Executive Summary

North Antelope Highlands Project

Rosebud Sioux Tribe and Citizens Wind

Ken Haukaas

The present day members of the Rosebud Sioux Tribe of approx. 34,000 are the descendants of the Sicangu Oyate (Brule or Burnt Thigh Nation). The Sicangu are a part of the Tetonwan Lakota Oyate (Dwellers of the Plains), more commonly known to history as the Great Sioux Nation. The people of the Sioux Nation, from west to east, refer to themselves as Lakota, Nakota or Dakota, which means friend or ally. The expansive, rolling prairies, the shallow, winding creeks and rivers, and the ever-present winds are all integral parts of the continuing history, culture and remaining economic base upon which the Lakota people who call Rosebud home depend. Many of the Rosebud Sioux Tribe reside on the one million acre reservation, the nation's 6th largest, in South Central South Dakota and unfortunately we live on one of the poorest counties in the United States.

In March 2003, through the vision of the late Alex "Little Soldier" Lunderman (1928-2000) and the efforts of the Rosebud Sioux Tribal Utilities Commission, with assistance from DISGEN Inc. and ICOUP, along with grant funding from Dept. of Energy and a loan from the Rural Utilities Service, United States Department of Agriculture, the Rosebud Sioux Tribe commissioned a single 750 kilowatt NEG Micon wind turbine near the Rosebud Casino in March 2003. The Little Soldier "Akicita Cikala" Turbine stands as a testament to the vision of a man and a people. This vision has carried on through the application and award of a DOE grant in 2003 for the pre-development work for the Owl Feather War Bonnet 30 Mw wind farm, which these activities were completed and the Use of Lease and Right of Way was approved in 2008.

In 2007, realizing the potential of wind development to bring about tribal economic development, the tribe continued to pursue wind development and issued an RFP to develop a 100 Mw wind farm in the highlands North of Antelope. Eventually the RST awarded the RFP to Citizens wind, a subsidiary of Citizens Energy Corp of Boston and we immediately began in earnest developing a potential 200 Mw in this area. A preliminary Systems Impact Study and capacity on the WAPA 115 kv that runs right through the selected site, was found to be limited to 190 Mw.

The estimated cost for all the predevelopment work would be around $3,000,000.00 and the tribe would not have to bear any of these costs but we would work closely with them to insure programs within the Tribe and the BIA, if needed would respond in the appropriate time frame.

In the initial discussions with Citizens wind, a new concept was presented to the tribe. The tribe would share in the development fees that generally just the developer reaps, and this is charged to an investment group that would eventually bring the project to the table, assuming that a Power Purchase Agreement was in place. Originally a 20/80 split was agreed to. Because of the DOE award in the fall of 2009 the RST, we garnered a position of 33/67 split in this developer fee.

In the past developers would charge around $100,000.00 per Mw, but because of the sluggish economy, we may opt to charge a lower fee in order to get the project in the ground. With this tribal development fee coming to the tribe, RST could opt to spend that money to purchase 1, 2 or 3 turbines depending on negotiated price of the PPA, and the tribe would gain all profits from the purchased turbines over and above the agreed 3.5% fee on gross revenue stream.

Throughout the years from 2009 to the present day all of the site reviews by various contractors have revealed no red flags as far as impeding the project continuance.

During this time, the project has lost both its initial primary contact at Citizens Wind, Mr. Braden Houston and its primary contact at the tribal level in 2012, due to tribal elections, for a period of 3 years, which has led to some stumbling in the course of acquiring reports from the contractors who have done the site work. Mr. Matt Pearlson has been hired to assume the management from the perspective of Citizens Wind and no one within the tribe has been hired to assume the work from the tribe's perspective but the effort to move oversight to REDCO is continuing. As former point of contact within the tribe, because of my efforts pushing to continue the project, I have been tasked to write the final report for the tribe.

Development of wind brings forth a myriad of complex issues that need to be understood before one can seriously even think about building a wind farm. The primary understanding is realizing your wind potential, and this data needs to be gathered through the implementation of a Meteorological Tower measuring wind at the proposed wind farm site or relatively near the site for at least a year, and the more years of data, the more financially stable the data is to the investor.

In 2003 the tribe, erected a 50 meter MET tower on the western edge of the NAHP, to record the data of this area and in 2009, Citizens Wind erected two more Met towers in the center and on the Eastern edge of this area. The data indicates that areas within the site have a capacity factor of around 47% which is outstanding for a wind farm.

It is the objective of this project to develop a self-sustainable business on the reservation primarily to foster jobs and to create maximum economic development benefits to the RST and its members without the tribe assuming any economic risk. It is the wish of this author that the tribe develop its own tribal utility from the revenue stream of this project and use that revenue stream towards developing localized distributive generation projects in our tribal communities, as the electricity rates are increasing dramatically for everyone due to EPA mandates on Coal Fired electrical plants.

We have completed all of the pre-construction studies on site requirements within the 15,000+ acre site, and as far as the biological assessments along with the flora and fauna studies, along with the required cultural studies, the site looks promising and nothing appears a pediment. We will continue to pursue this project meeting the proper regulatory pathways to insure approval of the NEPA process. (See Citizens Wind, Final report.)

Since 2003, the tribe has attempted to develop 2 large wind farms with little progress on securing a Power Purchase Agreement. We came close in 2006-07, with Owl Feather War Bonnet Wind Farm, but ineptness in the Bureau of Indian Affairs delaying the approval process caused us to lose a Draft PPA with Nebraska Public Power District. Since then, the sluggishness of US economy and our distance from a large load has restricted us from winning a PPA.

With the shutdown of aging Coal Fired Electrical Generating plants throughout the nation and mandates upon these types of electrical generation to lessen their Carbon emissions it is hoped that this will turn around and will help us get these two projects in the ground in the near future.

Looking back over these years since 2003, there is a need for the Rosebud Sioux Tribe and the Champion within to push these types of long range projects and to insure that they be kept moving as smoothly as they can be, and with that they need to be insulated as much as they can from tribal politics. When one administration leaves and another enters, priorities become shifted and interest is lost. With the tribe, projects of these types should be assigned to a permanent program within the tribe, so that attention to all the particulars of a long range project are fully understood and pursued. It is my hope that the Rosebud Sioux Tribe will soon develop a commercial wind farm on our tribal lands and reap monies that are sorely needed for our People and our Tribe.

CITIZENS
ENERGY
CORPORATION
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North Antelope Highlands Wind Project

Grant DE-EE0002505: A final report on Wind Energy Development on the Rosebud Sioux Reservation

Technical Contact:

Matthew Pearlson, Citizens Energy Corporation 88 Black Falcon Ave. Boston, MA 02210

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The Rosebud Project, designated as the Mission-North Antelope Wind Project, is a 99 MW wind project (with the potential to add a 91 MW second phase) located in south-central South Dakota. The Project is in mid to late stage development, and is seeking a power purchase agreement (PPA) as the main component to complete the development cycle. The entire wind project will be located on Federally recognized Indian lands, and will be able to take advantage of unique federal incentives. This report is provided to the Rosebud Sioux Tribe in partial fulfillment of grant DE-EE0002505.

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Final Report Summary of Project and Development Highlights:

Location: Located on approximately 11,000 acres on the Rosebud Reservation, which is about 2 hours south of the capital of South Dakota, Pierre.

Wind Resource: V-bar, a well renowned wind industry meteorological group, has analyzed multiple years of on-site wind data and calculated a Net Capacity Factor of 45+%, utilizing the GE 1.6mw, 82.5m turbine. With current turbine technology we would expect to have a NCF of approximately 50%. The calculated average array wind speed at 80 meters is 8.50 mps.

Environmental & Permitting: All flora and fauna field data gathering is complete. The cultural and archeological study was started in June of 2015, and was completed by the Rosebud Tribal Historical Preservation Office October of 2015. To secure a NEPA permit issuance all of this information will be compiled, and will be submitted to the lead permitting agency, the Bureau of Indian Affairs (BIA). The BIA will conduct an Environmental Assessment review, and we issue the permit within nine months of filing.

Transmission and Interconnection: Interconnection requests were filed with WAPA in Jan 2009 (GI 0906 and 0907). The Large Generator Interconnection Agreement was signed in August of 2014 for 190 MW, and yielded a $2.4m interconnection cost. The Project will connect to WAPA's 115kv Mission substation in Mission, SD which is located on the site of the wind project. Citizens placed the interconnection into "suspension" in August 2014 to preserve the interconnection request while it seeks a PPA. The interconnection may stay in suspension for up to three years, at which point it must start to make scheduled payments toward the $2.4m total interconnection cost or terminate the Agreement.

Equipment Supply: The Project has committed to utilizing GE turbines, with the condition that GE equipment must be market competitive at the time of order. Pricing and Terms and Conditions (T&C's) will be negotiated when the actual equipment order is placed. This agreement was made with GE in exchange for their support in trying to develop a large transmission line from the RST area to load pockets to the east. The financial review in 2011 did not show favorable economics, and the transmission line project was dropped.

Construction Contracts: In the fall of 2010, Citizens secured indicative pricing from Mortenson and White Construction, to complete all work associated with Balance of Plant, electrical and erection work on the project. Their review showed no special issues with constructing a project on the site, and as such pricing was competitive with build costs compared to other projects in the area. No commitment was made to any contractor.

Start of Operation Date: The gating issue for this project is the PPA. Once a PPA deal looks imminent, the EA would be submitted to the BIA. The permit could be issued within 9 months. If financing, equipment and contractor contracts were finalized during this time, the project could go into construction immediately following issuance of the NEPA permit.

Federal Incentives for Tribal Projects: This project will be able to utilize a 3 year MACRS, instead of the standard 5 year. RECs generated on Tribal lands and sold to Federal Entities count double towards their Federal Renewable Energy Requirements, which reach 20% by 2020. Depending on the ultimate financial structure, Federal financing assistance is available at preferred rates for Tribal Projects. In the absence of a PTC, tribal ownership would eliminate all required income taxes, making this the most competitive project in the region.

FINAL REPORT DETAILS OF DEVELOPMENT ACTIVITIES

Location: Located on approximately 11,000 acres on the Rosebud Reservation, which is about 2 hours south of the capital of South Dakota, Pierre.

All of the turbines, roads and array cables are located on either tribal trust or allotted land. Tribal land is land that is "held in trust" for the Tribe by the Federal government, so technically the Federal Government owns the land. Because of this, if the tribe wishes to make a deal, in our case a wind lease, they first negotiate the lease with the developer, and then the BIA must approve the lease, before the BIA signs the lease. The Tribe would sign the lease as well, but without Federal approval and signature, the lease is not valid. A lease was negotiated with the Tribe, and it was also partially negotiated with the BIA.

Wind Resource:

The project had three met towers in place on the project site. The towers were professionally installed by EAPC Wind Energy, and were able to collect about three years of quality wind data. V-bar analyzed the wind data and created a report detailing the wind resource. See wind study in the appendix. As wind turbine technology improved, the output from the site improved as well.

Environmental & Permitting:

All flora and fauna field data gathering is complete. The cultural and archeological study was started in June of 2015, and was completed by the Rosebud Tribal Historical Preservation Office October of 2015. To secure our NEPA permit issuance all of this information will be compiled, and will be submitted to the lead permitting agency, the Bureau of Indian Affairs. The BIA will

conduct an Environmental Assessment review, and we would expect to have the permit within nine months of filing.

All of the bird and bat data collection were completed for this project back in 2011. Ecology and Environment conducted all of the work and they have all of the data ready to compile for the EA submission. The quote to compile and file the EA was $150,000. There were no environmental concerns for the project, with the exception that one Eagle was seen nesting just outside the project site. The big concern with projects in the Dakotas relate to the endangered Whooping Crane. The project was far enough west of the Missouri River that this project was not a concern. No other endangered species were found within the project footprint either.

Transmission and Interconnection:

Interconnection requests were filed with WAPA in Jan 2009 (GI 0906 and 0907). The Large Generator Interconnection Agreement was signed in August of 2014 for 190 MW, and yielded a $2.4m interconnection cost. The Project will connect to WAPA's 115kv Mission substation in Mission, SD which is located on the site of the wind project. Citizens placed the interconnection into "suspension" in August 2014 to preserve the interconnection request while it seeks a PPA. The interconnection may stay in suspension for up to three years, at which point it must start to make scheduled payments toward the $2.4m total interconnection cost or terminate the Agreement.

Start of Operation Date:

The project could be in construction about 9 months after a PPA, and it would take about 6 months to build a 99 MW phase one. To build the whole 190MW, it would likely take two construction seasons.

PPA:

The project has been seeking a PPA for about 5 years. The issue is that the project is in the WAPA RTO and there is generally little load growth. The project was looking to ship power east, but crossing over the RTO boundary into MISO adds about $11 per MWh which made the project uncompetitive in the MISO.

There has been some recent load growth in the WAPA region, as it relates to the oil drilling in the Bakken. Basin Electric, which would be the main off-taker, issued two RFPs over the last two years and did take power. The exact prices were not disclosed, but the winning price was about $24 per MWh. Volume discounts for larger buyers on equipment and contractors as well as lower financing costs allow other larger developers to win the Basin RFPs.

Direct sales to WAPA are not feasible since they do not have the authority to engage in long term contracts. Additional potential off-takers have identified themselves over the years, but have not materialized into anything definitive to enable the project to continue.

Size of the Project:

The Project has an interconnection and enough land for 190MW. The first phase of the project is 99MW. The project does not really lose much in the way of economies of scale, as the first 99MW would be selected from the best preforming turbines first.

List of Important Agreements:

Large Generator Interconnection Agreement – signed with WAPA

Joint Development Agreement with RST

List of Work Completed

- All work associated with applying for and signing a Large Generator Interconnection Agreement.
- Three met towers installed, data collected and report generated detailing wind layout and output.
- Won $1.5m DOE tribal energy grant to advance development of the project RFPs.
- Citizens has responded to 6 RFPs for PPAs, three have been with Basin Electric, two have been with Google, and won has been with Xcel Energy in MN. We have also conducted extensive discussions with a non-utility commercial off-taker on a direct power sale for one of their projects under development.
- Draft lease for all related lands was crafted and was ready for signature.
- Negotiated, drafted and signed LOI.
- Negotiated, drafted and signed Joint Development Agreement (Operating Agreement).
- Completed all Flora and Fauna data collection.

