 eV resolution (FWHM) at 5.9 keV. The x-ray tube was operated at differing voltage and current settings to optimize excitation of the elements selected for analysis. In this case analyses were conducted for the elements rubidium (Rb Kα), strontium (Sr Kα), yttrium (Y Kα), zirconium (Zr Kα), and niobium (Nb Kα). Iron vs. manganese (Fe Kα/Mn Kα) ratios also were computed with x-ray tube current scaled to the physical size of the sample.

X-ray spectra are acquired and elemental intensities extracted for each peak region of interest, then matrix correction algorithms are applied to specific regions of the x-ray energy spectrum to compensate for inter-element absorption and enhancement effects. After these corrections are made, intensities are converted to concentration estimates by employing a least-squares calibration line established for each element from analysis of up to 30 international rock standards certified by the U.S. Geological Survey, the U.S. National Institute of Standards and Technology, the Geological Survey of Japan, the Centre de Recherches Petrographiques et Geochimiques (France), and the South African Bureau of Standards.

Trace element measurements in the data table are expressed in quantitative units (i.e. parts per million [ppm] by weight), and matches between unknowns (the artifacts you sent) and known obsidian chemical groups are made on the basis of correspondences (at the 2-sigma level) in diagnostic trace element concentration values (in this case, ppm values for Rb, Sr, Y, Zr, Nb, Ba, Ti, Mn and $Fe_2O_3^T$) that appear in Anderson et al. (1986), Baugh and Nelson (1987, 1988), Glascock et al. (1999), Hughes (1984, 2005a), Hughes and Nelson (1987), Jack (1971), Nelson (1984), Shackley (1995, 1998, 2005), in unpublished form on other Nevada , Utah and New Mexico obsidians (Hughes 2005b), and my own in-house Jemez Volcanic Field geologic reference collection. Artifact-to-obsidian source (geochemical type, *sensu* Hughes 1998) correspondences were considered reliable if diagnostic mean measurements for artifacts fell within 2 standard deviations of mean values for source standards. I use the term "diagnostic" to specify those trace elements that are well-measured by x-ray fluorescence, and whose concentrations show low intra-source variability and marked variability across sources. In short, diagnostic elements are those whose concentration values allow one to draw the clearest geochemical distinctions between sources (Hughes 1993). Zn and Ga ppm concentrations are not considered "diagnostic" because they don't usually vary significantly across obsidian sources (see Hughes 1982, 1984). This is particularly true of Ga, which occurs in concentrations between 10-30 ppm in nearly all parent obsidians in the study area. Zn ppm values are infrequently diagnostic; they are always high in Zr-rich, Sr-poor peralkaline volcanic glasses, but otherwise they do not vary significantly between sources in the study area vicinity.

The trace element composition measurements in the enclosed table are reported to the nearest ppm to reflect the resolution capabilities of non-destructive energy dispersive x-ray fluorescence spectrometry. The resolution limits of the present x-ray fluorescence instrument for the determination of Rb is about 4 ppm; for Sr about 3 ppm; Y about 2 ppm; Zr about 4 ppm; Nb about 2 ppm; and Ba about 10 ppm (see Hughes [1994] for other elements). When

counting and fitting error uncertainty estimates (the "±" value in the table) for a sample are greater than calibration-imposed limits of resolution, the larger number is a more conservative indicator of composition variation and measurement error arising from differences in sample size, surface and x-ray reflection geometry.

Table 1

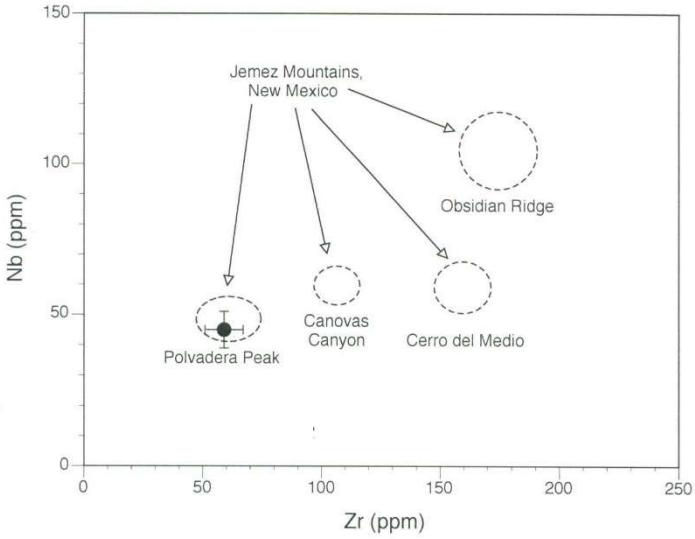
Quantitative Composition Estimates for an Obsidian Artifact from 5EP7635, Colorado

	Trace Element Concentrations											Ratio	
Cat. Number	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Fe/Mn	Obsidian Source (Chemical Type)
CA7204, OB 1	nm	nm	150 ±4	5 ±2	22 ±3	59 ±3	45 ±3	nm	nm	nm	.56 ±.02	13	Polvadera Peak, NM
U.S. Geological Survey Reference Standard													
RGM-1 (measured)	nm	nm	151 ±4	111 ±3	26 ±3	223 ±4	9 ±3	nm	nm	nm	1.86 ±.02	63	Glass Mountain, CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	1.86	nr	Glass Mountain, CA

Values in parts per million (ppm) except total iron [in weight %] and Fe/Mn intensity ratios; ± = expression of x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime. nm= not measured.

Figure 1

Nb vs. Zr Composition of an Obsidian Artifact from 5EP7635, Colorado



Dashed lines represent range of variation measured in geological obsidian source samples. Black dot plots the artifact in Table 1; error bars are two-sigma (95% confidence interval) estimates for this specimen.

Edxrf data in Table 1 and Figure 1 indicate that this obsidian flake has the same trace element composition as Polvadera Peak (aka El Rechuelos rhyolite) obsidian from the Jemez Mountains, New Mexico (cf. Macdonald et al. 1992: Appendix I, p. 148; Baugh and Nelson 1987: Table 1; Glascock et al. 1999: Table 1; Hughes 2005b; Shackley 2005: Table A.5; see Church [2000] for discussion of the availability of obsidian in the Rio Grande gravels).

I hope this information will help in your analysis and interpretation of materials from this site. Please contact me at my laboratory ([650] 851-1410; e-mail: rehughes@silcon.com) if I can be of further assistance.

Sincerely,

Richard Hughes

Richard E. Hughes, Ph.D., RPA
Director, Geochemical Research Laboratory

REFERENCES

Anderson, Duane C., Joseph A. Tiffany, and Fred W. Nelson
1986 Recent Research on Obsidian from Iowa Archaeological Sites. **American Antiquity** 51: 837-852.

Baugh, Timothy G., and Fred W. Nelson
1987 New Mexico Obsidian Sources and Exchange on the Southern Plains. **Journal of Field Archaeology** 14: 313-329.

1988 Archaeological Obsidian Recovered from Selected North Dakota Sites and Its Relationship to Changing Exchange Systems in the Plains. **Journal of the North Dakota Archaeological Association** 3: 74-94.

Church, Tim
2000 Distribution and Sources of Obsidian in the Rio Grande Gravels of New Mexico. **Geoarchaeology** 15: 649-678.

Glascock, Michael D., Raymond Kunselman, and Daniel Wolfman
1999 Intrasource Chemical Differentiation of Obsidian in the Jemez Mountains and Taos Plateau, New Mexico. **Journal of Archaeological Science** 26: 861-868.

Hughes, Richard E.
1982 Age and Exploitation of Obsidian from the Medicine Lake Highland, California. **Journal of Archaeological Science** 9: 173-185.

1984 Obsidian Sourcing Studies in the Great Basin: Problems and Prospects. *In* Richard E. Hughes (ed.) **Obsidian Studies in the Great Basin**, pp. 1-19. Contributions of the University of California Archaeological Research Facility No. 45. Berkeley.

1993 Trace Element Geochemistry of Volcanic Glass from the Obsidian Cliffs Flow, Three Sisters Wilderness, Oregon. **Northwest Science** 67: 199-207.

1994 Intrasource Chemical Variability of Artefact-Quality Obsidians from the Casa Diablo Area, California. **Journal of Archaeological Science** 21: 263-271.

REFERENCES (continued)

Hughes, Richard E.

1998 On Reliability, Validity, and Scale in Obsidian Sourcing Research. *In* Ann F. Ramenofsky and Anastasia Steffen (eds.), **Unit Issues in Archaeology: Measuring Time, Space, and Material**, pp. 103-114. University of Utah Press, Salt Lake City.

2005a Determination of the Geologic Sources for Obsidian Artifacts from Camels Back Cave, and Trace Element Analysis of Some Western Utah and Eastern Nevada Volcanic Glasses. *In* Dave N. Schmitt and David B. Madsen (eds.), **Camels Back Cave**, pp. 249-256. University of Utah Anthropological Papers No. 125. Salt Lake City.

2005b Appendix D: ED-XRF Analyses. *In* The Dome Fire Obsidian Study: Investigating the Interaction of Heat, Hydration, and Glass Geochemistry, by Anastasia Steffen, pp. 333-351. Ph.D. Dissertation, Department of Anthropology, University of New Mexico.

Hughes, Richard E., and Fred W. Nelson

1987 New Findings on Obsidian Source Utilization in Iowa. **Plains Anthropologist** 32 (117): 313-316.

Jack, Robert N.

1971 The Source of Obsidian Artifacts in Northern Arizona. **Plateau** 43: 103-114.

Macdonald, Ray, Robert L. Smith, and John E. Thomas

1992 Chemistry of the Subalkalic Silicic Obsidians. **U.S. Geological Survey Professional Paper** 1523.

Nelson, Fred W., Jr.

1984 X-ray Fluorescence Analysis of Some Western North American Obsidians. *In* Richard E. Hughes (ed.) **Obsidian Studies in the Great Basin**, pp. 27-62. Contributions of the University of California Archaeological Research Facility No. 45. Berkeley.

Shackley, M. Steven

1995 Sources of Archaeological Obsidian in the Greater American Southwest: An Update and Quantitative Analysis. **American Antiquity** 60: 531-551.

1998 Geochemical Differentiation and Prehistoric Procurement of Obsidian in the Mount Taylor Volcanic Field, Northwest New Mexico. **Journal of Archaeological Science** 25: 1073-1082.

2005 **Obsidian: Geology and Archaeology in the North American Southwest**. University of Arizona Press, Tucson.

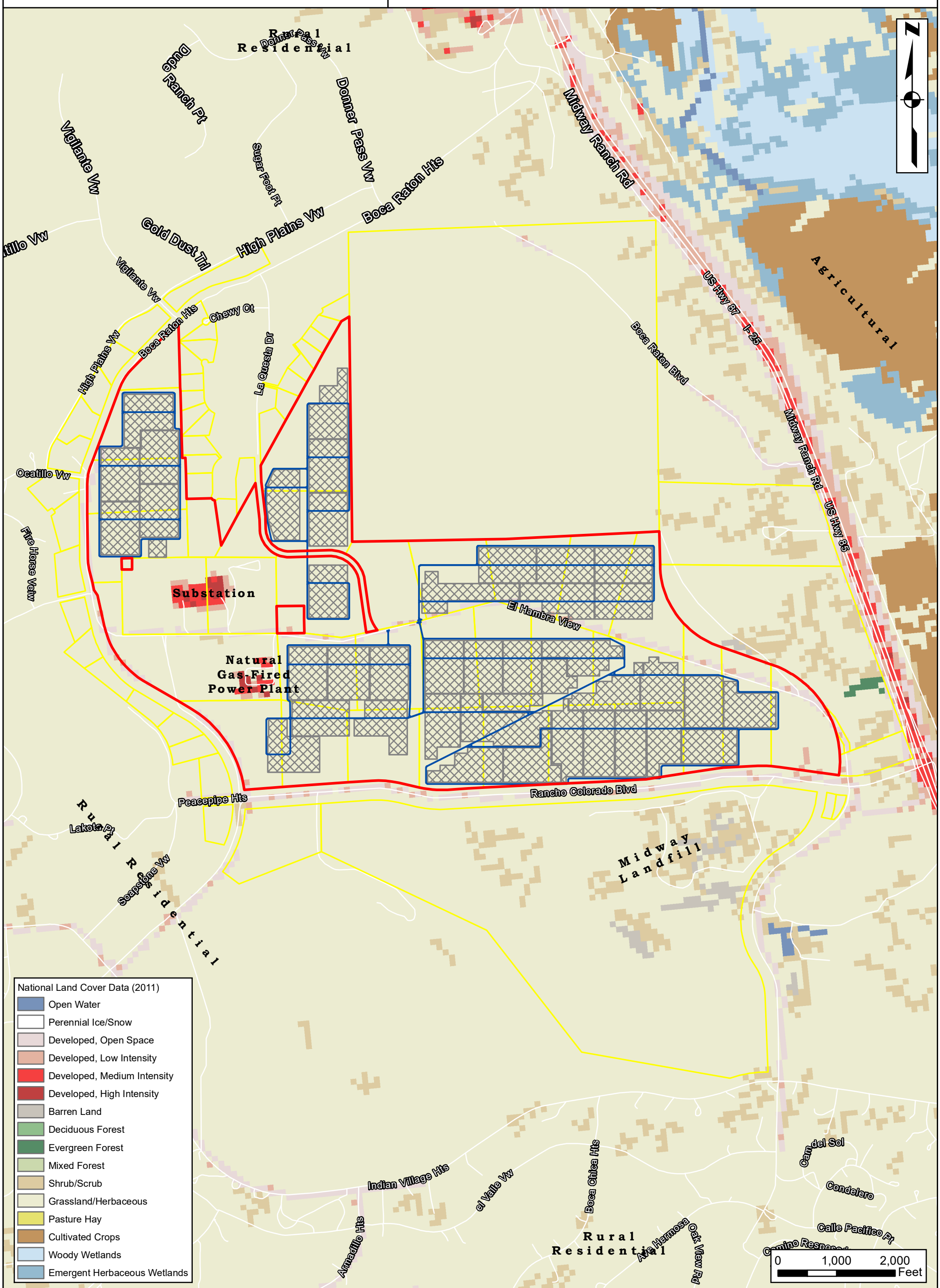
Attachment O

CORE CONSULTANTS
CIVIL ENGINEERING
DEVELOPMENT CONSULTING
NATURAL RESOURCES CONSULTING
LAND SURVEYING
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80120

Front Range Midway Solar Project

Land Use / Land Cover Map

El Paso County, Colorado



Proposed Project Boundary
Parcel Boundary
Preliminary Array
Proposed Road

Reference:
USGS National Land Cover Database 2011

Date: 1/30/2018

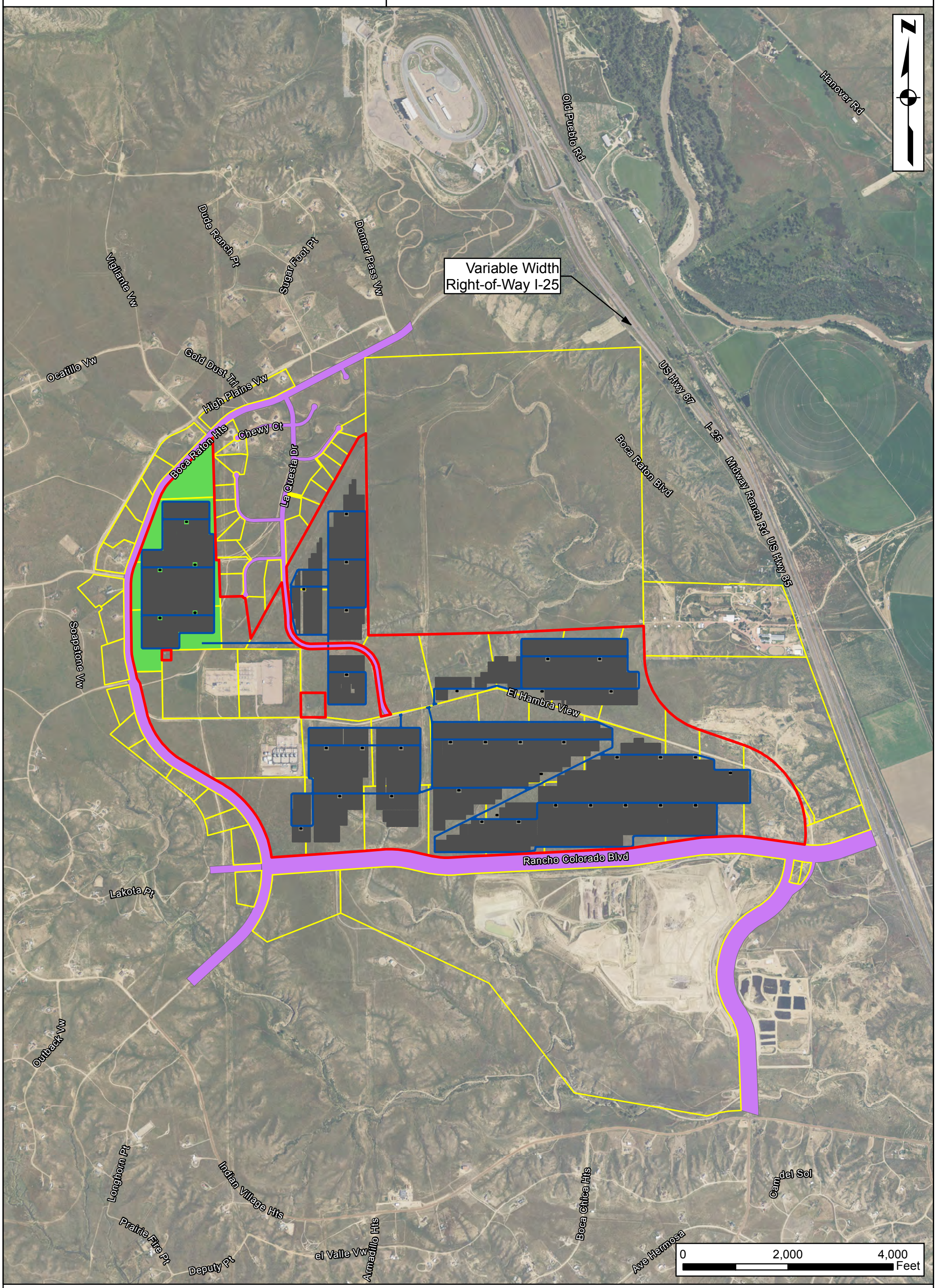
Attachment P

CORE CONSULTANTS
CIVIL ENGINEERING
DEVELOPMENT CONSULTING
NATURAL RESOURCES CONSULTING
LAND SURVEYING
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80120

Front Range Midway Solar Project

Public Lands Map

El Paso County, Colorado



Proposed Project Boundary
Parcel Boundary
Preliminary Array
Proposed Road

Immediately Affected Public Lands
Leased County Land
County Right-of-Way

Date: 1/30/2018

Attachment Q

TRADE WIND ENERGY®

Critical Issues Analysis (CIA)
Attachment A

Front Range - Midway Solar Project
El Paso County, CO

A trusted partner with utilities, landowners and local communities.

El Paso County, Colorado
Midway Solar Project

Table of Contents

1. Environmental Setting

A desktop review for the Midway Solar photovoltaic (PV) energy Project (Project) located in El Paso County, Colorado was completed on November 14, 2013. The Project area analyzed in this review includes over 30 adjacent parcels of land proposed for solar panel installations. The state and federally protected species known or likely to occur in the vicinity of the project area were reviewed, as well as the environmental setting of the Project and surrounding area.

The Project area encompasses approximately 1,100 acres (1.7 square miles) of land located 10 miles south of the city of Fountain, Colorado and two miles northwest of the populated place of Wigwam, Colorado. The Project is located three miles north of the El Paso-Pueblo county line and lies half a mile west of Interstate 25, which connects the two counties. According to the latest national census data, El Paso County has a population 622,263, Pueblo County has a population 159,063, and the city of Fountain has a population of 25,846 (USCB 2010). No municipalities are located within the Project area.

The Project lies in the U.S. Environmental Protection Agency Level III Ecoregion entitled the Southwestern Tablelands. Specifically, the Project lies within the Piedmont Plains and Tablelands Level IV subsection, located east of the foothills of the Rocky Mountain Range in eastern Colorado. The Level IV Ecoregion is defined by its irregular and dissected plains. Natural vegetation is shortgrass prairie (Chapman et al 2006). The Level IV subsection extends south to New Mexico and east to Kansas. This Ecoregion contains mostly shortgrass prairie rangeland with scattered areas of dry and irrigated cropland (Chapman et al 2006).

Land cover data for the Project area was obtained from the United States Geological Survey (USGS), National Land Cover Database (NLCD) (Fry et al. 2011). Results from these queries indicate a cover type primarily of grassland/herbaceous within and surrounding the Project area. This correlates to shortgrass

prairie as identified in the U.S. EPA Level IV Ecoregion associated with the Project site location. Other cover types represented within the Project area were identified as low, medium, and high density developed areas, developed open space (roads), and a small area of scrub/shrub land cover. The resolution of the dataset (one pixel = 30 meters X 30 meters) indicates that the scrub/shrub area is approximately 1 acre (it is represented by 5 pixels). The shrub/scrub land cover category is defined as dominated by shrubs less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions (Fry et al. 2011).

There is potential for habitat suitable for endangered species within the Project. This statement is based primarily on NLCD Land Cover data that indicates the dominant land cover type within the Project area as grassland/herbaceous (shortgrass prairie). The Project should be surveyed to identify the presence/absence of the required habitat that could support threatened or endangered species. The species most likely to be affected by Project development include terrestrial flora and fauna, and grassland birds. The absence of species specific habitat would be sufficient to determine that there is low likelihood of these T&E species.

Should this Project proceed, an on-site habitat assessment is recommended in order to ground-truth land uses and habitats at the Project.

2. Threatened and Endangered (T&E) Species Assessment

A review of federal and state Threatened and Endangered (T&E) Species was conducted for the Project. The U.S. Fish and Wildlife Service (USFWS) maintains a county list of documented occurrences/locations of federal trust resources, which includes species protected under the Endangered Species Act (ESA). This list was obtained for El Paso County, Colorado. State T&E species in Colorado are not available by a county level query. In-lieu of a county level query, the entire state T&E list was downloaded and researched for species probable occurrence within the Project vicinity. The determination of probable occurrence was based on reading the life history requirements of state listed species and comparing it to potential habitats in the vicinity of the Project. The determination also noted the current range of the species within the state and compared it to the Project location. In summary, federal species having the potential to occur in the county, and state species having the potential to occur within the vicinity of the Project area are listed in the table below. Inclusion of these species on the following table does not confirm that the species is present within the Project area.

Common Name	**Scientific Name**	**State Status**	**Federal Status**
Mexican Spotted Owl	*Strix occidentalis lucida*	Endangered	Threatened
Arkansas Darter	*Etheostoma cragini*	Threatened	Candidate Threatened
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	Threatened	Threatened

Common Name	Scientific Name	State Status	Federal Status
Ute Ladies'-Tresses	*Spiranthes diluvialis*	None	Threatened
Pawnee Montane Skipper	*Hesperia leonardus montana*	None	Threatened
Black-Footed Ferret	*Mustela nigripes*	Endangered	EXP*
North American Wolverine	*Gulo gulo luscus*	Endangered	Proposed Threatened
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Threatened	Threatened
Least Tern	*Sterna antillarum*	Endangered	Endangered
Piping Plover	*Charadrius melodus*	Threatened	Threatened
Whooping Crane	*Grus americana*	Endangered	Endangered
Pallid Sturgeon	*Scaphirhynchus albus*	None	Endangered
Plains Sharp-Tailed Grouse	*Tympanuchus phasianellus jamesii*	Endangered	None
Burrowing Owl	*Athene cunicularia*	Threatened	None
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*	Threatened	Proposed Threatened
River Otter	*Lontra canadensis*	Threatened	None

Sources: UFWS 2013 and CPW 2013

*EXP - experimental population. A taxon listed as experimental (either essential or nonessential). Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.

The Project area may provide habitat for some of the species that are included on the state and federal lists. The lack of significant permanent surface water habitats in the Project area makes it unlikely that obligate aquatic species would occur within the Project area. Sand Creek is a noted blue-line stream immediately south of the Project area. This may be an ephemeral streambed as aerial photography shows little to no riparian vegetation associated with this feature. Fountain Creek occurs several miles east of the Project area. Aerial photography shows a well-developed riparian vegetation zone along this feature. Species listed above that may utilize Fountain Creek and its associated riparian habitat may include Preble's Meadow Jumping Mouse, Least Tern, Piping Plover, Whooping Crane, Pawnee Montane Skipper, River Otter, and Ute-ladies'-tresses. Species listed above that may utilize shortgrass prairie

within the Project area or vicinity include Plains Sharp-tailed Grouse, Burrowing Owl, and Lesser Prairie-Chicken.

The plant species included in the table above have a potential to occur in the project area based on a desktop analysis alone. However, federally-listed plant species are not protected by the Endangered Species Act (ESA) except if they occur on federal lands, or if the proposed Project is considered a federal action or has a federal nexus under NEPA.

Based on the T&E portion of the desktop review for the Project area, critical flaws that would prevent construction of a solar facility were not identified. If the Project moves forward, consultation with the U.S. Fish and Wildlife Service and Colorado Parks and Wildlife is advisable to determine with greater certainty whether appropriate habitat exists within the Project area for any of the above-mentioned species, or others that were not identified for inclusion on the list. Depending on the outcome of consultation, biological surveys may need to be conducted to ensure that T&E species will not be impacted by the Project. If surveys indicate federally protected T&E species are present at the Project, the Project developer may choose to either avoid impacts or seek an incidental take permit from the USFWS to authorize “take” of the protected species under the ESA.

3. State Areas of Conservation Concern or Significance

A search of publicly available maps and GIS data layers was performed in order to identify federal, state, and local lands (wildlife preserves or other protected lands) in the area. No such designated lands are located within the Project area; however, portions of one assumed federal owned land parcel (United States), and one unknown ownership parcel (Public Service) are enveloped by the Project boundary and appear excluded from participating land parcels.

Pikes Peak International Raceway (USA Landmark) occurs approximately 1.5 miles north of the Project boundary. A cemetery labeled as the Wilson Cemetery occurs approximately 1.5 miles northeast of the Project boundary. Wigwam School occurs approximately 1.5 miles southeast of the Project boundary. Fort Carson Military Reservation occurs approximately 1 mile west of the Project boundary.

A database search was performed to identify designated National Register of Historic Places (NRHP) resources within 5 miles of the Project area in El Paso and Pueblo counties. A total of 87 designated NRHP properties in El Paso County and 64 NRHP properties in Pueblo County were identified by the database query (NRHP 2013). Of these properties, none were located within the proposed Project installation area, or within 5 miles of the Project. The nearest property to the Project is located 10 miles to the north within the city of Fountain, Colorado. The Project is not expected to impact any historical properties during construction or operation.

4. State Environmental and Wildlife Laws

Colorado Revised Statutes (C.R.S.) Article 2 - *Nongame and Endangered Species Conservation* (C.R.S. 33-2-105, revised 2013) comprises the state's endangered species provisions. The term "threatened species" means any species or subspecies of wildlife which, as determined by the commission, is not in

immediate jeopardy of extinction but is vulnerable because it exists in such small numbers or is so extremely restricted throughout all or a significant portion of its range that it may become endangered (C.R.S. 33-1-102). The term "endangered species" means any species or subspecies of native wildlife whose prospects for survival or recruitment within this state are in jeopardy as determined by the commission (C.R.S. 33-1-102).

This statute empowers the State of Colorado to list species and also outlines the criteria for listing. Under this statute it is unlawful for any person to take, possess, transport, export, process, sell or offer for sale, or ship and for any common or contract carrier to knowingly transport or receive for shipment any species or subspecies of wildlife appearing on the list of wildlife indigenous to this state determined to be threatened or endangered within the state (C.R.S. 33-2-105). It should be noted that the State of Colorado has not "adopted" federal ESA listed species, but for the most part the commission lists most of the species that occur on the USFWS list. Based on a preliminary review of C.R.S. 33-2-105, it appears that plants and insects do not receive state statutory protection in Colorado. Additionally, the prohibitions on state T&E species are fundamentally different from prohibitions on federal ESA listed species. According to C.R.S. 33-1-102, the term "take" means to acquire possession of wildlife; but such term shall not include the accidental wounding or killing of wildlife by a motor vehicle, vessel, or train.

5. Conclusions and Next Steps

This desktop study of the Midway Solar project in El Paso County, Colorado was conducted to ensure compliance with state and federal regulations including, but not limited to, the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Cultural and Historic Regulations, and various local zoning regulations.

Based on data obtained in this analysis for the proposed Solar PV Project site in El Paso County, Colorado, no critical flaws that would prevent construction of a solar energy facility were identified. However, potential concerns were identified that need consideration when siting project facilities and infrastructure. The following issues may warrant further study:

- A habitat assessment to determine the presence/absence of required habitat that could support any of the T&E species identified in this report is recommended. The absence of species specific habitat would be sufficient to determine that there is low likelihood of those T&E species.

Additionally, an ASTM Phase I Environmental Site Assessment should be conducted for the Project.

6. References

Colorado Parks and Wildlife (CPW). 2011. Threatened and Endangered List (last updated 12/21/2011). Available on-line at: http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/Pages/ListOfThreatenedAndEndangeredSpecies.aspx. Accessed November 2013.

Fry, J., G. Xian, S. Jin, J. Dewitz, C. Homer, L. Yang, C. Barnes, N. Herold, and J. Wickham. 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, *PE&RS*, Vol. 77(9):858-864.

National Park Service. 2012. List of National Historic Landmarks. Available on line at: http://www.nps.gov/nhl/designations/listsofnhls.htm. Accessed October 2013.

National Register of Historic Places (NRHP), National Park Service. 2013. National Register of Historic Places Download Center. Available on line at: http://nrhp.focus.nps.gov/natreg/docs/Download.html. Accessed October 2013.

United States Census Bureau (USCB). 2010. 2010 Census Data. Available on line at: http://quickfacts.census.gov/qfd/states/08000.html. Accessed November 2013.

U.S. Fish and Wildlife Service. 2013. County query for federal threatened and endangered species that may be affected by project. Available on-line at: http://www.fws.gov/mountain-prairie/co.HTML. Accessed November 2013.

Attachment T

Operations and Maintenance Plan

Section 1.1 **Scope of Services**. Front Range-Midway Solar, LLC shall perform or cause to perform the following service and maintenance in conformity with the Annual Facility Operating Plan:

1.1.1 Perform all scheduled and unscheduled service and required preventative maintenance of all equipment including; PV module, tracker system and components: inverters, controllers, control panels, connections to SCADA system sensors, DC electrical collection system, including the controls, and instruments and resetting of inverters, according to PV module and inverter O&M Manual. Also provide scheduled and unscheduled services to the electrical system from the inverters to the substation including the padmount transformers and collection system. Exhibit 1 is a description of the preventive maintenance task and schedule.

1.1.2 Coordinate all warranty work with PV equipment and inverter supplier during the warranty period.

1.1.3 Employ, hire, train, direct all employees or Contract to service and maintenance of the Equipment.

(a) Provide qualified supervision of service and maintenance employees.

(b) Provide any and all technical support required for service and maintenance. Develop, maintain and implement safety programs for the employees.

(c) Provide all regulatory required training including, but not limited to Hazardous Materials, and occupational safety and health.

1.1.4 Provide all materials, tools, supplies, consumables, equipment, vehicles, maintenance equipment, safety equipment, operating equipment, clothing and other supplies, personal property and assets necessary to conduct scheduled and unscheduled service and preventative maintenance of the Equipment per manufacturer's specifications.

1.1.5 Provide 24 hour remote monitoring and diagnostic analysis of PV site conditions from the Front Range-Midway Solar Site located in El Paso County, Colorado. Site will not be manned during daylight hours.

1.1.6 Provide regular and ongoing reports concerning the service and maintenance of the Equipment, including but not limited to.

1.1.7 Within 8 hours after any emergencies, nonscheduled shutdowns and outages, respond in an appropriate manner, if weather and site conditions permit, to

attempt to minimize loss of Facility revenue, damage to the Equipment or bodily harm to personnel.

(a) Provide reset and emergency response call-out capability, if weather and site conditions permit.

1.1.8 Maintain at all times a clean and presentable Facility with respect to the delivery of Service.

(a) Maintain the Facilities free from all debris and Materials related to the Services.