Appendix 1: Meteorological Reports

EAPC Wind Energy

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Biannual Met Tower Monitoring Report
March 2009 - July 2010
Mission East – Site #1141

Tower and Site Information

Location:	Mission, South Dakota	
Owner:	Citizen's Energy Group	
Commissioning Date:	2009.03.08	
Coordinates:		
Latitude	43° 20.6' N	
Longitude	100° 32.923' W	WGS84
Easting	374481	
Northing	4800169	UTM WGS84 z 14
Base Elevation (feet):	2782	
Tower Type:	NRG 60m XHD Tilt-up	
Call Schedule:	every 7 days	

Data Logger Information

Site #:	1141
SN:	309021141
Time Zone	CST (GMT -6)
Logger Type:	NRG Symphonie

Site Configuration

Channel #	Sensor Type	Sensor Model	Serial #	Height (ft, in)		Height (m)	Orientation	Boom Length
1	Anemometer	NRG #40C	99550	195	1	59.46	250°	95"
2	Anemometer	NRG #40C	99551	136	3	41.53	250°	95"
3	Anemometer	NRG #40C	99552	66	0	20.12	250°	95"
4	Anemometer	Vector A100L2	12102	195	1	59.46	70°	95"
5	Anemometer	NRG #40C	99553	136	3	41.53	70°	95"
6	Anemometer	NRG #40C	99554	66	0	20.12	70°	95"
7	Direction Vane	NRG #200P	-	188	7	57.48	250°	95"
8	Direction Vane	NRG #200P	-	129	9	39.55	250°	95"
9	Direction Vane	NRG #200P	-	59	7	18.16	250°	95"
10	Barometer	NRG #BP20	-	4	0	1.22	-	-
11	iPack Voltmeter	-	-	-	-	-	-	-
12	Temperature	NRG #110S	-	7	0	2.13	-	-

Note: The data presented in this report is based on raw data files with little or no filtering. Results may change significantly after quality control routines have been applied. No tower shadow substitutions have been made.

Incident History

Current Month:

No additional issues to report. (July 2010)

Previous Incidents since Site Commissioning:

The issues reported from the previous months continue with the low power levels for the iPack resulting in missed call-ins during the month. (May/June 2010)

The iPack voltmeter on channel #11 shows degrading voltage for the iPack battery. An issue may exist with the PV panel used to charge the system. The wind direction vane on channel #9 (20 m) appears to be providing erroneous readings when compared to the other two wind direction levels. A site visit to inspect the PV panel and 20 m wind direction sensor is recommended. (April 2010)

Site commissioned on 2009.03.08

Project:
Met Tower Monitoring

Description:
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Meteo data report - Main results

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

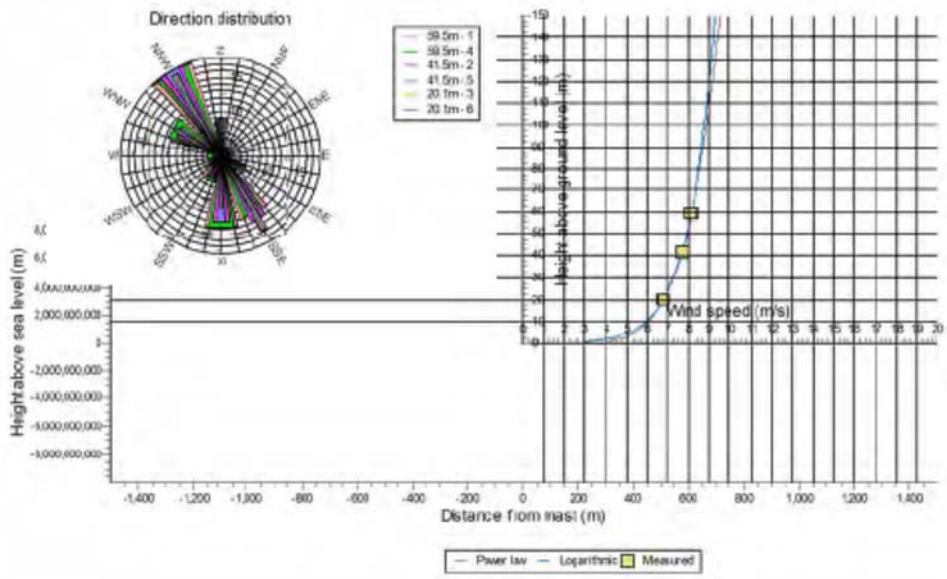
Mast position: Geo WGS 84 East: -100°23.8850' North: 46°00.4303'

Measurement heights and wind speeds (in this report)
Disabled data not included in overview table below

ID	Height [m]	Data recovery [%]	Records	U_max [m/s]	U_mean *) [m/s]
59.5m - 1	59.5	96.9	71529	35.7	7.9
59.5m - 4	59.5	90.3	66641	36.1	7.9
41.5m - 2	41.5	96.4	71121	34.2	7.4
41.5m - 5	41.5	96.8	71420	33.9	7.5
20.1m - 3	20.1	97.8	72147	31.9	6.5
20.1m - 6	20.1	96.4	71148	32.3	6.7

*) *U_mean is simple arithmetic average*

Mean wind profile for all concurrent data and terrain profile for the most frequent sector of height: 59.5m - 1: NNW (left side)



Profile characteristics for best curve fit through all data (Note: Values are only fully valid in flat terrain)
Shear exponent 0.1673 (Power law profile)
Roughness lenght 0.0839 m class 1.85 (Equivalent roughness for logarithmic profile)

WindPRO is developed by EMD International A/S, Niels Jernesvej 10, DK-9220 Aalborg Ø, Tlf. +45 96 35 44 44, Fax +45 96 35 44 46, e-mail: windpro@emd.dk

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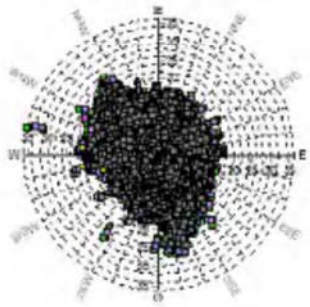
Meteo data report - Main results

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

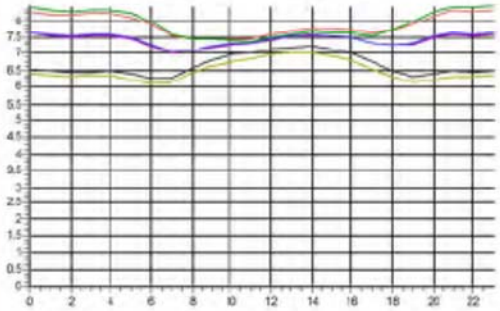
Wind speed/direction



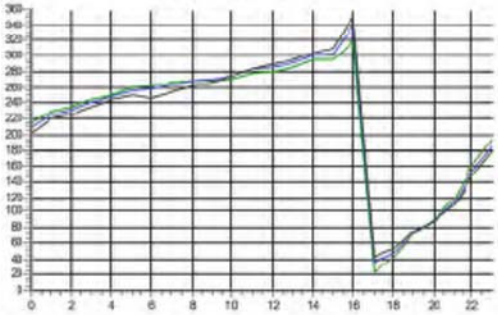
Statistics

Signal		Unit	Count	Of period [%]	Mean	Weibull mean	Weibull A	Weibull k
59.5m - 1	Mean wind speed, all	m/s	71529	96.9	7.90	8.05	9.06	2.27
59.5m - 1	Wind direction, all	Degrees	69620	93.5	257.59			
59.5m - 1	Turbulence intensity, all		71529	96.9	0.10			
59.5m - 1	Turbulence intensity, enabled		60202	87.6	0.08			
59.5m - 4	Mean wind speed, all	m/s	66641	90.3	7.91	8.03	9.06	2.30
59.5m - 4	Wind direction, all	Degrees	69620	93.5	257.59			
59.5m - 4	Turbulence intensity, all		66641	90.3	0.10			
59.5m - 4	Turbulence intensity, enabled		56347	76.3	0.09			
41.5m - 2	Mean wind speed, all	m/s	71121	96.4	7.42	7.57	8.54	2.23
41.5m - 2	Wind direction, all	Degrees	69689	93.6	256.18			
41.5m - 2	Turbulence intensity, all		71121	96.4	0.11			
41.5m - 2	Turbulence intensity, enabled		58820	79.7	0.09			
41.5m - 5	Mean wind speed, all	m/s	71420	96.8	7.45	7.57	8.54	2.24
41.5m - 5	Wind direction, all	Degrees	69689	93.6	256.18			
41.5m - 5	Turbulence intensity, all		71420	96.8	0.11			
41.5m - 5	Turbulence intensity, enabled		59455	80.6	0.09			
20.1m - 3	Mean wind speed, all	m/s	72147	97.8	6.50	6.63	7.48	2.07
20.1m - 3	Wind direction, all	Degrees	69742	93.7	249.37			
20.1m - 3	Turbulence intensity, all		72147	97.8	0.13			
20.1m - 3	Turbulence intensity, enabled		55420	75.1	0.11			
20.1m - 6	Mean wind speed, all	m/s	71148	96.4	6.66	6.68	7.55	2.07
20.1m - 6	Wind direction, all	Degrees	69742	93.7	249.37			
20.1m - 6	Turbulence intensity, all		71148	96.4	0.13			
20.1m - 6	Turbulence intensity, enabled		55850	75.8	0.11			
20.1m - 6	Temperature, all	Deg C	72870	98.7	9.55			

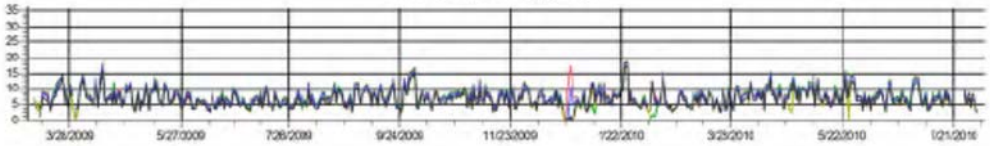
Hourly mean wind speed



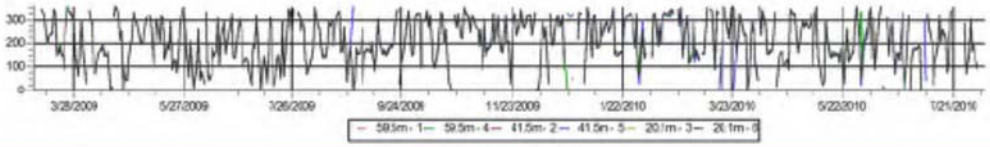
Hourly mean wind direction



Wind speed, Averaging: Day



Wind direction, Averaging: Day



Met Tower Monitoring

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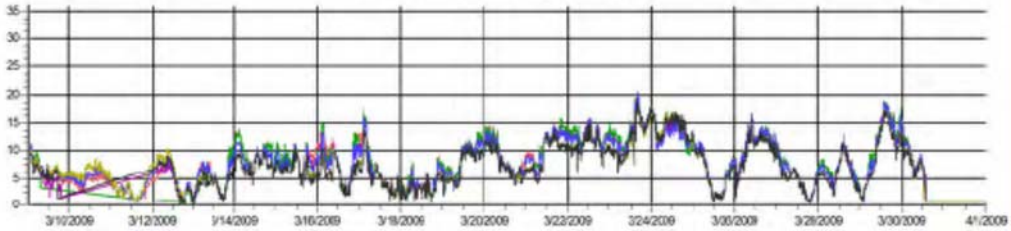
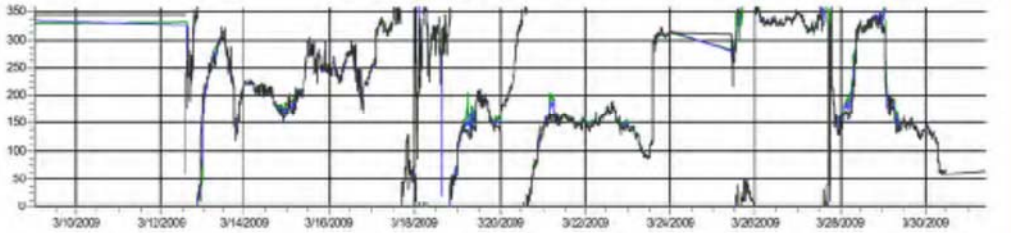
Meteo data report - Time series graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

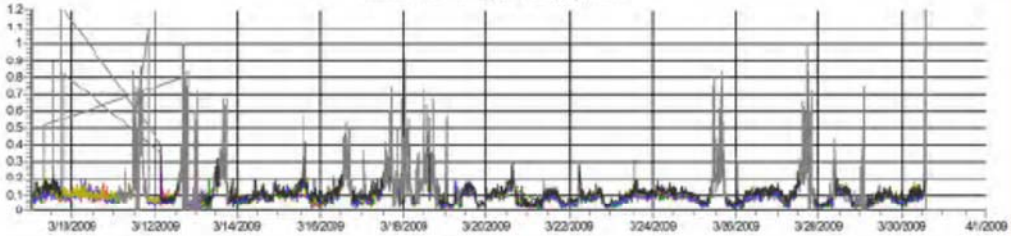
Mean wind speed, Averaging: None



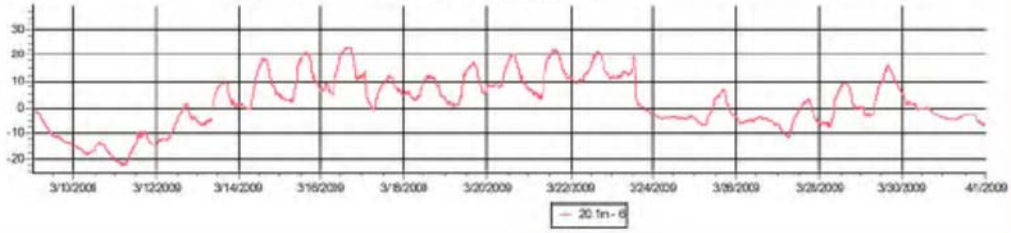
Wind direction, Averaging: None



Turbulence intensity, Averaging: None



Temperature, Averaging: None



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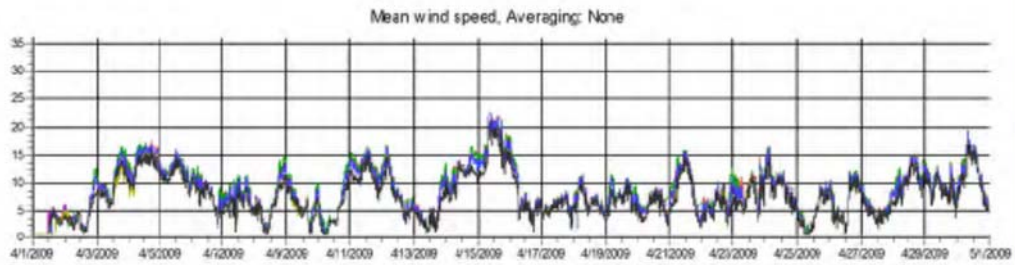
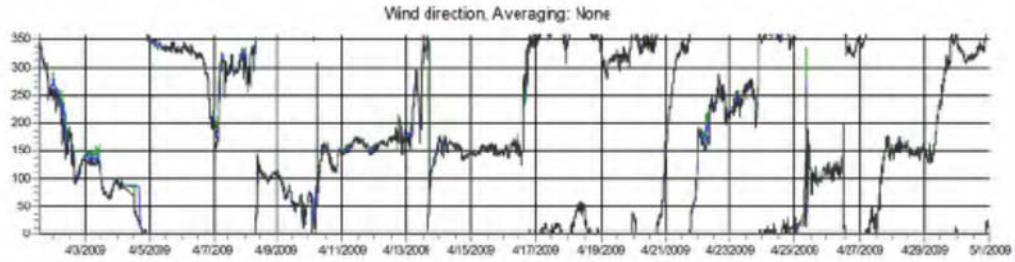
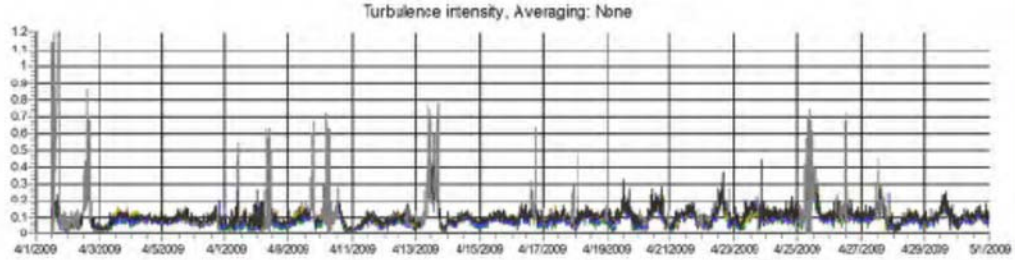
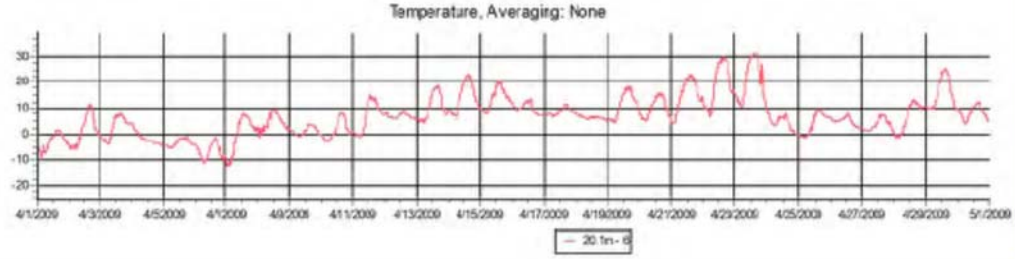
Meteo data report - Time series graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy: Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)









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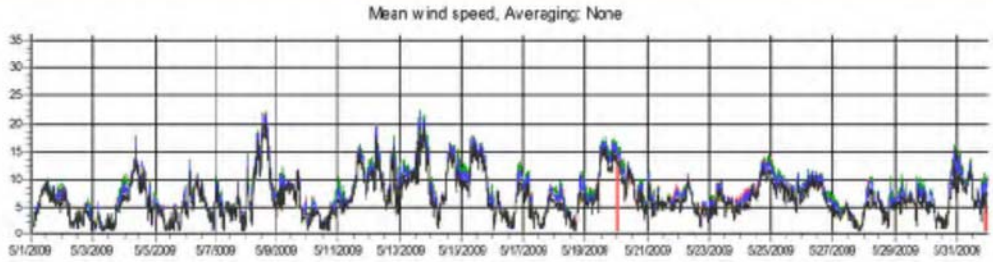

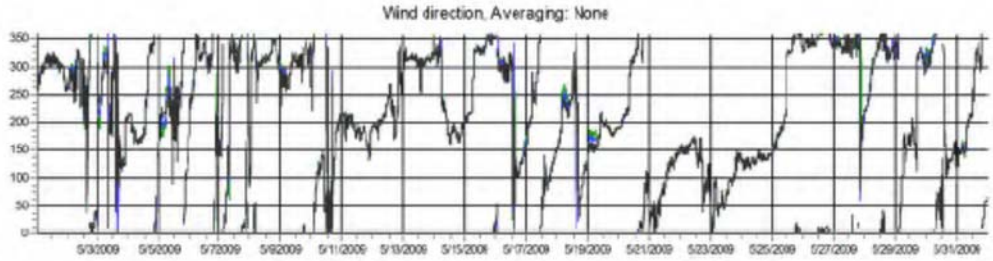

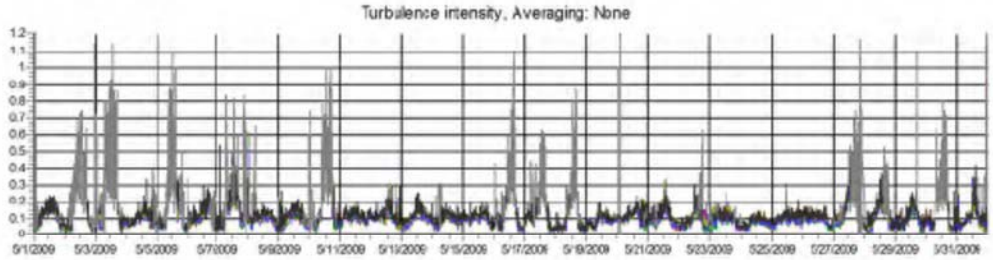

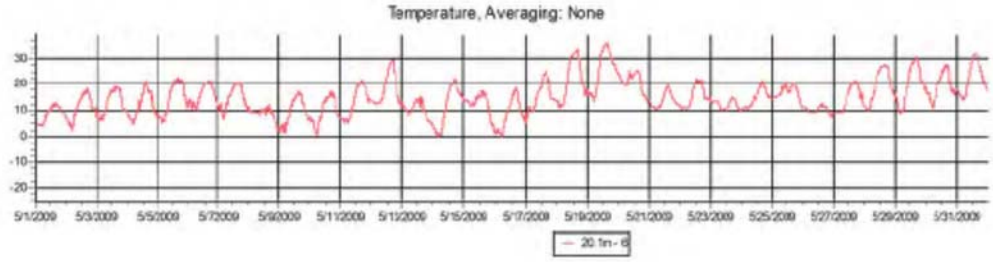

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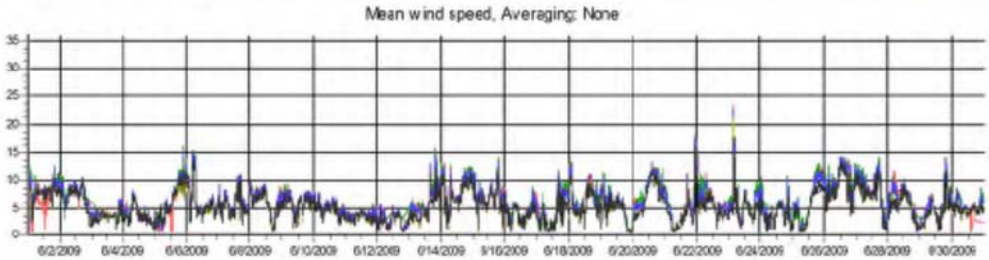

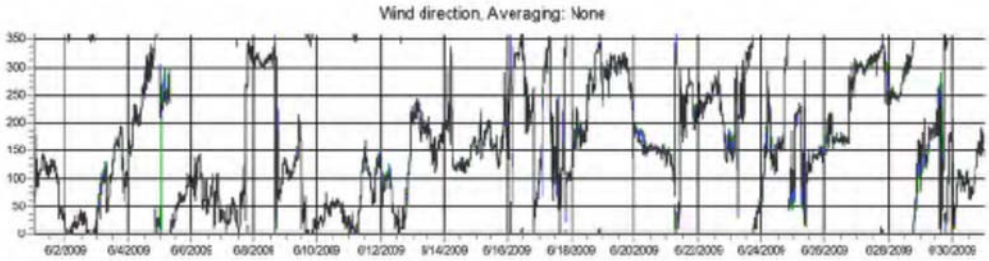

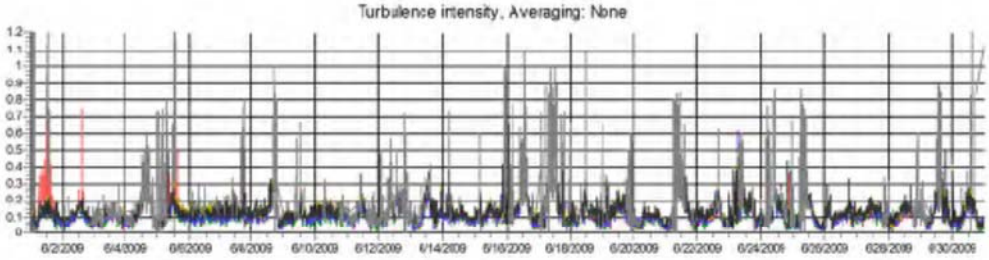

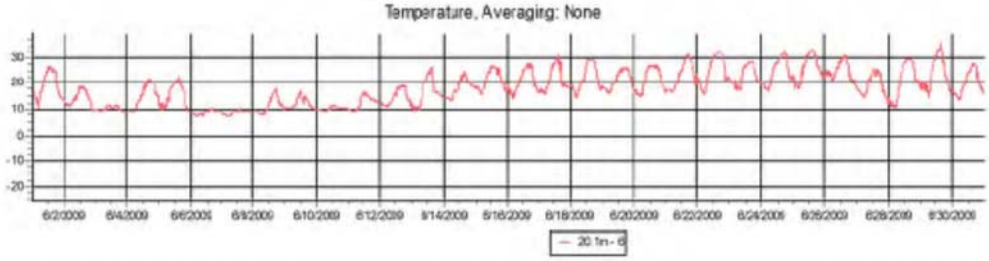

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Meteo data report - Time series graphs

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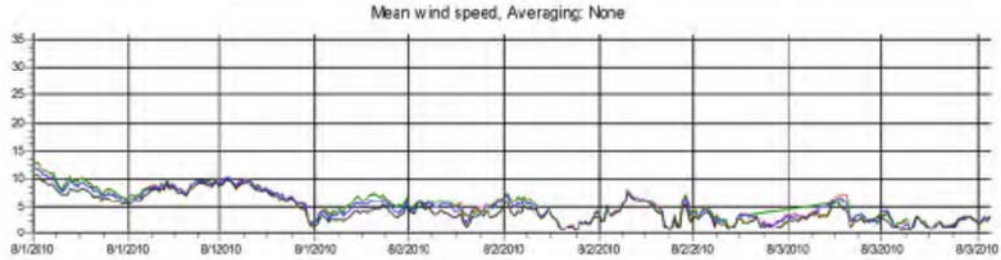

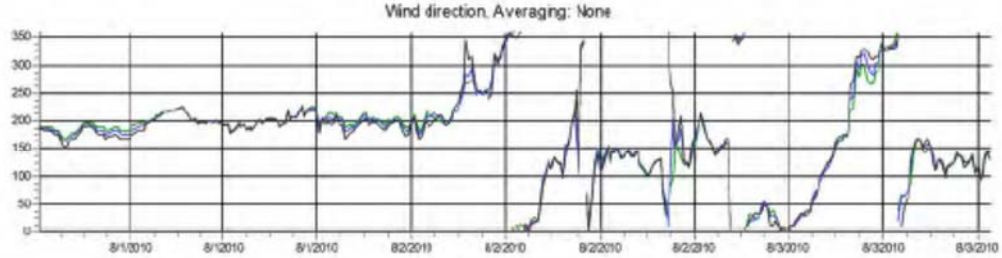

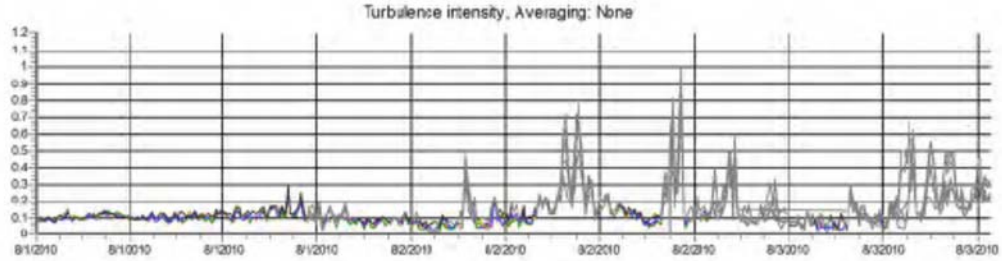

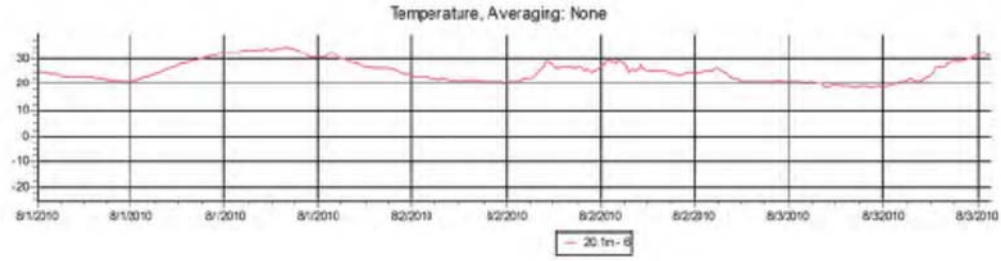

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Meteo data report - Monthly wind speeds

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Monthly wind speeds

59.5m - 1

Month	2009	2010	Mean	Mean of month
January		8.61	8.61	8.61
February		6.72	6.72	6.72
March	7.80	7.10	7.43	7.45
April	8.77	9.26	9.02	9.02
May	7.74	9.44	8.59	8.59
June	6.22	7.72	6.97	6.97
July	6.40	7.78	7.01	7.09
August	7.43	5.52	7.28	6.47
September	9.17		9.17	9.17
October	8.18		8.18	8.18
November	8.03		8.03	8.03
December	7.75		7.75	7.75
mean, all data	7.74	8.13		
mean of months	7.75	7.77		7.84