1.1.9 Provide timely telephonic, electronic and written notice if required in the event of any facility malfunction or unusual event at or involving the Equipment.

1.1.10 Monitor component failures, and perform root cause analysis in a reasonable time frame.

1.1.11 Process purchase orders and invoices, as required, for all Equipment transactions.

1.1.12 Maintain the Facility in compliance with all applicable federal, state, and local laws/ordinances and regulations, including but not limited to:

(a) Safety, industrial hygiene, and environmental conditions on, under or about the Facility (air, soil and ground water conditions), endangered species, and Hazardous Materials.

(b) Comply with site mandated safety and environmental standards.

EXHIBIT 1

Solar PV - Maintenance Schedule

Service Description-	Service Frequency- Weekly (W) Months (M)
Solar Field:	
Met Stations:	
Clean Sensors	1 W
Check Filters	1M
Level All Sensors	1M
Sensor Calibrations	24M
Reference Module Cleaning	1W
Reference Module Calibration	12M
Panels:	
Module Inspection	1W
Module Cleaning	as needed
Themography (IR) Scan	12M
Trackers:	
Inspection	1W
Calibration	As needed per alarm alert
Lubrication check	6M
Combiner Box Inspection	1W
Inverters:	
Inspection	1W
Cleaning	12M
HVAC Inspection	1W
HVAC Maintenance	12M
Pad Mounted Transformers:	
Inspection	1W
IR Scan	3M
Oil Sample	12M
Control Room/Swithyard:	
Control Room:	
Inspection	1W
Battery Cell Test	3M
HVAC Inspection	1W
HVAC Maintenance	12M
Switchyard:	
Inspection	1W
Switchyard IR Scan	6M
Breaker Maintenance	24M
Transformer Oil Sample	12M

Revenue Meter "A" Phase Calibration	12M
Revenue Meter "B" Phase Calibration	12M
Revenue Meter "C" Phase Calibration	12M
Safety	
Site Safety Audit	1M
Site Safety Assessment	12M
First Aid Kit Quantity Inspection	1M
Fire Extinguisher Inspection	1M
Fire Extinguisher Recertification	12M
Protective Grounds Recertification	12M
Voltage Rated Glove Recertification	6M
Switch Stick Recertification	24M
Administrative:	
Spare Parts Inventory	3M partial count
Spare Parts Inventory	12M full count
SCADA Inspection	Daily
SCADA Maintenance	1M
PI/Historian Inspection	Daily
PI/Historian Maintenance	1M

Attachment U

1. DESCRIPTION

This report presents a draft Decommissioning Plan for the Front Range-Midway Solar Project (Project) located near Fountain, Colorado. This Plan was prepared for El Paso County by the Project applicant and owner and operator of the proposed solar facility, Front Range-Midway Solar Project, LLC. The purpose of this Plan is to detail the demolition, removal, and rehabilitation actions to be conducted during Project decommissioning. The Project is sited on property owned and leased by the Project owner; decommissioning activities would occur in coordination with all property owners. Some property owners may prefer that no decommissioning activities take place. The company will seek to comply with the property owners requests where leaving the site in that condition is in compliance with laws and regulations and coincides with the company's goals. The decommissioning and reclamation procedures and practices that would be employed by Front Range-Midway Solar Project, LLC will meet federal and state requirements for the reclamation phase following construction of the Project and for the rehabilitation of the Project site following decommissioning.

While this report is designed to address all aspects of decommissioning, it should be considered a draft document, as the Project has not yet been constructed.

The following components are included in this plan:

- Structure, Equipment, and Facility Removal: Solar photovoltaic (PV) modules and support systems, infrastructure, roads, substation equipment and structures, and miscellaneous equipment (i.e., fencing and gates).
- Removal of the perimeter security fencing, including all components, gates and hardware, if desired by the Landowner at time of Project decommissioning
- Deconstruction of the access and perimeter roads (if required)
- Grading and recontouring of the affected areas after demolition, deconstruction and materials removal
- Revegetation of the affected areas after grading and recontouring is completed (if required)

2. SOLAR FACILITIES DESCRIPTION

Access Roads – Access to the site will occur via Exit 119 from Interstate-25 (I-25). Vehicle traffic will travel west on Rancho Colorado Boulevard . Site access will occur along Rancho Colorado Boulevard at the southwestern portion of the project.

Security Fencing and Gates – Permanent perimeter site security fence will be installed and will consist of a six-foot fence with a two-foot three-strand barbed wire on top. The security fencing will be constructed within the project boundary to allow room for fence maintenance and to comply with property setback requirements. Fencing will be designed to resist wind and other weather or debris loads. Gates of similar design will be installed at the primary and emergency access points into each section of the solar field. The total linear footage of the security fencing and gates is approximately 28,000.

Solar Field - PV solar panels would be mounted on tracking systems that help minimize the angle between the solar panels and the sun. The electricity generated will be sent to inverters located at the perimeter of each array that will convert the electricity from direct current to alternating current. Underground electric collection lines will transfer the electricity from the inverters to the solar project substation where it will be stepped up to transmission voltage and an overhead electrical gen-tie line that will transfer the electricity to the Midway or PsCo substation. Inverter hardware will be located in a series of Power Conversion Units (PCU), which will convert the direct current (DC) electric input into grid-quality AC electric output. The PCU's consist of an inverter, transformer, and related hardware. The PCU inverter steps of the electrical voltage from about 550 Volts to 34.5 kV, allowing for efficient electrical collection from the site with marginal power losses.

Project Substation – The Project will include construction of a substation that collects the 34.5 kV power from the solar field and steps up the voltage to the interconnection level of 115 kV or 230 kV, depending on the executed interconnection agreement with the Public Service Company (PSCo) at 115 kV or Western Area Power Administration (WAPA) at 230 kV. The project substation will consist of a 34.5 / 115 kV main transformer, one 115 kV and multiple 34.5 kV breakers, motor-operated and manually operated switches, a control enclosure, instrument transformers for metering, and galvanized steel support structures within an eight-foot-tall fence enclosure.

3. METHODOLOGY

The objective of decommissioning and reclamation is to remove the installed materials and equipment and return the land to the condition that existed prior to condition. Some parcels will not require complete decommissioning and reclamation if the landowner plans to utilize the property for other land uses. The procedures described for decommissioning and reclamation will ensure public health and safety, environmental protection, and compliance with applicable regulations. Procedures include restoration of land contours and native revegetation, hydrology, visual resources, and wildlife habitats.

The procedures outlined for reclamation include a description of the proposed activities for reclamation to be undertaken during and after completion of Project operation and measures to be taken to prevent unnecessary or undue degradation.

All facility components will be recycled to the greatest extent possible during decommissioning. Specific opportunities for recycling (i.e., PV solar panels) are discussed below in the context of various site components.

Overall

- Conducting pre-closure activities, such as final closure and restoration planning, that addresses the “as-found” site conditions at the start of the Project;
- Establishing and documenting health and safety procedures;
- Using industry standard demolition methods will allow personnel to efficiently undertake demolition activities, thereby minimizing the environmental safety exposures;
- Demolishing the aboveground structures in a phased approach so that some project structures can be used until the final demolition
- Demolishing and removing underground collection facilities as needed to meet the closure goals;
- Remediating soils, if needed, to ensure that clean closure is achieved;
- Disposing of materials in appropriate facilities for treatment/disposal or recycling; and
- Re-contouring lines and grades to match the original grade and ecological function.
- Evaluate the execution of the decommissioning and restoration plan through appropriate oversight and quality assurance; and
- Document implementation of the plan and compliance with environmental requirements

Decommissioning activities are discussed in detail below Technologies and construction techniques are expected to change prior to decommissioning of the project and may impact the details of each activity described.

4. DECOMMISSIONING ACTIVITIES

The anticipated project life is 30-35 years. Decommissioning may occur sooner or later depending on unforeseen circumstances. If the Project remains economically viable, it could operate for more than 35 years. However, if the facility were to become economically non-viable before 30 years of operation, permanent closure could occur sooner. Nonetheless, a Final Decommissioning Plan would be prepared and put into effect when permanent closure occurs.

An updated Decommissioning Plan will be submitted to the County for approval at the commencement of decommissioning. The plan will describe the proposed equipment to be removed and equipment that will remain for future use, based on expected future use of the site. Decommissioning activities will not commence until the Final Plan is approved.

In general, decommissioning will attempt to maximize the recycling of all facility components. Specific opportunities for recycling (i.e., PV solar panels) are discussed below in the context of various site components. The individual Project components to be decommissioned will be recycled to the maximum extent possible.

The key Project components to be affected by decommissioning activities are discussed below. The general decommissioning approach will be the same whether a portion of the Project or the entire Project would be decommissioned.

Implementation Strategy

In general, decommissioning will include the removal of all improvements less than 3 feet below final grade to prepare for restoration of disturbed areas.

Front Range-Midway Solar Project proposes the following strategies to achieve the goals of implementation:

- Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical
- Plan each component of the decommissioning such that personnel and environmental safety are maintained while efficiently executing the work
- Evaluate the execution of the Decommissioning and Reclamation Plan through Project oversight and quality assurance
- Document implementation of the Plan and compliance with environmental requirements.

The Decommissioning Plan for the Project consists of the following major elements:

- Establishment and documentation of health and safety requirements and procedures
- Completion of pre-decommissioning planning activities such as preparing the final decommissioning and restoration plans and schedules based on the “as-found” site conditions documented prior to construction
- Dismantling and removal of Project materials and improvements

- Soils cleanup procedures and disposal requirements are detailed in the Project's Soil Restoration Plan (see Section 5)
- Disposal of materials in appropriate facilities for treatment, disposal, or recycling

Dismantling of Project components will proceed according to the following general staging process. The first stage will consist of dismantling/demolition and removal of the PV panels and underground and above ground electrical components, parking areas, and other installed facilities. The second stage will consist of removing the installed fencing and site contouring to return disturbed areas to original conditions to the greatest extent possible. The second stage is covered in the Reclamation Plan (Section 5).

Health and Safety Procedures (HASP)

The following health and safety procedures will be established prior to decommissioning:

- General safety and hazard responsibilities
- Establishment of an effective hazard communications program
- Task hazard analysis and control
- Personal protection equipment (PPE) requirements
- Occupational and environmental monitoring requirements
- Medical and other emergency procedures
- Personnel training
- Incident reporting
- Self-audit and compliance procedures

A site-specific HASP or equivalent will document health and safety requirements for establishing and maintaining a safe working environment during the implementation of the planned site decommissioning activities.

Decommissioning Planning and Preparation

The first phase in the decommissioning process will consist of a site assessment of existing conditions and preparation for demolition. The removal of solar facility components will follow. However, access roads, fencing, and electrical power facilities will remain in place for use by the decommissioning and restoration workers until the solar panel components and associated facilities are removed. Demolition debris will be placed in temporary on-site storage area(s) pending final transportation and disposal/recycling according to the procedures listed below.

Decommissioning of Project Components

During decommissioning, Project components that are no longer needed will be dismantled (including breaking concrete into gravel), removed from the site and recycled or disposed of, or abandoned in place where allowable and as outlined in this DRP. Decommissioning procedures associated with each Project component are discussed below.

PV Equipment Removal and Recycling

The PV solar panels, supports, and buried underground conductors will be removed. The demolition debris and removed components will be dismantled into pieces that can be safely lifted or carried with the on-site equipment being used. The majority of glass and steel will be processed for transportation and delivery to an off-site recycling center. All steel, aluminum, and copper will be recycled to the greatest extent that is economically viable. PV panels will be recycled or disposed of in accordance with the manufacturer's recycling program.

Site Access, Parking Area and Maintenance Roads

On-site roads will remain in place to accomplish decommissioning at the end of the facility's life. Project access roads will remain if the landowner determines that some of these roads will be beneficial for future use of the site. Roads that will not remain will be restored to preconstruction conditions. The road surface will be restored and revegetated as described in Section 5.

Project Substation

At decommissioning the prefabricated control enclosure and electronic components of the substation equipment will be electrically disconnected and made safe for removal. The control enclosure will then be disassembled and removed from the site. The transformers, breakers, bus work, and metal dead-end structures will also be disassembled and removed. Concrete foundations and containment berms/curbs for the transformers up to a minimum of 3 feet below grade will be broken into pieces, and all debris and aggregate rock will either be removed from the site or crushed into gravel and used on-site in coordination with the Property owners' desires. The area will be revegetated as described in Section 5.

The main power transformer's insulating oil will be drained, and transferred to a licensed disposal facility for recycling or disposal. Site personnel involved in handling these materials will be trained appropriately.

As part of the preparation for closure, the stormwater management for the site will be updated to cover spill prevention and countermeasures for handling specific materials during decommissioning. Procedures to decrease the potential for release of contaminants to the environment will be specified in the Final Plan.

Dismantling and Demolition of Fencing

Demolition of security fencing will entail breakdown and removal of gates and fencing materials at the completion of demolition of other Project components. Residual materials from fencing will be transported via heavy haul dump truck to a central recycling/staging area where the materials will be processed for transport to an off-site recycler. A Project recycle center may be established to reduce staging of materials for transport to an off-site recycling location. The materials could include barbed wire, steel fence bracing and stretcher bars, galvanized steel hardware fabric, chain link fabric, posts, and concrete post supports.

The use of mechanized equipment and trained personnel will ensure the safe dismantling and removal of the perimeter security gates and fence.

The permanent security fence below-ground materials consist of concrete backfill for the posts. Fence post supports will be unearthed and removed. The concrete attached to the posts will be physically removed and transported to the recycling area for recycling off-site or crushed into gravel to remain on-site.

Demolition Debris Management, Disposal and Recycling

All demolition procedures will maximize the recycling of materials to the greatest extent possible. Non-hazardous wastes will be collected and disposed of in specific and appropriate waste areas. Hazardous wastes will be disposed of according to applicable laws, ordinances, regulations, and standards (LORS). Demolition debris will be placed in temporary on-site storage area(s), prior to transport to an off-site recycling center, in accordance with the procedures listed below.

For the purpose of this Plan, it is assumed that the removal of all equipment and appurtenant facilities from all site areas will be required. Removal activities will be achieved in conformance with all applicable LORS. Aboveground structures will be removed through mechanical or other approved methods, and transported off-site. Below ground materials will be removed as described in the sections above. Once all structural elements are removed, the ground surface will be re-contoured to return the site topography to the pre-construction conditions.

5. SITE RECLAMATION

Decommissioning procedures will remove Project components and related structures as described above. Site reclamation activities will occur following the completion of decommissioning. Reclamation will restore natural topography, vegetative cover, and hydrologic function after closure of the facility. Restoring ecological features to a condition compatible with the adjacent land form will inherently restore the visual elements of the site to pre-disturbance conditions in accordance with Project approvals and restoration requirements.

If soils are determined to be compacted at levels that will affect successful revegetation, decompaction will occur. The method of decompaction will depend on the level of compaction. Regrading and contouring the site will follow and necessary decompaction of soils. Regrading and contouring will occur as necessary, where Project construction resulted in changes to the natural topography of the site. It is unlikely that a significant amount of earthwork will be required as the construction plan calls for limited disturbance of the Project site. Reclamation grading activities will be limited to disturbed areas that require re-contouring.

As the preconstruction use for the Project site is primarily rural-residential and relatively undisturbed, it is anticipated that reseeding will be the primary method of revegetation within the proposed disturbance areas. The primary goal of revegetation will be to establish a barrier to erosion of soils. The site will be revegetated with a native seed mix compatible with the surrounding vegetative cover. The method by which seeds will be placed will be determined at the time of decommissioning, since revegetation technology may change over the next 30 years.

Closure and Restoration Strategy

The overall closure and restoration strategy includes the following major elements:

- Conducting restoration planning that addresses the “as-found” site conditions at the start of the Project
- Documenting and establishing health and safety procedures
- Re-contouring topography and grades to match the natural grades and ecological function of the site
- Restoration of soils, if needed, to ensure that clean closure is achieved
- Evaluate the execution of the Decommissioning and Reclamation Plan through Project oversight and quality assurance
- Document implementation of the Plan and compliance with environmental requirements

It is the responsibility of the Project owner to ensure the Project is constructed, commissioned, operated and decommissioned according to Federal, State and Local requirements.

Site Recontouring

Re-contouring of the site will be conducted using standard grading equipment to return the land to the previously existing surface. Grading activities will be limited to disturbed areas that require re-contouring. Fills will be compacted to approximately 85 percent relative compaction by wheel or track rolling to avoid over-compaction of the soils.

Best management practices will be implemented to provide erosion and sediment control until revegetation efforts have sufficiently stabilized the soil.

Restoration of Drainage

This section presents an initial drainage restoration plan for the Project that focuses on permanent closure and subsequent decommissioning activities to restore the site drainage to conditions that will complement present off-site drainage conditions. This plan is a draft and will be reviewed and revised as necessary for the final plan when decommissioning activities are imminent.

As used here, “closure” is synonymous with decommissioning and includes removal of the Project fencing and materials that were used to support the pre-construction activities of the Project. Drainage restoration will be one of the final decommissioning activities. Storm water detention ponds are planned for construction of the Project; detention ponds will maintain the historic drainage patterns and release rates for the site. Since the Project components, roads, fences, and all other appurtenant facilities will be decommissioned (unless otherwise indicated by landowners), storm water detention ponds will be decommissioned as part of the restoration effort. Removal of the detention ponds along with regrading and recontouring will ensure that pre-construction drainage patterns and release rates can be maintained. It is assumed that the removal of all equipment will be required and will be achieved in conformance with all applicable LORS and local/regional plans.

Soil Restoration

As part of the decommissioning planning, determination of the depth and lateral extent of contaminated soil (if present) will be conducted as needed. Any required soil cleanup will be based on visual observations, a review of spill records and daily operating practices, and results of any chemical analyses performed on soil samples collected during site closure.

At this time and for the purposes of this preliminary Plan, it is not anticipated that soil cleanup will be required due to the limited amount of contaminants present at the Project. If required, appropriate soil cleanup and rehabilitation methods will be selected to meet Project objectives and regulatory requirements based on criteria contained in applicable Federal, State, and County guidance. If contaminated soil removal is required, the resulting excavations will be backfilled with native soil of similar permeability and consistency as the surrounding soils and compacted to 85 percent relative compaction.

If required, soil restoration will be one of the final decommissioning activities implemented (following removal of site equipment, in accordance with all applicable LORS and local/regional plans).

Attachment W

16105 West 113th Street, Suite 105
Lenexa, Kansas 66219
P: 913.888.9463
tradewindenergy.com

September 6, 2017

Front Range – Midway Solar Project, LLC
Emergency Response Plan – Preliminary for Permitting Purposes

The Front Range Midway Solar Project will develop a site specific Emergency Response Plan (ERP) prior to the Construction and Operations of the project. Since the EPC Contractor will be responsible for coordinating daily material deliveries, construction equipment, on-site labor, and the overall project schedule, the development, implementation, and execution of the Emergency Response Plan for construction will be led by the EPC Contractor. The EPC Contractor will be selected at a later date through a competitive bidding process, including the requirement for their ERP to address the following. Once selected, the EPC Contractor will also review the ERP with, and implement any essential modifications to the ERP the Emergency Response Jurisdictions identify.

Emergency Response Plan – Construction Phase

1. Project Description
2. Project Team
3. Emergency Response Jurisdictions
    a. 911 and expected location/duration for response
    b. Secondary contact information and location
    c. Non-emergency contact information and location
4. Site Access
    a. Site address
    b. Site emergency egress routes
    c. Site emergency vehicle access
    d. Site employee parking
    e. Site delivery routes and staging areas
5. Site Plans
    a. Overall Site Map
    b. Site Map showing site access
    c. Map showing the proposed hazardous material storage location
6. Fire Prevention
    a. Fire Prevention Plan (FPP)
    b. Photovoltaic solar arrays – electrical safety
7. Vegetation Fire and Response
    a. On-site response to small contained fires
    b. On and off-site response to large stage fires
8. Fire Department Access
    a. Site access – external to the fence
    b. Perimeter roads – inside the fence
    c. Internal roads – non-vegetated to inverters and medium voltage transformers
    d. Access aisles – vegetated in-between solar arrays
9. Emergency Response – Non-Fire related
    a. Site access – external to the fence

   b. Perimeter roads – inside the fence
   c. Internal roads – non-vegetated to inverters and medium voltage transformers
   d. Access aisles – vegetated in-between solar arrays
10. Severe Weather
   a. Thunderstorms
   b. Tornados
   c. Dust storms
   d. Snowstorms
11. Employee Training & Education
   a. Use of Portable Fire Extinguishers
   b. Site Maintenance
   c. Housekeeping
   d. Equipment Fire Safety
12. Chemical and biological hazards
13. Hazardous Materials
   a. Hazardous materials on site
   b. Container management
   c. Housekeeping
   d. Secondary containment
14. Spill Response Plan
   a. Minor spills
   b. Semi-significant spills
   c. Significant/Hazardous Spills
15. Maintenance and Inspection

Emergency Response Plan – Operations Phase

Prior to the operations phase of the project, the O&M Team will develop an Emergency Response Plant that will be enacted the first day immediately following the commercial operation date. The ERP will address all of the items above, as well as the additional items listed below.

- TBD by the O&M Team during the construction period of the project.

Attachment A1

TRADE WIND ENERGY®

Solar Project Feasibility Summary Report

Front Range - Midway Solar Project
El Paso County, CO

A trusted partner with utilities, landowners and local communities.

Solar Project Feasibility Summary Report

Front Range - Midway Solar Project, LLC

1. Executive Summary

A. Market Compliance

Front Range - Midway is the primary solar site being pursued in the Colorado, which is a state that TWE management and EGP have both deemed desirable. The market segment targeted here is the very large, utility-scale market. To date, the 60+ MW Front Range - Midway Project is the first project to be secured by TWE in Colorado.

It targets a key node in Colorado's electric system where 5 major utility entities converge: Black Hills, Colorado Springs Utilities, Tri-State G&T, Xcel, and WAPA. All of the utilities present at the Midway substation (except WAPA) have recently been active in procuring utility-scale solar power. Xcel recently announced acquisitions of 170 MW of solar capacity (there has also been a large amount of distributed solar added to the Xcel system in the past 3-4 years). CSU is gearing up to procure renewable power to take advantage of the solar ITC which expires in 2016 via an RFP in 2014, Black Hills is seeking 60 MW of renewables via a RFP in 1Q 2014, and Tri-State has been a recent buyer of solar power in Colorado and New Mexico. The belief is that Colorado will remain a relatively strong market for utility-scale solar through 2016 (prior to expiration of the Federal ITC). Targeting the Midway substation provides TWE with flexibility to target one or more of these utilities with a single site.

B. Site Assessment /SWOT Analysis

Front Range - Midway is a large solar project site that is anticipated to accommodate ~60-75 MW of capacity, dependent upon detailed terrain analysis and off taker appetite.

The site is located just west of I-25 about 20 miles south of downtown Colorado Springs in El Paso County. It is very wide open and mostly flat, with some acreage with moderate roll. There is very good access from the highway as the site is adjacent to an I-25 exit/entrance. Although located along the Front Range, there is a "gap" in the Rocky Mountains to the west southwest and west providing significant fetch.

Adjacent to the site are other developments, including:

- the Midway landfill to the south;
- the Midway substations (WAPA and Xcel);

- Fountain Valley Power Facility, a gas-fired power plant adjacent to the substations;
- the Pikes Peak International Raceway;
- the El Dorado Village development and other multi-acre single family homesites 1-2 miles west of the proposed site.

Strengths	Weaknesses
The site has a high solar resource compared to other major electrical nodes in the Front Range; Generally flat, open ground; Good access from major interstate highway (I-25); Provides interconnection access to four primary utility offtakers from one-site; The Midway node is a desired delivery/transaction point for the offtakers; The area is quasi-industrial, which should make permitting manageable.	The lowest interconnection voltage is 115 kV, so the cost to interconnect is relatively high (thus the requirement for a larger project). While mostly regarded as an industrial-like setting, the site parcels are zoned Residential Rural-2.5 acre, which will require a conditional use permit from El Paso County. Other weaknesses include (per EFR report): - Water availability may be limited. - Existence of an active landfill nearby could increase cleaning frequency. - Some unsuitable slopes in the northern part of the project. - Two easements consisting of underground utilities and a county road ROW will require encroachment and/or crossing agreements.
Opportunities	**Threats**
The location permits one project to be developed that can be marketed to 1-4 utility off takers. There is an opportunity to parse out MW to deliver to/transact with more than one offtaker (i.e. via the WAPA interconnection).	The primary threat is potential resistance to the project from homeowners to the west of the Project and/or lack of support from El Paso County. A lack of ATC on one or more utility systems would reduce off-take flexibility. Competitive threats may come from other large utility scale projects or a number of smaller distributed projects.

C. Scoring Recap

Scoring criteria were not applied to this site relative to other sites in Colorado. The Midway substation is a unique in Colorado in that it serves four potential utility

offtakers at one location and possesses other attributes that support development of a large solar project.

D. Actions Items

Action Items	Now	Near Term
Key Management Actions	Approval of Purchase Options	Negotiations w/ multiple offtakers
Key Development Tasks	1. Given the project's size and location, TWE will immediately pursue installation of a solar MET. 2. TWE will immediately file for interconnection with WAPA (for CSU and BH)	
Cost of Key Development Tasks	1. ~ $20,000 2. TBD	

2. Site Suitability

A. Market

i. Target Market/Customer: Multiple utilities (Black Hills, CSU, Tri-State, Xcel)
ii. Market Opportunities: 60+ MW PPA
iii. RPS or Other Energy/Market Related Incentives: See market discussion above.
iv. Load Growth or Other Market Drivers: Load growth in the Front Range is nominal, but customer preference for renewables is high; CSU may be retiring a coal unit and would be in the market for solar and natural gas generation.
v. Competition Highlights: Competition is strong at both the utility-scale level as well as from smaller, distributer solar systems.
vi. LMP: NA

B. Transmission

The Midway complex is made up of the "WAPA" substation/system (where WAPA, Black Hills, CSU, and Tri-State transmission lines converge) and the "Xcel" substation/system that is directly adjacent and connected to the WAPA substation, but operates largely independent of WAPA. For TWE, an analysis was conducted by Black & Veatch to determine the available transfer capability (ATC) of both substation/systems to accommodate a large solar project. The highlights of the analysis indicated that the WAPA substation/system can accommodate approximately 146 MW and 158 MW of solar capacity for Black Hills and CSU, respectively, as there are no significant prior queued projects in either system. For Tri-State, due to a large number of prior queued projects, ATC is limited if most or all projects come to fruition (note: there is the opportunity to jump prior queued projects but the ATC analysis conservatively assumed all prior projects would move forward). For the separate Xcel system, results were similar to Tri-State, with a large number of prior queued projects clouding the ATC picture at Midway (note: same opportunity to jump prior queued projects exists).

The B&V analysis gives TWE confidence that two of the four possible off takers, Black Hills and CSU, have sufficient ATC at Midway to deliver power from a large, 60+ MW solar project. It is also plausible that Tri-State and Xcel will also have ATC by 2016 due to a thinning of the interconnection queue and completion of transmission system upgrades that were not fully factored into the B&V analysis.

C. Interconnection

The initial interconnection strategy at Midway will include an umbrella project filing on the WAPA system, which will cover Black Hills, CSU, and Tri-State. A project filing on the Xcel system will be determined based on further assessment of Xcel's solar appetite and more clarity of ATC on their system.

i. Existing Infrastructure: On-site 115 kV/230 substations
ii. Proposed Gen-tie Scheme: short tie-line to 115 kV breaker position(s)
iii. Summary of Interconnection Queue: See discussion above.
iv. Summary of Other System Impact Studies Having Impact at POI: See above.
v. Cost and Loss Impacts in Regards to Location: Step-up costs will be relatively high but the tie-line will be short with nominal losses.

D. Permitting and Environmental

This site has had a Phase I Environmental Site Assessment (ESA) performed by Terra-Con, with no environmental issues found that would preclude development.

The project site lies just west of I-25 within El Paso County. The site is currently zoned "Residential Rural-2.5 Acre" so the project will require a variance of use (VOU) permit (note: given the site is immediately off of I-25 with minimal housing nearby, and several adjacent industrial and waste facilities, a VOU is regarded as cumbersome but achievable).

Environmental (and cultural)-related information is covered in the Critical Issues Assessment report associated with this project (see Attachment A). The highlights of the CIA are:

This desktop study of the Midway Solar project in El Paso County, Colorado was conducted to ensure compliance with state and federal regulations including, but not limited to, the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Cultural and Historic Regulations, and various local zoning regulations.

Based on data obtained in this analysis for the proposed Solar PV Project site in El Paso County, Colorado, no critical flaws that would prevent construction of a solar energy facility were identified. However, potential concerns were identified that need

consideration when siting project facilities and infrastructure. The following issues may warrant further study:

• A habitat assessment to determine the presence/absence of required habitat that could support any of the T&E species identified in this report is recommended. The absence of species specific habitat would be sufficient to determine that there is low likelihood of those T&E species.

Additionally, an ASTM Phase I Environmental Site Assessment should be conducted for the Project.

E. Meteorology

While it is widely known that the best solar resource in Colorado is found in the San Luis Valley area of south central Colorado, electrical connection from this area to the populated Front Range is limited (recent solar project build-outs in the Valley have all but consumed ATC to the east). In the Front Range of Colorado, solar resource increases to south, making the Midway substation area one of the more attractive electrical nodes with a relatively high solar resource. In fact, it is the best solar resource available to CSU and its resource compares favorably with other potential locations in Pueblo County to the south.

Meteorology has acquired virtual MET data from 3Tier for the Midway site to enable energy simulations to be run for the site. This site will require a solar MET to be installed, and may require more frequent maintenance cleanings due to airborne dust from the adjacent land fill operation and a network of rock/dirt roads in the area. It is anticipated that a single-axis tracking configuration will be used at the site, and the broad horizons and the comparative economics with fixed arrays for this location support that approach. As the site is not dead flat with some moderate roll in certain areas, an articulating tracking system will likely be required.

F. Engineering/Construction

Engineering/construction-related information is covered in the Engineering Feasibility Report associated with this project (see Attachment B). The highlights of the EFR are:

TradeWind's in-house engineering staff conducted a desktop review of this potential utility scale solar energy generation site utilizing information culled from public resources including the USDA's Soil Web Server, the Soil Survey of El Paso County, the El Paso County website, as well as other sources.

The purpose of this feasibility report is to review the site's suitability for use as a solar energy project and seek out any potential risks not immediately identifiable from other desktop efforts and/or site visits. No site visit has been undertaken by TradeWind's Engineering staff to date, nor has there been any consultation with any other reputable

parties to validate any assumptions or statements herein. However, in reviewing the site, some items have surfaced that may impact suitability and/or contribute to additional costs:

• Water availability may be very limited. The water rights are owned by the land owner of the project parcels. Fountain Valley Power Plant may be expanding and will be competing for available water.

• Existence of an active landfill nearby could increase cleaning frequency and water availability is limited and may be relatively expensive.

• Some unsuitable slopes in the northern part of the project.

• Two easements consisting of underground utilities will require encroachment and crossing agreement. Additionally a county road ROW will need crossing agreements.

• Potential for rezoning through the County of El Paso for use as a solar project within rural residential districts.

G. Operations

i. Access: Road access is very good from I-25.
ii. Operational Impacts to Neighborhood: Care will need to be taken during construction to minimize impacts to the residential neighborhood 1-2 miles to the west, but operational impacts will be nominal.
iii. Available Utility Services: On-site

H. Real Estate

Initial site acquisition activities involve pursuing agreements with two key landowners:

<u>Midway Development Company</u>

Midway Development Company owns 490 acres to the east of the Midway substations that represent the primary acreage for the Project. Acquisition will be pursued via a purchase option agreement that will involve 2 semi-annual payments per year totaling $60,000/yr ($120/acre) during the option term. The purchase price for the acreage is $1,470,000, or $3,000/acre. [Note: on a 20 year project life basis, the total purchase amount is equivalent to an annual lease payment of $210/acre; either way (purchase or lease) the site acquisition costs are regarded as relatively low relative to typical land costs in Colorado and other TWE solar site costs in other markets.]

Since this is a site purchase scenario, extended term rent is not applicable.