Monthly wind speeds

59.5m - 4

Month	2009	2010	Mean	Mean of month
January		7.80	7.80	7.80
February		6.15	6.15	6.15
March	8.80	6.99	7.73	7.90
April	9.01	9.16	9.08	9.08
May	7.93	9.54	8.73	8.73
June	6.61	7.89	7.26	7.25
July	6.52	7.82	7.11	7.17
August	7.54	5.62	7.40	6.58
September	9.34		9.34	9.34
October	8.31		8.31	8.31
November	8.01		8.01	8.01
December	7.07		7.07	7.07
mean, all data	7.90	7.92		
mean of months	7.91	7.62		7.78

Monthly wind speeds

41.5m - 2

Month	2009	2010	Mean	Mean of month
January		8.16	8.16	8.16
February		6.60	6.60	6.60
March	7.70	6.71	7.15	7.21
April	8.37	8.77	8.57	8.57
May	7.41	8.96	8.18	8.19
June	6.07	7.32	6.70	6.70
July	6.01	7.30	6.58	6.66
August	6.93	5.15	6.80	6.04
September	8.61		8.61	8.61
October	7.92		7.92	7.92
November	7.46		7.46	7.46
December	5.87		5.87	5.87
mean, all data	7.22	7.71		
mean of months	7.24	7.37		7.33

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Meteo data report - Monthly wind speeds

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Monthly wind speeds

41.5m - 5

Month	2009	2010	Mean	Mean of month
January		8.12	8.12	8.12
February		6.36	6.36	6.36
March	7.88	6.72	7.25	7.30
April	8.51	8.73	8.62	8.62
May	7.39	8.93	8.16	8.16
June	6.00	7.26	6.63	6.63
July	5.95	7.27	6.53	6.61
August	6.89	5.14	6.76	6.01
September	8.56		8.56	8.56
October	7.90		7.90	7.90
November	7.43		7.43	7.43
December	6.86		6.86	6.86
mean, all data	7.32	7.65		
mean of months	7.34	7.32		7.38

Monthly wind speeds

20.1m - 3

Month	2009	2010	Mean	Mean of month
January		7.19	7.19	7.19
February		5.92	5.92	5.92
March	6.89	6.07	6.43	6.48
April	7.55	7.31	7.43	7.43
May	6.66	7.80	7.22	7.23
June	5.34	6.44	5.89	5.89
July	5.19	6.40	5.73	5.79
August	6.05	4.57	5.93	5.31
September	7.66		7.66	7.66
October	7.12		7.12	7.12
November	6.35		6.35	6.35
December	4.83		4.83	4.83
mean, all data	6.34	6.73		
mean of months	6.36	6.46		6.43

Monthly wind speeds

20.1m - 6

Month	2009	2010	Mean	Mean of month
January		7.39	7.39	7.39
February		5.98	5.98	5.98
March	7.50	6.10	6.65	6.80
April	7.65	7.81	7.73	7.73
May	6.64	8.02	7.33	7.33
June	5.39	6.46	5.93	5.92
July	5.26	6.46	5.79	5.86
August	6.00	4.53	5.88	5.26
September	7.72		7.72	7.72
October	7.19		7.19	7.19
November	6.41		6.41	6.41
December	5.53		5.53	5.53
mean, all data	6.49	6.89		
mean of months	6.53	6.59		6.59

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Meteo data report - Frequency distribution (TAB file data)

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Frequency distribution (TAB file data)

59.5m - 1

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			7.95	6.84	5.78	5.09	5.60	6.80	9.40	9.07	7.55	6.98	7.63	8.45	8.81
0		0.49	531	36	30	37	236	15	15	33	10	18	26	40	35
1	0.50	1.49	1057	86	104	81	91	70	85	86	105	80	82	92	95
2	1.50	2.49	2414	244	208	211	162	167	200	209	231	163	162	209	248
3	2.50	3.49	3854	397	308	353	228	298	310	250	286	264	247	371	542
4	3.50	4.49	5424	644	476	404	344	502	424	337	331	321	327	511	803
5	4.50	5.49	6150	711	499	396	371	458	488	510	433	322	313	651	998
6	5.50	6.49	6406	706	429	271	304	554	623	722	511	300	310	673	1003
7	6.50	7.49	6395	625	338	227	221	500	614	830	553	333	285	718	1151
8	7.50	8.49	7289	640	332	134	187	492	814	1053	609	389	387	847	1405
9	8.50	9.49	6773	547	205	91	157	429	872	1195	546	393	362	752	1224
10	9.50	10.49	5693	414	137	77	99	268	802	1253	424	311	276	622	1010
11	10.50	11.49	4597	268	77	43	90	221	823	887	318	212	220	621	817
12	11.50	12.49	4005	199	37	20	73	137	1079	677	257	149	181	503	693
13	12.50	13.49	2833	118	22	21	38	83	822	486	172	76	134	295	566
14	13.50	14.49	1828	65	9	10	37	42	455	386	93	14	100	225	392
15	14.50	15.49	1316	56	8	4	17	30	260	283	68	10	63	152	365
16	15.50	16.49	839	21	12	1	11	12	142	179	43	8	33	121	256
17	16.50	17.49	554	9	11	0	5	1	105	93	13	2	23	87	205
18	17.50	18.49	345	4	2	1	0	2	62	31	5	2	20	75	141
19	18.50	19.49	205	0	0	0	0	0	19	8	1	0	11	57	109
20	19.50	20.49	158	0	0	0	0	0	24	7	1	0	7	45	74
21	20.50	21.49	106	0	0	0	0	0	20	8	0	1	1	28	48
22	21.50	22.49	55	0	0	0	0	0	6	3	0	0	2	8	36
23	22.50	23.49	26	0	0	0	0	0	5	6	0	0	0	1	14
24	23.50	24.49	16	0	0	0	0	0	2	7	0	0	1	0	6
25	24.50	25.49	8	0	0	0	0	0	0	6	0	0	0	1	1
26	25.50	26.49	8	0	0	0	0	0	0	8	0	0	0	0	0
27	26.50	27.49	3	0	0	0	0	0	0	2	1	0	0	0	0
28	27.50	28.49	0	0	0	0	0	0	0	0	0	0	0	0	0
29	28.50	29.49	0	0	0	0	0	0	0	0	0	0	0	0	0
30	29.50	30.49	0	0	0	0	0	0	0	0	0	0	0	0	0
31	30.50	31.49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31.50	32.49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32.50	33.49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33.50	34.49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34.50	35.49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35.50	36.49	1	0	0	0	0	0	0	0	0	0	1	0	0
37	36.50	37.49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37.50	38.49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38.50	39.49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39.50	40.49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40.50		0	0	0	0	0	0	0	0	0	0	0	0	0

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Meteo data report - Frequency distribution (TAB file data)

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Frequency distribution (TAB file data)

59.5m - 4

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			7.91	6.86	5.88	5.62	6.47	6.90	9.41	9.04	7.58	6.47	7.45	8.43	8.34
0		0.49	207	20	4	24	8	6	14	13	6	13	7	12	80
1	0.50	1.49	920	77	82	48	57	49	67	69	68	74	72	104	153
2	1.50	2.49	2460	250	216	168	109	147	207	222	238	197	189	276	241
3	2.50	3.49	3885	386	286	288	194	248	296	250	264	348	272	367	686
4	3.50	4.49	5123	593	398	337	262	436	388	358	295	327	340	500	889
5	4.50	5.49	5843	695	454	340	304	428	482	456	442	338	313	613	978
6	5.50	6.49	5935	639	390	233	262	490	554	665	455	332	314	661	940
7	6.50	7.49	6218	622	318	227	194	394	537	830	539	435	340	672	1110
8	7.50	8.49	6961	622	295	163	198	451	735	1044	590	376	394	756	1327
9	8.50	9.49	6445	527	208	109	166	402	820	1151	532	354	329	724	1123
10	9.50	10.49	5356	397	135	86	90	258	772	1180	414	244	244	594	942
11	10.50	11.49	4326	283	70	51	97	193	782	831	298	145	211	616	749
12	11.50	12.49	3660	182	38	36	55	130	1000	611	240	96	158	489	625
13	12.50	13.49	2609	111	23	19	44	79	755	476	163	42	123	288	486
14	13.50	14.49	1765	69	8	12	42	42	451	371	94	9	90	233	344
15	14.50	15.49	1116	42	8	8	25	26	230	245	55	3	63	149	262
16	15.50	16.49	791	19	14	16	10	11	143	190	41	5	33	114	195
17	16.50	17.49	451	7	7	3	6	1	96	84	10	1	14	84	138
18	17.50	18.49	285	4	1	1	0	2	56	24	4	0	23	79	91
19	18.50	19.49	159	0	0	0	0	0	23	8	0	0	8	55	65
20	19.50	20.49	138	0	0	0	0	0	23	8	1	1	7	45	53
21	20.50	21.49	92	0	0	0	0	0	16	7	0	0	1	26	42
22	21.50	22.49	56	0	0	0	0	0	6	2	0	0	2	8	38
23	22.50	23.49	26	0	0	0	0	0	6	6	0	0	1	2	11
24	23.50	24.49	16	0	0	0	0	0	1	7	0	0	0	0	8
25	24.50	25.49	9	0	0	0	0	0	0	6	0	0	0	1	2
26	25.50	26.49	5	0	0	0	0	0	0	5	0	0	0	0	0
27	26.50	27.49	6	0	0	0	0	0	0	5	1	0	0	0	0
28	27.50	28.49	0	0	0	0	0	0	0	0	0	0	0	0	0
29	28.50	29.49	0	0	0	0	0	0	0	0	0	0	0	0	0
30	29.50	30.49	0	0	0	0	0	0	0	0	0	0	0	0	0
31	30.50	31.49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31.50	32.49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32.50	33.49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33.50	34.49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34.50	35.49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35.50	36.49	1	0	0	0	0	0	0	0	0	0	1	0	0
37	36.50	37.49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37.50	38.49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38.50	39.49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39.50	40.49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40.50		0	0	0	0	0	0	0	0	0	0	0	0	0

Project:
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Description:
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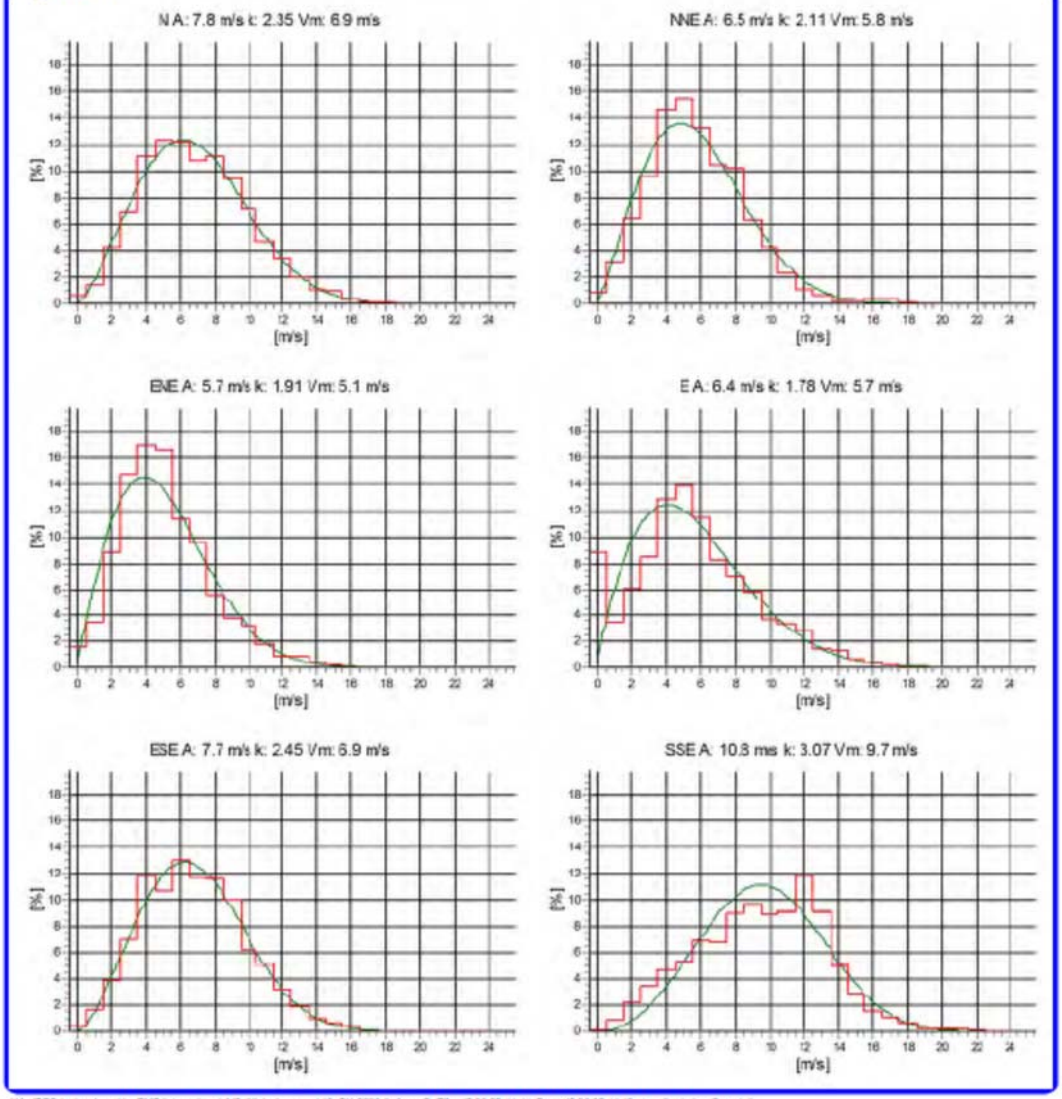
Meteo data report - Sector wise frequency/weibull graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **69.6m - 1**



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WindPRO version 2.7.473 Jun 2010

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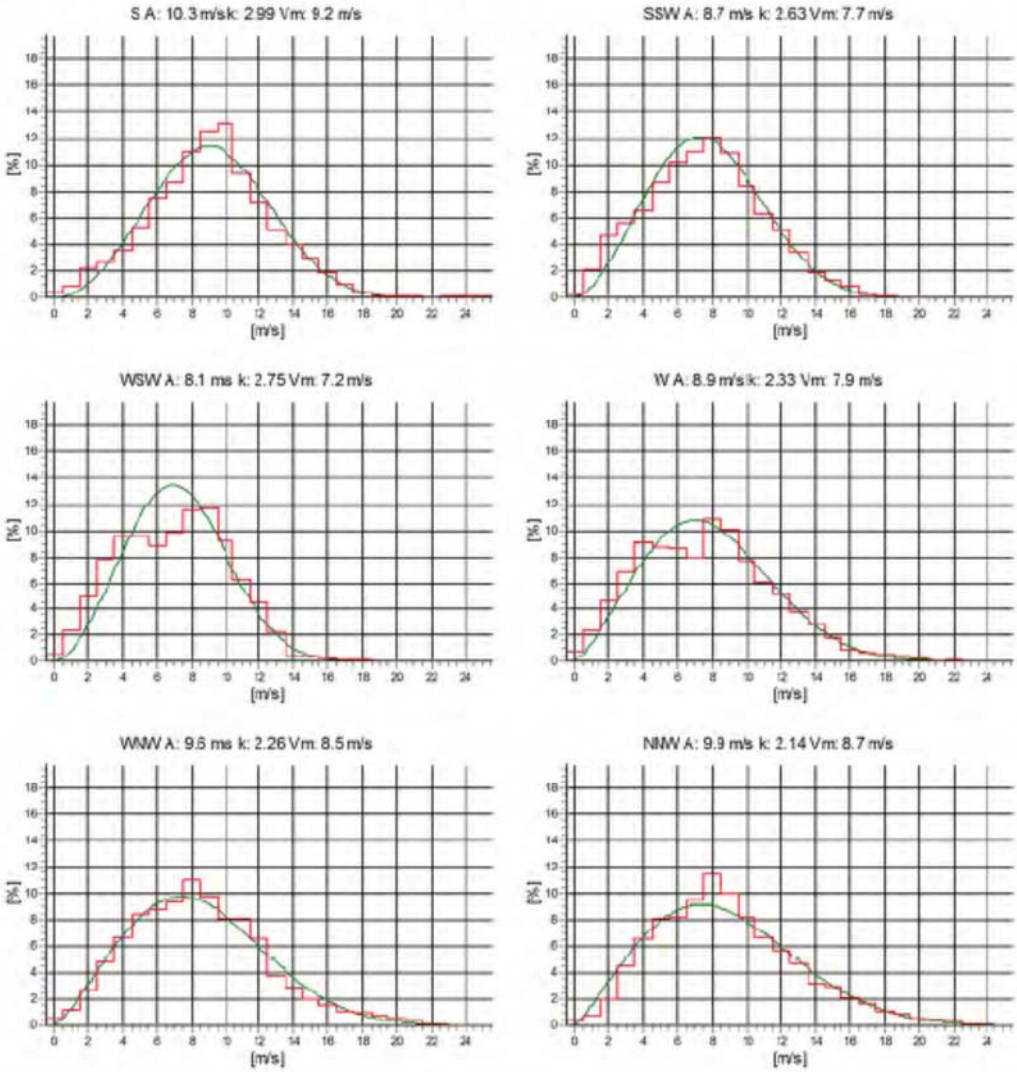
Height: **68.6m - 1**



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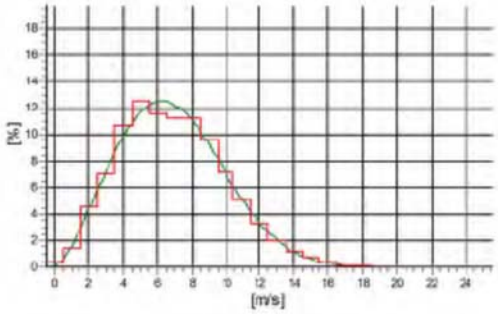
Meteo data report - Sector wise frequency/weibull graphs

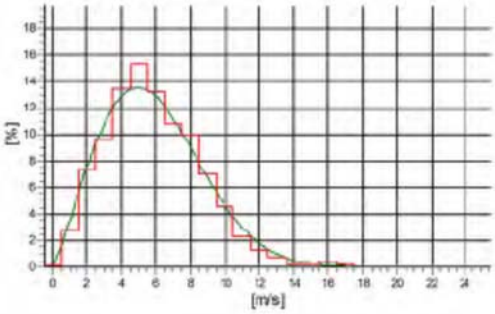
Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **68.6m - 4**

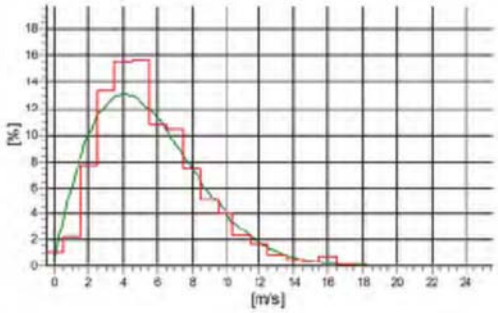
N A: 7.8 m/s k: 2.40 Vm: 6.9 m/s



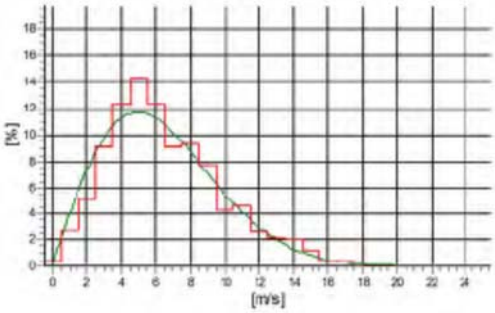
NNE A: 6.6 m/s k: 2.14 Vm: 5.9 m/s



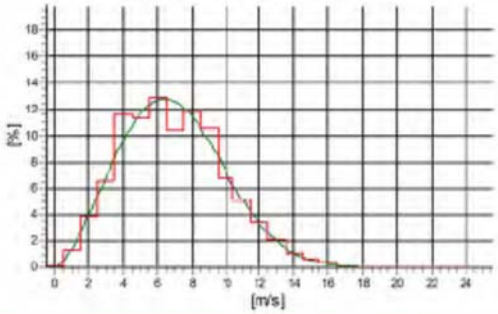
ENE A: 6.2 m/s k: 1.84 Vm: 5.5 m/s



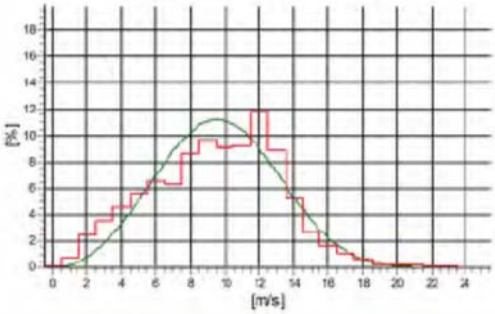
E A: 7.2 m/s k: 1.94 Vm: 6.4 m/s



ESE A: 7.9 m/s k: 2.48 Vm: 7.0 m/s



SSE A: 10.8 ms k: 3.11 Vm: 9.7 m/s



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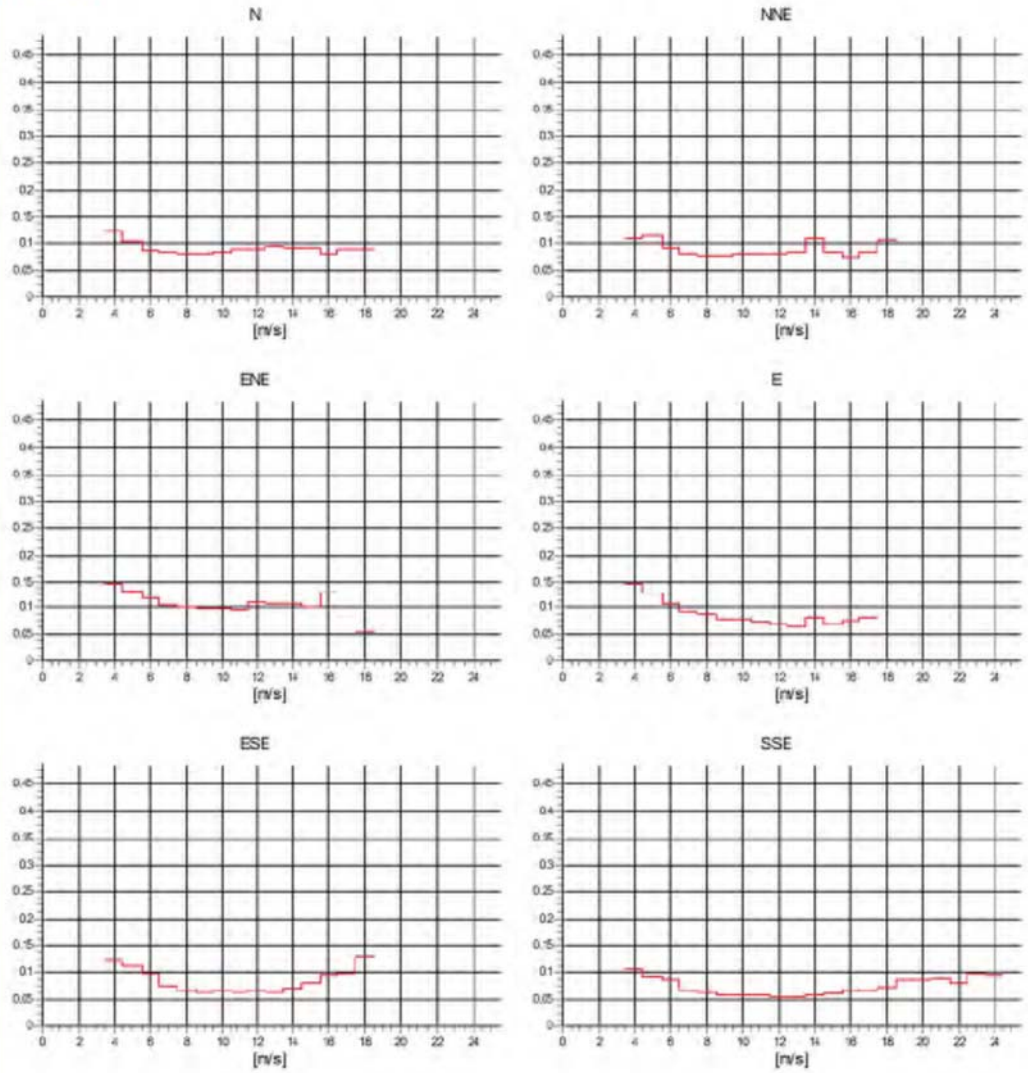
Meteo data report - Sector wise mean turbulence graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **68.6m - 1**



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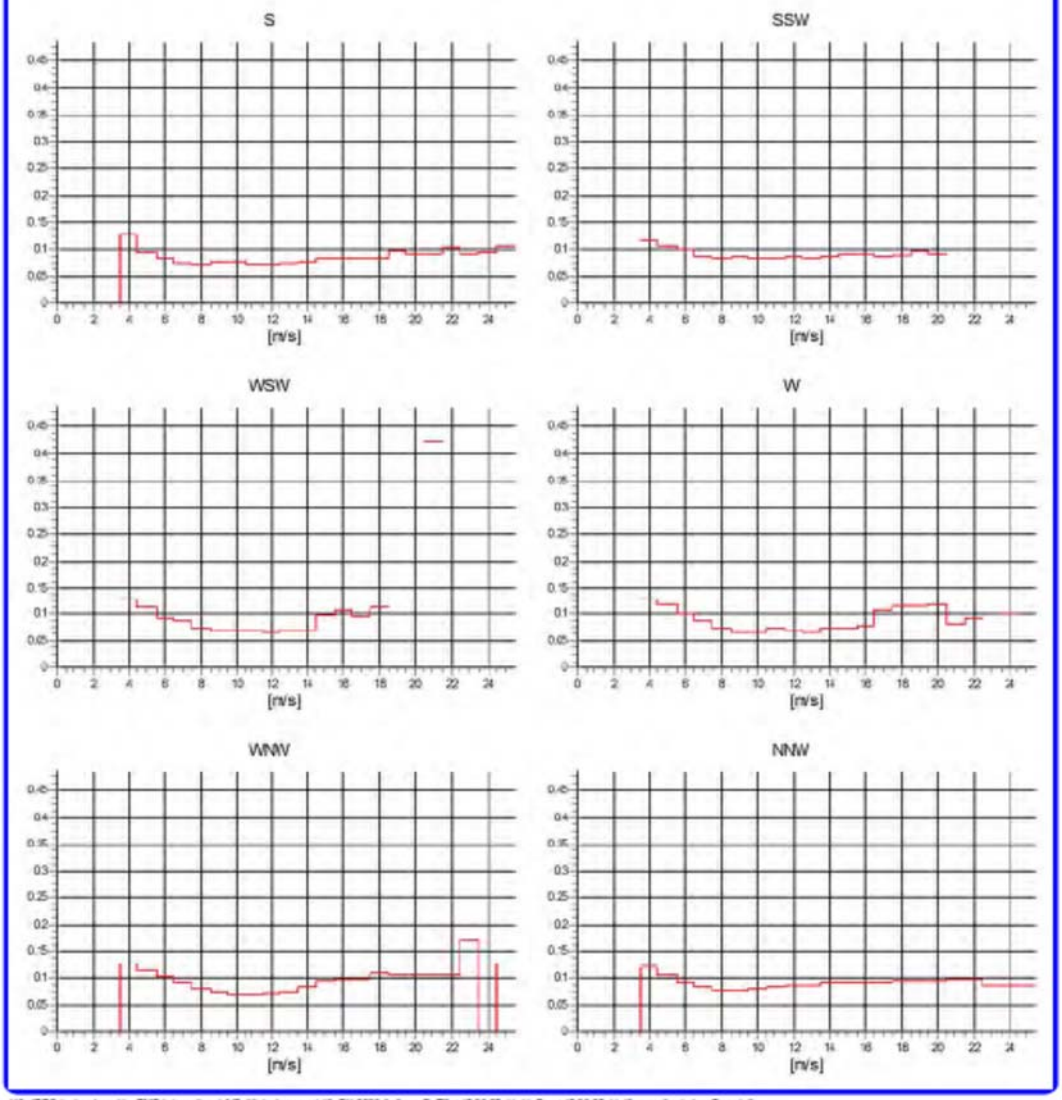
Meteo data report - Sector wise mean turbulence graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **68.6m - 1**