Cando + Eldorado Village Lot

Cando owns 212 acres to the east of the Midway substations that represent useful acreage for the Project as well as access to the WAPA and Xcel substations. Acquisition will be pursued via a purchase option agreement that will involve 2 semi-annual payments per year totaling $40,000/yr ($188/acre) during the development term. The purchase price for the acreage is $848,000, or $4,000/acre. [Note: on a 20 year project life basis, the total purchase amount is equivalent to an annual lease payment of $280/acre.] An easement will likely be pursued on the Eldorado Village Lot (11 acres); the lot is for currently for sale at $50,000 if a purchase option is pursued.

Since this is a site purchase scenario, extended term rent is not applicable.

Additional Acreage

Should the Project need to add additional land to increase project size, there are other interested landowners adjacent to these properties, including El Paso County and a private landowner group affiliated with the nearby racetrack that could be pursued.

i. Ownership: Verified via recorded deed with title commitments to be ordered upon execution of the options.
ii. Land Values: See above.
iii. Mineral/Water Rights: Mineral rights are not expected to be an issue as the land is currently zoned residential; water rights will be purchased from Wigwam Water company (~$20k/year for water assuming an aggressive 900,000 gal/yr assumption, but would be more likely be ~$5k/yr).

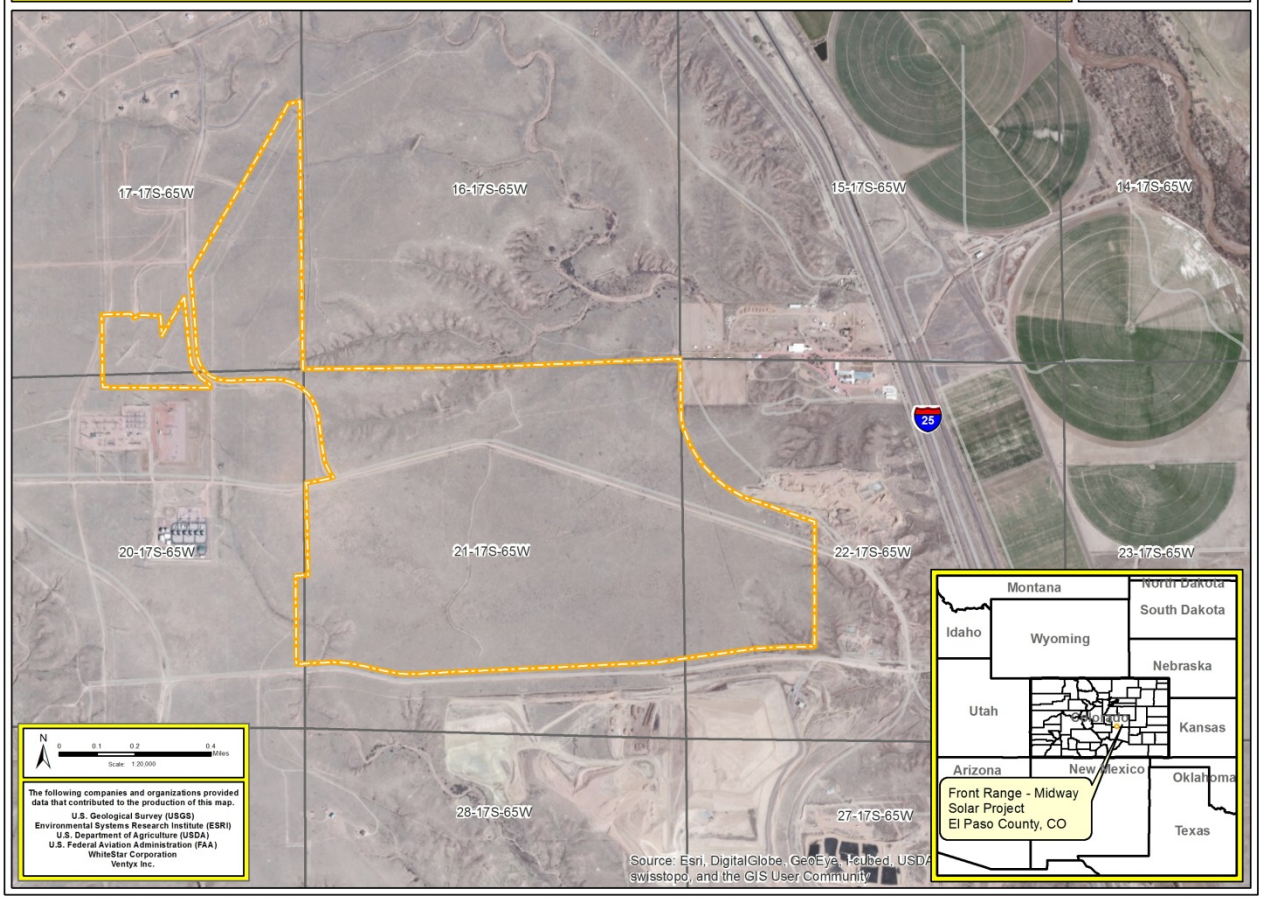
I. Government Affairs

TWE is broadly aware of regulatory issues and procedures in Colorado due to its prior experience with wind development. TWE also retains the services of Mark Detsky, and experienced energy regulatory attorney in Colorado who is intimately familiar with the four utility offtakers, the PUC, and renewable energy and the power industry.

J. Maps

The map below indicates the location of the project within Colorado and an aerial view of the leased parcel. Attachments A, B, and C also include maps of different aspects of the project.

Front Range - Midway Solar Project



TRADE WIND ENERGY®

Critical Issues Analysis (CIA)
Attachment A

Front Range - Midway Solar Project
El Paso County, CO

A trusted partner with utilities, landowners and local communities.

El Paso County, Colorado
Midway Solar Project

Table of Contents

1. Environmental Setting

A desktop review for the Midway Solar photovoltaic (PV) energy Project (Project) located in El Paso County, Colorado was completed on November 14, 2013. The Project area analyzed in this review includes over 30 adjacent parcels of land proposed for solar panel installations. The state and federally protected species known or likely to occur in the vicinity of the project area were reviewed, as well as the environmental setting of the Project and surrounding area.

The Project area encompasses approximately 1,100 acres (1.7 square miles) of land located 10 miles south of the city of Fountain, Colorado and two miles northwest of the populated place of Wigwam, Colorado. The Project is located three miles north of the El Paso-Pueblo county line and lies half a mile west of Interstate 25, which connects the two counties. According to the latest national census data, El Paso County has a population 622,263, Pueblo County has a population 159,063, and the city of Fountain has a population of 25,846 (USCB 2010). No municipalities are located within the Project area.

The Project lies in the U.S. Environmental Protection Agency Level III Ecoregion entitled the Southwestern Tablelands. Specifically, the Project lies within the Piedmont Plains and Tablelands Level IV subsection, located east of the foothills of the Rocky Mountain Range in eastern Colorado. The Level IV Ecoregion is defined by its irregular and dissected plains. Natural vegetation is shortgrass prairie (Chapman et al 2006). The Level IV subsection extends south to New Mexico and east to Kansas. This Ecoregion contains mostly shortgrass prairie rangeland with scattered areas of dry and irrigated cropland (Chapman et al 2006).

Land cover data for the Project area was obtained from the United States Geological Survey (USGS), National Land Cover Database (NLCD) (Fry et al. 2011). Results from these queries indicate a cover type primarily of grassland/herbaceous within and surrounding the Project area. This correlates to shortgrass

prairie as identified in the U.S. EPA Level IV Ecoregion associated with the Project site location. Other cover types represented within the Project area were identified as low, medium, and high density developed areas, developed open space (roads), and a small area of scrub/shrub land cover. The resolution of the dataset (one pixel = 30 meters X 30 meters) indicates that the scrub/shrub area is approximately 1 acre (it is represented by 5 pixels). The shrub/scrub land cover category is defined as dominated by shrubs less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions (Fry et al. 2011).

There is potential for habitat suitable for endangered species within the Project. This statement is based primarily on NLCD Land Cover data that indicates the dominant land cover type within the Project area as grassland/herbaceous (shortgrass prairie). The Project should be surveyed to identify the presence/absence of the required habitat that could support threatened or endangered species. The species most likely to be affected by Project development include terrestrial flora and fauna, and grassland birds. The absence of species specific habitat would be sufficient to determine that there is low likelihood of these T&E species.

Should this Project proceed, an on-site habitat assessment is recommended in order to ground-truth land uses and habitats at the Project.

2. Threatened and Endangered (T&E) Species Assessment

A review of federal and state Threatened and Endangered (T&E) Species was conducted for the Project. The U.S. Fish and Wildlife Service (USFWS) maintains a county list of documented occurrences/locations of federal trust resources, which includes species protected under the Endangered Species Act (ESA). This list was obtained for El Paso County, Colorado. State T&E species in Colorado are not available by a county level query. In-lieu of a county level query, the entire state T&E list was downloaded and researched for species probable occurrence within the Project vicinity. The determination of probable occurrence was based on reading the life history requirements of state listed species and comparing it to potential habitats in the vicinity of the Project. The determination also noted the current range of the species within the state and compared it to the Project location. In summary, federal species having the potential to occur in the county, and state species having the potential to occur within the vicinity of the Project area are listed in the table below. Inclusion of these species on the following table does not confirm that the species is present within the Project area.

Common Name	**Scientific Name**	**State Status**	**Federal Status**
Mexican Spotted Owl	*Strix occidentalis lucida*	Endangered	Threatened
Arkansas Darter	*Etheostoma cragini*	Threatened	Candidate Threatened
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	Threatened	Threatened

Common Name	Scientific Name	State Status	Federal Status
Ute Ladies'-Tresses	*Spiranthes diluvialis*	None	Threatened
Pawnee Montane Skipper	*Hesperia leonardus montana*	None	Threatened
Black-Footed Ferret	*Mustela nigripes*	Endangered	EXP*
North American Wolverine	*Gulo gulo luscus*	Endangered	Proposed Threatened
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Threatened	Threatened
Least Tern	*Sterna antillarum*	Endangered	Endangered
Piping Plover	*Charadrius melodus*	Threatened	Threatened
Whooping Crane	*Grus americana*	Endangered	Endangered
Pallid Sturgeon	*Scaphirhynchus albus*	None	Endangered
Plains Sharp-Tailed Grouse	*Tympanuchus phasianellus jamesii*	Endangered	None
Burrowing Owl	*Athene cunicularia*	Threatened	None
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*	Threatened	Proposed Threatened
River Otter	*Lontra canadensis*	Threatened	None

Sources: UFWS 2013 and CPW 2013

*EXP - experimental population. A taxon listed as experimental (either essential or nonessential). Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.

The Project area may provide habitat for some of the species that are included on the state and federal lists. The lack of significant permanent surface water habitats in the Project area makes it unlikely that obligate aquatic species would occur within the Project area. Sand Creek is a noted blue-line stream immediately south of the Project area. This may be an ephemeral streambed as aerial photography shows little to no riparian vegetation associated with this feature. Fountain Creek occurs several miles east of the Project area. Aerial photography shows a well-developed riparian vegetation zone along this feature. Species listed above that may utilize Fountain Creek and its associated riparian habitat may include Preble's Meadow Jumping Mouse, Least Tern, Piping Plover, Whooping Crane, Pawnee Montane Skipper, River Otter, and Ute-ladies'-tresses. Species listed above that may utilize shortgrass prairie

within the Project area or vicinity include Plains Sharp-tailed Grouse, Burrowing Owl, and Lesser Prairie-Chicken.

The plant species included in the table above have a potential to occur in the project area based on a desktop analysis alone. However, federally-listed plant species are not protected by the Endangered Species Act (ESA) except if they occur on federal lands, or if the proposed Project is considered a federal action or has a federal nexus under NEPA.

Based on the T&E portion of the desktop review for the Project area, critical flaws that would prevent construction of a solar facility were not identified. If the Project moves forward, consultation with the U.S. Fish and Wildlife Service and Colorado Parks and Wildlife is advisable to determine with greater certainty whether appropriate habitat exists within the Project area for any of the above-mentioned species, or others that were not identified for inclusion on the list. Depending on the outcome of consultation, biological surveys may need to be conducted to ensure that T&E species will not be impacted by the Project. If surveys indicate federally protected T&E species are present at the Project, the Project developer may choose to either avoid impacts or seek an incidental take permit from the USFWS to authorize “take” of the protected species under the ESA.

3. State Areas of Conservation Concern or Significance

A search of publicly available maps and GIS data layers was performed in order to identify federal, state, and local lands (wildlife preserves or other protected lands) in the area. No such designated lands are located within the Project area; however, portions of one assumed federal owned land parcel (United States), and one unknown ownership parcel (Public Service) are enveloped by the Project boundary and appear excluded from participating land parcels.

Pikes Peak International Raceway (USA Landmark) occurs approximately 1.5 miles north of the Project boundary. A cemetery labeled as the Wilson Cemetery occurs approximately 1.5 miles northeast of the Project boundary. Wigwam School occurs approximately 1.5 miles southeast of the Project boundary. Fort Carson Military Reservation occurs approximately 1 mile west of the Project boundary.

A database search was performed to identify designated National Register of Historic Places (NRHP) resources within 5 miles of the Project area in El Paso and Pueblo counties. A total of 87 designated NRHP properties in El Paso County and 64 NRHP properties in Pueblo County were identified by the database query (NRHP 2013). Of these properties, none were located within the proposed Project installation area, or within 5 miles of the Project. The nearest property to the Project is located 10 miles to the north within the city of Fountain, Colorado. The Project is not expected to impact any historical properties during construction or operation.

4. State Environmental and Wildlife Laws

Colorado Revised Statutes (C.R.S.) Article 2 - *Nongame and Endangered Species Conservation* (C.R.S. 33-2-105, revised 2013) comprises the state's endangered species provisions. The term "threatened species" means any species or subspecies of wildlife which, as determined by the commission, is not in

immediate jeopardy of extinction but is vulnerable because it exists in such small numbers or is so extremely restricted throughout all or a significant portion of its range that it may become endangered (C.R.S. 33-1-102). The term "endangered species" means any species or subspecies of native wildlife whose prospects for survival or recruitment within this state are in jeopardy as determined by the commission (C.R.S. 33-1-102).

This statute empowers the State of Colorado to list species and also outlines the criteria for listing. Under this statute it is unlawful for any person to take, possess, transport, export, process, sell or offer for sale, or ship and for any common or contract carrier to knowingly transport or receive for shipment any species or subspecies of wildlife appearing on the list of wildlife indigenous to this state determined to be threatened or endangered within the state (C.R.S. 33-2-105). It should be noted that the State of Colorado has not "adopted" federal ESA listed species, but for the most part the commission lists most of the species that occur on the USFWS list. Based on a preliminary review of C.R.S. 33-2-105, it appears that plants and insects do not receive state statutory protection in Colorado. Additionally, the prohibitions on state T&E species are fundamentally different from prohibitions on federal ESA listed species. According to C.R.S. 33-1-102, the term "take" means to acquire possession of wildlife; but such term shall not include the accidental wounding or killing of wildlife by a motor vehicle, vessel, or train.

5. Conclusions and Next Steps

This desktop study of the Midway Solar project in El Paso County, Colorado was conducted to ensure compliance with state and federal regulations including, but not limited to, the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Cultural and Historic Regulations, and various local zoning regulations.

Based on data obtained in this analysis for the proposed Solar PV Project site in El Paso County, Colorado, no critical flaws that would prevent construction of a solar energy facility were identified. However, potential concerns were identified that need consideration when siting project facilities and infrastructure. The following issues may warrant further study:

- A habitat assessment to determine the presence/absence of required habitat that could support any of the T&E species identified in this report is recommended. The absence of species specific habitat would be sufficient to determine that there is low likelihood of those T&E species.

Additionally, an ASTM Phase I Environmental Site Assessment should be conducted for the Project.

6. References

Colorado Parks and Wildlife (CPW). 2011. Threatened and Endangered List (last updated 12/21/2011). Available on-line at: http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/Pages/ListOfThreatenedAndEndangeredSpecies.aspx. Accessed November 2013.

Fry, J., G. Xian, S. Jin, J. Dewitz, C. Homer, L. Yang, C. Barnes, N. Herold, and J. Wickham. 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, *PE&RS*, Vol. 77(9):858-864.

National Park Service. 2012. List of National Historic Landmarks. Available on line at: http://www.nps.gov/nhl/designations/listsofnhls.htm. Accessed October 2013.

National Register of Historic Places (NRHP), National Park Service. 2013. National Register of Historic Places Download Center. Available on line at: http://nrhp.focus.nps.gov/natreg/docs/Download.html. Accessed October 2013.

United States Census Bureau (USCB). 2010. 2010 Census Data. Available on line at: http://quickfacts.census.gov/qfd/states/08000.html. Accessed November 2013.

U.S. Fish and Wildlife Service. 2013. County query for federal threatened and endangered species that may be affected by project. Available on-line at: http://www.fws.gov/mountain-prairie/co.HTML. Accessed November 2013.

TRADE WIND ENERGY®

Engineering Feasibility Report (EFR)
Attachment B

Front Range - Midway Solar Project
El Paso County, CO

A trusted partner with utilities, landowners and local communities.

Table of Contents

Summary

Tradewind's in-house engineering staff conducted a desktop review of this potential utility scale solar energy generation site utilizing information culled from public resources including the USDA's Soil Web Server, the Soil Survey of El Paso County, the El Paso County website, as well as other sources.

The purpose of this feasibility report is to review the site's suitability for use as a solar energy project and seek out any potential risks not immediately identifiable from other desktop efforts and/or site visits. No site visit has been undertaken by Tradewind's Engineering staff to date, nor has there been any consultation with any other reputable parties to validate any assumptions or statements herein. However in reviewing the site, some items worth consideration have surfaced that may impact suitability and/or contribute to additional costs:

- Water availability may be very limited. The water rights are owned by the land owner of the project parcels. Fountain Valley Power Plant may be expanding and will be competing for available water.
- Existence of an active landfill nearby could increase cleaning frequency and water availability is limited and may be relatively expensive.
- Some unsuitable slopes in the northern part of the project.
- Two easements consisting of underground utilities will require encroachment and crossing agreement. Additionally a county road ROW will need crossing agreements.
- Potential for rezoning through the County of El Paso for use as a solar project within rural residential districts.

The following captures the detailed review of the site from an engineering perspective.

A. Available Transmission Capacity (ATC)

According to the final interconnection facility study GI-2007-12 rev 1, the PSCO 230kV system that connects to the Midway substation had 250MW of injection capacity available. However, a Clipper wind project will be taking up 200MW of that capacity. The total remaining capacity is unknown at this point in time.
Black & Veatch will be supplying a study of the available transmission capacity at the Midway substation in the near future.

B. Presumed Point of Interconnection

A substation of substantial size with voltages of 69, 115, and 230kV is conveniently located adjacent to the southwestern portion of the project site. There appears to be expansion underway to the east for accommodation of 345kV as part of the Midway-Waterton 345kV Transmission Project. Burns & McDonnell appears to be Xcel's EPC contractor for some portion of this work.

Fountain Valley Power, LLC (Southwest Generation) runs a power plant adjacent to the Midway Substation. The Fountain Valley Facility is a 240 MW simple cycle, natural gas-fired, peaking facility with

a PPA with PSCo. Adjacent to the Fountain Valley Facility is 145 vacant acres of land for future development.

C. Existing Conditions - Terrain/Slope

The dominant use is idle land with a total acreage is 490 of which 319 acres are located on the south side of Peacepipe Heights Rd. An adjacent facility appears to have dry storm-water ponds for runoff and/or rate control which may be a requirement of the state. If this is true, plans for similar such facilities should be anticipated for use over the life of the project. The entire project is void of trees and/or significant vegetative cover. Looking at the landowner provided ALTA product, there appear to be two easements through the project area. One easement owned by Arkansas Valley G&T Inc. is 100 feet wide and presumably contains a gas line to the Fountain Valley Power Plant. This easement runs east-west through the center of the project area. The other easement is owned by AT&T and is approximately 17 feet wide and contains an underground utility. This AT&T easement run diagonally through the southern part of the parcel. TWE will need encroachment and crossing agreements with Arkansas Valley G&T and AT&T. Additionally the existing county road ROW splits the project area and TWE will need ROW crossing agreements with the county.

This parcel is comprised mostly of slopes under 3%, however the project area located north of the county road has some unsuitable areas with slopes greater than 12% facing north. The majority of the project's slope faces east which is not optimal but due to the minimal slope it will only have a small impact on the design. A landfill (Midway Landfill) abuts the southerly edge which may be problematic from an O&M perspective as cleaning the panels may have to be performed on a more frequent basis given the fine grained nature of soils in the area. It appears the El Paso County has two (if not more) landfills and disposal ponds for Coal Ash which has environmental risks, but unlikely to affect the suitability of the site for a solar project. In addition to the northern boundary being encumbered by steep slopes, the site appears to have unfavorable back slope towards the north which will require more spacing between rows and unfavorable tilt for single axis tracking.

D. Available Utilities

No calls have been placed to any utility company operating in the area nor has any research been performed in regards to the available capacity on their infrastructure.

1. Water

The land owner of the project parcel owns the all the remaining water rights in the area. TWE will have to secure a very limited water supply to wash panels before they are sold. Fountain Valley Power, LLC is proposing an expansion of their facility which will require additional water and they may be acquiring much of the remaining water available.

2. Power

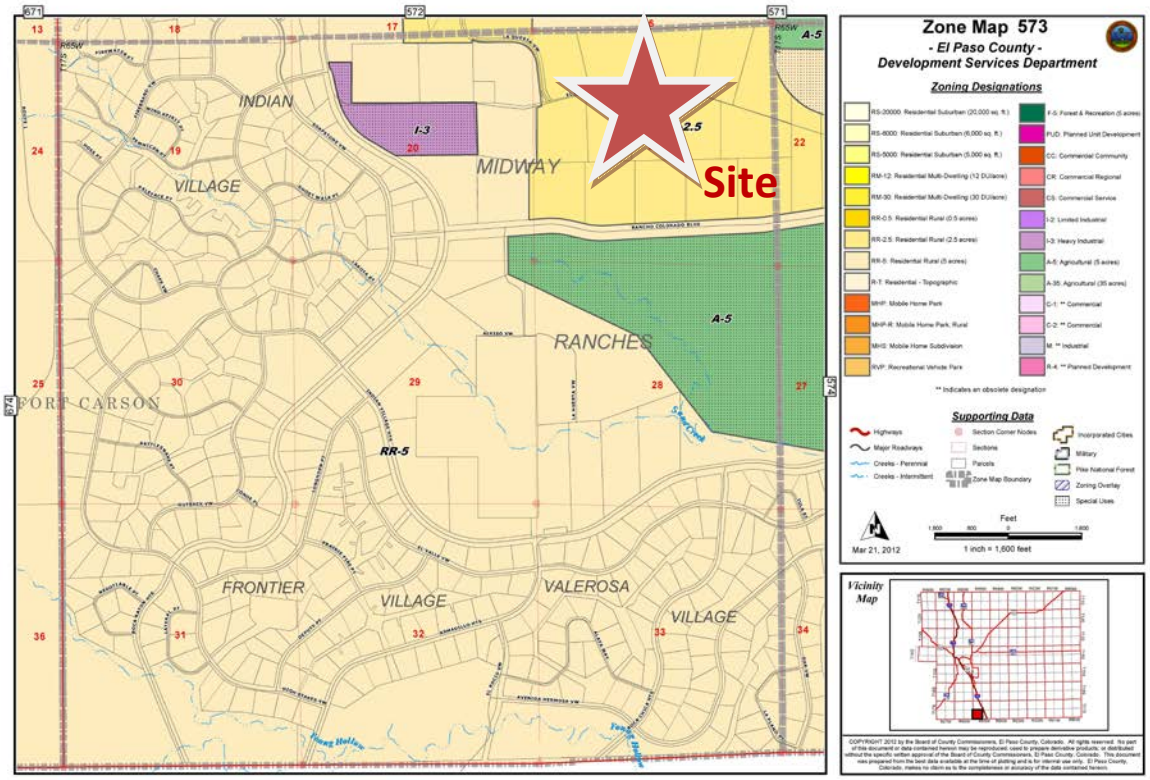
The City of Fountain is serviced by **MEAN (M**unicipal **E**nergy **A**gency of **N**ebraska). MEAN is the wholesale electricity supply organization of the Nebraska Municipal Power Pool (NMPP). A commercial Load Data Form may need to be completed and submitted to the City to determine serviceability to a project. An application for Electric Line extensions may also be necessary.

3. Other

Electric (Rural El Paso County):	Mountain View Electric	(719) 495-2283
Natural Gas (Fountain/Widefield):	Black Hills Energy	(800) 303-0752
Natural Gas (Security):	Colorado Springs Utilities	(719) 448-4800
Telephone:	Qwest	(800) 244-1111
Wastewater (Fountain):	Fountain Sanitation District	(719) 382-5303
Water/Wastewater (Security):	Security Water and Sanitation District	(719) 392-3475
Water/Wastewater (Widefield):	Widefield Water and Sanitation District	(719) 390-7111

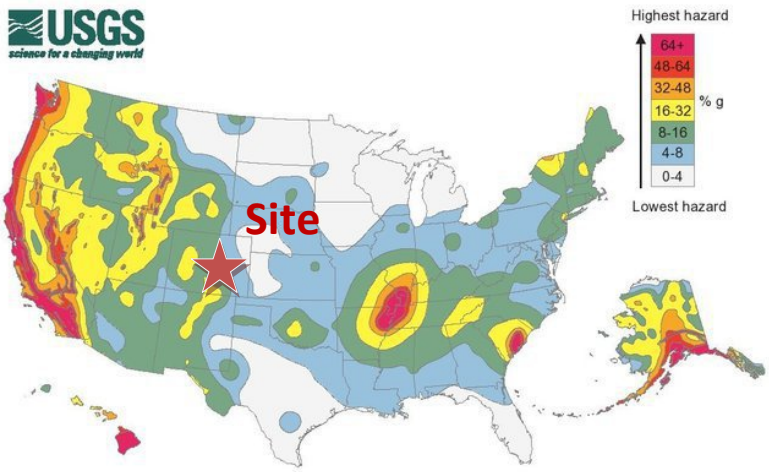
E. Zoning

El Paso County appears to have a sophisticated planning and zoning organization. The project is predominantly located in zones RR-2.5 which represents Residential Rural districts of 2.5 lots minimum. “Solar Farm” is not one of the permitted uses. The only zones that permits “Solar Farm” is A-35, I-3, and M.



A side note, although the City of Fountain does not currently have a Dark-Sky ordinance, they are members of The International Dark-Sky Association. All street lights installed in subdivisions and along arterial streets are Dark-Sky compliant.

F. Seismic Risk

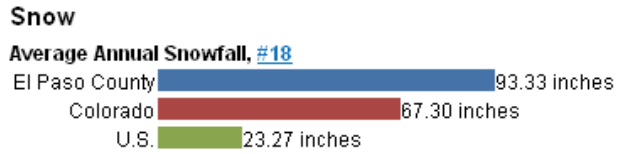


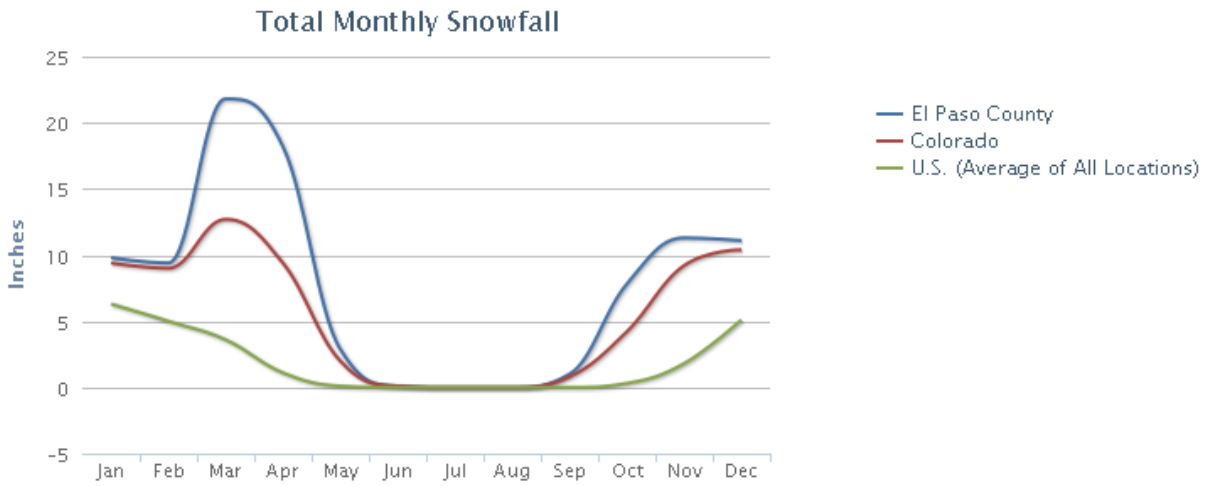
The project is located in Seismic Zone 1 which is an area of very low risk for seismic activity. US Geology Survey National Seismic Hazard Map —These maps are based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from earthquake sources. Colors on this particular map show the levels of horizontal shaking that have a 2 % chance of being exceeded in a 50 year period. Shaking is express as a percentage of g (g is the acceleration of a falling object due to gravity). Areas in red have a much higher likelihood than areas of white to be exceeded, for example.

G. Snow Loads

Snow Loads are determined by the Pikes Peak Regional Building Department. They can be contacted at 327-2880 or at their offices at 2880 International Circle. It is unclear if this type of project would have to be reviewed by the Building Department. El Paso County's average annual snowfall is ranked 18th highest among 64 climate monitoring stations located in Colorado. Assuming new snowfall has an average density of 10%, (i.e., 1 inch of snow water or rainfall = 10 inches of new snowfall), a cubic foot of snow would weigh 62.418lbs x 10% = 6.24 pounds per foot in a square foot column. Therefore, the maximum ground snow loading (without factoring for wind, shape, ice, etc…) should be ~48Lbs per square foot for this site.

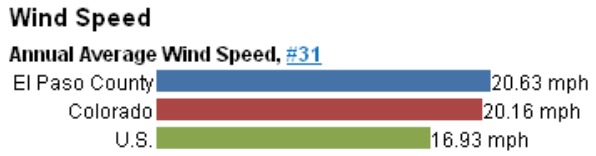
The following is taken from http://www.usa.com/el-paso-county-co-weather.htm:

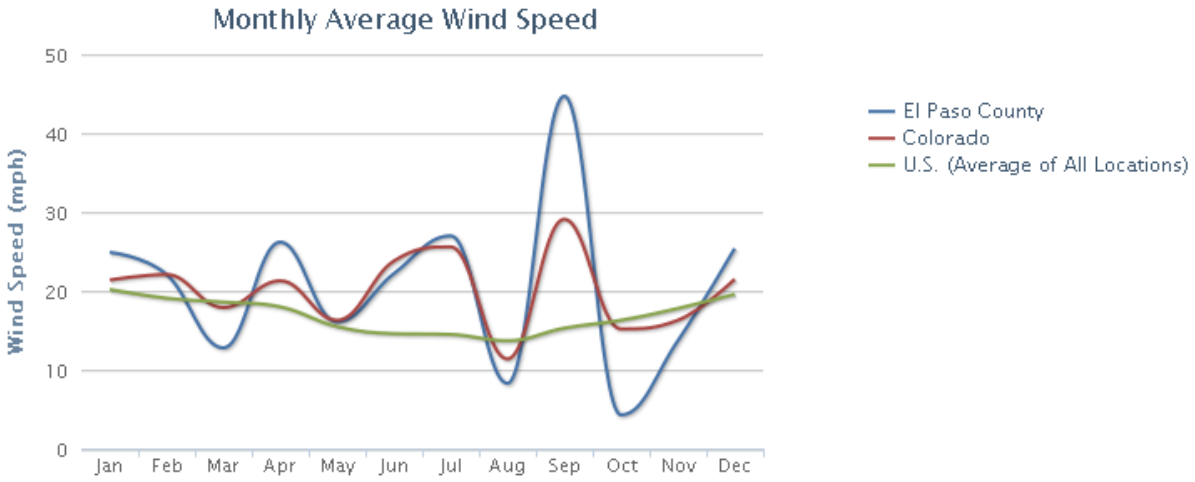




H. Wind loading

Normal meteorological events appear to not impact the site's infrastructure significantly. The following is taken from http://www.usa.com/el-paso-county-co-weather.htm:





* The temperature, snow fall, and precipitation information on this page were calculated from the historical data of 18,000+ U.S weather stations for the period of time from 1980 to 2010. The humidity and wind speed information were calculated from data from 15,000 worldwide stations for the period of time from 1980 to 2010.