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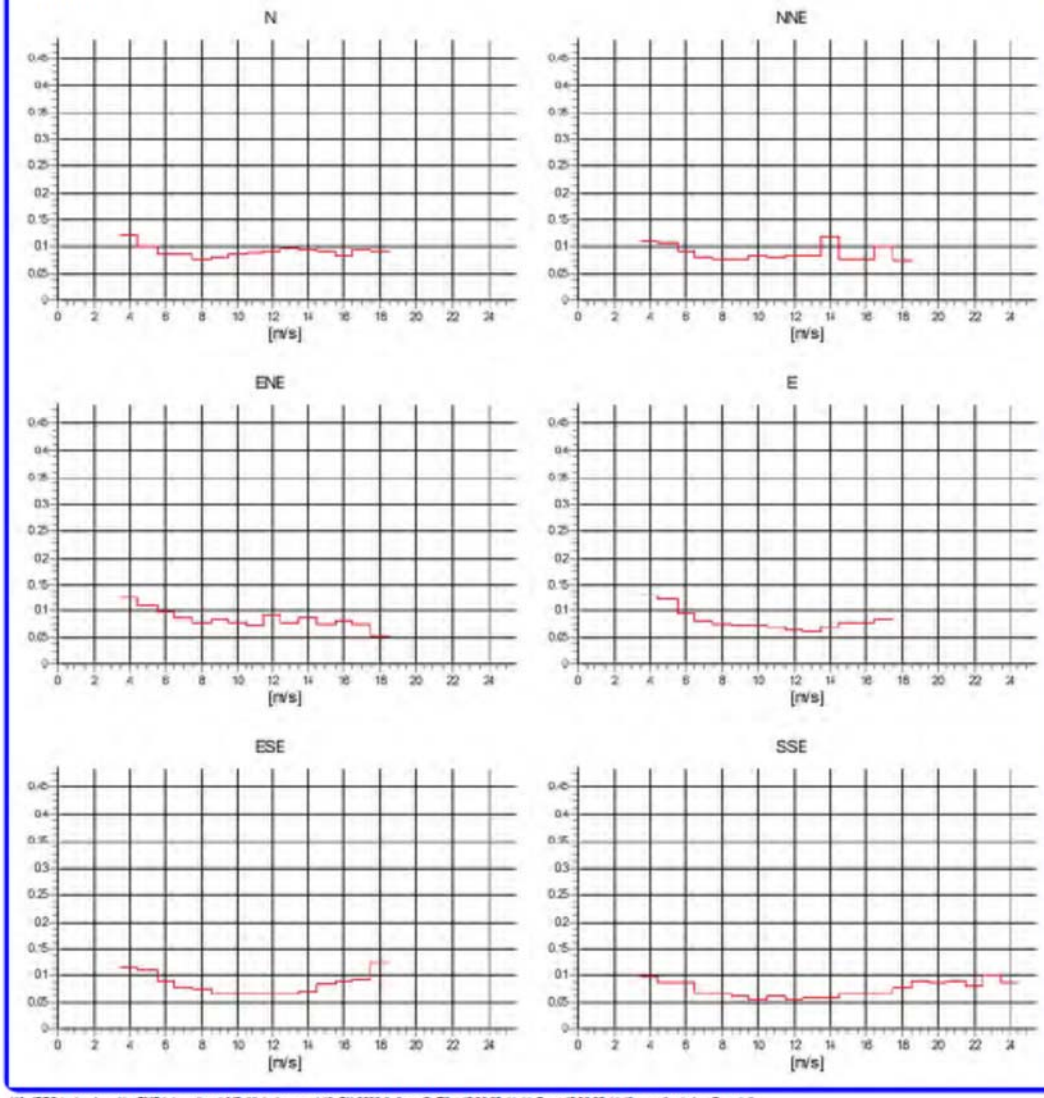
Meteo data report - Sector wise mean turbulence graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **68.6m - 4**



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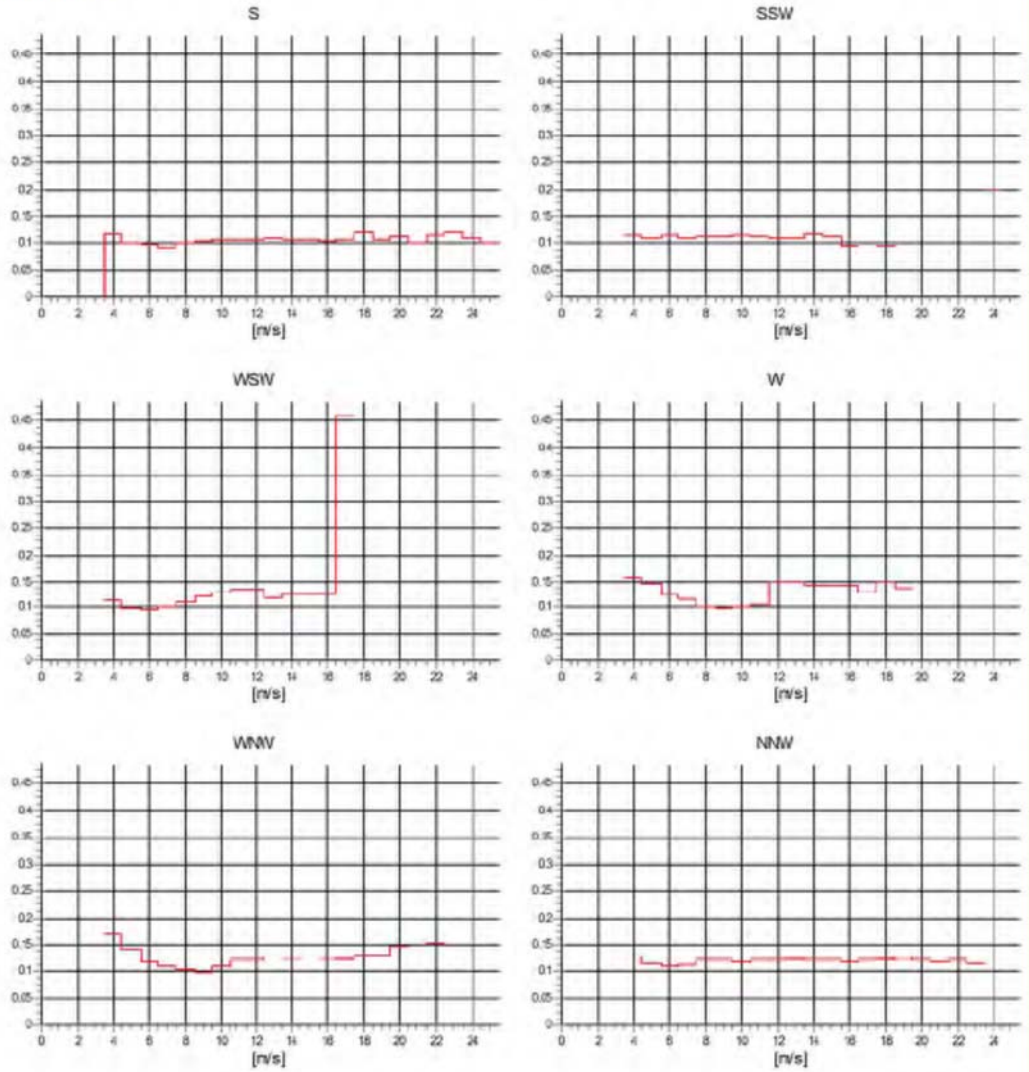
Meteo data report - Sector wise mean turbulence graphs

Mast: 1139 - Mission, SD (West) - Citizens Energy; Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

Height: **20.1m - 6**



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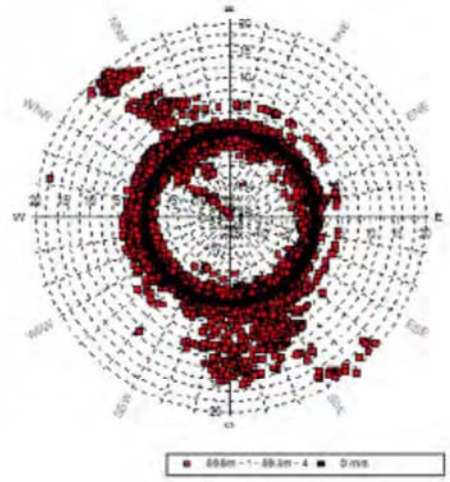
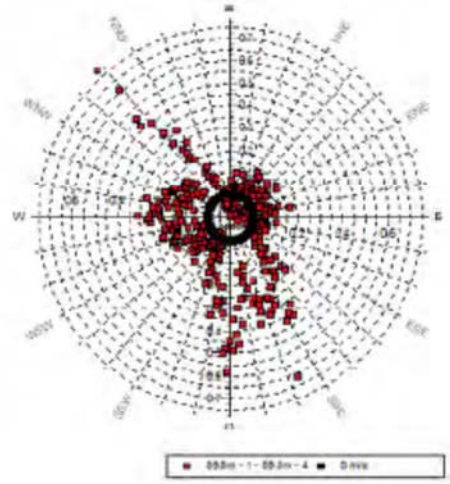
Meteo data report - Wind speed difference

Mast: 1139 - Mission, SD (West) - Citizens Energy: Biannual Met Tower Report **Period:** Full period: 3/9/2009 - 8/3/2010 (16.8 months)

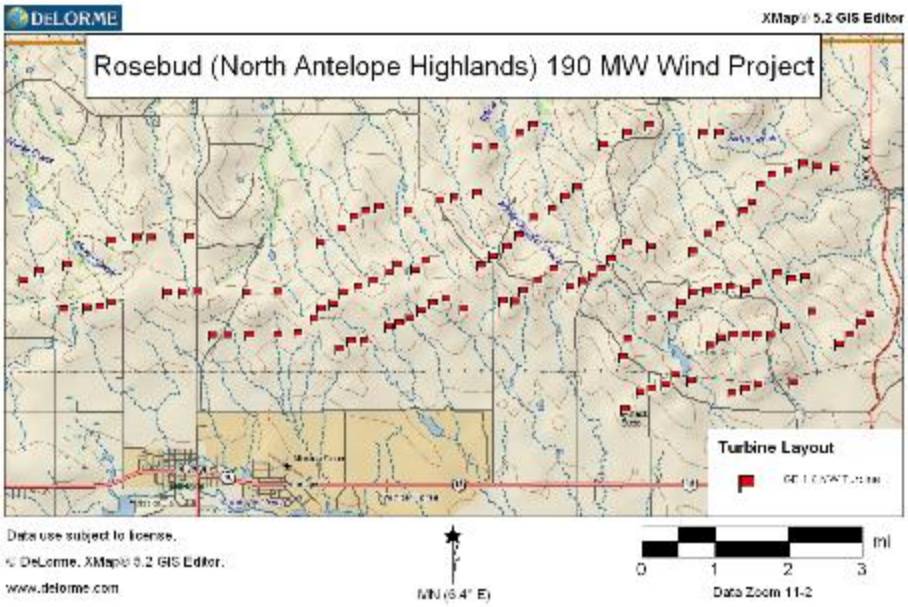
All data

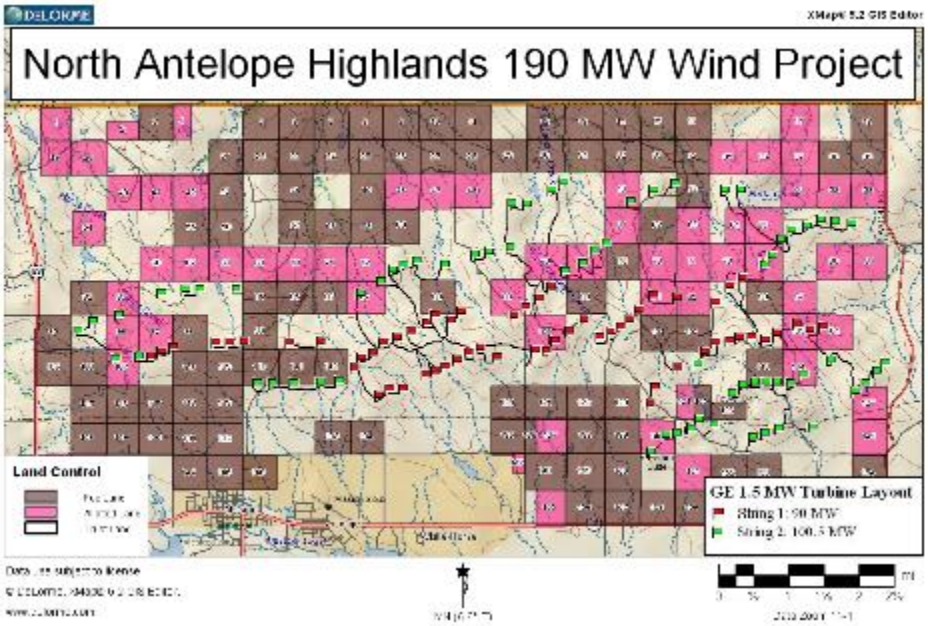


Binned by 1 degree



Appendix 2: Turbine Layout Diagram





Appendix 3: DOE Response Letter

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3305

August 21, 2009

Ken Haukaas, Tribal Project Supervisor
Rosebud Sioux Tribe
11 Legion Ave.
Rosebud, SD 57570

Dear Mr. Haukaas:

SUBJECT: Application Submitted Under Funding Opportunity Announcement Number DE-PS36-09GO99014, Entitled "Renewable Energy and Energy Efficiency Deployment in Indian Country"
Application Title: RST Wind Energy Development

Congratulations on the Department of Energy's selection of your above-referenced application for negotiation of an award. In order to expedite the negotiation process, we require additional information to clarify and supplement your application. Please submit the following information on or before September 11, 2009:

1. Please describe any developments, work performed, or changes to the proposed project or budget since the submittal of your application. This information should include, but is not limited to, a revised schedule of planned pre-construction activities assuming a start date of October 31, 2009; status of the birds and bat studies underway; status of Environmental Assessment activities and coordination with the Bureau of Indian Affairs or other agencies; status of incorporation of the "Project Company"; and any additional relevant information.

2. Please clarify whether the planned agreement should be between DOE and the Rosebud Sioux Tribe or the Rosebud Economic Development Corporation (REDCO), as wind development was redirected from the Rosebud Sioux Tribal Council to REDCO. Please be advised that DOE can only consider REDCO as the recipient if REDCO is incorporated under Federal or Tribal law, has a unique DUNS Number, unique employer identification number, is registered in the Central Contractor Registration (see below), has adequate financial systems, and has been delegated the authority to enter into agreements by the Tribal Council.

3. Because any award will be between DOE and either the Tribe, or REDCO (see paragraph 2 above), all formal points of contact MUST be representatives of the Tribe or REDCO, as appropriate, rather than any subrecipients/subcontractors. DOE does not have a privity of contract with such subrecipients/subcontractors. Therefore, please identify a representative of the Rosebud Sioux Tribe or REDCO, as appropriate, as the Technical Contact for the planned agreement.

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Appenxdix 4: FAA Determination Letter

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
2601 Meacham Boulevard
Fort Worth, TX 76137

Aeronautical Study No.
2011-WTE-7115-OE

Issued Date: 07/08/2011

Braden Houston
Citizens Enterprises Corporation
88 Black Falcon Avenue
Center Lobby, Suite 342
Boston, MA 02210

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Wind Turbine RST001
Location:	Mission, SD
Latitude:	43-20-12.88N NAD 83
Longitude:	100-40-47.41W
Heights:	499 feet above ground level (AGL) 3229 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked/lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, white paint/synchronized red lights - Chapters 4,12&13(Turbines).

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part I)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part II)

See attachment for additional condition(s) or information.
While the structure does not constitute a hazard to air navigation, it would be located within or near a military training area and/or route.

Any height exceeding 499 feet above ground level (3229 feet above mean sea level), will result in a substantial adverse effect and would warrant a Determination of Hazard to Air Navigation.

This determination expires on 01/08/2013 unless:

(a) extended, revised or terminated by the issuing office.

Page 1 of 4

(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Additional wind turbines or met towers proposed in the future may cause a cumulative effect on the national airspace system. This determination is based, in part, on the foregoing description which includes specific coordinates and heights . Any changes in coordinates will void this determination. Any future construction or alteration requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

If we can be of further assistance, please contact our office at (816) 329-2525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2011-WTE-7115-OE.

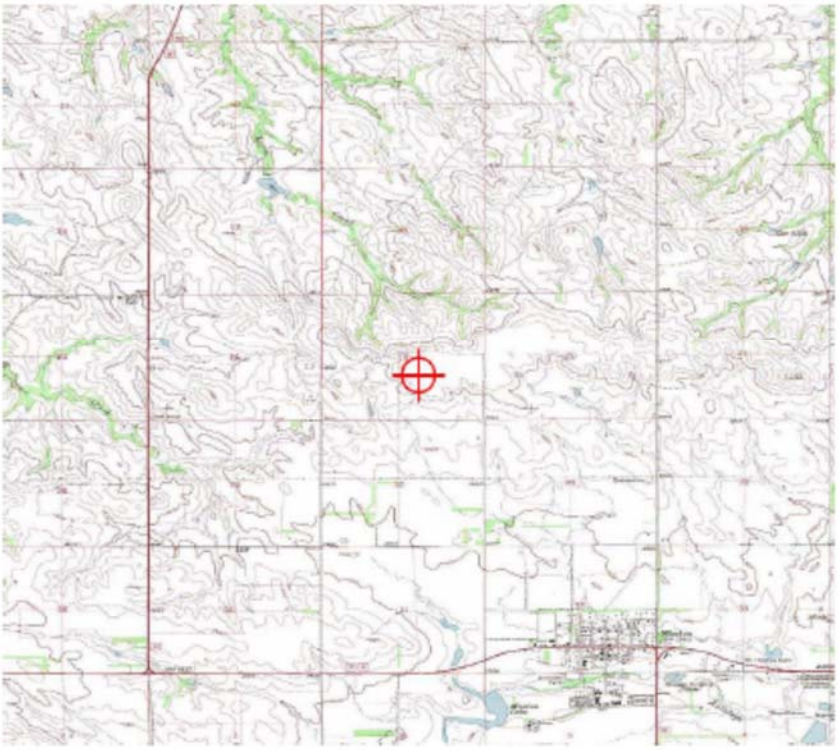
Signature Control No: 143031386-145829718 (DNE -WT)
Donna ONeill
Specialist

Attachment(s)
Additional Information
Map(s)

Additional information for ASN 2011-WTE-7115-OE

Marking and lighting recommendations for wind turbine farms are developed based on the project as a whole. Any change to the obstruction marking/lighting of a structure within this project or a change to the number or locations of any turbines within this project [e.g. a turbine(s) is not built, moved] would require a review of the recommended marking/lighting for the entire project.

TOPO Map for ASN 2011-WTE-7115-OE



Page 4 of 4

Appendix 5: DoD Preliminary Screening

Federal Aviation Administration

« OE/AAA

DoD Preliminary Screening Tool

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100 % optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
  -Air Defense and Homeland Security radars(Long Range Radar)
  -Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
  -Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

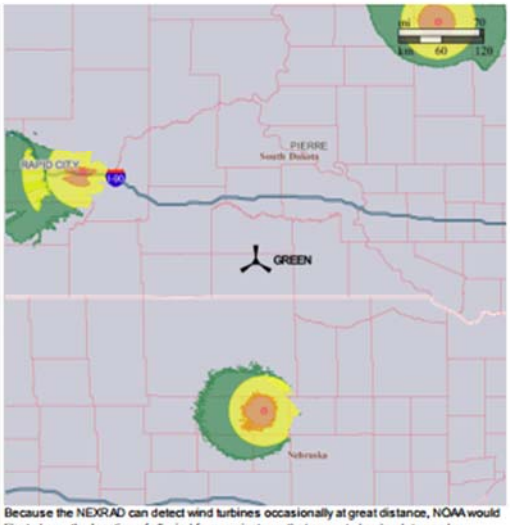
Screening Type: NEXRAD Geometry Type: Single Point

Point	Latitude Deg	Min	Sec	Dir	Longitude Deg	Min	Sec	Dir
1	43	20	12.88	N	100	40	47.41	W

Horizontal Datum: NAD83

Map Legend:

- **Green: No Impact Zone.** Impacts not likely. NOAA will not perform a detailed analysis, but would still like to know about the project.
- **Dk Green: Notification Zone.** Some impacts possible. Consultation with NOAA is optional, but NOAA would still like to know about the project.
- **Yellow: Consultation Zone.** Significant impacts possible. NOAA requests consultation to discuss project details and to perform a detailed impact analysis. NOAA may request mitigation of significant impacts.
- **Orange: Mitigation Zone.** Significant impacts likely. NOAA will likely request mitigation if a detailed analysis indicates that the project will cause significant impacts.



Because the NEXRAD can detect wind turbines occasionally at great distance, NOAA would like to know the location of all wind farm projects so that corrupted radar data can be flagged. Send project information directly to NOAA at wind.energy.matters@noaa.gov or through the National Telecommunications & Information Administration (NTIA) in the Dept. of Commerce. NOAA protects all wind project information as proprietary and sensitive.

Federal Aviation Administration

« OE/AAA

DoD Preliminary Screening Tool

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100 % optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
  -Air Defense and Homeland Security radars(Long Range Radar)
  -Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
  -Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Military Operations Geometry Type: Single Point

Point	Latitude Deg	Min	Sec	Dir	Longitude Deg	Min	Sec	Dir
1	43	20	12.88	N	100	40	47.41	W

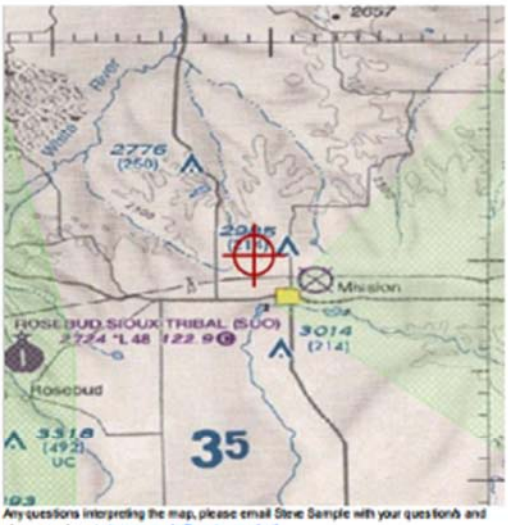
Horizontal Datum: NAD83

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact Dr. Thomas (Thom) H. Rennie at the USAF Regional Enviromental Coordinator at (214)767-4678 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Enviromental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Enviromental Coordinator at (817) 222-5921 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USMC Regional Enviromental Coordinator at (817) 222-5930 for confirmation and documentation.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil

Appendix 6: Rosebud Sioux Tribe Corporation Resolution

ROSEBUD SIOUX TRIBE
CORPORATE RESOLUTION NO. 2010-20

Operating Agreement
Between
Rosebud Sioux Tribe
And
Citizens Enterprises Corporation

WHEREAS, The Rosebud Sioux Tribe is a federally recognized Indian Tribe organized pursuant to the Indian Reorganization Act of 1934 and pertinent amendments thereof: and

WHEREAS, the Rosebud Sioux Tribe, pursuant to Section 17 of the Indian Reorganization Act has established a federal corporate charter for the Rosebud Sioux Tribe, ratified in March 16, 1937, with amendments; and

WHEREAS, the Rosebud Sioux Tribal Council has convened and hereby acts within its capacity and under its federal corporate status, with all the corporate rights, powers, privileges and immunities, for the purpose of tribal economic development; and

WHEREAS, the Corporate Charter of the Rosebud Sioux Tribe, Corporate Powers, Section 5 (i) provides that the Tribe, subject to any restrictions contained in the Constitution and laws of the United States, to sue and to be sued in courts of competent jurisdiction within the Unites States: but the grant or exercise of such power to sue and to be sued shall not be deemed a consent by the Tribe or by the United States to the levy of any judgment, lien, or attachment upon the property of the Tribe other than the income or chattels specifically pledged or assigned; nor shall the grant or exercise of such power be deemed or construed to be a consent to be sued in respect of any land within the exterior boundaries of the Rosebud Reservation, or a consent to the alienation, attachment, or encumbrance of any such land; and

WHEREAS, pursuant to the Corporate Charter of the Rosebud Sioux Tribe, Corporate Powers, Section 5 (f), the Tribe subject to any restrictions contained in the Constitution and laws of the United States, or in the Constitution and By-laws of the said Tribe, shall have the following corporate powers, in addition to all powers already conferred or guaranteed by the Constitution, to make and perform contracts and agreements of every description, not inconsistent with law or with any provisions of this charter; and

WHEREAS, the Constitution and By-laws of the Rosebud Sioux Tribe, Article IV Section 1 (m) authorizes the Rosebud Sioux Tribal Council to safeguard, promote the peace, safety, morals and general welfare of the Tribe by regulating the conduct of trade and the use of property upon the reservation; and

WHEREAS, The Rosebud Sioux Tribe and Citizens Enterprises Corporation entered into a Memorandum of Understanding on December 16, 2008 to develop wind power

1

project(s) located within or adjacent to the traditional lands of the Rosebud Sioux Tribe which they believe are favorable for the development of wind project. The described Memorandum of Understanding sets forth the general terms; and

WHEREAS, The Operating Agreement of Rosebud Wind Holdings, LLC ("Operating Agreement") with the following exhibits sets forth the specific terms that are not inconsistent with the described Memorandum of Understanding: (1) Glossary of terms; (2) Certificate of Formation for the Delaware limited liability company with accompanying membership certificate; (3) Form of Membership Units; (4) Tribal lands covered by the Operating Agreement; (5) Tribal lands excluded from the Operating Agreement and (6) lease and easement agreement where the wind turbines will be located; and,

WHEREAS, The parties have agreed to the following dispute resolution provision contained in Section 10.10 Compliance with Laws; Dispute Resolution; Limited Waiver of Sovereign Immunity of the Operating Agreement: "The parties acknowledge and agree to comply with applicable Tribal, federal and state law. Each party agrees that it will use its best efforts to negotiate an amicable resolution of any dispute arising from this Agreement or any other matter relating to the business affairs of the Company. If the parties are unable to negotiate an amicable resolution of a dispute within fourteen (14) days from the date written notice of the dispute is provided to the other party, or such other period as the parties mutually agree in writing, then either party may cause the dispute to be referred to non-binding mediation in accordance with the mediation procedures (the "Procedures") of the American Arbitration Association ("AAA") by notifying the AAA and the other party. If the parties are unable to mutually agree upon a mediator within ten (10) business days after receipt by the non-referring party of the notice of referral to mediation, the mediator shall be selected in accordance with the Procedures, unless mutually agreed otherwise by the parties. The mediation shall take place through a proceeding conducted over no more than two (2) business days and shall be completed within ten (10) business days after the parties agree upon a mediator, or a mediator is appointed pursuant to this section. The parties agree to submit any dispute that has not been resolved by mediation to arbitration pursuant to the AAA rules and procedures with a single arbiter, applying the laws of the State of Delaware without regard to the choice of law principles thereof, if the matter involves interpretation of this Agreement, and applying the laws of the State of South Dakota in the case of a dispute involving any other matter relating to the business affairs of the Company. Judgment on any arbitration award made pursuant to this Section, whether preliminary or final, may be entered and enforced in the Rosebud Sioux Tribal Court or any United States Federal District Court in the District of South Dakota. If the Rosebud Sioux Tribal Court is requested to enforce an arbitration award but does not do so for any reason, any party may thereafter seek to enforce the arbitration award in the federal district courts in the State of South Dakota. RST affirmatively and knowingly waives, and agrees not to assert the defense of sovereign immunity in any proceedings relating to this Agreement and, to the fullest extent permitted by law, RST

consents to the initiation of any such proceedings in the federal district courts in the State of South Dakota. RST land or assets not relating to a Project or Projects will not be considered for any type of arbitration-related settlement compensation"; and

WHEREAS, The Rosebud Sioux Tribe has agreed to the following taxes in Section 6.5 Tax Status of the Operating Agreement: "With the exception of the Contractors' excise tax currently set at one percent (1%) of gross receipts and the use tax set at four percent (4%), the Rosebud Sioux Tribe agrees to impose no additional fees or taxes, including those imposed by the TECRO Ordinance consistent with exemption requirements therein on the Company or any direct or indirect subsidiary of the Company (including any Project Company) or on any distribution to any member of such entities."

WHEREAS, The Project will only be required to pay those taxes delineated in South Dakota Senate HB 1320 once annually. In other words, if the Rosebud Sioux Tribe successfully asserts its jurisdiction in a court of competent jurisdiction over the taxes described in HB 1320 then the Project will pay the Tribe for said taxes annually; and

WHEREAS, The parties have agreed to the formation of North Antelope Wind Farm, LLC – a Delaware Limited Liability Company as described on Exhibit B of the Operating Agreement.

NOW, THEREFORE BE IT RESOLVED, the Tribal Council hereby authorizes and approves the attached Operating Agreement with supporting exhibits between the Rosebud Sioux Tribe and Citizens Enterprises Corporation (incorporated herein).

NOW, THEREFORE BE IT FURTHER RESOLVED, the Tribal Council authorizes the Tribal President to execute the Operating Agreement and supporting exhibits.

CERTIFICATION

This is to certify that the above Corporate Resolution No. 2010-09 was duly passed by the Rosebud Sioux Tribal Council in corporate session on November 10, 2010, by a vote of fourteen (14) in favor, zero (0) opposed and zero (0) not voting. The said resolution was adopted pursuant to authority vested in the Council. A quorum was present.