I. Flood Hazard

There does not appear to be any flood risk to this site.

J. Subsurface Soil Characteristics

The predominant soil types are given as Kim Loam, Schamber-Razor Complex, Wilid Silt Loam, and Wiley Silt Loam. Loam is soil composed of sand, silt, and clay in relatively even concentration (about 40-40-20% concentration respectively). Loam soils generally contain more nutrients and moisture and humus than sandy soils, have better drainage and infiltration of water and air than silty soils, and are easier to till than clay soils. The different types of loam soils each have slightly different characteristics, with some draining liquids more efficiently than others.

Loam is considered ideal for gardening and agricultural uses because it retains nutrients well and retains water while still allowing excess water to drain away. A soil dominated by one or two of the three particle size groups can behave like loam if it has a strong granular structure, promoted by a high content of organic matter. However, a soil that meets the textural definition of loam can lose its characteristic desirable qualities when it is compacted, depleted of organic matter, or has clay dispersed throughout its fine-earth fraction.

The following are additional soil considerations given as it relates to the site's potential use as a solar facility:

1. Shallow Excavations

The Project's suitability for development in so far as shallow excavations are concerned indicates that it is somewhat limited due to unstable excavation walls in all the upland areas. Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

2. Gravel Sources

The Project's suitability to self-generate gravel material is rated mostly "Poor." Gravel consists of natural aggregates (2 to 75 millimeters in diameter) suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains gravel, the soil is considered a likely source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 6 feet. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be gravel.

3. Road-fill Sources

The Project's suitability to self-generate structural fill material for use in road or pad material is mostly "poor" or "fair" with approximately 20% actually rated as "good." Roadfill is soil material that is excavated in one place and used in road embankments in another place. The soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments. The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The soils are rated "good," "fair," or "poor" as potential sources of roadfill. The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential). Normal compaction, minor processing, and other standard construction practices are assumed.

4. Vegetative Cover

The Project's suitability for establishing and maintaining vegetative cover appears to range between "fair" and "good" due to the topsoil on site. Areas deemed "fair" possess too much clay, carbonate, and sodium content. Topsoil is used to cover an area so that vegetation can be established and maintained. The surface layer of most soils is generally preferred for topsoil because of its content of organic matter. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. Normal compaction, minor processing, and other standard construction practices are assumed.

5. Septic Tank Absorption Fields

The Project's suitability for use of an on-site septic system to accommodate an operations facility appears to be somewhat- to very limited due to slow water movement and filtering capacity of the soils. Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

6. Susceptibility to Corrosion

The USDA Soil Survey indicates that most of the flat upland areas may exhibit high corrosive properties that affect steel. Concrete corrosivity does not appear to be a risk for this project.

7. Depth to bedrock

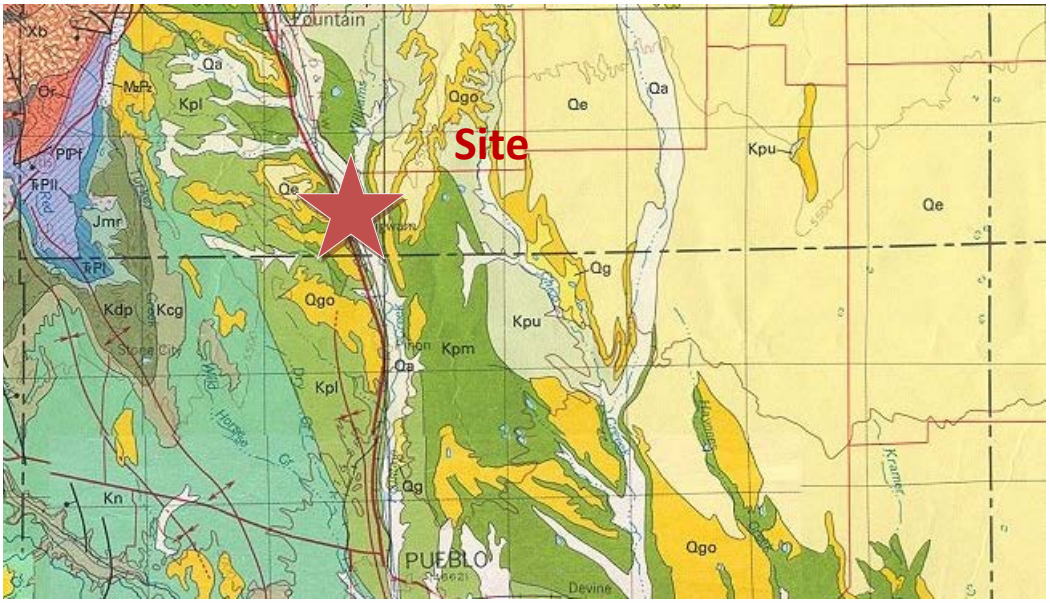
The site doesn't appear to have any significant bedrock concerns in the upper 2m of soil depth. Areas where indurated soils or rock exist appear to be in eroded drainage ways that won't be contenders for development.

K. Geology

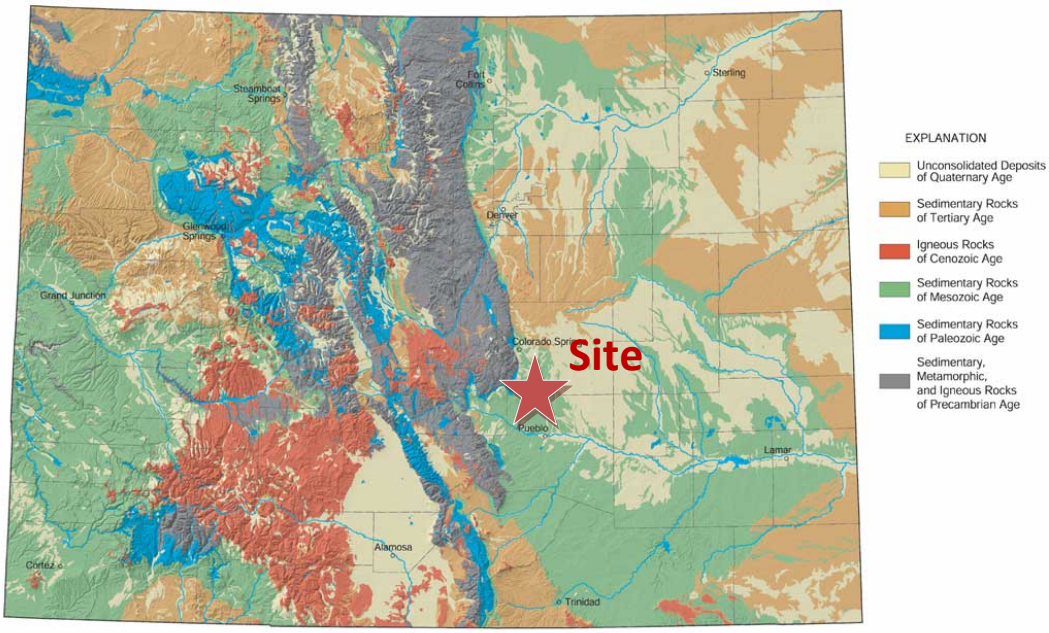
Although seven physiographic provinces are defined in Colorado, there are basically three topographic/geologic zones in the state. Topographically, the state is divided into Eastern Plains, Rocky Mountains, and Colorado Plateau. Geologically, the eastern plains and western plateau are composed of sedimentary rock whereas, the Rocky Mountain province is a complex assortment of igneous, metamorphic, and sedimentary rocks in approximate equal proportions (http://www.geospectra.net/fieldgeology/coloradorocks.htm).

The geology symbols around the site are as follows:

- Kpl - Lower shale member of Pierre Shale (Upper Cretaceous)
- Qe - Eolium (windblown clay, silt (loess), sand, and granules) (upper Holocene to Bull Lake Glaciation)
- Qgo – Quaternary alluviums and gravels.



Geology image taken from http://www.geospectra.net/fieldgeology/coloradorocks.htm:



L. Accessibility

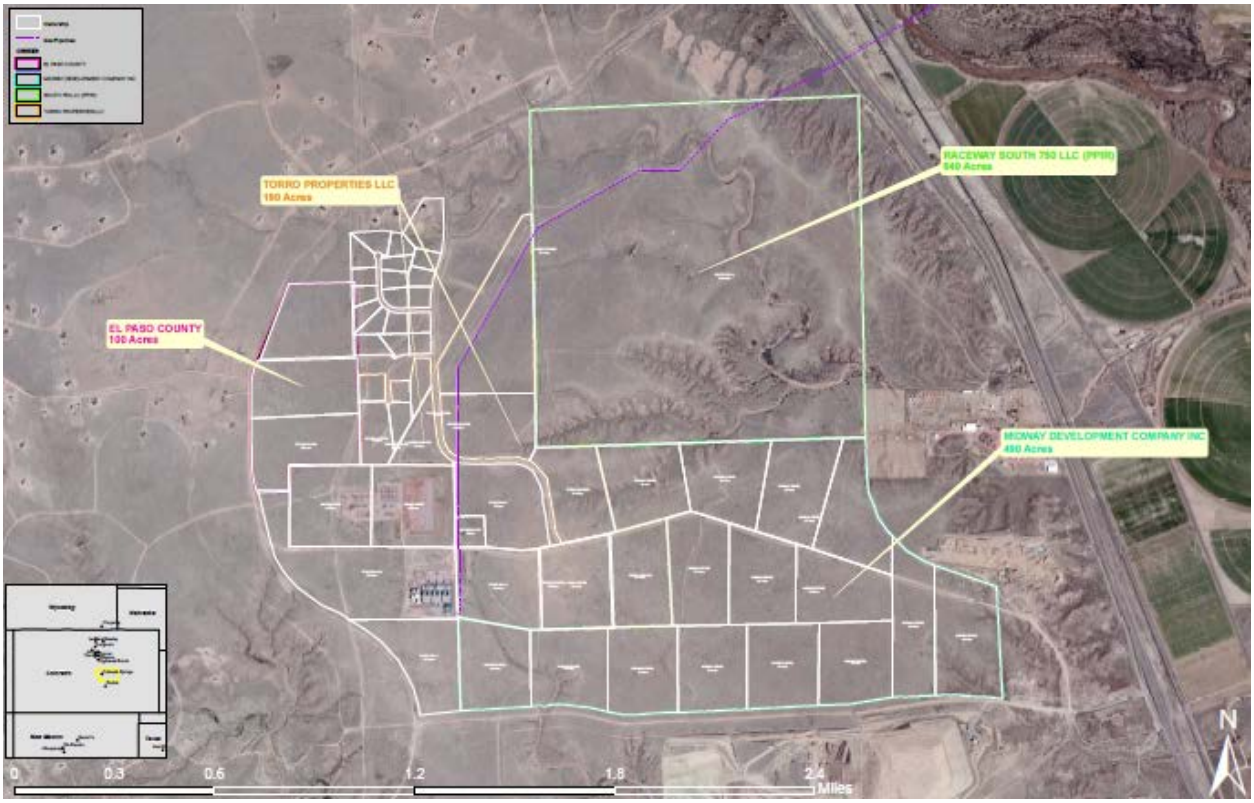
Accessibility appears to be very good with a few roads in or near the project that access off of HWY 25 on the eastern limits of the project area. Although it appears that most of the internal roads are gravel or sand, no information on road conditions or material has been collected to date.

M. Cultural and Environmental Resources

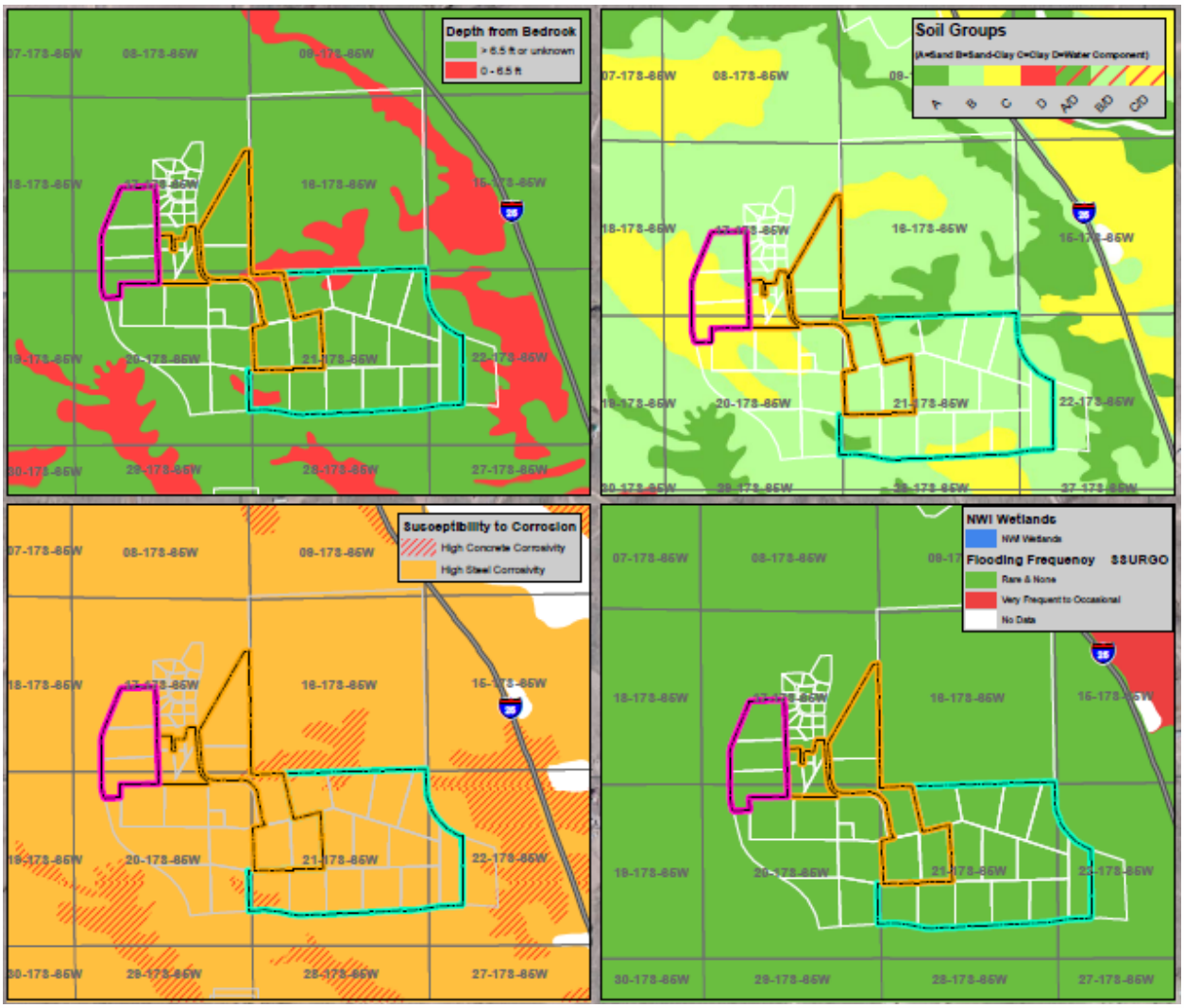
No information relative to cultural and environmental resources has surfaced during basic desktop research for this project.

N. Maps/Exhibits

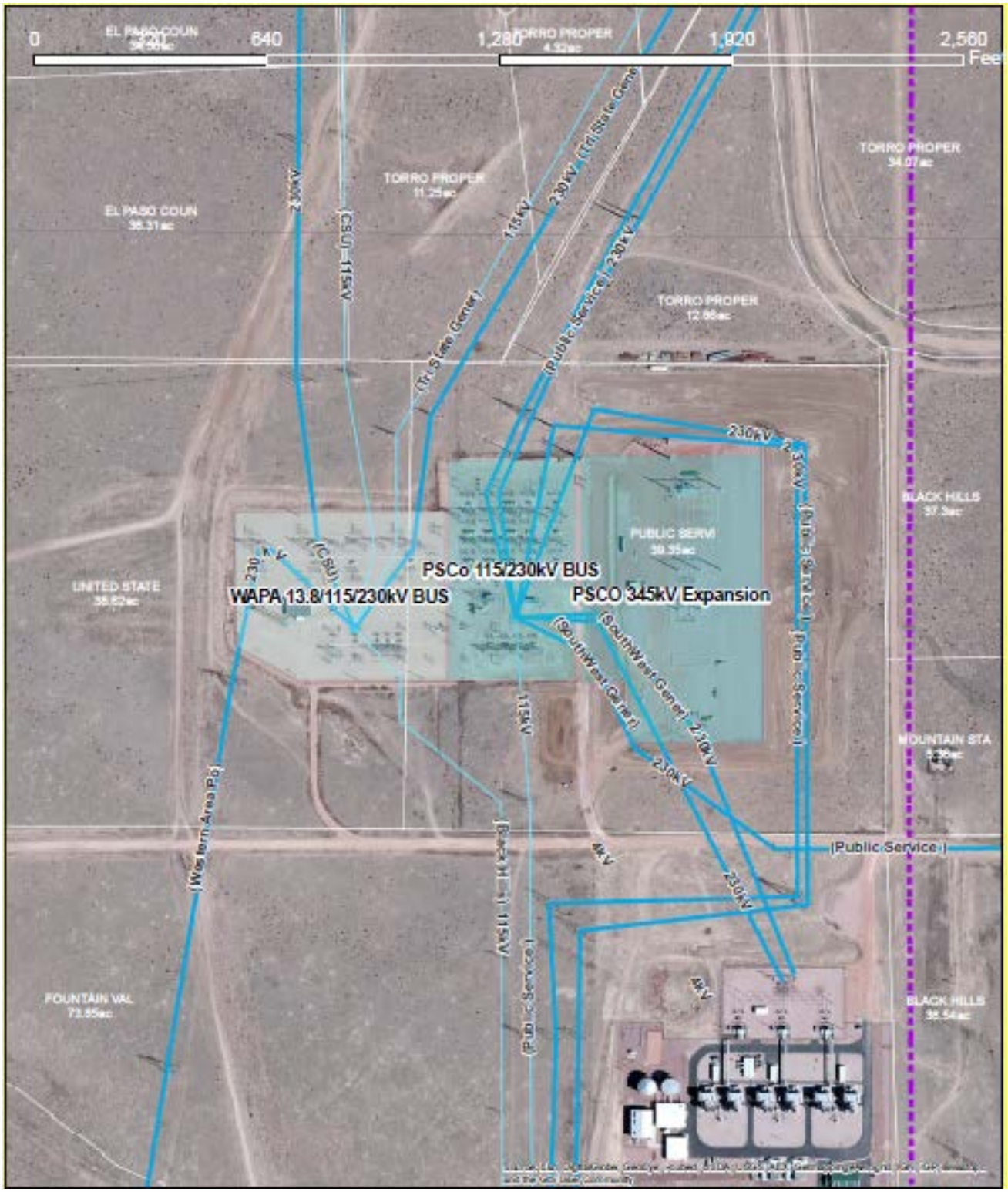
1. Site Map



2. Soil 4-panel Map



3. Midway Substation



TRADE WIND ENERGY®

Maps
Attachment C

Front Range - Midway Solar Project
El Paso County, CO

A trusted partner with utilities, landowners and local communities.

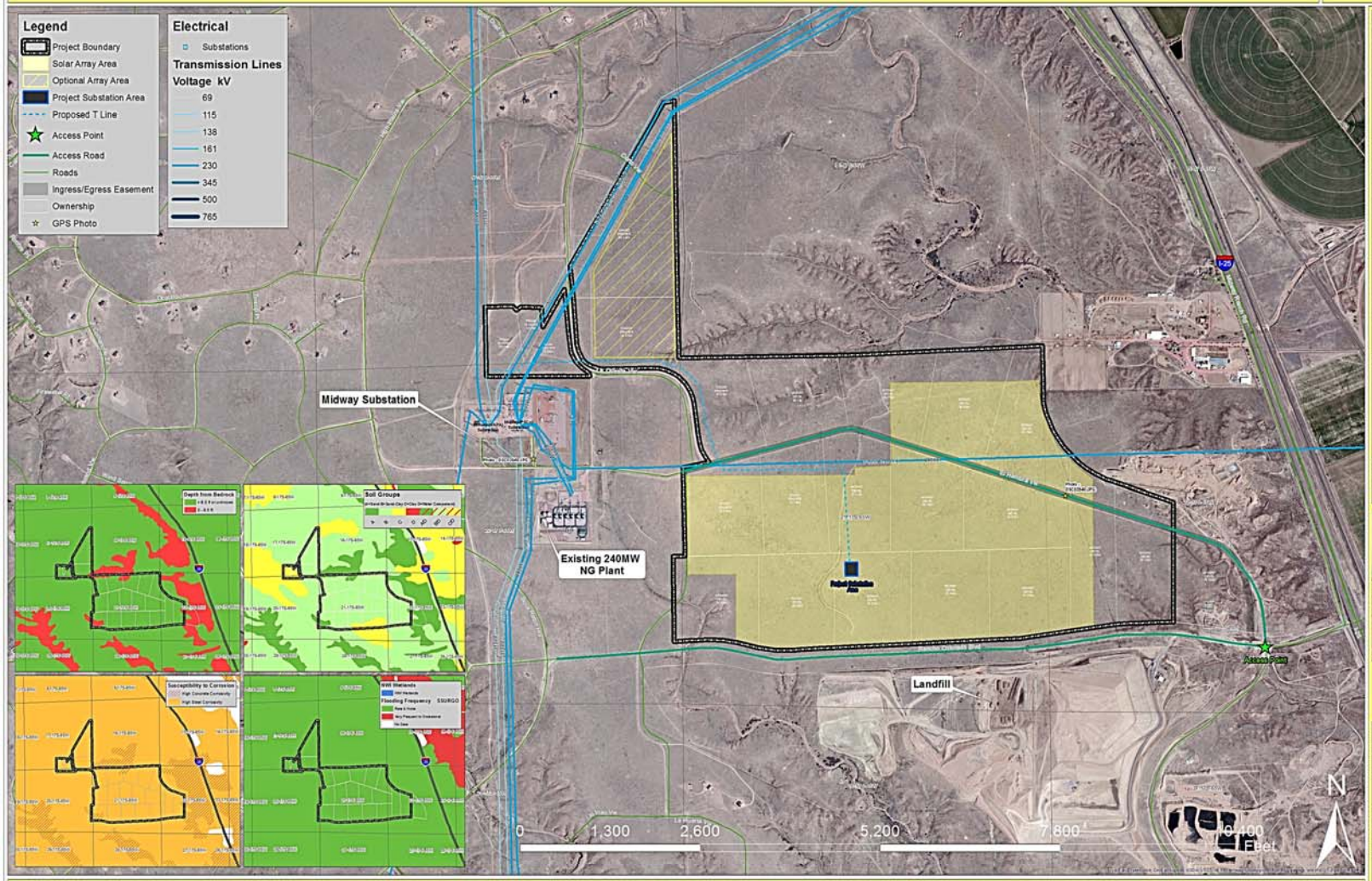
Front Range - Midway Solar Project

TRADEWIND ENERGY

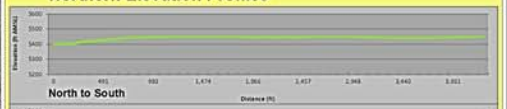
Legend
- Project Boundary
- Solar Array Area
- Optional Array Area
- Project Substation Area
- Proposed T Line
- Access Point
- Access Road
- Roads
- Ingress/Egress Easement
- Ownership
- GPS Photo

Electrical
- Substations

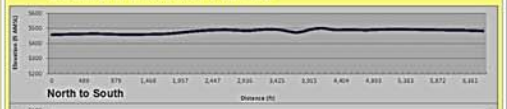
Transmission Lines
Voltage kV
- 69
- 115
- 138
- 161
- 230
- 345
- 500
- 765

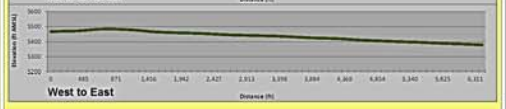


Northern Elevation Profiles

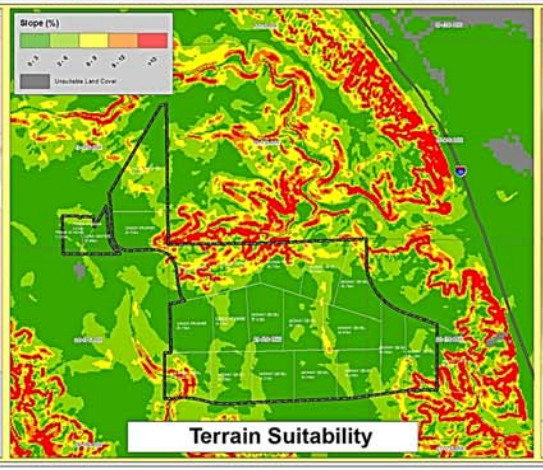


Southern Elevation Profiles

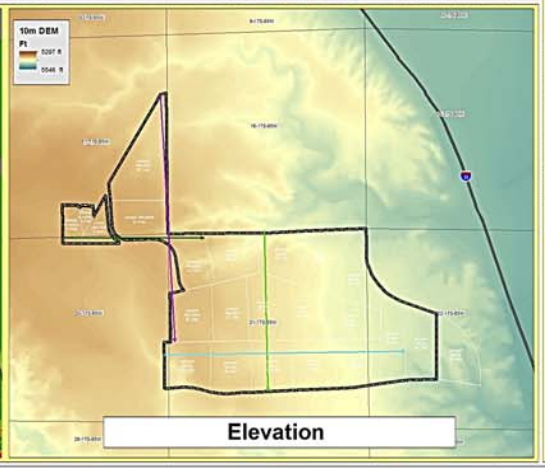




Overview



Terrain Suitability



Elevation

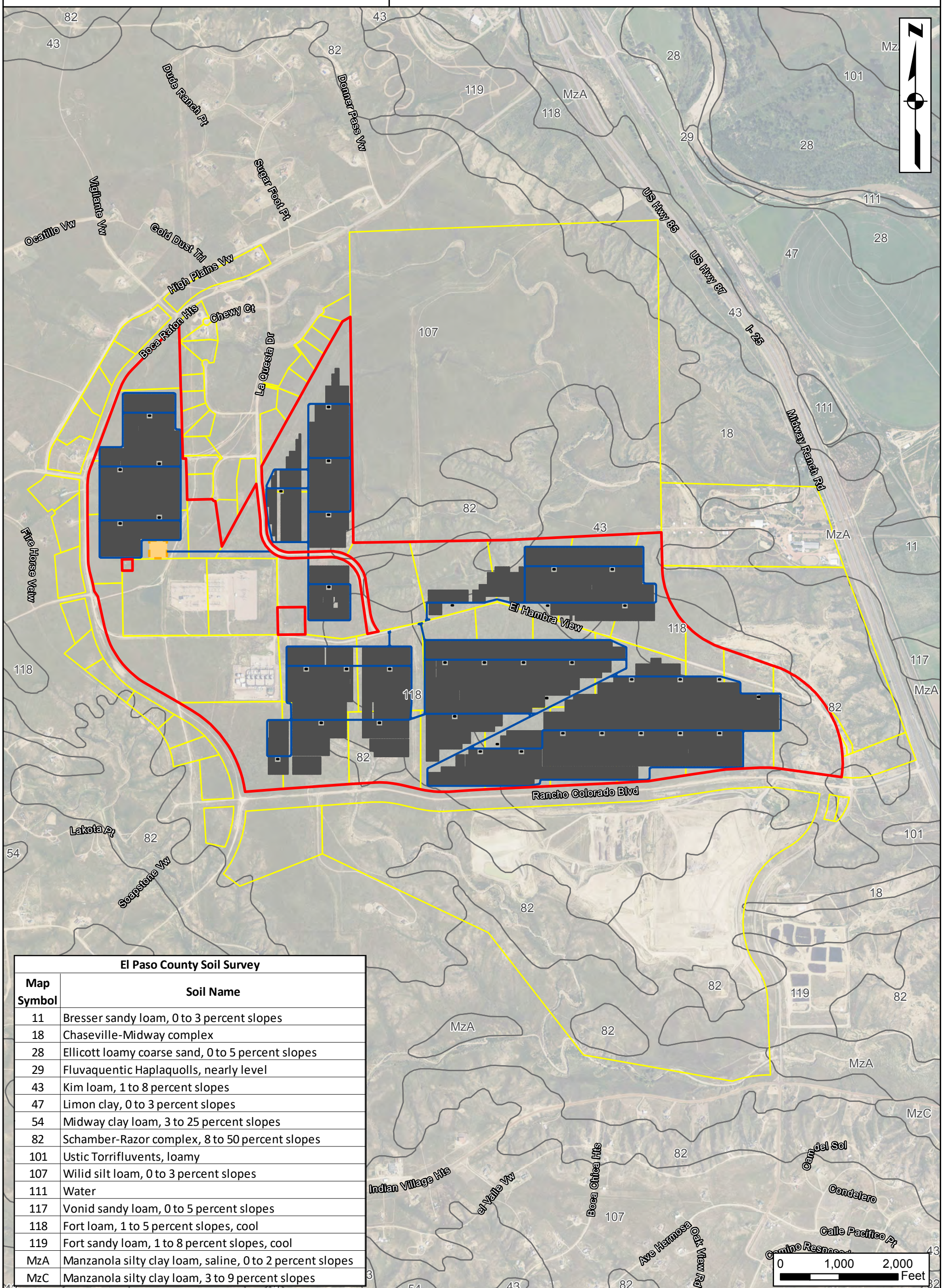
Attachment A2

CORE CONSULTANTS
CIVIL ENGINEERING
DEVELOPMENT CONSULTING
NATURAL RESOURCES CONSULTING
LAND SURVEYING
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80120

Front Range Midway Solar Project

County Soil Survey Map

El Paso County, Colorado



El Paso County Soil Survey	
Map Symbol	Soil Name
11	Bresser sandy loam, 0 to 3 percent slopes
18	Chaseville-Midway complex
28	Ellicott loamy coarse sand, 0 to 5 percent slopes
29	Fluvaquentic Haplaquolls, nearly level
43	Kim loam, 1 to 8 percent slopes
47	Limon clay, 0 to 3 percent slopes
54	Midway clay loam, 3 to 25 percent slopes
82	Schamber-Razor complex, 8 to 50 percent slopes
101	Ustic Torrifluvents, loamy
107	Wilid silt loam, 0 to 3 percent slopes
111	Water
117	Vonid sandy loam, 0 to 5 percent slopes
118	Fort loam, 1 to 5 percent slopes, cool
119	Fort sandy loam, 1 to 8 percent slopes, cool
MzA	Manzanola silty clay loam, saline, 0 to 2 percent slopes
MzC	Manzanola silty clay loam, 3 to 9 percent slopes

Proposed Project Boundary
Parcel Boundary
Preliminary Array
Proposed Road
Soil

Reference:
NRCS/USDA
Soil Survey SSURGO
Database

Date: 1/30/2018

Attachment A3

NEXTracker Design Bulletin

Snow Stowing

Systems built in areas with significant annual snowfall may require the installation of snow depth sensors and, in some cases, greater than normal above-grade pier height in order to ensure proper tracker operation. This document provides a brief overview of design considerations for such situations.

Design Recommendations based on Site Characteristics

Annual snow loads per ASCE 7-10 will determine which design elements are advised. NEXTracker's design services team will evaluate this for customers on a project-specific basis. General guidelines are shown in the table below; these may also vary in conjunction with wind loads.

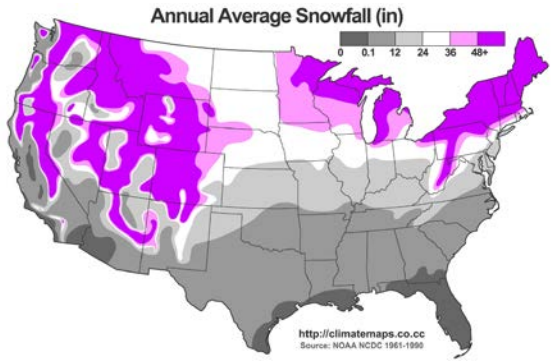


Figure 1 – US snowfall coverage map

Category	Annual Snow Load	Approx. Equivalent Snowfall*	NEXTracker Recommendation
A	< 30 psf	< 24"	No changes to standard design
B	30 – 45 psf	24" – 36"	Add snow sensor(s)
C	> 45 psf	> 36"	Add snow sensor(s) AND increase above-grade pier height

* based on 15 lb/cubic ft snow weight

Snow Depth Measuring Equipment & Operation

NEXTracker recommends (and provides) ultrasonic sensors for measuring snow depth. The device consists of an ultrasonic transducer mounted parallel to the ground. The sensor sends periodic ultrasonic pulses downward and measures the amount of time required for the reflected signal to return. This, when coupled with appropriate temperature adjustments provides an accurate reading of snow depth. The sensor head features automatic de-icing to maintain accuracy within 0.1%.

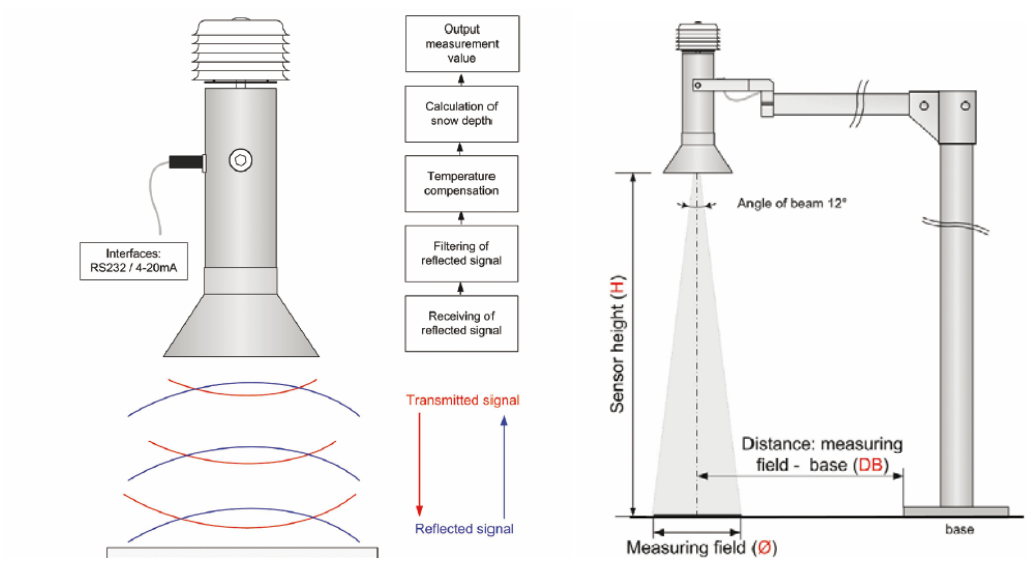


Figure 2 – Typical ultrasonic snow sensor operation

Snow Stowing Algorithm

Tracker behavior in response to snow detection is determined by a pre-programmed algorithm in the central tracker control units (NCUs). The algorithm is triggered when the snow sensor(s) detect a minimum snow accumulation rate. NEXTracker's default recommended algorithm is as follows:

Initial trigger point: 2.0" snow accumulation per hour

Accumulation Rate per Hour	Tracker Operation
0.0 to 0.5"	Resume normal operation
> 0.5" to 2.0"	Oscillating stow mode - tracker will rotate from 60° east to 60° west every two hours
> 2.0"	Fixed stow at 60° away from prevailing wind direction

Note: Wind stowing will supersede snow stowing commands. The tracker will stow to the horizontal position upon detection of 60mph or greater wind speed regardless of snow conditions.

Sensor Placement on Site

Snow accumulation in a given area is influenced by a large number of variables including wind patterns, terrain, ambient temperatures, shading, soil type, surface composition, etc. As such, care should be taken to select a measuring location that will be as representative as possible of the entire site. For larger projects or sites with significant terrain variations it may be advisable to install multiple sensors in different locations to ensure applicable readings.

NEXTracker recommends a vertical height of at least 3 meters from the ground to the sensor head. An area with at least one meter radius should be kept clear directly below the sensor. Actual height and clear ground area requirements depend on local conditions and will be determined based on detailed specifications from the sensor manufacturer.

Additional Measures for High Snowfall Locations

For locations with more than 36 inches (30cm) of snowfall per year NEXTracker recommends extending above-grade pier height. Snow shedding off the tracker may accumulate on top of existing snow on the ground, creating a possible obstruction to tracker movement. Increasing the pier height will provide additional clearance in this situation.

NEXTracker

6200 Paseo Padre Parkway
Fremont, CA 94555
+1 (510) 270-2500
www.nextracker.com

Attachment A4

Phase I Environmental Site Assessment

Front Range-Midway Solar Project, LLC Easement Property

9070 and 9310 Rancho Colorado Boulevard

Fountain, El Paso County, CO

February 5, 2014

Terracon Project No. 23147702

Prepared for:

TradeWind Energy, Inc.
Lenexa, Kansas

Prepared by:

Terracon Consultants, Inc.
Colorado Springs, Colorado

February 5, 2014

TradeWind Energy, Inc.
16105 West 113th Street, Suite 105
Lenexa, KS 66219

Attn: Ms. Jennifer Dean
E: jdean@tradewindenergy.com

Re: Phase I Environmental Site Assessment
Front Range-Midway Solar Project, LLC Easement Property
9070 and 9310 Rancho Colorado Boulevard
Fountain, El Paso County, Colorado
Project No. 23147702

Dear Ms. Dean:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Phase I Environmental Site Assessment (ESA) report for the above-referenced site. This assessment was performed in accordance with our proposal dated January 15, 2014.

We appreciate the opportunity to be of service to you on this project. In addition to Phase I services, our professionals provide geotechnical, environmental, construction materials, and facilities services on a wide variety of projects locally, regionally and nationally. For more detailed information on all of Terracon's services please visit our website at www.terracon.com. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Daniel K. Taylor
Project Manager

Lawrence R. Keefe
Principal | Office Manager

Attachments

TABLE OF CONTENTS

APPENDICES

TABLE OF CONTENTS (continued)

EXECUTIVE SUMMARY

This Phase I Environmental Site Assessment (ESA) was performed in accordance with our proposal dated January 15, 2014, and was conducted consistent with the procedures included in ASTM E 1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The ESA was conducted under the supervision or responsible charge of Daniel K. Taylor, Environmental Professional. Daniel K. Taylor performed the site reconnaissance on January 30, 2014.

Findings

A cursory summary of findings is provided below. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

Site Description and Use

The site is located at 9070 and 9310 Rancho Colorado Boulevard in Fountain, El Paso County, Colorado. The site is an approximate 70-acre tract of undeveloped land that includes an outdoor equipment storage yard in the southeast portion of the site. With the exception of the outdoor equipment storage yard, the site is currently unoccupied.

Historical Information

Based on a review of the historical information, the site appears to have consisted of undeveloped land from the early 1900s to the present, with the exception of an outdoor equipment storage yard, referred to as “The Bull Pen” located in the southeast portion of the site developed in the 1990s. RECs were identified in connection a reported gold mill tailings stockpile located in the Bull Pen area because it may contain concentrations of cyanide and other gold ore processing chemicals during the review of historical information.

Records Review

The regulatory review identified one SWF/LF, one AST, and two Mines facilities within the specified search radii. Based upon review of the regulatory report and inquiry results from the local agencies, RECs were not identified in connection with the site at this time.

Site Reconnaissance

The site reconnaissance was conducted on January 30, 2014. Several 55-gallon drums and 5-gallon buckets (some of which exhibited oily staining on the containers and surrounding soil), pipeline markers for water utilities, wind-blown trash and debris (including household trash, wood, plastic, glass, cardboard, broken concrete and asphalt, tires, household appliances furniture, and metal), several stockpiles of apparent building debris including asphalt roof shingles and gypsum board, a stockpile of gold mill tailings, a soil stockpile containing various

debris, several soil stockpiles of apparent native soil, and several reported percolation test holes were observed during the site reconnaissance. RECs were observed in connection with the drums and buckets with observed oily staining and lack of secondary containment; with the stockpiles of apparent building debris due to the potential presence of asbestos-containing materials; with the gold mill tailings due to the potential presence of cyanide and arsenic; and with the soil stockpile containing various debris due the unknown content and origin. RECs were not observed in connection with the remaining items identified during the site reconnaissance.

Adjoining Properties

Direction	Description
North	Midway Gravel Pit
East	Midway Gravel Pit and undeveloped land
South	Rancho Colorado Boulevard followed by Midway Landfill facility
West	Undeveloped land

Indications of RECs were not observed with the adjoining properties.

Conclusions

We have performed a Phase I ESA consistent with the procedures included in ASTM Practice E 1527-05 of the Front Range-Midway Solar Project, LLC Easement Property project located at 9070 and 9310 Rancho Colorado Boulevard, Fountain, El Paso County, Colorado, the site. Recognized environmental conditions were identified in connection with drums and buckets with observed oily staining and lack of secondary containment; with stockpiles of dumped building debris due to the potential presence of asbestos; with gold mill tailings due to the potential presence of cyanide and arsenic; and with a soil stockpile containing various debris due the unknown content and origin.

Recommendations

Based on the scope of services, limitations, and findings of this assessment, Terracon recommends additional investigation to evaluate and characterize the identified RECs.

PHASE I ENVIRONMENTAL SITE ASSESSMENT
FRONT RANGE-MIDWAY SOLAR PROJECT, LLC EASEMENT PROPERTY
9070 AND 9310 RANCHO COLORADO BOULEVARD
FOUNTAIN, EL PASO COUNTY, COLORADO

Terracon Project No. 23147702
February 5, 2014

1.0 INTRODUCTION

1.1 Site Description

Site Name	Front Range-Midway Solar Project, LLC Easement Property
Site Location/Address	9070 and 9310 Rancho Colorado Boulevard, Fountain, El Paso County, Colorado
Land Area	Approximately 70 acres comprising two contiguous parcels
Site Improvements	Undeveloped land with unimproved roads and an outdoor storage yard

The site location is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. A Site Diagram of the site and adjoining properties is included as Exhibit 2 of Appendix A. Acronyms and terms used in this report are described in Appendix B.

1.2 Scope of Services

This Phase I ESA was performed in accordance with our proposal no. P2314009 dated January 15, 2014, and was conducted consistent with the procedures included in ASTM E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The Department Of Homeland Security, Coast Guard 33 CFR Part 137 [Docket No. USCG-2006-25708] RIN 1625-AB09 The Landowner Defenses to Liability Under the Oil Pollution Act of 1990: Standards and Practices for Conducting All Appropriate Inquiries dated January 14, 2008, states the following: SUPPLEMENTARY INFORMATION: ASTM Standard E 1527-05 (Page 2148) “ASTM International (ASTM) E 1527-05, ``Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,'' is the current voluntary industry standard that defines good commercial and customary practice in the United States for conducting an environmental site assessment of a parcel of commercial real estate with respect to oil under OPA 90 and hazardous substances under CERCLA. The 2004 Act, at 33 U.S.C. 2703 (d)(4)(D)(ii), refers to ASTM E 1527-97, which is no longer available from ASTM and has been replaced by ASTM E 1527-05 and subsequently ASTM E 1527-13. Both the EPA and the Coast Guard agree that the new ASTM E 1527-13 is the active industry

standard and is consistent with Congressional intent. Persons conducting all appropriate inquiries are permitted to use the procedures included in the ASTM E 1527-13 standard to comply with this rule, but use of the ASTM is not mandatory." Therefore, since this Phase I ESA was conducted in accordance with procedures in ASTM International (ASTM) E 1527-13, it is permitted for use under the Landowner Defenses to Liability under the Oil Pollution Act of 1990: Standards and Practices for Conducting All Appropriate Inquiries.

The purpose of this ESA was to assist the client in developing information to identify Recognized Environmental Conditions (RECs) in connection with the site as reflected by the scope of this report. This purpose was undertaken through user-provided information, a regulatory database review, historical and physical records review, interviews, including local government inquiries, as applicable, user-provided information, and a visual noninvasive reconnaissance of the site and adjoining properties. Limitations, ASTM deviations, and significant data gaps (if identified) are noted in the applicable sections of the report.

1.3 Standard of Care

This ESA was performed in accordance with generally accepted practices of this profession, undertaken in similar studies at the same time and in the same geographical area. We have endeavored to meet this standard of care, but may be limited by conditions encountered during performance, a client-driven scope of work, or inability to review information not received by the report date. Where appropriate, these limitations are discussed in the text of the report, and an evaluation of their significance with respect to our findings has been conducted.

Phase I ESAs, such as the one performed at this site, are of limited scope, are noninvasive, and cannot eliminate the potential that hazardous, toxic, or petroleum substances are present or have been released at the site beyond what is identified by the limited scope of this ESA. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. It should be recognized that environmental concerns may be documented in public records that were not reviewed. No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs. No warranties, express or implied, are intended or made. The limitations herein must be considered when the user of this report formulates opinions as to risks associated with the site or otherwise uses the report for any other purpose. These risks may be further evaluated – but not eliminated – through additional research or assessment. We will, upon request, advise you of additional research or assessment options that may be available and associated costs.

1.4 Additional Scope Limitations, ASTM Deviations and Significant Data Gaps

Based upon the agreed-on scope of services, this ESA did not include subsurface or other invasive assessments, business environmental risk evaluations, or other services not particularly identified and discussed herein, including an evaluation of vapor encroachment

conditions. Credentials of the company (Statement of Qualifications) have not been included in this report but are available upon request. Pertinent documents are referred to in the text of this report, and a separate reference section has not been included. Reasonable attempts were made to obtain information within the scope and time constraints set forth by the client; however, in some instances, information requested is not, or was not, received by the issuance date of the report. Information obtained for this ESA was received from several sources that we believe to be reliable; nonetheless, the authenticity or reliability of these sources cannot and is not warranted hereunder.

An evaluation of the significance of these limitations and missing information with respect to our findings has been conducted, and where appropriate, significant data gaps are identified and discussed in the text of the report. However, it should be recognized that an evaluation of significant data gaps is based on the information available at the time of report issuance, and an evaluation of information received after the report issuance date may result in an alteration of our conclusions, recommendations, or opinions. We have no obligation to provide information obtained or discovered by us after the issuance date of the report, or to perform any additional services, regardless of whether the information would affect any conclusions, recommendations, or opinions in the report. This disclaimer specifically applies to any information that has not been provided by the client.

This report represents our service to you as of the report date and constitutes our final document; its text may not be altered after final issuance. Findings in this report are based upon the site's current utilization, information derived from the most recent reconnaissance and from other activities described herein; such information is subject to change. Certain indicators of the presence of hazardous substances or petroleum products may have been latent, inaccessible, unobservable, or not present during the most recent reconnaissance and may subsequently become observable (such as after site renovation or development). Further, these services are not to be construed as legal interpretation or advice.

1.5 Reliance

This ESA report is prepared for the exclusive use and reliance of TradeWind Energy, Inc. and Front Range-Midway Solar Project, LLC. Use or reliance by any other party is prohibited without the written authorization of TradeWind Energy, Inc., Front Range-Midway Solar Project, LLC and Terracon Consultants, Inc. (Terracon).

Reliance on the ESA by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the proposal, ESA report, and Terracon's Agreement for Services. The limitation of liability defined in the Agreement for Services is the aggregate limit of Terracon's liability to the client and all relying parties.

Continued viability of this report is subject to ASTM E 1527-13 Sections 4.6 and 4.8. If the ESA will be used by a different user (third party) than the user for whom the ESA was originally

prepared, the third party must also satisfy the user's responsibilities in Section 6 of ASTM E 1527-13.

1.6 Client Provided Information

Prior to the site visit, Mr. Rob Freeman, client's representative, was asked to provide the following user questionnaire information as described in ASTM E1527-05 Section 6.

Client Questionnaire Responses

Client Questionnaire Item	Client Did Not Respond	Client's Response	
		Yes	No
Aware of any Environmental Cleanup Liens against the site.			X
Actual Knowledge of Environmental Liens or Activity Use Limitations (AULs) that may encumber the site.		X	
Aware of any Specialized Knowledge or Experience related to the site or nearby properties.			X
Actual Knowledge of a Significantly Lower Purchase Price because of hazardous substances or petroleum products.			X
Commonly Known or Reasonably Ascertainable Information that is material to a release in connection with the site.		X	
Obvious Indicators of Contamination at the site.		X	

According to Mr. Freeman, *"a variance of use will be required from El Paso County."* In addition, Mr. Freeman stated that a *"junk pile is located along the southern site boundary."* Terracon's consideration of the client provided information did not identify RECs. A copy of the questionnaire is included in Appendix C.

2.0 PHYSICAL SETTING

Physical Setting Information		Source
Topography (Refer to Appendix A for an excerpt of the Topographic Map)		
Site Elevation	Ranging from approximately 5,320 to 5,380 feet (NGVD)	USGS Topographic Map, Butte, Colorado Quadrangle, 1961 Map Revised 1994
Surface Runoff/ Topographic Gradient	Generally towards the east-southeast based on site observations	
Closest Surface Water	Unnamed creek located in the eastern portion of the site	

Physical Setting Information		Source
Soil Characteristics		
Soil Type	1. Kim loam, 1 to 8 percent slopes 2. Schamber-Razor complex, 8 to 50 percent slopes 3. Wiley silt loam, 0 to 3 percent slopes 4. Fort Collins loam, 1 to 5 percent slopes	Web Soil Survey, USDA Natural Resources Conservation Service
Description	1. Deep, well drained soils formed in calcareous loamy sediment on fans and uplands. Permeability is moderate 2. Deep to moderately deep well drained, gently rolling to steep soils on eroded breaks and remnants of granite outwash over shale. Permeability is slow to rapid 3. Deep, well-drained soil formed in calcareous, silty eolian material. Permeability is moderate 4. Deep, well drained soils formed from loamy eolian deposits on plains. Permeability is moderately high	
Geology/Hydrogeology		
Formation	1. Pierre Shale, Undivided 2. Older Gravels and Alluviums (Pre Bull Lake Age)	Geologic Map of Colorado, United States Geological Survey, compiled by Odgen Tweto, 1979
Description	1. Middle Unit – Shale between zones of Baculites reesidei and B. scotti 2. Includes Slocum, Verdos, Rocky Flats, and Nussbaum Alluviums in east, and Florida, Bridgetimber, and Bayfield Gravels in southwest	
Estimated Depth to First Occurrence of Groundwater	20 to 40 feet	Colorado Division of Water Resources Online Mapping
*Hydrogeologic Gradient	Not known - may be inferred to be parallel to topographic gradient (primarily to the east-southeast).	

* The groundwater flow direction and the depth to shallow, unconfined groundwater, if present, would likely vary depending upon seasonal variations in rainfall and other hydrogeological features. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

3.0 HISTORICAL USE INFORMATION

Terracon reviewed the following historical sources for indications of RECs. A summary of the historical review is included at the end of the Historical Use Information section. Copies of selected historical documents are included in Appendix C.

3.1 Historical Topographic Maps

Readily available historical USGS topographic maps were reviewed to evaluate land development in connection with the site. Reviewed historical topographic maps are summarized below.

- Colorado Springs, Colorado, published 1909 (1:125,000)
- Buttes, Colorado, published 1949 (1:24,000)
- Buttes, Colorado, published 1961, revised 1969, 1974 and 1994 (1:24,000)

Historical Topographic Maps

Direction	Description
Site	Depicted as undeveloped land (1909, 1949, 1961, 1969, 1974, 1994)
North	Depicted as undeveloped land (1909, 1949) Depicted as undeveloped land and unimproved roads (1961, 1969, 1974) Depicted as undeveloped land and unimproved roads followed by a “Gravel Pit” (1994)
East	Depicted as undeveloped land followed by unimproved roads (1909) Depicted as undeveloped land followed by Highway 85-87 (1949) Depicted as undeveloped land and unimproved roads followed by “Gravel Pits” and Highway 85-87 (1961, 1969, 1974, 1994)
South	Depicted as undeveloped land with unimproved roads (1909, 1949, 1961, 1969, 1974, 1994)
West	Depicted as undeveloped land with unimproved roads (1909, 1949, 1961, 1969, 1974, 1994)

3.2 Historical Aerial Photographs

Selected historical aerial photographs were reviewed at approximately 10 to 15 year intervals, if readily available, to obtain information concerning the history of development on and near the site. Evaluation of these aerials may be limited by a photo’s quality and scale. Selected photographs are summarized below.

- YL-10P-125, 1955
- YL-1HH-148, June 22, 1967
- GS-VDOD 1-65, September 23, 1975
- Landiscor P-11/12, May 17, 1994
- Colorado Oil and Gas Conservation Commission (COGCC) webpage, 2005
- COGCC webpage, 2011

Historical Aerial Photographs

Direction	Description
Site	**1955, 1967, 1975:** Apparent undeveloped land **1994:** Apparent undeveloped land transected by an unimproved road (El Hambra View) in the northern portion of the site **2005, 2011:** Apparent undeveloped land transected by El Hambra View with an equipment storage yard in the southeast portion of the site
North	**1955, 1967, 1975:** Apparent undeveloped land followed by a ranch **1994, 2005, 2011:** Apparent gravel pit followed by undeveloped land and a ranch
East	**1955, 1967, 1975:** Apparent undeveloped land followed by a highway (Interstate 25) **1994, 2005, 2011:** Apparent unimproved road (El Hambra View) followed by undeveloped land and a highway (Interstate 25)
South	**1955, 1967:** Apparent undeveloped land **1975, 1994:** Apparent unimproved road (Rancho Colorado Boulevard) followed by undeveloped land **2005, 2011:** Rancho Colorado Boulevard followed by Midway landfill
West	**1955, 1967, 1975, 1994, 2005, 2011:** Apparent undeveloped land

3.3 Historical City Directories

The Polk and Cole city directories used in this study were requested from EDR and were reviewed at approximate five-year intervals, if readily available. Since these references are copyright protected, reproductions are not provided in this report. City directory coverage was not available for the site and surrounding area.

3.4 Historical Fire Insurance Maps

Historical fire insurance maps produced by the Sanborn Map Company were requested from EDR to evaluate past uses and relevant characteristics of the site and surrounding properties. Based upon inquiries to the above-listed Sanborn provider, Sanborn Maps were not available for the site.

3.5 Site Ownership

Based on a review of information obtained from El Paso County assessor's records, the site is owned by Midway Development Company Inc. Assessor's records are including in Appendix C.

3.6 Title Search

At the direction of the client, a title search was not included as part of the scope of services. Unless notified otherwise, we assume that the client is evaluating this information outside the scope of this report.

3.7 Environmental Liens

Environmental lien records recorded against the site were not provided by the client. At the direction of the client, performance of a review of these records was not included as part of the scope of services and unless notified otherwise, we assume that the client is evaluating this information outside the scope of this report.

3.8 Historical and Site Interviews

The following individuals were interviewed regarding the current and historical use of the site.

Interviewees

Interviewer	Interviewee/Phone #	Title	Date
Dan Taylor	Gary Smith	Property Owner/ Midway Development Company, Inc.	February 5, 2014

Gary Smith, Midway Development Company, Inc.
Mr. Gary Smith, owner of Midway Development Company, Inc., was interviewed regarding the site on January 21, 2014. Mr. Smith stated that he has been associated with the site since 1973. According to Mr. Smith, the site has historically consisted of undeveloped land used for cattle grazing, with the exception of an outdoor equipment and materials storage yard in the southeast portion of the site. According to Mr. Smith, the storage yard is referred to as the “Bull Pen” and has been present on the site for approximately 20 years. Mr. Smith further stated that a stockpile of gold mill tailings from an offsite location that may contain residual cyanide and drums and buckets containing hydraulic fluids are located within the Bull Pen area. In addition, Mr. Smith stated that he did not have knowledge of additional past or present USTs, ASTs, petroleum product use or hazardous materials on the site. Mr. Smith was not aware of any pending, threatened or past environmental litigation, proceedings or notices of possible violations of environmental laws or liability or potential environmental concerns in connection with the site.

3.9 Prior Report Review

Terracon performed a previous Phase I ESA report (Phase I) prepared for the upgradient adjacent parcels to the west, dated December 3, 2013. According to the report, Terracon did not identify RECs in connection with the western adjacent properties. Additional investigation was not recommended in the previous Terracon Phase I for the upgradient adjacent parcel.

3.10 Historical Use Information Summary

Based on a review of the historical information, the site appears to have consisted of undeveloped land from the early 1900s to the present, with the exception of an outdoor equipment storage yard, referred to as “The Bull Pen” located in the southeast portion of the site

developed in the 1990s. RECs were identified in connection a reported gold mill tailings stockpile located in the Bull Pen area because it may contain concentrations of cyanide and other gold ore processing chemicals during the review of historical information.

4.0 RECORDS REVIEW

Regulatory database information was provided by EDR, a contract information services company. The purpose of the records review was to identify RECs in connection with the site. Information in this section is subject to the accuracy of the data provided by the information services company and the date at which the information is updated, and the scope herein did not include confirmation of facilities listed as "unmappable" by regulatory databases.

In some of the following subsections, the words up-gradient, cross-gradient and down-gradient refer to the topographic gradient in relation to the site. As stated previously, the groundwater flow direction and the depth to shallow groundwater, if present, would likely vary depending upon seasonal variations in rainfall and the depth to the soil/bedrock interface. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

4.1 Federal and State/Tribal Databases

Listed below are the facility listings identified on federal and state/tribal databases within the ASTM-required search distances from the approximate site boundaries. Database definition, descriptions, and the database search report are included in Appendix D.

Federal Databases

Database	Description	Radius (miles)	Listings
CERCLIS	The CERCLIS database is a compilation of facilities which the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the CERCLA of 1980.	0.5	0
CERCLIS / NFRAP	CERCLIS/NFRAP refers to facilities that have been removed and archived from EPA's inventory of CERCLA sites.	0.5	0
ERNS	The Emergency Response Notification System (ERNS) is a listing compiled by the EPA on reported releases of petroleum and hazardous substances to the air, soil and/or water.	Site	0
IC / EC	A listing of sites with institutional and/or engineering controls in place. IC include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required	Site	0

Database	Description	Radius (miles)	Listings
	as part of the institutional controls. EC include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.		
NPL	The NPL is the EPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program.	1	0
NPL (Delisted)	The NPL (Delisted) refers to facilities that have been removed from the NPL.	0.5	0
RCRA CORRACTS/ TSD	The EPA maintains a database of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous waste that are undergoing "corrective action." A "corrective action" order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.	1	0
RCRA Generators	The RCRA Generators database, maintained by the EPA, lists facilities that generate hazardous waste as part of their normal business practices. Generators are listed as either large (LQG), small (SQG), or conditionally exempt (CESQG). LQG produce at least 1000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. SQG produce 100-1000 kg/month of non-acutely hazardous waste. CESQG are those that generate less than 100 kg/month of non-acutely hazardous waste.	Site and adjoining properties	0
RCRA Non-CORRACTS/ TSD	The RCRA Non-CORRACTS/TSD Database is a compilation by the EPA of facilities which report storage, transportation, treatment, or disposal of hazardous waste. Unlike the RCRA CORRACTS/TSD database, the RCRA Non-CORRACTS/TSD database does not include RCRA facilities where corrective action is required.	0.5	0
DOD	List of Department of Defense (DOD) sites greater than 640-acres maintained by the USGS.	1.0	0

State/Tribal Databases

Database	Description	Radius (miles)	Listings
AUL	Activity and use limitations include both engineering controls and institutional controls. The Department of Public Health & Environment approve requests to restrict the future use of a property using an enforceable agreement called an environmental real covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected cleanup remedy is adequately protective of human health and the environment.	Site	0
CO ERNS	Listing of spills reported to the CDPHE. Information includes releases of hazardous or potential hazardous chemical/materials into the environment.	Site	0

Database	Description	Radius (miles)	Listings
LUST	State and/or Tribal database of leaking underground storage tanks in the state of Colorado.	0.5	0
SHWS	The State of Colorado does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.	0.5	0
SWF/LF	State and/or Tribal database of solid waste facilities located within Colorado. The database information may include the facility name, class, operation type, area, estimated operational life, and owner.	0.5	1
UST/AST	State and/or Tribal database of registered storage tanks in the State of Colorado which may include the owner and location of the tanks.	Site and adjoining properties	1
VCP	State and/or Tribal facilities included as Voluntary Cleanup Program sites.	0.5	0
AIRS	Permitted facility and emission listings of Air Pollution Control Division permits in the state of Colorado.	Site	0
MINES	Mines Master Index File. Contains all mine identification numbers issued for mines active or open since 1971. The data also includes violation information.	0.25	2
NPDES	Permitted Facility Listing. A listing of permitted facilities from the Water Quality Control Division.	Site	0
Financial Assurance	A listing of financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator if a regulated facility is unable or unwilling to pay.	Site	0

In addition to the above ASTM-required listings, Terracon reviewed other federal, state, local, and proprietary databases provided by the database firm. A list of the additional reviewed databases is included in the regulatory database report included in Appendix D.

The following table summarizes the site-specific information provided by the database and/or gathered by this office for identified facilities. Facilities are listed in order of proximity to the site. Additional discussion for selected facilities follows the summary table.

Listed Facilities

Facility Name And Location	Estimated Distance/Direction/Gradient	Database Listings
Waste Management Midway Landfill 8925 Rancho Colorado Blvd.	Approximately 100 feet / south / downgradient	SWF/LF, Financial Assurance, AST
Midway Gravel Pit El Paso County, CO	Approximately 100 feet / northeast / downgradient	MINES

Midway Landfill and Midway Organic, Waste Management Midway Landfill
According to the EDR report this facility is included in the SWF/LF, Financial Assurance, FINDS, and AST database listings. Based on review of topographic maps and site observations, the facility is located south and downgradient from the site. Terracon contacted Mr. Tom Schweitzer, Project Manager with Waste Management of Colorado, regarding the facility on November 13, 2013 during the previous Terracon Phase I ESA for the adjacent property to the west. According to Mr. Schweitzer, groundwater flow at the landfill facility is toward the southeast and away from the site. Based on the above information and downgradient orientation of this facility relative to the site, the listing does not appear to represent a REC in connection with the site at this time.

Midway Gravel Pit
According to the EDR report this facility is included in the MINES database listings. Based on review of topographic maps and site observations, the facility is located northeast and downgradient from the site. Based on the downgradient orientation of this facility relative to the site, the listing does not appear to represent a REC in connection with the site at this time.

Unmapped facilities are those that do not contain sufficient address or location information to evaluate the facility listing locations relative to the site. The report listed 17 facilities in the unmapped section. Determining the location of unmapped facilities is beyond the scope of this assessment; however, none of these facilities were identified as the site or adjacent properties. These facilities are listed in the database report in Appendix D.

4.2 Local Agency Inquiries

4.2.1 Health Department/Environmental Division

The Colorado Department of Public Health and Environment-Hazardous Materials and Waste Management Division (CDPHE) was contacted by email on January 27, 2014 regarding environmental records or information indicating environmental concerns for the site. According to an email response received from the CDPHE, records in connection with the site were not on file for the requested property addresses.

4.2.2 Fire Department

Terracon contacted the Hanover Fire Protection District regarding underground and aboveground storage tank records; hazardous materials spill responses; and violations for the site address on January 27, 2014. At the issuance of this report a response has not been received from the Hanover Fire Protection District.

4.2.3 Planning, Building Permit/Inspection Department

Terracon reviewed building permits available through the Pikes Peak Regional Building Department online database on January 27, 2014. Based on the information available, permits constituting RECs to the site were not observed in connection with the site.

4.3 Records Review Summary

The regulatory review identified one SWF/LF, one AST, and two Mines facilities within the specified search radii. Based upon review of the regulatory report and inquiry results from the local agencies, RECs were not identified in connection with the site at this time.

5.0 SITE RECONNAISSANCE

5.1 General Site Information

Information contained in this section is based on a visual reconnaissance conducted while walking through the site and the accessible interior areas of structures, if any, located on the site. Exhibit 2 in Appendix A is a Site Diagram of the site. Photo documentation of the site at the time of the visual reconnaissance is provided in Appendix E. Credentials of the individuals planning and conducting the site visit are included in Appendix F.

General Site Information

Site Reconnaissance	
Field Personnel	Daniel K. Taylor
Reconnaissance Date	January 30, 2014
Weather Conditions	Overcast and 40°F
Site Contact/Title	Gary Smith, Property Owner, Midway Development Company, Inc.

Site Utilities	
Drinking Water	None
Wastewater	None

5.2 Overview of Current Site Occupants and Operations

The site is located at 9070 and 9310 Rancho Colorado Boulevard in Fountain, El Paso County, Colorado. The site is an approximate 70-acre tract of undeveloped land that includes an outdoor equipment storage yard in the southeast portion of the site. With the exception of the outdoor equipment storage yard, the site is currently unoccupied.

5.3 Site Observations

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Site Characteristics

Category	Item or Feature	Observed
Site Operations, Processes, and Equipment	Emergency generators	
	Elevators	
	Air compressors	
	Hydraulic lifts	
	Dry cleaning	
	Photo processing	
	Ventilation hoods and/or incinerators	
	Waste treatment systems and/or water treatment systems	
	Heating and/or cooling systems	
	Other processes or equipment	
Aboveground Chemical or Waste Storage	Aboveground storage tanks	
	Drums, barrels and/or containers ≥ 5 gallons	X
	MSDS	
Underground Chemical or Waste Storage, Drainage or Collection Systems	Underground storage tanks or ancillary UST equipment	
	Sumps, cisterns, catch basins and/or dry wells	
	Grease traps	
	Septic tanks and/or leach fields	
	Oil/water separators	
	Pipeline markers	X
	Interior floor drains	
Electrical Transformers/ PCBs	Transformers and/or capacitors	
	Other equipment	

Category	Item or Feature	Observed
Releases or Potential Releases	Stressed vegetation	
	Stained soil	X
	Stained pavement or similar surface	
	Leachate and/or waste seeps	
	Trash, debris and/or other waste materials	X
	Dumping or disposal areas	X
	Construction/demolition debris and/or dumped fill dirt	X
	Surface water discoloration, odor, sheen, and/or free floating product	
	Strong, pungent or noxious odors	
	Exterior pipe discharges and/or other effluent discharges	
Other Notable Site Features	Surface water bodies	
	Quarries or pits	
	Wells / Percolations Test Holes	X

Aboveground Chemical or Waste Storage

Drums, barrels and/or containers ≥ 5 gallons

An outdoor equipment and materials storage yard was observed in the southeast portion of the site during the site reconnaissance. According to the site owner, Mr. Gary Smith, the storage yard is referred to as the "Bull Pen" and has been present on the site for approximately 20 years. During the site reconnaissance, Terracon observed several 55-gallon drums and 5-gallon buckets, some of which exhibited oily staining on the containers and surrounding soil, within a fenced area in the southern portion of the Bull Pen. According to Mr. Smith, the drums and buckets contain hydraulic fluid. Secondary containment was not observed associated with the containers. Based on the observed releases and lack of secondary containment, the drums and buckets represent a REC to the site.

Underground Chemical or Waste Storage, Drainage or Collection Systems

Pipeline markers

Pipeline markers were observed in the northern portion of the site during the site reconnaissance. Associated labeling indicated that the pipelines contained water utilities. Indications of releases or odors were not observed in association with the pipelines during the site reconnaissance. Based on the above information, the pipelines do not appear to represent a REC to the site at this time.

Releases or Potential Releases

Stained soil

Terracon observed several 55-gallon drums and 5-gallon buckets, some of which exhibited oily staining on the containers and surrounding soil, within a fenced area in the southern portion of the Bull Pen. According to Mr. Smith, the drums and buckets contain hydraulic fluid. Secondary containment was not observed associated with the containers. Based on the observed releases and lack of secondary containment, the drums and buckets represent a REC to the site.

Trash, Debris and/or Other Waste Materials

Wind-blown trash and debris including household trash, wood, plastic, glass, cardboard, broken concrete and asphalt, tires, household appliances, furniture, and metal were generally observed along roadways in the northern portion of the site and scattered throughout the Bull Pen during the site reconnaissance. Leakage, spills, odors, or other releases from these materials were not observed during the visual reconnaissance. The debris materials were surficial and did not appear to be hazardous in nature; however, they should be removed and disposed in accordance with local and state regulations.

Dumping or disposal areas

Several stockpiles of apparent building debris including asphalt roof shingles and gypsum board, each approximately 3-feet in height and 8-feet in diameter, were observed in the northern portion of the site during the site reconnaissance. Based upon visual surface observations, staining or odors were not observed associated with these stockpiles; however, the building materials may contain asbestos. Based on the potential presence of asbestos in the stockpiles of building material debris, the stockpiles represent a REC in connection with the site at this time.

Construction/Demolition Debris and/or Dumped Fill Dirt

A large stockpile of dark gray apparent fill material was observed in the northern portion of the Bull Pen during the site reconnaissance. According to Mr. Smith, the stockpile consists of gold mill tailings from an offsite location and may contain residual cyanide. Mr. Smith stated that he did not believe the gold mill tailings contained cyanide due to the “short half-life of cyanide in a low pH environment.” Based on the potential for the stockpile to contain cyanide (and arsenic from historic gold mining operations), the gold mill tailing stockpile represents a REC in connection with the site.

A large soil stockpile containing wood, tires, an empty metal drum, and other debris was observed in the northern portion of the Bull Pen next to the gold tailing stockpile during the site reconnaissance. Mr. Smith stated that he was not aware of the nature or origin of the soil stockpile. Based on the unknown origin of the soil stockpile containing debris, the stockpile represents a REC in connection with the site.

Several soil stockpiles of apparent native soil material were observed in the northern portion of the site during the site reconnaissance. According to Mr. Smith, the stockpiles consist of native soils from the adjacent gravel pit to the north of the site. Indications of releases, hazardous materials, or odors were not noted in connection with the native soil stockpiles during the site reconnaissance. Based on the above information, the native soil stockpiles do not appear to represent a REC in connection with the site.

Other Notable Site Features

Wells / Percolations Test Holes

Three apparent percolation test holes were observed in the central portion of the site during the site reconnaissance. The percolation test holes consisted of slotted pipes protruding approximately 1 foot above the ground surface and are indicative of percolation test locations for future septic leach fields. Mr. Smith confirmed that the observed test holes are percolation test locations. Indications of discharges, odors, stained soil, hazardous materials or petroleum products were not observed in these areas during the site reconnaissance. Based on the above information, the percolation test holes do not appear to constitute a REC in connection with the site.

5.4 Site Reconnaissance Summary

The site reconnaissance was conducted on January 30, 2014. Several 55-gallon drums and 5-gallon buckets (some of which exhibited oily staining on the containers and surrounding soil), pipeline markers for water utilities, wind-blown trash and debris (including household trash, wood, plastic, glass, cardboard, broken concrete and asphalt, tires, household appliances furniture, and metal), several stockpiles of apparent building debris including asphalt roof shingles and gypsum board, a stockpile of gold mill tailings, a soil stockpile containing various debris, several soil stockpiles of apparent native soil, and several reported percolation test holes were observed during the site reconnaissance. RECs were observed in connection with the drums and buckets with observed oily staining and lack of secondary containment; with the stockpiles of apparent building debris due to the potential presence of asbestos-containing materials; with the gold mill tailings due to the potential presence of cyanide and arsenic; and with the soil stockpile containing various debris due the unknown content and origin. RECs were not observed in connection with the remaining items identified during the site reconnaissance.

6.0 ADJOINING PROPERTY RECONNAISSANCE

Visual observations of adjoining properties (from site boundaries) are summarized below.

Adjoining Properties

Direction	Description
North	Midway Gravel Pit
East	Midway Gravel Pit and undeveloped land
South	Rancho Colorado Boulevard followed by Midway Landfill facility
West	Undeveloped land

Indications of RECs were not observed with the adjoining properties.

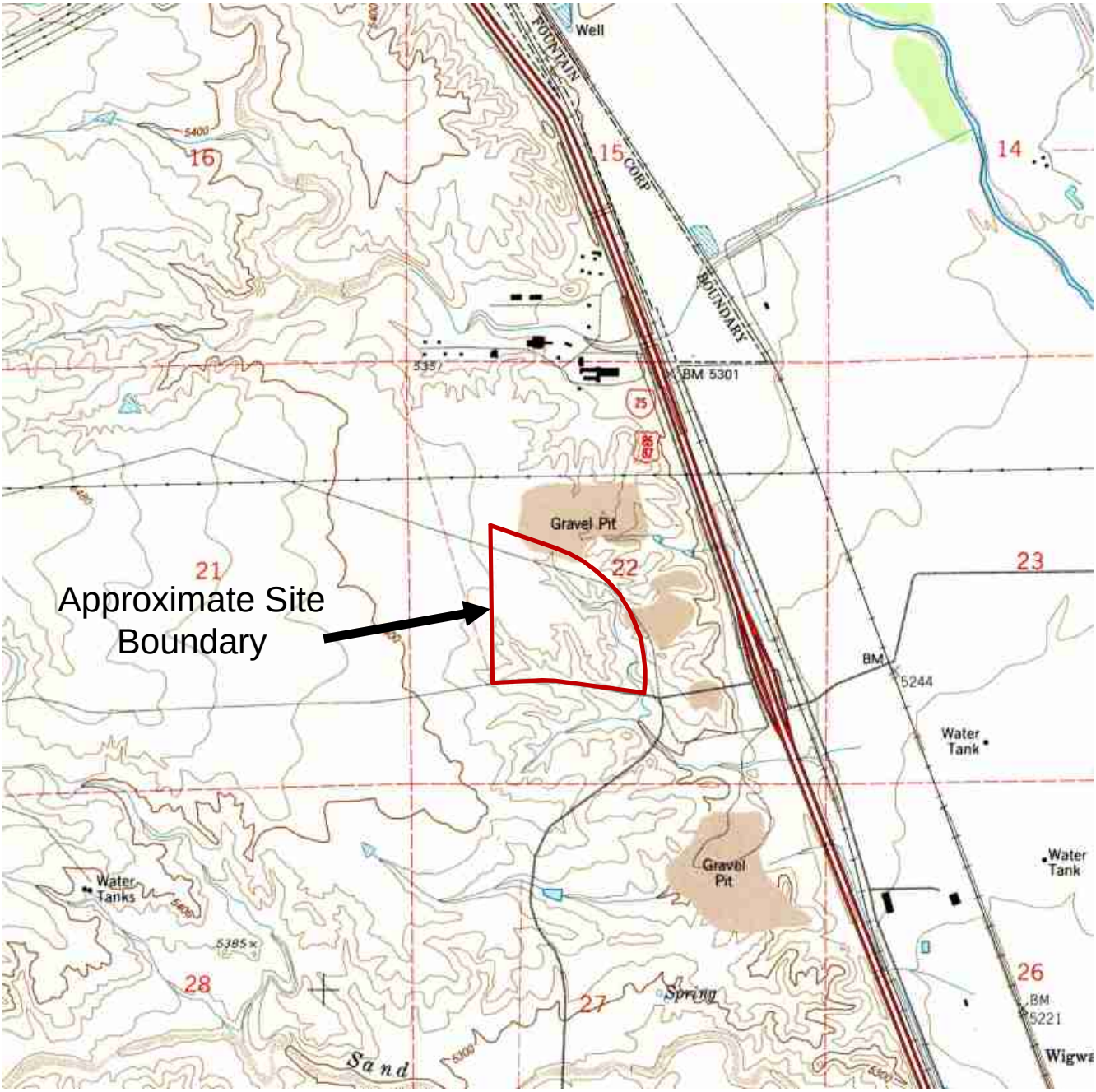
7.0 ADDITIONAL SERVICES

Per the agreed scope of services specified in the proposal, additional services (e.g. asbestos sampling, lead-based paint sampling, wetlands evaluation, lead in drinking water testing, radon testing, vapor encroachment screening, etc.) were not conducted.

8.0 DECLARATION

I, Daniel K. Taylor, declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312; and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the site. I have developed and performed the All Appropriate Inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

APPENDIX A
EXHIBIT 1 – TOPOGRAPHIC MAP
EXHIBIT 2 – SITE DIAGRAM



N

Scale: 1:24,000

0 1000 0 2000

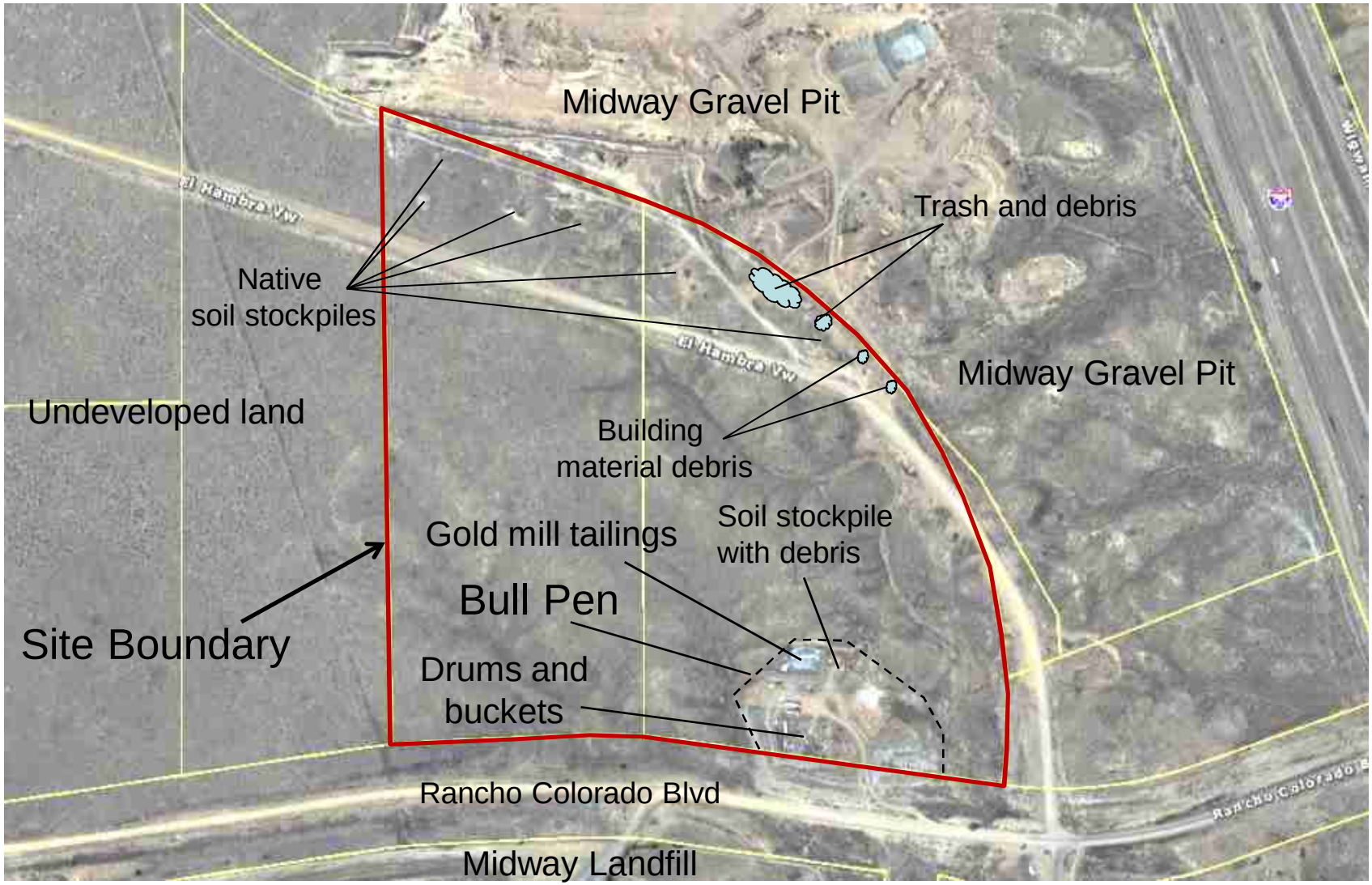
Feet

CONTOUR INTERVAL: 20 FEET

United States Department of the Interior – Geological Survey
Buttes Quadrangle (1994)
Colorado Springs, CO
7.5 Minute Series (Topographic)

DIAGRAM IS FOR GENERAL LOCATION ONLY AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project No. 23147702	Terracon Consulting Engineers & Scientists	SITE LOCATION / TOPOGRAPHIC MAP	Exhibit
Scale: As shown		FRONT RANGE-MIDWAY SOLAR PROJECT, LLC EASEMENT PROPERTY	1
File Name: Fig 1		9070 AND 9310 RANCHO COLORADO BOULEVARD FOUNTAIN, COLORADO	
Date: 1/27/14	4172 Center Park Drive Colorado Springs, CO 80916 PH. (719) 597-2116 FAX. (719) 597-2117		



BASE DRAWING OBTAINED FROM THE EL PASO COUNTY ASSESSOR WEBPAGE. AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: DKT	Project No. 23147702
Drawn by: DKT	Scale: N.T.S.
Checked by: LRK	File Name: Fig 2
Approved by: LRK	Date: 1/27/2014

Terracon
Consulting Engineers & Scientists
4172 Center Park Drive Colorado Springs, CO 80916
PH. (719) 597-2116 FAX. (719) 597-2117

SITE DIAGRAM

FRONT RANGE-MIDWAY SOLAR PROJECT, LLC
EASEMENT PROPERTY
9070 AND 9310 RANCHO COLORADO BOULEVARD
FOUNTAIN, COLORADO

Exhibit 2

APPENDIX B
DESCRIPTION OF TERMS AND ACRONYMS

Description of Selected General Terms and Acronyms

Term/Acronym	*Description*
ACM	Asbestos Containing Material. Asbestos is a naturally occurring mineral, three varieties of which (chrysotile, amosite, crocidolite) have been commonly used as fireproofing or binding agents in construction materials. Exposure to asbestos, as well as ACM, has been documented to cause lung diseases including asbestosis (scarring of the lung), lung cancer and mesothelioma (a cancer of the lung lining). Regulatory agencies have generally defined ACM as a material containing greater that one (1) percent asbestos, however some states (e.g. California) define ACM as materials having 0.1% asbestos. In order to define a homogenous material as non-ACM, a minimum number of samples must be collected from the material dependent upon its type and quantity. Homogenous materials defined as non-ACM must either have 1) no asbestos identified in all of its samples or 2) an identified asbestos concentration below the appropriate regulatory threshold. Asbestos concentrations are generally determined using polarized light microscopy or transmission electron microscopy. Point counting is an analytical method to statistically quantify the percentage of asbestos in a sample. The asbestos component of ACM may either be friable or non-friable. Friable materials, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure and have a higher potential for a fiber release than non-friable ACM. Non-friable ACM are materials that are firmly bound in a matrix by plastic, cement, etc. and, if handled carefully, will not become friable. Federal and state regulations require that either all suspect building materials be presumed ACM or that an asbestos survey be performed prior to renovation, dismantling, demolition, or other activities that may disturb potential ACM. Notifications are required prior to demolition and/or renovation activities that may impact the condition of ACM in a building. ACM removal may be required if the ACM is likely to be disturbed or damaged during the demolition or renovation. Abatement of friable or potentially friable ACM must be performed by a licensed abatement contractor in accordance with state rules and NESHAP. Additionally, OSHA regulations for work classification, worker training and worker protection will apply.
AHERA	Asbestos Hazard Emergency Response Act
AST	Above Ground Storage Tanks. ASTs are generally described as storage tanks less than 10% of which are below ground (i.e., buried). Tanks located in a basement, but not buried, are also considered ASTs. Whether, and the extent to which, an AST is regulated, is determined on a case-by-case basis and depends upon tank size, its contents and the jurisdiction of its location.
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes. BTEX are VOC components found in gasoline and commonly used as analytical indicators of a petroleum hydrocarbon release.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (a.k.a. Superfund). CERCLA is the federal act that regulates abandoned or uncontrolled hazardous waste sites. Under this Act, joint and several liability may be imposed on potentially responsible parties for cleanup-related costs.
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System. An EPA compilation of sites having suspected or actual releases of hazardous substances to the environment. CERCLIS also contains information on site inspections, preliminary assessments and remediation of hazardous waste sites. These sites are typically reported to EPA by states and municipalities or by third parties pursuant to CERCLA Section 103.
CESQG	Conditionally exempt small quantity generators.
CFR	Code of Federal Regulations
DOT	U.S. Department of Transportation

Description of Selected General Terms and Acronyms (cont.)

Term/Acronym	*Description*
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System. An EPA-maintained federal database which stores information on notifications of oil discharges and hazardous substance releases in quantities greater than the applicable reportable quantity under CERCLA. ERNS is a cooperative data-sharing effort between EPA, DOT, and the National Response Center.
ESA	Environmental Site Assessment
FRP	Fiberglass Reinforced Plastic
Hazardous Substance	As defined under CERCLA, this is (A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33, (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act (with some exclusions); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any hazardous air pollutant listed under section 112 of the Clear Air Act; and (F) any imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action under section 2606 of Title 15. This term does not include petroleum, including crude oil or any fraction thereof which is not otherwise listed as a hazardous substance under subparagraphs (A) through (F) above, and the term include natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).
Hazardous Waste	This is defined as having characteristics identified or listed under section 3001 of the Solid Waste Disposal Act (with some exceptions). RCRA, as amended by the Solid Waste Disposal Act of 1980, defines this term as a "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."
ILP	Innocent Landowner/Operator Program
LQG	Large quantity generators.
LUST	Leaking Underground Storage Tank. This is a federal term set forth under RCRA for leaking USTs. Some states also utilize this term.
MCL	Maximum Contaminant Level. This Safe Drinking Water concept (and also used by many states as a ground water cleanup criteria) refers to the limit on drinking water contamination that determines whether a supplier can deliver water from a specific source without treatment.
MSDS	Material Safety Data Sheets. Written/printed forms prepared by chemical manufacturers, importers and employers which identify the physical and chemical traits of hazardous chemicals under OSHA's Hazard Communication Standard.
NESHAP	National Emissions Standard for Hazardous Air Pollutants (Federal Clean Air Act). This part of the Clean Air Act regulates emissions of hazardous air pollutants.
NFRAP	Facilities where there is "No Further Remedial Action Planned," as more particularly described under the Records Review section of this report.
NOV	Notice of Violation. A notice of violation or similar citation issued to an entity, company or individual by a state or federal regulatory body indicating a violation of applicable rule or regulations has been identified.
NPDES	National Pollutant Discharge Elimination System (Clean Water Act). The federal permit system for discharges of polluted water.
NPL	National Priorities List, as more particularly described under the Records Review section of this report.
OSHA	Occupational Safety and Health Administration or Occupational Safety and Health Act
PACM	Presumed Asbestos-Containing Material. A material that is suspected of containing or presumed to contain asbestos but which has not been analyzed to confirm the presence or absence of asbestos.

Description of Selected General Terms and Acronyms (cont.)

Term/Acronym	*Description*
PCB	Polychlorinated Biphenyl. A halogenated organic compound commonly in the form of a viscous liquid or resin, a flowing yellow oil, or a waxy solid. This compound was historically used as dielectric fluid in electrical equipment (such as electrical transformers and capacitors, electrical ballasts, hydraulic and heat transfer fluids), and for numerous heat and fire sensitive applications. PCB was preferred due to its durability, stability (even at high temperatures), good chemical resistance, low volatility, flammability, and conductivity. PCBs, however, do not break down in the environment and are classified by the EPA as a suspected carcinogen. 1978 regulations, under the Toxic Substances Control Act, prohibit manufacturing of PCB-containing equipment; however, some of this equipment may still be in use today.
pCi/l	Pico Curies per Liter of Air. Unit of measurement for Radon and similar radioactive materials.
PLM	Polarized Light Microscopy (see ACM section of the report, if included in the scope of services)
PST	Petroleum Storage Tank. An AST or UST that contains a petroleum product.
Radon	A radioactive gas resulting from radioactive decay of naturally-occurring radioactive materials in rocks and soils containing uranium, granite, shale, phosphate, and pitchblende. Radon concentrations are measured in Pico Curies per Liter of Air. Exposure to elevated levels of radon creates a risk of lung cancer; this risk generally increases as the level of radon and the duration of exposure increases. Outdoors, radon is diluted to such low concentrations that it usually does not present a health concern. However, radon can accumulate in building basements or similar enclosed spaces to levels that can pose a risk to human health. Indoor radon concentrations depend primarily upon the building's construction, design and the concentration of radon in the underlying soil and ground water. The EPA recommended annual average indoor “action level” concentration for residential structures is 4.0 pCi/l.
RCRA	Resource Conservation and Recovery Act. Federal act regulating solid and hazardous wastes from point of generation to time of disposal (‘cradle to grave”). 42 U.S.C. 6901 et seq.
RCRA Generators	The RCRA generators list is part of the RCRIS database maintained by EPA and lists facilities that generate hazardous waste as part of their normal business operations, as more particularly defined under Section 4.1 of this report.
RCRA CORRACTS/TSDs	The USEPA maintains a database of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous materials which are undergoing “corrective action”. A “corrective action” order is issued when there is a release of hazardous waste or constituents into the environment from a RCRA facility.
RCRA Non-CORRACTS/TSDs	The RCRA Non-CORRACTS/TSD Database is a compilation by the USEPA of facilities which report storage, transportation, treatment, or disposal of hazardous waste. Unlike the RCRA CORRACTS/TSD database, the RCRA Non-CORRACTS/TSD database does not include RCRA facilities where corrective action is required.
RCRA Violators List	RAATS. RCRA Administrative Actions Taken. RAATS information is now contained in the RCRIS database and includes records of administrative enforcement actions against facilities for noncompliance.
RCRIS	Resource Conservation and Recovery Information System, as defined in the Records Review section of this report.
REC	Recognized Environmental Conditions” are defined by ASTM E1527-05 as “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions of compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.”
SCL	State “CERCLIS” List (see SPL /State Priority List, below).

Description of Selected General Terms and Acronyms (cont.)

Term/Acronym	*Description*
SPCC	Spill Prevention, Control and Countermeasures. SPCC plans are required under federal law (Clean Water Act and Oil Pollution Act) for any facility storing petroleum in tanks and/or containers of 55-gallons or more that when taken in aggregate exceed 1,320 gallons. SPCC plans are also required for facilities with underground petroleum storage tanks with capacities of over 42,000 gallons. Many states have similar spill prevention programs, which may have additional requirements.
SPL	State Priority List. State list of confirmed sites having contamination in which the state is actively involved in clean up activities or is actively pursuing potentially responsible parties for clean up. Sometimes referred to as a State "CERCLIS" List.
SQG	Small quantity generator.
SWF	Solid Waste Facility
TPH	Total Petroleum Hydrocarbons
TRI	Toxic Release Inventory. Routine EPA report on releases of toxic chemicals to the environment based upon information submitted by entities subject to reporting under the Emergency Planning and Community Right to Know Act.
TSCA	Toxic Substances Control Act. A federal law regulating manufacture, import, processing and distribution of chemical substances not specifically regulated by other federal laws (such as asbestos, PCBs, lead-based paint and radon). 15 U.S.C 2601 et seq.
USACE	United States Army Corps of Engineers
USC	United States Code
USGS	United States Geological Survey
USNRCS	United States Department of Agriculture-Natural Resource Conservation Service
UST	Underground Storage Tank. Most federal and state regulations, as well as ASTM E1527-05, define this as any tank, incl., underground piping connected to the tank, that is or has been used to contain hazardous substances or petroleum products and the volume of which is 10% or more beneath the surface of the ground (i.e., buried).
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
Wetlands	Areas that are typically saturated with surface or ground water that creates an environment supportive of wetland vegetation (i.e., swamps, marshes, bogs). The Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1) defines wetlands as areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For an area to be considered a jurisdictional wetland, it must meet the following criteria: more than 50 percent of the dominant plant species must be categorized as Obligate, Facultative Wetland, or Facultative on lists of plant species that occur in wetlands; the soil must be hydric; and, wetland hydrology must be present. The federal Clean Water Act which regulates "waters of the US," also regulates wetlands, a program jointly administered by the USACE and the EPA. Waters of the U.S. are defined as: (1) waters used in interstate or foreign commerce, including all waters subject to the ebb and flow of tides; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, etc., which the use, degradation, or destruction could affect interstate/ foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U. S., (5) tributaries of waters identified in 1 through 4 above; (6) the territorial seas; and (7) wetlands adjacent to waters identified in 1 through 6 above. Only the USACE has the authority to make a final wetlands jurisdictional determination.

Description of Terms and Acronyms (cont.)

Colorado Term/Acronym	Description
SHWS	The State of Colorado does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
SWF/LF	State and/or Tribal database of solid waste facilities located within Colorado. The database information may include the facility name, class, operation type, area, estimated operational life, and owner.
LUST	State and/or Tribal database of leaking underground storage tanks in the state of Colorado.
UST	State and/or Tribal database of registered storage tanks in the State of Colorado which may include the owner and location of the tanks.
CO ERNS	Listing of spills reported to the CDPHE. Information includes releases of hazardous or potential hazardous chemical/materials into the environment.
AUL	Activity and use limitations include both engineering controls and institutional controls. The Department of Public Health & Environment approve requests to restrict the future use of a property using an enforceable agreement called an environmental real covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected cleanup remedy is adequately protective of human health and the environment.
VCP	State and/or Tribal facilities included as Voluntary Cleanup Program sites.

APPENDIX C
HISTORICAL DOCUMENTATION AND USER QUESTIONNAIRE

ASTM E 1527-05 USER QUESTIONNAIRE

Proposal No: P2314009

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Relief and Brownfields Revitalization Act of 2001, the user must respond to the following questions. Failure to provide this information to the environmental professional may result in significant data gaps, which may limit our ability to identify recognized environmental conditions resulting in a determination that "all appropriate inquiry" is not complete. This form represents a type of interview and as such, the user has an obligation to answer all questions in good faith, to the extent of their actual knowledge.

Site Name: Front Range-Midway Solar Project, LLC Easement Property
Site Address: 9070 and 9310 Rancho Colorado Boulevard

1) Are you aware of any environmental cleanup liens against the site that are filed or recorded under federal, tribal, state, or local law (40 CFR 312.25)? X No ___Yes If yes, please explain.

2) Are you aware of any activity and use limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state, or local law (40 CFR 312.26)? ___No ___Yes If yes, please explain.
A variance of use will be required from El Paso County.

3) As the user of this ESA, do you have any specialized knowledge or experience related to the site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the site or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business (40 CFR 312-28)? X No ___Yes If yes, please explain.

4) Does the purchase price being paid for this site reasonably reflect the fair market value of the site (40 CFR 312.29)? ___No X Yes

If no, have you considered whether the lower purchase price is because contamination is known or believed to be present at the site (40 CFR 312.29)? ___No ___Yes If yes, please explain.

5) Are you aware of commonly known or reasonably ascertainable information about the site that would help the environmental professional to identify conditions indicative of releases or threatened releases (40 CFR 312.30)? ___No X Yes If yes, please explain.
Junk pile located along southern boundary.

6) As the user of this ESA, based on your knowledge and experience related to the site, are there any obvious indicators that point to the presence or likely presence of contamination at the site (40 CFR 312.31)? ___No X Yes If yes, please explain.
Junkpile located along southern boundary.

Please return this form with the signed and completed Agreement for Services.

Request for Information and Documentation

In addition to the specific questions outlined above, the user is requested to provide the following information and documentation, as available. ASTM requires that this information, if available, be provided to the environmental professional prior to the site visit.

Item Supplied "X"	Not Applicable, Not Available or Not Known "X"	Item Requested (See Proposal)	Contacts/Comments or Indicate Attachment
X		Point of Contact for Access	Name/Phone: Gary Smith 719-491-1671
X		Current Site Owner	Name/Phone: Gary Smith Midway Development Co., Inc.
X		Current Facility Operator	Name/Phone: Same as POC
	X	Contacts for Prior Owners	Name/Phone:
	X	Contacts for Prior Occupants	Name/Phone:
X		Access Restrictions	Per POC
X		Notification of Special Requirements Regarding Confidentiality	Per MSA
		Legal Description and Diagram / Survey of Site	
	X	Chain of Title with Grantor/Grantee Summary (back to 1940 or first developed use)	
X		Reasons for Conducting ESA	Due diligence

Please return this form with the signed and completed Agreement for Services.

Helpful Documents Checklist

Pursuant to ASTM E 1527-05 § 10.8, do you know whether any of the following documents exist related to the subject property and, if so, whether copies can and will be provided to the environmental professional? Check all that apply.

- ☐ Environmental site assessment reports
- ☐ Environmental compliance audit reports
- ☐ Geotechnical studies
- ☐ Reports regarding hydrogeologic conditions on the property or surrounding area
- ☐ Registrations for above or underground storage tanks
- ☐ Notices or other correspondence from any governmental agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property
- ☐ Registrations for underground injection systems
- ☐ Environmental permits/plans, solid waste permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits, SPCC plans

Rob M. Freeman
Name (Authorized Client Representative)

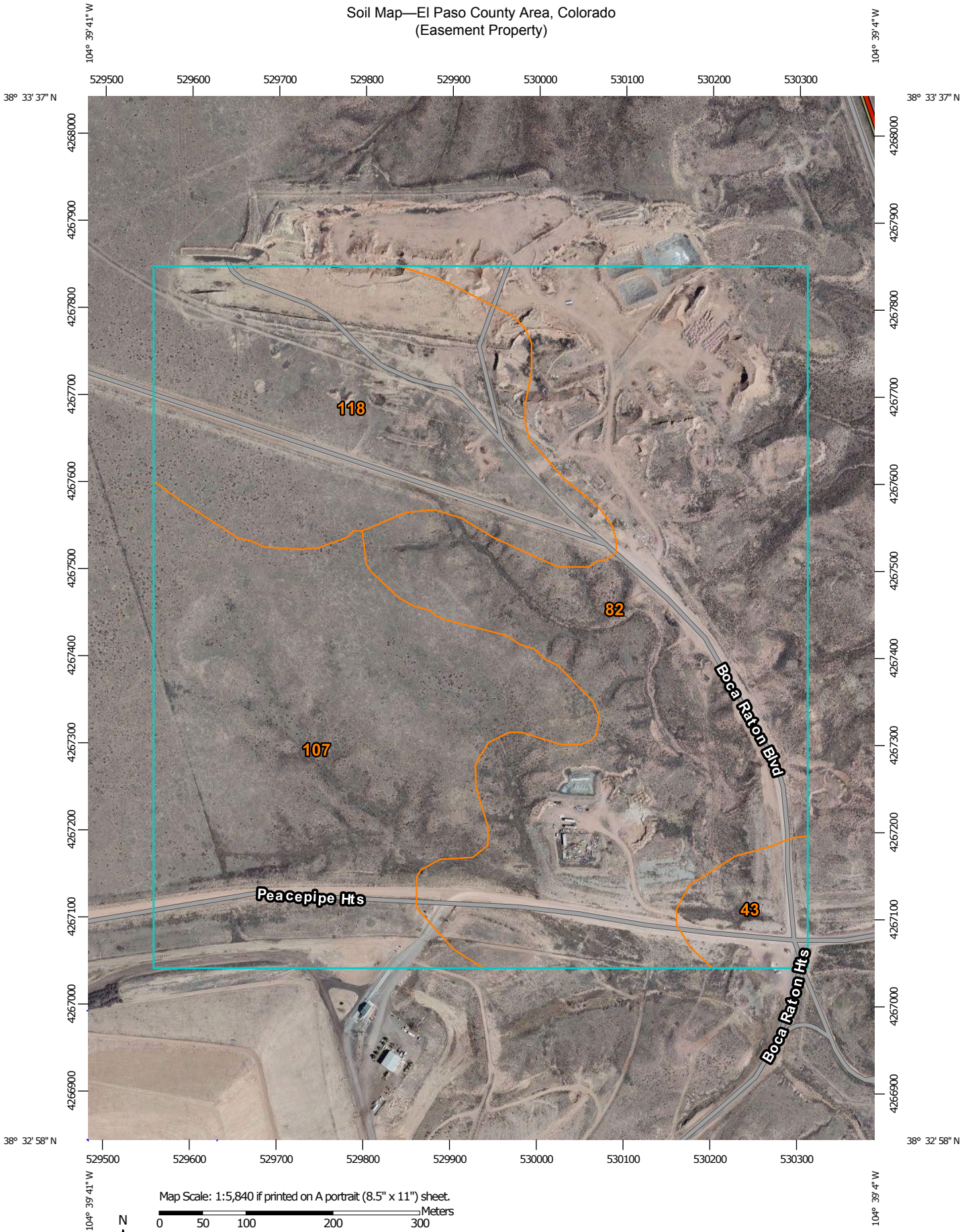
President
Title

Signature

1/16/14
Date

Please return this form with the signed and completed Agreement for Services.

Soil Map—El Paso County Area, Colorado
(Easement Property)



Map Scale: 1:5,840 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 10, Dec 23, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 15, 2011—Sep 22, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

El Paso County Area, Colorado (CO625)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
43	Kim loam, 1 to 8 percent slopes	4.5	3.0%
82	Schamber-Razor complex, 8 to 50 percent slopes	67.4	44.7%
107	Wilid silt loam, 0 to 3 percent slopes	45.6	30.3%
118	Fort loam, 1 to 5 percent slopes, cool	33.3	22.1%
Totals for Area of Interest		**150.8**	**100.0%**

Easement Property
9070 and 9310 Rancho Colorado Blvd
Fountain, CO 81008

Inquiry Number: 3832761.4
January 16, 2014

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

1/16/14

Site Name:
Easement Property
9070 and 9310 Rancho
Fountain, CO 81008

EDR Inquiry # 3832761.4

Client Name:
Terracon, Inc.
4172 Center Park Drive
Colorado Springs, CO 80916

Contact: Dan Taylor

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Terracon, Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name:	Easement Property
Address:	9070 and 9310 Rancho Colorado Blvd
City, State, Zip:	Fountain, CO 81008
Cross Street:	
P.O. #	NA
Project:	23147702
Certification #	BF82-48E3-A90D

Sanborn® Library search results
Certification # BF82-48E3-A90D

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Terracon, Inc. (the client) is permitted to make up to THREE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

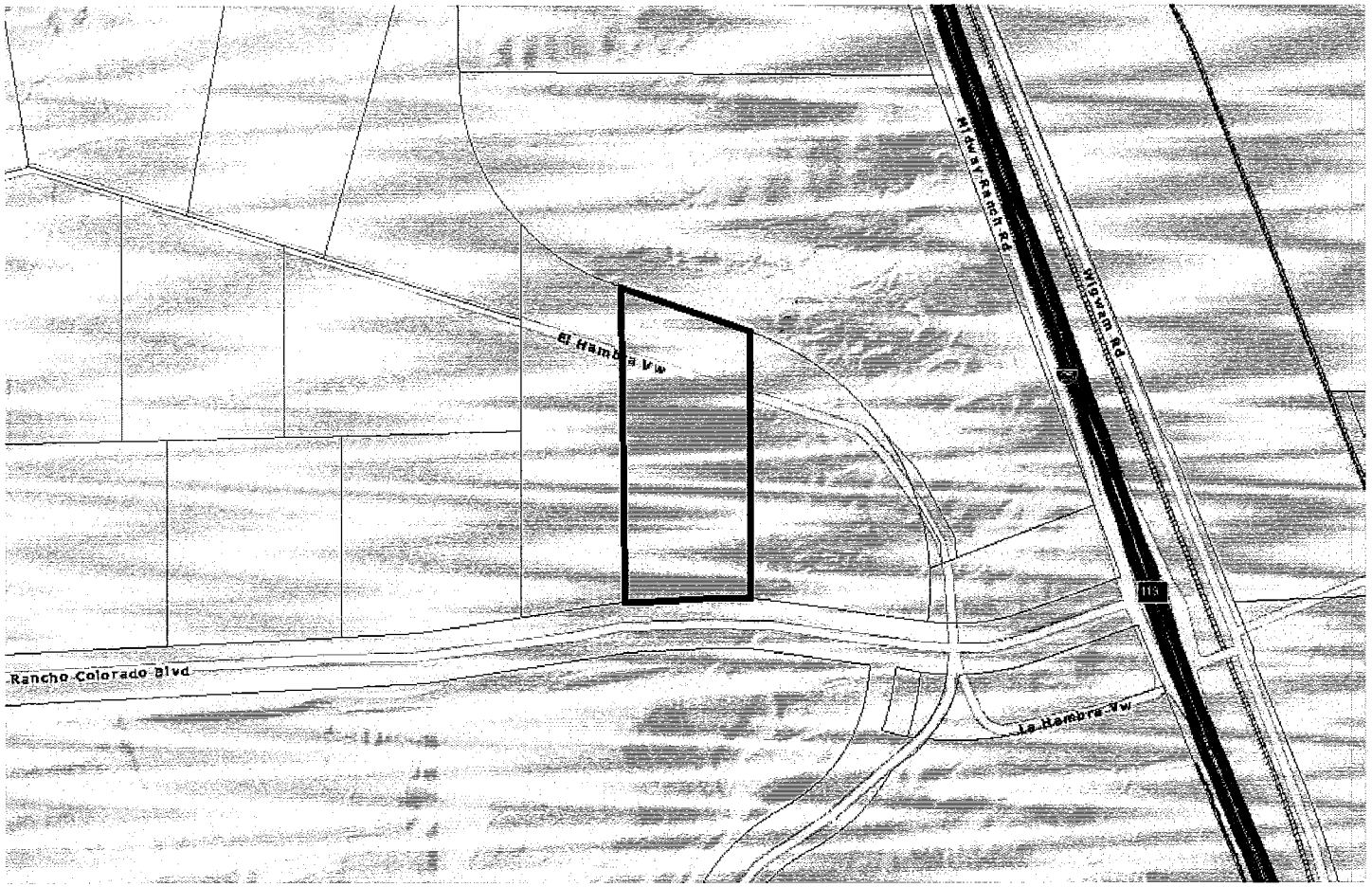
El Paso County Assessor's Office

9070 RANCHO COLORADO BLVD

SCHEDULE: 5722001001

OWNER: MIDWAY DEVELOPMENT COMPANY INC

N
W E
S



Assessor

El Paso County, Colorado - Services

Public Record Property Information

Property Search

Parcel Map
Print Data
County Zoning

Map Sheet 57220.tif

Personal Information

Schedule No: 5722001001

Owner Name: MIDWAY DEVELOPMENT COMPANY INC

Location: 9070 RANCHO COLORADO BLVD

Mailing Address: 2454 WAYNOKA RD
COLORADO SPRINGS CO 80915-1612

Legal Description

LOT 123 MIDWAY RANCHES FIL NO 7

Plat No: 11568

Market Information (2013 Values)

Levy Year: 2013 Mill Levy: 82.537 Exempt Status: Not Exempt

Table	Use Code	2013 Market Value	2013 Assessed Value	Exempt
Land	CODE 100 AT PRESENT WORTH	7242	2100	
	Total Value $	**7242**	**2100**	

Tax Entity and Levy Information County Treasurer Tax Information

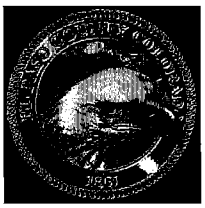
(District: NBK)

Taxing Entity	Contact Name	Contact Phone
EL PASO COUNTY	FINANCIAL SERVICES	(719) 520-6498
EPC ROAD & BRIDGE (UNSHARED)		(719) 520-6498
HANOVER SCHOOL NO 28	PAUL MCCARTY	(719) 683-2247
PIKES PEAK LIBRARY	MIKE VARNET	(719) 531-6333
HANOVER FIRE PROTECTION	PAUL OGLE	(719) 683-3242
CENTRAL COLORADO CONSERVATION	MADELINE NEWELL	(719) 473-7104
ELDORADO VILLAGE METROPOLITAN	PETER SUSEMIHL	(719) 579-6500

Sale Information

(Click on the **row** for further information)

Seq#	Sale Date	Sale Price	Sale Type
1	06/20/2001	0	-
2	08/17/2007	0	-
3	08/17/2007	1338889	Multiple properties Vacant land



Assessor:
Mark Lowderman

Location:
1675 W. Garden of the Gods Rd
Suite 2300
Colorado Springs, CO 80907

Telephone:
(719) 520-6600

Fax Number:
(719) 520-6635

Hours:
8:00 AM - 5:00 PM
Monday - Friday
Offices closed:
Saturday - Sunday, weekly

Send any concerns or comments to:
asrweb@elpasoco.com

4	09/14/2010	0	Foreclosure

Land Information

Seq #	Use	Exempt	Area
1	CODE 100 AT PRESENT WORTH		35.03 acres

Residential Information

None

Commercial Information

None

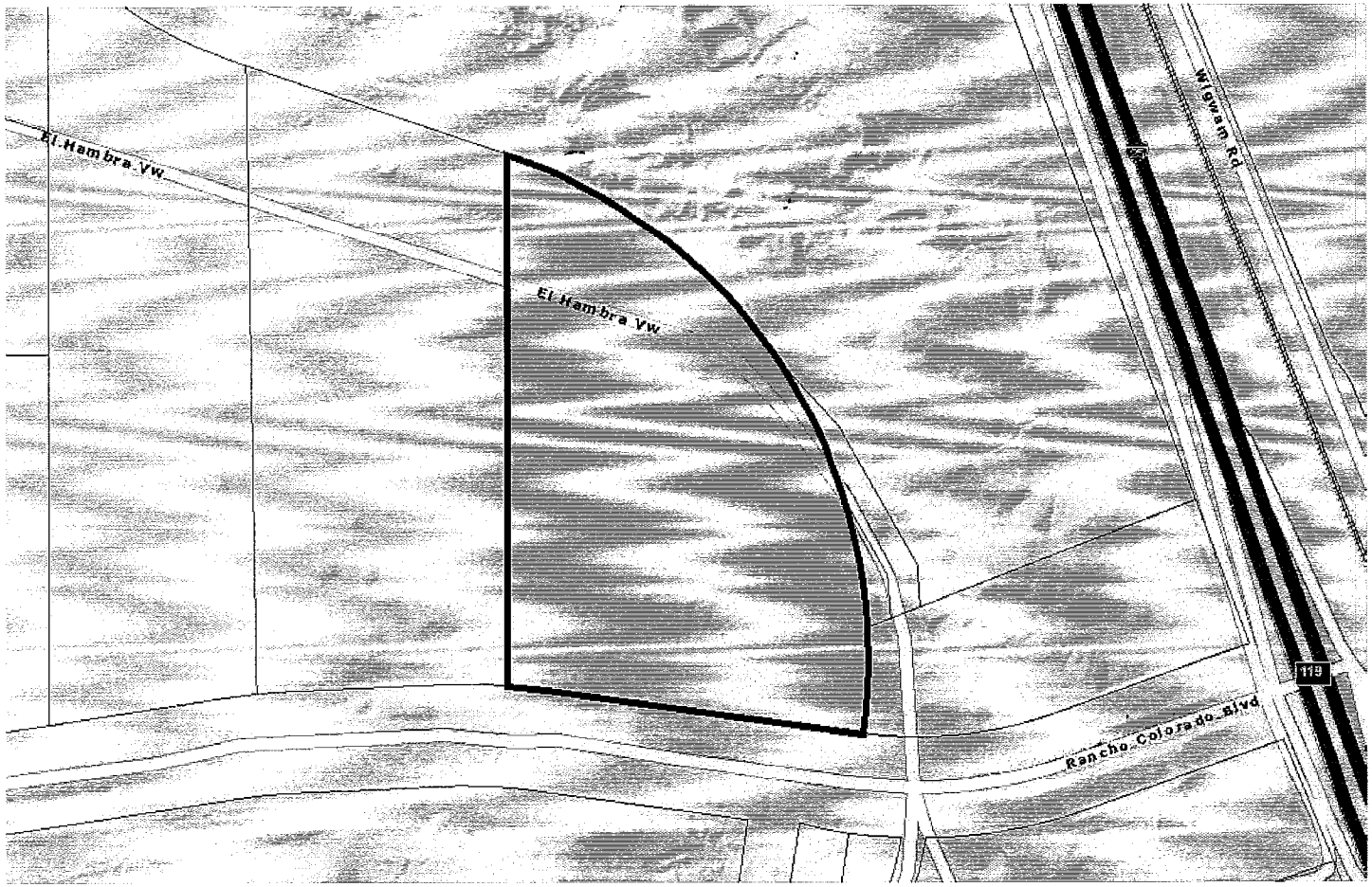
05

El Paso County Assessor's Office

9310 RANCHO COLORADO BLVD

SCHEDULE: 5722001002

OWNER: MIDWAY DEVELOPMENT COMPANY INC



Assessor

El Paso County, Colorado - Services

Public Record Property Information

Property Search

Parcel Map
Print Data
County Zoning

Map Sheet 57220.tif

Personal Information

Schedule No: 5722001002

Owner Name: MIDWAY DEVELOPMENT COMPANY INC

Location: 9310 RANCHO COLORADO BLVD

Mailing Address: 2454 WAYNOKA RD
COLORADO SPRINGS CO 80915-1612

Legal Description

LOT 122 MIDWAY RANCHES FIL NO 7

Plat No: 11568

Market Information (2013 Values)

Levy Year: 2013 Mill Levy: 82.537 Exempt Status: Not Exempt

Table	Use Code	2013 Market Value	2013 Assessed Value	Exempt
Land	CODE 100 AT PRESENT WORTH	7242	2100	
	Total Value $	**7242**	**2100**	

Tax Entity and Levy Information County Treasurer Tax Information

(District: NBK)

Taxing Entity	Contact Name	Contact Phone
EL PASO COUNTY	FINANCIAL SERVICES	(719) 520-6498
EPC ROAD & BRIDGE (UNSHARED)		(719) 520-6498
HANOVER SCHOOL NO 28	PAUL MCCARTY	(719) 683-2247
PIKES PEAK LIBRARY	MIKE VARNET	(719) 531-6333
HANOVER FIRE PROTECTION	PAUL OGLE	(719) 683-3242
CENTRAL COLORADO CONSERVATION	MADELINE NEWELL	(719) 473-7104
ELDORADO VILLAGE METROPOLITAN	PETER SUSEMIHL	(719) 579-6500

Sale Information

(Click on the **row** for further information)

Seq#	Sale Date	Sale Price	Sale Type
1	06/20/2001	0	-
2	08/17/2007	0	-
3	08/17/2007	1338889	Multiple properties Vacant land

Assessor:
Mark Lowderman

Location:
1675 W. Garden of the Gods Rd
Suite 2300
Colorado Springs, CO 80907

Telephone:
(719) 520-6600

Fax Number:
(719) 520-6635

Hours:
8:00 AM - 5:00 PM
Monday - Friday
Offices closed:
Saturday - Sunday, weekly

Send any concerns or comments to:
asrweb@elpasoco.com

4	09/14/2010	0	Foreclosure

Land Information

Seq #	Use	Exempt	Area
1	CODE 100 AT PRESENT WORTH		35.01 acres

Residential Information

None

Commercial Information

None

05

Log On Back Permits Plans Links

No Permits matched the search parameters

Place: 9070-9310 RANCHO COLORADO BLVD ;

Details Plan Image View Map

APPENDIX D
ENVIRONMENTAL DATABASE INFORMATION

Easement Property
9070 and 9310 Rancho Colorado Blvd
Fountain, CO 81008

Inquiry Number: 3832761.2s
January 16, 2014

The EDR Radius Map™ Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

9070 AND 9310 RANCHO COLORADO BLVD
FOUNTAIN, CO 81008

COORDINATES

Latitude (North):	38.5548000 - 38˚ 33' 17.28''
Longitude (West):	104.6566000 - 104˚ 39' 23.76''
Universal Tranverse Mercator:	Zone 13
UTM X (Meters):	529921.9
UTM Y (Meters):	4267223.0
Elevation:	5367 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	38104-E6 BUTTES, CO
Most Recent Revision:	1994

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2011
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List

EXECUTIVE SUMMARY

Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls
LUCIS ..... Land Use Control Information System

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS ..... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State and tribal leaking storage tank lists

LUST ..... Leaking Underground Storage Tank List
LUST TRUST ..... RAP Site Listing
LAST ..... Leaking Aboveground Storage Tank Listing
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ..... Underground Storage Tank Database

EXECUTIVE SUMMARY

INDIAN UST ..... Underground Storage Tanks on Indian Land
FEMA UST ..... Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

AUL ..... Environmental Covenants and Environmental Use Restrictions List

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup & Redevelopment Act Application Tracking Report

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
HIST LF ..... Historical Landfill List
SWRCY ..... Registered Recyclers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
CDL ..... Meth Lab Locations
US HIST CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CO ERNS ..... Spills Database
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators
DOT OPS ..... Incident and Accident Data
DOD ..... Department of Defense Sites
FUDS ..... Formerly Used Defense Sites
CONSENT ..... Superfund (CERCLA) Consent Decrees
ROD ..... Records Of Decision
UMTRA ..... Uranium Mill Tailings Sites
US MINES ..... Mines Master Index File
TRIS ..... Toxic Chemical Release Inventory System
TSCA ..... Toxic Substances Control Act

EXECUTIVE SUMMARY

FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
METHANE SITE	Methane Site Investigations - Jefferson County 1980
Methane Investigation	Methane Gas & Swamp Findings
DRYCLEANERS	Drycleaner Facilities
NPDES	Permitted Facility Listing
AIRS	Permitted Facility & Emissions Listing
UMTRA	Uranium Mill Tailings Sites
ASBESTOS	Asbestos Abatement & Demolition Projects
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US AIRS	Aerometric Information Retrieval System Facility Subsystem
PRP	Potentially Responsible Parties
2020 COR ACTION	2020 Corrective Action Program List
LEAD SMELTERS	Lead Smelter Sites
Financial Assurance	Financial Assurance Information Listing
PCB TRANSFORMER	PCB Transformer Registration Database
EPA WATCH LIST	EPA WATCH LIST
COAL ASH DOE	Steam-Electric Plant Operation Data
US FIN ASSUR	Financial Assurance Information
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Department of Public Health and Environment's Solid Waste Sites & Facilities database.

A review of the SWF/LF list, as provided by EDR, and dated 12/31/2012 has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	***8925 RANCHO COLORADO BL***	***SSW 0 - 1/8 (0.011 mi.)***	***A1***	***7***

State and tribal registered storage tank lists

AST: The Aboveground Storage Tank database contains registered ASTs. The source is the State Oil Inspector's Office's Tank List.

A review of the AST list, as provided by EDR, and dated 12/09/2013 has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WASTE MANAGEMENT MIDWAY LANDFI	8925 RANCHO COLO BLVD	SSW 0 - 1/8 (0.011 mi.)	A2	11

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

MINES: This dataset represents permitted mines in the State of Colorado

A review of the MINES list, as provided by EDR, and dated 09/19/2011 has revealed that there are 2 MINES sites within approximately 0.25 miles of the target property.

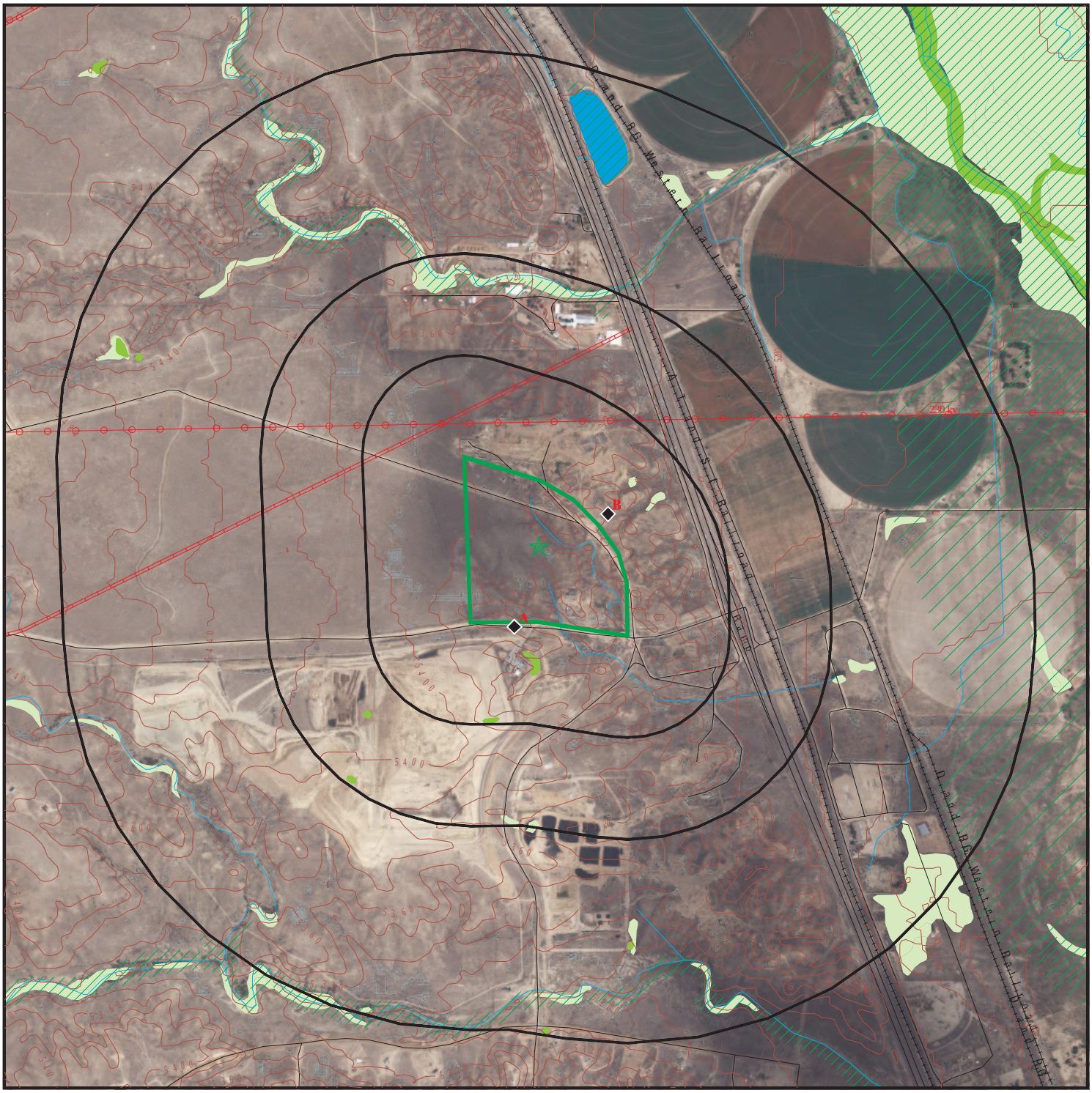
Lower Elevation	Address	Direction / Distance	Map ID	Page
MIDWAY GRAVEL PIT		ENE 0 - 1/8 (0.036 mi.)	B3	11
MIDWAY PIT		ENE 0 - 1/8 (0.036 mi.)	B4	12

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 17 records.

Site Name	Database(s)
ALBERTSONS EXPRESS #816	LUST, RGA LUST
SIMS TIRE	LUST, RGA LUST
GAS RITE #3120	LUST, LUST TRUST, RGA LUST
50 WEST AMOCO	LUST TRUST, LAST
CST METRO LLC DBA CORNER STORE #17	UST
GOODYEAR AUTO SERVICE CTR #8171	UST
LOAF N JUG #93	UST
GAS-RITE #3120	UST
50 WEST AMOCO	AST
KLAUS KLAPAC PROPERTY	FINDS
COLO SPGS HWY 94 SWDS	HIST LF
	RGA LUST
	RGA LUST
	RGA LUST
	RGA LUST
	RGA LUST
	RGA LUST

OVERVIEW MAP - 3832761.2s



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Easement Property ADDRESS: 9070 and 9310 Rancho Colorado Blvd Fountain CO 81008 LAT/LONG: 38.5548 / 104.6566	CLIENT: Terracon, Inc. CONTACT: Dan Taylor INQUIRY #: 3832761.2s DATE: January 16, 2014 4:00 pm

DETAIL MAP - 3832761.2s

0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Easement Property ADDRESS: 9070 and 9310 Rancho Colorado Blvd Fountain CO 81008 LAT/LONG: 38.5548 / 104.6566	CLIENT: Terracon, Inc. CONTACT: Dan Taylor INQUIRY #: 3832761.2s DATE: January 16, 2014 4:06 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		1	0	0	NR	NR	1
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0
LUST TRUST	0.500		0	0	0	NR	NR	0
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		1	0	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CO ERNS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
METHANE SITE	TP		NR	NR	NR	NR	NR	0
Methane Investigation	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
MINES	0.250		2	0	NR	NR	NR	2
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LUST	0.500		0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

A1
SSW
< 1/8
0.011 mi.
60 ft.

8925 RANCHO COLORADO BLVD.
FOUNTAIN, CO

SWF/LF **S110079947**
ASBESTOS **N/A**
Financial Assurance

Site 1 of 2 in cluster A

Relative:
Lower

Actual:
5352 ft.

LF:

Facility ID:	918
Facility Type:	Not reported
Owner:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Owner Telephone:	Not reported
Operator Name:	WASTE MANAGEMENT OF COLORADO, IN
Operator Contact:	Steve Eivins
Operator Address:	8925 EL Centro Blvd
Operator City,St,Zip:	Fountain, CO 80817
Operator Telephone:	Not reported

CO ASBESTOS:

Permit Number:	Not reported
Contractor:	Powers Environmental, LLC
Permit Date:	Not reported
Project:	Not reported
Linear Ft:	Not reported
Square Ft:	Not reported
Year:	2013
Project Type:	Asbestos Abatement Projects
Demo Number:	13EP3518N
Notice Date:	07/19/2013
Drums:	Not reported
End Date:	Not reported
Begin Date:	Not reported

CO Financial Assurance 2:

Region:	2
Month Due:	APR
Post Closure Cost:	$1,760,280.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	Other Revised Cost
First Of Submitted Date:	04/11/2012
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	$1,037,522.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	Inflation Adjustment

(Continued) **S110079947**

First Of Submitted Date:	04/08/2011
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	Not reported
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	Inflation Adjustment
First Of Submitted Date:	06/24/2010
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	$1,028,268.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	04/08/2010
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	Not reported
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	Inflation Adjustment
First Of Submitted Date:	10/01/2009
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	$1,016,075.00
Financial Assurance Required:	Not reported
Instrument:	Insurance

(Continued) **S110079947**

ID:	918
Active:	Not reported
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	04/14/2009
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	Not reported
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	Inflation Adjustment
First Of Submitted Date:	10/01/2008
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	$900,999.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	04/08/2008
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	$0.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	05/29/2007
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR

(Continued) **S110079947**

Post Closure Cost:	$857,992.00
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	Not reported
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	04/09/2007
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	Not reported
Financial Assurance Required:	Not reported
Instrument:	Insurance
ID:	918
Active:	True
Cost Reason:	Inflation Adjustment
First Of Submitted Date:	Not reported
Corrective Action Cost:	Not reported
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	911625.00
Financial Assurance Required:	Not reported
Instrument:	NO Instrument
ID:	918
Active:	True
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	10/22/1997
Corrective Action Cost:	0.00
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

Region:	2
Month Due:	APR
Post Closure Cost:	824826.00
Financial Assurance Required:	Not reported
Instrument:	NO Instrument
ID:	918
Active:	True
Cost Reason:	5-Year Revised Cost
First Of Submitted Date:	04/08/2005
Corrective Action Cost:	0.00
RCE Prepared Year:	Not reported
RCE Prepared Date:	Not reported
RCE Prepared Dur:	Not reported
Submitted Year:	Not reported

A2 SSW < 1/8 0.011 mi. 60 ft. | **WASTE MANAGEMENT MIDWAY LANDFILL** | **AST** | **A100348253** **N/A**
8925 RANCHO COLO BLVD
PUEBLO, CO 81008

Site 2 of 2 in cluster A

Relative: Lower

Actual: 5352 ft.

AST:

Facility ID:	10220

Owner:

Owner Id:	2573
Owner Name:	MIDWAY LANDFILL
Owner Address:	8925 RANCHO COLORADO BLVD
Owner City/State/Zip:	PUEBLO, CO 81008
Owner County:	PUEBLO

Tank Tag:	10220-1
Tank Status:	Not Regulated
Date Tank Installed:	04/01/1993
Tank Age:	20.7059782470827
Tank Contents:	Diesel - Dyed #2
Tank Type:	AST

Tank Tag:	10220-2
Tank Status:	Not Regulated
Date Tank Installed:	Not reported
Tank Age:	Not reported
Tank Contents:	Diesel
Tank Type:	AST

B3 ENE < 1/8 0.036 mi. 191 ft. | **MIDWAY GRAVEL PIT** | **MINES** | **S112328742** **N/A**
EL PASO (County), CO

Site 1 of 2 in cluster B

Relative: Lower

Actual: 5357 ft.

MINES:

Facility Id:	M1980086
Mine Type:	Surface
Status Description:	Revoked & Terminated
Date Status:	07/23/2009
Permittee:	Midway Sand & Gravel Inc
Permit Type:	110c
Date Permit Issued:	08/26/1980
Permit Acreage:	9.900000000000004
Commodity 2:	Not reported
Annual Fee:	50
Required Surety:	2500
Required I:	48
Actual Surety:	0
Township:	17
North or South:	S
Range:	65
Range Direction:	W
Prime Meridian:	06
Section:	22
Quarter:	Not reported
Quarter Quarter:	Not reported
Quarter1:	Not reported
UTM X:	530194.90000000002

MIDWAY GRAVEL PIT (Continued) **S112328742**

UTM Y:	4267358.4000000004
PS X UTM:	530194.90000000002
PS Y UTM:	4267358.4000000004
Latitutde:	38.556010000000001
Longitude:	-104.65346
Post Mining:	Rangeland
Pre Mining:	Rangeland
Max Allowed Disturbed Acres:	9.9000000000000004
Affected Acres:	9
Date Last Inspection:	06/04/1987
Mineral Owner:	Private
Surface Owner:	Private
Permit Specialist Assigned:	SGR

B4 **MIDWAY PIT** **MINES** **S112330463**
ENE **N/A**
< 1/8 **EL PASO (County), CO**
0.036 mi.
191 ft. **Site 2 of 2 in cluster B**

Relative:
Lower

Actual:
5357 ft.

MINES:

Facility Id:	M1988018
Mine Type:	Surface
Status Description:	Active
Date Status:	03/10/1988
Permittee:	Midway Aggregates, RLLP
Permit Type:	112c
Date Permit Issued:	08/12/1988
Permit Acreage:	25.350000000000001
Commodity 2:	Not reported
Annual Fee:	791
Required Surety:	40000
Required I:	48
Actual Surety:	40000
Township:	17
North or South:	S
Range:	65
Range Direction:	W
Prime Meridian:	06
Section:	22
Quarter:	Not reported
Quarter Quarter:	Not reported
Quarter1:	Not reported
UTM X:	530194.90000000002
UTM Y:	4267358.4000000004
PS X UTM:	530194.90000000002
PS Y UTM:	4267358.4000000004
Latitutde:	38.556010000000001
Longitude:	-104.65346
Post Mining:	Solid Waste Disposal
Pre Mining:	Rangeland
Max Allowed Disturbed Acres:	25.649999999999999
Affected Acres:	25.350000000000001
Date Last Inspection:	09/20/2006
Mineral Owner:	Private
Surface Owner:	Private
Permit Specialist Assigned:	BMK

Count: 17 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
EL PASO COUNTY	S100795781	COLO SPGS HWY 94 SWDS	13320 E HWY 94		HIST LF
FOUNTAIN	S114280822		7360-7390 HWY 85 AND 87 FOUNTA		RGA LUST
FOUNTAIN	S114280163		6460 S 85-87 HWY		RGA LUST
FOUNTAIN	S114280165		6460 S HWY 85 & 87		RGA LUST
FOUNTAIN	S114280164		6460 S HWY 85 & 87 FOUNTAIN CO		RGA LUST
FOUNTAIN	1008217434	KLAUS KLAPAC PROPERTY	6950 S HWY 85-87		FINDS
FOUNTAIN	S114272989		14020 MIDWAY RANCH RD RT 2		RGA LUST
FOUNTAIN	S114271474		101 W US HWY 50 SALIDA CO 8120		RGA LUST
PUEBLO	U004149836	CST METRO LLC DBA CORNER STORE #17	1525 HWY 50 W	81008	UST
PUEBLO	U004007373	GOODYEAR AUTO SERVICE CTR #8171	1500 HWY 50 W	81008	UST
PUEBLO	U003806212	LOAF N JUG #93	905 HWY 50 W & CLUB MANOR DR	81008	UST
PUEBLO	U003662962	ALBERTSONS EXPRESS #816	1601 HWY 50 W	81008	LUST, RGA LUST
PUEBLO	U003116790	GAS-RITE #3120	900 HWY 50 W	81008	UST
PUEBLO	S108084725	50 WEST AMOCO	2825 HWY 50 W	81008	LUST TRUST, LAST
PUEBLO	S107556078	SIMS TIRE	1500 HWY 50 W	81008	LUST, RGA LUST
PUEBLO	S107555445	GAS RITE #3120	900 HWY 50 W	81008	LUST, LUST TRUST, RGA LUST
PUEBLO	A100288494	50 WEST AMOCO	2825 HWY 50 W	81008	AST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 01/21/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 01/09/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/09/2013	Telephone: N/A
Date Made Active in Reports: 07/10/2013	Last EDR Contact: 01/09/2014
Number of Days to Update: 62	Next Scheduled EDR Contact: 04/21/2014
	Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/29/2013	Telephone: 703-412-9810
Date Made Active in Reports: 08/09/2013	Last EDR Contact: 11/11/2013
Number of Days to Update: 72	Next Scheduled EDR Contact: 03/10/2014
	Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 05/31/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 07/08/2013	Telephone: 703-603-8704
Date Made Active in Reports: 12/06/2013	Last EDR Contact: 01/10/2014
Number of Days to Update: 151	Next Scheduled EDR Contact: 04/21/2014
	Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/29/2013	Telephone: 703-412-9810
Date Made Active in Reports: 08/09/2013	Last EDR Contact: 11/11/2013
Number of Days to Update: 72	Next Scheduled EDR Contact: 03/10/2014
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/30/2013
Date Data Arrived at EDR: 10/01/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 66

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 01/10/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of Public Health & Environment
Telephone: 303-692-3300
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: N/A

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Sites & Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 03/08/2013
Number of Days to Update: 18

Source: Department of Public Health & Environment
Telephone: 303-692-3300
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Annually

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank List

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 12/09/2013
Date Data Arrived at EDR: 12/10/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 36

Source: Department of Labor and Employment, Oil Inspection Section
Telephone: 303-318-8521
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Quarterly

TRUST: Lust Trust Sites

Reimbursement application package. The 1989 Colorado General Assembly established Colorado's Petroleum Storage Tank Fund. The Fund reimburses eligible applicants for allowable costs incurred in cleaning up petroleum contamination from underground and aboveground petroleum storage tanks, as well as for third-party liability expenses. Remediation of contamination caused by railroad or aircraft fuel is not eligible for reimbursement. The Fund satisfies federal Environmental Protection Agency financial assurance requirements. Monies in the Fund come from various sources, predominantly the state environmental surcharge imposed on all petroleum products except railroad or aircraft fuel.

Date of Government Version: 11/08/2013
Date Data Arrived at EDR: 11/15/2013
Date Made Active in Reports: 12/11/2013
Number of Days to Update: 26

Source: Department of Labor and Employment, Oil Inspection Section
Telephone: 303-318-8521
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Varies

LAST: Leaking Aboveground Storage Tank Listing

A listing of leaking aboveground storage tank sites.

Date of Government Version: 12/09/2013
Date Data Arrived at EDR: 12/10/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 36

Source: Department of Labor & Employment
Telephone: 303-318-8525
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/06/2013
Date Data Arrived at EDR: 11/07/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 08/27/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 66

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 184

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/01/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 12/09/2013
Date Data Arrived at EDR: 12/10/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 36

Source: Department of Labor and Employment, Oil Inspection Section
Telephone: 303-318-8521
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Quarterly

AST: Aboveground Tank List
Aboveground storage tank locations.

Date of Government Version: 12/09/2013
Date Data Arrived at EDR: 12/10/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 36

Source: Department of Labor and Employment, Oil Inspection Section
Telephone: 303-318-8521
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 70

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/01/2014
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 07/29/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 92

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 07/29/2013
Date Data Arrived at EDR: 07/30/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 129

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Quarterly

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/13/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Environmental Real Covenants List
Senate Bill 01-145 gave authority to the Colorado Department of Public Health and Environment to approve requests to restrict the future use of a property using an enforceable agreement called an environmental covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected cleanup remedy is adequately protective of human health and the environment.

Date of Government Version: 11/07/2013
Date Data Arrived at EDR: 11/07/2013
Date Made Active in Reports: 12/05/2013
Number of Days to Update: 28

Source: Department of Public Health & Environment
Telephone: 303-692-3331
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/17/2013
Date Data Arrived at EDR: 10/01/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 66

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup & Redevelopment Act Application Tracking Report
The Voluntary Cleanup and Redevelopment Act is intended to permit and encourage voluntary cleanups by providing a method to determine clean-up responsibilities in planning the reuse of property. The VCRA was intended for sites which were not covered by existing regulatory programs.

Date of Government Version: 09/04/2013
Date Data Arrived at EDR: 10/15/2013
Date Made Active in Reports: 10/25/2013
Number of Days to Update: 10

Source: Department of Public Health and Environmental
Telephone: 303-692-3331
Last EDR Contact: 01/13/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/24/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/24/2013
Next Scheduled EDR Contact: 04/07/2014
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: No Update Planned

SWRCY: Registered Recyclers Listing
A listing of registered recycler locations in the state of Colorado.

Date of Government Version: 12/18/2013
Date Data Arrived at EDR: 12/19/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 27

Source: Department of Public Health & Environment
Telephone: 303-692-3337
Last EDR Contact: 12/12/2013
Next Scheduled EDR Contact: 03/31/2014
Data Release Frequency: Varies

HISTORICAL LANDFILL: Historical Landfill List
Abandoned/Inactive Landfills.

Date of Government Version: 01/31/1993
Date Data Arrived at EDR: 04/24/1994
Date Made Active in Reports: 05/30/1994
Number of Days to Update: 36

Source: Department of Public Health & Environment
Telephone: 303-692-3300
Last EDR Contact: 09/05/1996
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/06/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 22

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 12/05/2013
Next Scheduled EDR Contact: 03/17/2014
Data Release Frequency: Quarterly

CDL: Meth Lab Locations
Meth lab locations that were reported to the Department of Public Health & Environment.

Date of Government Version: 01/02/2014
Date Data Arrived at EDR: 01/06/2014
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 9

Source: Department of Public Health and Environment
Telephone: 303-692-3023
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Quarterly

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/13/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/30/2013
Date Data Arrived at EDR: 10/01/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 76

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

CO ERNS: Spills Database
State reported spills.

Date of Government Version: 01/02/2014
Date Data Arrived at EDR: 01/06/2014
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 9

Source: Department of Public Health and Environmental
Telephone: 303-692-2000
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 10/15/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/06/2013
Number of Days to Update: 34

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 10/02/2013
Date Made Active in Reports: 12/16/2013
Number of Days to Update: 75

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 11/06/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/15/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 12/13/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 06/11/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 143

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/12/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/26/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 28

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 12/06/2013
Next Scheduled EDR Contact: 03/17/2014
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/31/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 44

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/27/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/07/2014
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 11/21/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 11/21/2014
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/09/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2013
Date Data Arrived at EDR: 07/17/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 107

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/22/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 91

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 09/30/2013
Date Data Arrived at EDR: 10/09/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 23

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/10/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 111

Source: EPA
Telephone: (303) 312-6312
Last EDR Contact: 12/10/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/28/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/25/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Biennially

METHANE SITE: Methane Site Investigations - Jefferson County 1980

The objectives of the study are to define as closely as possible the boundaries of methane producing solid waste landfills.

Date of Government Version: 12/31/1980
Date Data Arrived at EDR: 02/13/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 50

Source: Jefferson County Health Department
Telephone: 303-239-7175
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

METHANE INVESTIGATION: Methane Gas & Swamp Findings

The primary objective of this study was to assess methane gas related hazards at selected landfill sites in Colorado. These sites were selected by the Colorado Department of Health following evaluation of responses received from County and Municipal agencies about completed and existing landfills within their jurisdiction.

Date of Government Version: 03/15/1979
Date Data Arrived at EDR: 02/13/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 50

Source: Department of Health
Telephone: 303-640-3335
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DRYCLEANERS: Drycleaner Facilities

A listing of drycleaning facilities.

Date of Government Version: 12/10/2013
Date Data Arrived at EDR: 12/11/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 35

Source: Department of Public Health & Environment
Telephone: 303-692-3213
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

NPDES: Permitted Facility Listing

A listing of permitted facilities from the Water Quality Control Division.

Date of Government Version: 11/04/2013
Date Data Arrived at EDR: 11/04/2013
Date Made Active in Reports: 12/05/2013
Number of Days to Update: 31

Source: Department of Public Health & Environment
Telephone: 303-692-3611
Last EDR Contact: 11/04/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Varies

AIRS: Permitted Facility & Emissions Listing

A listing of Air Pollution Control Division permits and emissions data.

Date of Government Version: 12/10/2013
Date Data Arrived at EDR: 12/11/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 35

Source: Department of Public Health & Environment
Telephone: 303-692-3213
Last EDR Contact: 12/09/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

There were nine uranium mill tailings sites in Colorado designated for cleanup under the federal Uranium Mill Tailings Radiation Control Act. These nine sites, know commonly as UMTRA sites, were remediated jointly by the State of Colorado and the U.S. Department of Energy during the late 1980's and early 1990's. Mill tailings were removed from 8 of the mill sites and relocated in engineered disposal cells. A disposal cell is designed to encapsulate the material, reduce radon emanation, and prevent the movement of water through the material. At one site, Maybell, CO, the tailings were stabilized in-place at the mill site. After remediation of the tailings was completed, the State and DOE began to investigate the residual impacts to groundwater at the mill sites. The groundwater phase of the UMTRA program is on-going.

Date of Government Version: 11/23/2004
Date Data Arrived at EDR: 03/21/2007
Date Made Active in Reports: 05/02/2007
Number of Days to Update: 42

Source: Department of Public Health & Environment
Telephone: 970-248-7164
Last EDR Contact: 11/25/2013
Next Scheduled EDR Contact: 03/10/2014
Data Release Frequency: Varies

ASBESTOS: Asbestos Abatement & Demolition Projects

Asbestos abatement and demolition projects by the contractor.

Date of Government Version: 09/30/2013
Date Data Arrived at EDR: 11/15/2013
Date Made Active in Reports: 12/05/2013
Number of Days to Update: 20

Source: Department of Public Health & Environment
Telephone: 303-692-3100
Last EDR Contact: 11/11/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Semi-Annually

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/15/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/15/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: N/A

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 07/03/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 72

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 01/02/2014
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/01/2013
Next Scheduled EDR Contact: 02/11/2014
Data Release Frequency: Varies

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Quarterly

COAL ASH DOE: Sleam-Electric Plan Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 01/13/2014
Next Scheduled EDR Contact: 04/28/2014
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 10/28/2013
Date Data Arrived at EDR: 10/29/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 38

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 11/18/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Quarterly

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/13/2013
Next Scheduled EDR Contact: 03/24/2014
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
A listing of financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 10/22/2013
Date Data Arrived at EDR: 10/23/2013
Date Made Active in Reports: 12/05/2013
Number of Days to Update: 43

Source: Department of Public Health & Environment
Telephone: 303-692-3350
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Varies

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/23/2013
Date Data Arrived at EDR: 11/06/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 30

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/23/2013
Date Data Arrived at EDR: 11/06/2013
Date Made Active in Reports: 12/06/2013
Number of Days to Update: 30

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/14/2014
Data Release Frequency: Annually

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

MINES: Permitted Mines Listing
This dataset represents permitted mines in the State of Colorado

Date of Government Version: 09/19/2011
Date Data Arrived at EDR: 12/26/2012
Date Made Active in Reports: 02/01/2013
Number of Days to Update: 37

Source: Division of Reclamation Mining and safety
Telephone: 303-866-3567
Last EDR Contact: 12/26/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/15/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 10/22/2013
Date Data Arrived at EDR: 10/23/2013
Date Made Active in Reports: 12/10/2013
Number of Days to Update: 48

Source: Department of Public Health & Environment
Telephone: 303-392-3350
Last EDR Contact: 01/03/2014
Next Scheduled EDR Contact: 04/21/2014
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/02/2014
Number of Days to Update: 185

Source: EDR
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ADAMS COUNTY:

Summary Report on Methane Gas Hazards and Surveys Conducted on Domestic and Demolition Landfills in Adams County

As of May 8, 1978, all known landfills or dumping sites in the Adams County area have been surveyed.

Date of Government Version: 05/08/1978
Date Data Arrived at EDR: 02/16/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 47

Source: Tri-County Health Department
Telephone: 303-761-1340
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

ARAPAHOE COUNTY:

A Survey of Landfills in Arapahoe County

A survey of Arapahoe County was conducted from August through November, 1977, of all open and closed landfills and dumpsites in the county. Each of the sites found was classified as domestic or demolition.

Date of Government Version: 12/31/1978
Date Data Arrived at EDR: 02/16/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 47

Source: Tri-County Health Department
Telephone: 303-761-1340
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

BOULDER COUNTY:

Old Landfill Sites

Landfill sites in Boulder county.

Date of Government Version: 05/01/1986
Date Data Arrived at EDR: 11/14/1995
Date Made Active in Reports: 12/07/1995
Number of Days to Update: 23

Source: Boulder County Health Department
Telephone: 303-441-1182
Last EDR Contact: 01/30/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DENVER COUNTY:

Landfills in Denver County

Landfill sites in the city and county of Denver.

Date of Government Version: 04/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/25/2013
Number of Days to Update: 31

Source: City and County of Denver
Telephone: 303-436-7300
Last EDR Contact: 12/26/2013
Next Scheduled EDR Contact: 04/07/2014
Data Release Frequency: No Update Planned

Investigation of Methane Gas Hazards

The purpose of this study was to assess the actual and potential generation, migration, explosive and related problem associated with specified old landfills, and to identify existing and potential problems, suggested strategies to prevent, abate, and control such problems and recommend investigative and monitoring functions as may be deemed necessary. Eight sites determined to be priorities due to population density and potential hazards to population and property were selected by the Colorado Department of Health.

Date of Government Version: 01/01/1981
Date Data Arrived at EDR: 01/29/2013
Date Made Active in Reports: 03/08/2013
Number of Days to Update: 38

Source: City and County of Denver Department of Environmental Health
Telephone: 720-865-5522
Last EDR Contact: 01/15/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DOUGLAS COUNTY:

Douglas County Landfill Key

Landfill sites in Douglas county.

Date of Government Version: 06/12/1991
Date Data Arrived at EDR: 02/16/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 47

Source: Tri-County Health Department
Telephone: 303-761-1340
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

PUEBLO COUNTY:

Designated Disposal & Landfill Sites
Only inert materials. Asphalt, cement, dirt & rock unless otherwise specified. These sites are no longer active.

Date of Government Version: 04/30/1990
Date Data Arrived at EDR: 11/16/1995
Date Made Active in Reports: 12/07/1995
Number of Days to Update: 21

Source: Pueblo City-County Health Department
Telephone: 719-583-4300
Last EDR Contact: 11/13/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

TRI COUNTY:

Tri-County Area Solid Waste Facilities List (Adams, Arapahoe and Douglas Counties)
Closed Domestic Landfills in Adams County, Closed Domestic Landfills in Arapahoe County, Closed Demolition Landfills in Arapahoe County, Closed Domestic Landfills in Douglas County.

Date of Government Version: 10/15/1983
Date Data Arrived at EDR: 02/16/1995
Date Made Active in Reports: 04/04/1995
Number of Days to Update: 47

Source: Tri-County Health Department
Telephone: 303-761-1340
Last EDR Contact: 01/27/1995
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WELD COUNTY:

Solid Waste Facilities in Weld County
Solid Waste Facilities in Weld County.

Date of Government Version: 11/01/2013
Date Data Arrived at EDR: 11/13/2013
Date Made Active in Reports: 12/05/2013
Number of Days to Update: 22

Source: Weld County Department of Public Health
Telephone: 970-304-6415
Last EDR Contact: 11/08/2013
Next Scheduled EDR Contact: 02/24/2014
Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/22/2013
Next Scheduled EDR Contact: 03/03/2014
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 11/01/2013
Date Data Arrived at EDR: 11/07/2013
Date Made Active in Reports: 11/18/2013
Number of Days to Update: 11

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 11/07/2013
Next Scheduled EDR Contact: 02/17/2014
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/19/2013
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 09/27/2013
Number of Days to Update: 49

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/11/2013
Next Scheduled EDR Contact: 03/31/2014
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Daycare Listing
Source: Department of Human Services
Telephone: 303-866-5958

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Riparian Vegetation Data
Source: Division of Wildlife
Telephone: 970-416-3360

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

APPENDIX E
SITE PHOTOGRAPHS

Phase I Environmental Site Assessment Photos
Front Range-Midway Solar Project, LLC Easement Property ■ Fountain, CO
Photo Date: January 30, 2014 ■ Terracon Project No. 23147702

Photo #1 View of subject site

Photo #2 View to the north from the subject site

Photo #3 View to the east from the subject site

Photo #4 View to the west from the subject site

Photo #5 View to the south from the subject site

Photo #6 View of soil stockpiles and debris in the northern portion of the site

Photo #7 View of trash dumped in the northern portion of the site

Photo #8 View of building materials dumped in the northern portion of the site

Photo #9 View of drums, buckets, and associated oil-stained soil in the southeast portion of the site

Photo #10 View of drums and trash in the southeast portion of the site

Photo #11 View of gold mill tailings stockpile in the southeast portion of the site

Photo #12 View of soil stockpiles containing trash and debris including a drum in the southeast portion of the site

APPENDIX F
CREDENTIALS

DANIEL K. TAYLOR

PROJECT MANAGER, ENVIRONMENTAL SERVICES

PROFESSIONAL EXPERIENCE

Mr. Taylor is an environmental project manager in Terracon's Colorado Springs, Colorado office and has eleven years of experience. He performs environmental site assessments and is responsible for site reconnaissance, site research, regulatory research, regulatory interpretation, and report preparation. Mr. Taylor is also experienced in conducting asbestos surveys and Phase II ESA's including historical site characterizations, water and soil sampling, soil vapor surveys, radon studies, and site health and safety monitoring and management.

PROJECT EXPERIENCE

- **Asbestos and Lead Based Paint Surveys and Inspections**
  Mr. Taylor is a certified State of Colorado Asbestos Inspector. He has managed and performed asbestos surveys and lead based paint sampling on federal, commercial, industrial, municipal and residential facilities throughout Colorado. In addition, Mr. Taylor has inspected soils for suspect asbestos materials during environmental and geotechnical drilling and excavation activities at federal facilities including Peterson Air Force Base, the United States Air Force Academy, Fort Carson Army Post, and the Denver Federal Center, and for Colorado School District 49 within an abandoned landfill.

- **Air Monitoring and Sampling**
  Mr. Taylor performes and manages air and soil vapor monitoring and sampling for project sites including residential, commercial, and industrial facilities, landfills, and agricultural facilities. Resposibilies include coordinating and performing field activities, subcontractor coordination, data evaluation and report preparation.

- **Peterson Air Force Base, Colorado Springs, CO**
  Mr. Taylor has performed and managed waste water sampling and analysis, asbestos surveys, lead paint sampling, and air monitoring activities for project sites located at Peterson Air Force Base. Resposibilies include coordinating and performing field activities, subcontractor coordination, data evaluation and report preparation.

- **United States Air Force Academy , Colorado Springs, CO**
  Provides project management and field support of groundwater and hazardous waste sampling and analysis for project sites located at the United States Air Force Academy. Responsibilies include coordinating and performing field activities, subcontractor coordination, and data evaluation.

- **Phase II Environmental Assessments**
  Performed and managed quarterly groundwater monitoring, soil sampling, and well installation. Mr. Taylor collected soil samples via hand auger, Geoprobe, and hollow/solid stem auger methods. Office responsibilities include investigation and report writing.

- **Phase I Environmental Site Assessments – Environmental Professional (EP)**
  Managed Phase I ESAs for construction sites, vacant land, agricultural land, commercial facilities, and industrial/manufacturing facilities throughout Colorado.

EDUCATION

Bachelor's of Arts, Geography, Concentration in Environmental Policy, San Diego State University

CERTIFICATIONS

OSHA Hazwoper 40-Hour Health & Safety

State of Colorado Asbestos Inspector

OSHA 2-Hour AHERA Asbestos Awareness Training

WORK HISTORY

Terracon Consultants, Environmental Scientist, 2005-Present

Petra Geotechnical, Inc., Environmental Senior Staff Scientist, 2002-2005

LAWRENCE R. KEEFE
PRINCIPAL, OFFICE MANAGER

PROFESSIONAL EXPERIENCE
Mr. Keefe has more than 30 years of professional consulting experience and manages Terracon's Colorado Springs, Colorado office. He has extensive experience in environmental consulting, with particular expertise in groundwater, remedial and hazardous waste site investigations and feasibility studies. His experience includes RCRA facility investigations, brownfields properties, state Superfund remedial investigation/feasibility studies, remedial programs for inactive hazardous waste sites and site remediation for USTs.

Mr. Keefe has developed work plans and procedures for inactive hazardous waste, radioactive waste and mixed waste sites including health and safety plans, QA/QC plans and sampling analysis plans. He has designed, constructed and installed computerized datalogger systems for monitoring various hydrogeological parameters. Mr. Keefe has also designed and constructed alternative methods of groundwater monitoring well installation, development and sampling. He has worked extensively with automated groundwater monitoring instrumentation and geotechnical instrumentation.

Mr. Keefe has managed or performed more than 800 Phase I and Phase II environmental site assessments for financial institutions, developers and private and public organizations. Properties investigated include commercial, industrial and governmental facilities impacted with petroleum, hazardous and radioactive wastes. Mr. Keefe has developed plans, procedures and protocols for environmental sampling and analysis programs.

PROJECT EXPERIENCE
Voluntary Cleanup Program Application – Pueblo, Colorado
Project manager responsible for assessing closed in-placed underground fuel storage tanks at a former bakery and distribution center. Terracon developed a cost effective investigation approach which resulted in a No Further Action determination pursuant to the State of Colorado Voluntary Cleanup Program.

Tierra Vista Communities – Peterson AFB, Colorado
Project manager for pre-demolition surveys of military housing units scheduled for redevelopment. Services provided include asbestos, lead-based paint, mold, and persticide/herbicides surveys. Also developed abatement and remedial plans as required. Terracon has developed a tiered inspection and analysis program which resulted in significant time and cost savings to the client. In addition, a team of highly qualified professionals was assembled to provide a quick response to the client's needs for a variety of services.

Federal Facility Environmental Compliance Audit – Pueblo, Colorado
Project manager responsible for conducting an environmental compliance audit of the Transportation Technology Center, a 56-square-mile US Department of Transportation facility. The audit was conducted in accordance with USEPA guidance and federal executive orders and

Education
Bachelor of Science, Environmental Science, Ashwood University

Associate of Arts, Mathematics and Science, 1981, Onondaga Community College

Electrical Engineering Studies, Rochester Institute of Technology, 1982-1984

Registrations
Listed Consultant – State of Colorado Division of Oil and Public Safety

Certifications
40-Hour OSHA Hazardous Waste Site Worker Training

Supervisor's Hazardous Waste Operations and Emergency Response – General Physics Corporation

USEPA AHERA – Building Inspector

Affiliations
Society of American Military Engineers, Pikes Peak Post

Association of Groundwater Scientists and Engineers

Work History
Terracon Consultants, Inc., Office Manager, 2003-Present; Environmental Department Manager, 2000-2003; Senior Project Manager, 1998-2000

The Sear Brown Group, Project Manager/Senior Environmental Engineer, 1995-1998

Dames & Moor, Project Manager/Senior Environmental Engineer, 1981-1995

U.S. Army Reserves, 403rd Civil Affair Battalion, Civil Affairs Team Sergeant, 1979-1998 (retired)

provided the client with clear guidance and recommendations for corrective actions.

GSA Environmental Advisory Services Contract – Various Federal Facilities
Contract administrator/account manager for environmental consulting services provided to federal agencies. Projects have included personnel assigned to support the client on-site, biosolids application area assessment, skeet range assessment and evaluation, remedial response, regulatory compliance assistance and as-needed services.

Voluntary Cleanup Program Application – Denver, Colorado
Project manager responsible for assessing and remediating releases from a dry cleaning facility on a retail plaza. Investigation activities included air, soil, and groundwater sampling, and indoor air and sub-slab air sampling. Investigation and remediation of the site was conducted pursuant to the State of Colorado Voluntary Cleanup Program.

Multi-Phased RCRA Facility Audit and Investigation – Buffalo, New York
Project manager responsible for management of all aspects of investigation including field activities, data analysis and interpretation, preparation of reports and presentations to regulatory agencies. Site consisted of evaluation and assessment of over 120 SWMUs. Conducted data assessment, usability and validation in accordance with state and USEPA Region 2 guidelines and requirements.

Compliance Audit, Dry Cleaning Facility – Colorado Springs, Colorado
Conducted a compliance audit of a dry cleaning facility to determine compliance with federal and state air emission regulations, hazardous material and waste regulations and general site operations.

Compliance Audit, Microelectronics Facility – Colorado Springs, Colorado
Conducted an audit to determine compliance with federal and state air emission regulations, hazardous material and waste storage and handling regulations and general site operations.

Macerich Management Company – Various Locations
National client manager of asbestos surveys and abatement projects at retail malls located throughout the United States. Responsible for scheduling, overseeing surveys, ensuring quality control and consistency, client interaction and consolidation of reports.

Sampling and Analysis Program for Bethlehem Steel Corporation – Buffalo, New York
Project manager for sampling and analysis program to support petition to delist waste materials. Managed field activities, data analysis and statistical evaluation of data as required by USEPA. Conducted data usability and validation in accordance with USEPA Region 2 guidelines.

Brownfield Site Assessment and Remediation – Rochester, New York
Project manager and lead investigator for assessment of a former industrial facility under State of New York Brownfield Program. Responsible for development of work plans including field sampling plans, quality assurance plans, and data quality objectives plan. Conducted data evaluation, assessment and validation as required by the state and the USEPA.

Fleet Bank ESAs – Hartford, Connecticut
Project manager for national contract involving environmental assessment studies for real estate transactions (commercial and industrial properties). Assessments included PCAs, regulatory compliance audits, data evaluation and validation, health risk assessments and comparative analysis of remedial options.

UST Design and Construction, American Airlines – Rochester, New York
Project manager/engineer for design and construction oversight of UST installation at airline maintenance facility. Design included double-wall fiberglass UST, automated fuel management system and fire suppression system.

Closure Design of C&D Landfill – Buffalo, New York
As project manager, evaluated and designed remedial alternatives for a leachate recovery system and cover system. Modeled alternative performances using various computer models.

UST Assessment and Survey – Fort Drum, Watertown, New York
Project manager responsible for conducting an assessment and survey of more than 100 USTs on the "Old Post" section of Fort Drum. Developed GIS system to electronically manage information including locations, sizes and digital photographs of USTs.

Petroleum Release Investigations and Remediation – New York
Project manager/engineer responsible for evaluation, design and construction of numerous petroleum release sites involving gasoline and fuel oil. Remedial alternatives implemented include in-situ and ex-situ bioremediation, soil flushing, groundwater extraction and excavation. Developed cleanup objectives using risk-based analysis considering present and future property uses.

Inactive Hazardous Waste Site Investigations – New York
Project manager for NYSDEC Phase I and II inactive hazardous waste site investigations. Responsible for initial site inspection, report preparation, HRS scoring and Phase II recommendations and completion.

Geophysical Survey, Bethlehem Steel Corporation – Buffalo, New York
Conducted geophysical surveys to determine locations and geological conditions at waste and disposal sites. Survey methods included magnetometer, electromagnetics, resistivity and seismic refractions.

Environmental Assessment – Buffalo, New York
Assessment activities included regulatory compliance, evaluation of SWMUs, manufacturing processes and waste streams and recommendations to correct findings.

Remediation and Feasibility Study for Chemical Disposal Site at Cornell University – New York
Project engineer for preparation of feasibility study for remediation of chemical disposal site. Contaminants included organic solvents (TCE) in groundwater. Final remediation included a cap and slurry wall that was accepted by NYSDEC in ROD.

Published Articles
Keefe, Lawrence and Perrott, Erin. *Terraced Transition,* CE News, February 2010.

Keefe, Lawrence (contributing author). *Handbook of Environmental Monitoring Procedures,* McGraw Hill, 2005.

Keefe, Lawrence. *Environmental Site Assessments,* New York Real Estate Journal, May 1994.

Keefe, Lawrence and L. Brannaka. *Microcomputers as Applied to Groundwater Monitoring,* Groundwater Monitoring Review, Spring 1986.

Additional Courses
Risk-Based Corrective Action Implementation Workshop, Colorado Department of Labor & Employment, Oil Inspection Section, 1999.

Risk-Based Corrective Action, ASTM Standards Technology Training, 1996.

Total Quality Management, Sear-Brown, 1995.

In-Situ and On-Site Bioreclamation Conference, 1995.