ATTEST:

Linda L. Marshall, Secretary
Rosebud Sioux Tribe

Rodney M. Bordeaux, President
Rosebud Sioux Tribe

Appendix 7: Interconnection and Outlet Capacity Study

Mission, SD Wind Generation Outlet Capacity Study

Prepared by:
Excel Engineering, Inc.
January 14, 2009

Principal Contributors:

Richard Gonzalez, PE
Jeffrey Norman, PE

Certification

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Minnesota.

Richard Gonzalez
Registration Number 18938
January 14, 2009

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Minnesota.

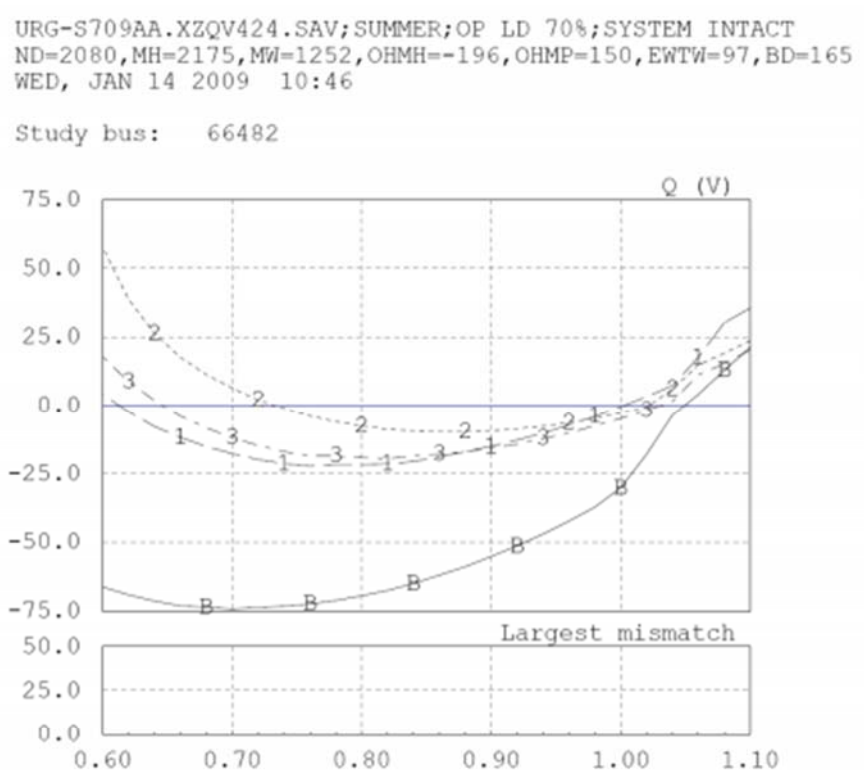
Jeffrey Norman
Registration Number 44951
January 14, 2009

Introduction

Per client request, we have investigated the generation outlet capacity of the Mission SD site. This analysis presumes the generation is connected to the existing WAPA Mission 115 kV Substation.

The WAPA queue presently has a 100 MW interconnection request (GI-0613) for the Mission, SD WAPA substation. No System Impact Study has been completed for that interconnection request. This present analysis was performed without considering the proposed 100 MW of generation (GI-0613) at the Mission 115 kV substation, but its potential impact is rather simple in that it would just reduce the "available outlet MW" values in the table below by 100 MW.

The following graph shows the results when the Mission 115 kV generation is reduced to 190 MW. This shows satisfactory performance because the critical voltage is sufficiently low (approx. 0.88 pu) and shape of the VQ curve provides a crossing of the x-axis.



Conclusions

This analysis has identified several thermal limiters which appear to be easy to address up to 210 MW of total outlet at the Mission 115 kV bus. However, the reactive power/voltage control considerations will limit the total generation at Mission to approximately 190 MW unless additional transmission lines are established for outlet.

All these results are, as usual, sensitive to the assumptions made in modeling the system configuration and other nearby generation.

Excel Engineering Inc
Mission.doc
01/14/2008
Rick Gonzalez, PE
Jeffrey Norman, PE

Tribal Historic Preservation
Cultural Resource Management Office
P.O. Box 809
Rosebud, South Dakota
Telephone: (605) 747-4255
Fax: (605) 747-4211
Email: rstthpo@yahoo.com

Protecting the Land, Cultural, Heritage and Tradition for the Future Generation

Russell Eagle Bear
Officer

Kathy Arcoren
Administrative Assistant

Citizen's Energy Corp.
88 Black Falcon Ave.
Boston, MA 02210

Re: Clearance North Antelope Wind Energy Project

Dear Mr.,

I have reviewed the intensive archaeological survey of one (1) proposed RST North Antelope Wind Energy Project within T37N, R29W, Section 24, T37N, R28W, Sections-12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, and 28., T37N, R27W, Sections 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 32, in Todd County, South Dakota.

Benjamin K. Rhodd, a professional Archaeologist with 15 Field Technicians conducted the Cultural survey April 4, 2015 through June 30, 2015, a total of 5,928.87 acres was intensively surveyed during the course of this investigation.

No archaeological or historical resources were located during the course of the current reported survey. Clearance is granted with the recommendation of **No Adverse Effect** for this project area. During construction if any archaeological resources are inadvertently discovered all ground disturbance activities will stop and the THPO office will be contacted.

If you have any questions please feel to contact this office any time. Thank you.

Sincerely,

Mr. Russell Eagle Bear
Tribal Historic Preservation Office
PO Box 809
Rosebud, SD 57570
(605) 747-4255
(605) 747-4211

A Class III Archaeological and Traditional Cultural Property Survey of The Proposed North Antelope Wind Generation Farm For Citizens Wind Corporation Inc. Rosebud Sioux Reservation Todd County, South Dakota

By

Ben Rhodd, M.S., RPA
Contract Archaeologist- Cultural Resource Management
Historic Preservation Office
Rosebud Sioux Tribe
PO Box 809
Rosebud, South Dakota

Submitted Report To:

The Rosebud Sioux Tribe
Rosebud Agency, Rosebud, South Dakota

September 25, 2015

Rosebud Sioux Cultural Resource Management
Historic Preservation Office Report #: 9-14-15

Abstract

The Rosebud Sioux Tribe entered into an agreement to conduct an archaeological and Traditional Cultural Property Survey with Citizens Wind, Inc. The project APE will affect approximately 15, 225 acres of lands controlled, managed, and administered within the exterior boundaries of the Rosebud Sioux Reservation, Todd County, South Dakota, by the Rosebud Sioux Tribe. Approximately 5,928.87 of the acres to be effected by this proposed project were surveyed resulting in the identification of 73 cultural resources. The future establishment of the wind generation field will have a direct or indirect effect on the cultural resources and Traditional Cultural Properties (TCP's) of the Rosebud Sioux Tribal Reservation as these resources are defined by law and code.

Twenty-six (26) sites, a portion of the 73 total sites identified, are considered as eligible for nomination to the National Register of Historic Places. These 26 sites are in the direct APE of the proposed turbine location placement or the proposed access road construction. Therefore, a recommendation of **Adverse Effect** to these resources will occur if the project as presently designed proceeds.

Citizens Energy Corporation proposes to construct and operate an electrical generation field consisting of approximately 127 turbines. The field will consist of generation dynamos, access roads to the generators, and sub-surface collector lines. As such, in the construction of the aforementioned operations and their future maintenance, land surfaces will be disturbed by earth moving equipment and traffic.

The Rosebud Sioux Tribe administration and their internal tribal cooperating offices have absolute jurisdiction over the management of those Tribal lands that are proposed for construction and operations of the wind farm field. The Tribal Cultural Resource Management Historic Preservation Office (RST-CRMHPO), established in 2006 by the passing of the Rosebud Sioux Tribe Cultural Resource Management Code (2006) and authorized by the National Park Service (2006) is the office charged with the responsibility of over-seeing and complying with federal law for the protection of cultural and archaeological resources on the Rosebud Reservation; Mr. Russell Eagle Bear is the current Tribal Historic Preservation Officer.

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A Class III Archaeological and Traditional Cultural Property Survey of The Proposed North Antelope Wind Generation For Citizens Wind Corporation Inc.
Rosebud Sioux Reservation
Todd County, South Dakota

Introduction

The original purpose of the cultural resource investigation performed on those lands defined, designated and platted (15,225 acres) for the proposed wind farm was to identify cultural resources or Traditional Cultural Properties (TCP's) which may be within the Area of Potential Effect (APE). A survey of any Reservation lands to be detrimentally effected by proposed construction is required by not only Federal law but additionally Title(s) 18 and 19 of the Rosebud Sioux Tribe Environmental Code (1991 and 2004 respectively) of the Rosebud Sioux Tribe. The Cultural Resource Code of the Tribe serves as the functioning compliance authority for any cultural resource work to be performed prior to any surface disturbance within the Reservation boundaries.

The field survey work was performed by the Principle Investigator Ben Rhodd, a professional archaeologist, and 15 (on average) Traditional Cultural Specialist(s) (TCS's). The TCS's are part of a cadre of field technicians kept on call by the RST-CRMHPO to conduct surveys and excavations. Each has received an 80 hour course including classroom and field training. Their expertise is exceptional in the recognition of archaeological resources and TCP's and are recognized by federal agencies as legitimate experts in the conducting of field work.

The RST-CRMHPO, in conjunction with cooperating offices authorized a survey of the project APE. An area encompassing 5,928.87 acres consisting of numerous sections (see Area of Investigation section of this report) in Todd County, South Dakota, Rosebud Sioux Reservation was investigated. The area of survey has not been previously impacted by extensive development beyond two track roads and an extremely small area of row crop use. The development of constructed wind turbine pads, access roads, and collector line installation will involve mechanical modification of these areas. These locations will undergo extensive modifications and affect the cultural and physical landscapes. Previous uses of the areas of investigation exhibited trails and roads created for entrance into pasture (grazing units), farm ground, and for hunting activities.

The contractor authorized the conducting of a Class I records search as required by 36 CFR Part 800.4. The search revealed numerous surveys within a one mile proximity to the areas proposed for investigation. The RST-CRMHPO records clerk, Ms. Bernadette Emory, was instrumental and essential to this research prior to a Class III survey being initiated. All pertinent and applicable laws were adhered to prior to designing a strategy and methodology utilizing standard archaeological techniques (controlled block survey transects) to be implemented during the field investigation.

The proposed Area of Potential Effect (APE) was originally agreed to be a 100% survey of all the lands in proximity and the APE. Due to an exceptionally heavy rainfall spring and early summer of 2015, the field crew was limited to days when conditions were favorable for access. In addition, electronic instruments used for transect locational data, section lines and brass cap markers, recordation of resources located, and access points could not be exposed to rainfall, mist, or foggy conditions. Given these climatic conditions, instead of pursuing 100% of the section areas of the surrounding landscape only the APE of the proposed locations were surveyed during the latter two

weeks of the field exercise. During this period, the Principle Investigator and the 15 TCS field crew members concentrated directly on the APE of the turbines, access roads and collector lines.

In conjunction to the climatic conditions and concerns for the electronic equipment, negotiations regarding an authorization to proceed with the entirety of the field investigation was delayed. An attempt to survey was started on November 3-5, 2014 but winter weather forced the crews from the field. When permission to proceed occurred in the spring of 2015 beginning on April 4, 2015 until June 30th, 2015, the time limitation for a full 100% survey of the platted areas and APE of the project was not possible.

The platted proposed areas of construction cross a variety of topographic features near the City of Mission and the tribal community of Antelope. Buttes, draws, and rolling prairie encompass the entirety of the projected APE. Ninety-eight percent of the APE is within this milieu and the other two percent is ranch locations, established roads, farm ground, stock dams, power line easements, and old aggregate extraction sites. Investigation strategies incorporated were restricted only on areas of 30 degree slope or more to prevent injury to personnel. Field strategy methodology utilized consisted of 10 meter transects over the entire platted areas of survey. The totality of the 5,928.87 acres of land were surveyed using this methodology.

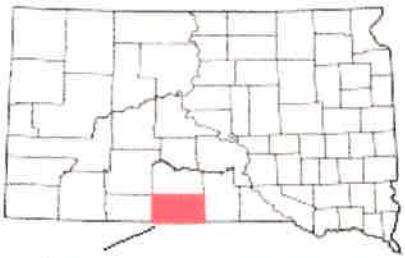
The Class I file search and reference research pertinent to the Class III survey was conducted by personnel from the RST-CRMHPO to identify any previously recorded prehistoric or historic properties that may be impacted by the proposed construction activities. Seventy-three (73) cultural resource sites were identified and positioned within the proposed project area for this report.

Area of Investigation

The project is located within the political sub-division of counties within the State of South Dakota. Todd County is a county located in the U.S. state of South Dakota (Figure 1). As of the 2010 census, the population was 9,612; Todd County does not have its own county seat. Instead, Winner in neighboring Tripp County serves as its administrative center. Its largest city is Mission. The county was created in 1909, although it remains unorganized. The county was named by European-American settlers after John Blair Smith Todd, who was a delegate from Dakota Territory to the United States House of Representatives and a general in the Union Army during the American Civil War (Wikipedia; Newberry Library 2006).

The county lies entirely within the Rosebud Indian Reservation and is coterminous with the main reservation (exclusive of off-reservation trust lands, which lie in four nearby counties). Its southern border is with the state of Nebraska. It is one of five South Dakota counties entirely within an Indian reservation. Other counties within the state are Corson, Dewey, Oglala, and Ziebach.) The county's per-capita income makes it the third poorest county in the United States. Unlike many rural counties in South Dakota, since 1960, its population has increased.

Figure 1: Project area location- Todd County, South Dakota



The greater regional descriptive of the proposed wind farm is located on what is stereotypically termed the Great Plains (Figure 2). The region is exemplified by broad expanses of flat land, proportionally covered by prairie steppe and grasslands that lie west of the Mississippi River tallgrass states and east of the Rocky Mountains in the United States and Canada. This area covers parts, but not all, of the states of Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming, and the Canadian provinces of Alberta, Manitoba and Saskatchewan. The regional economics rely primarily on, and is known for, supporting extensive cattle ranching and dry farming (Wishart, 2004).

Figure 2: Regional location of the project area within the Great Plains.

The term "Great Plains" is used in the United States to describe a sub-section of the even more vast Interior Plains physiographic division, which covers much of the interior of North America. It also has predominance as a region of human geography, referring to the Plains Indians or the Plains States of which a bison economy was the prime source of nutrition, clothing, and housing. The bison herds, estimated at 60 million in the early 18th century, used three eco-systems designations of tallgrass, mid-grass, and shortgrass prairies stretching from the inter-montane area of the Rockies to the Mississippi. It is noted here that this description is concentrated on the Central Region of the Great Plains as this is the area of the currently proposed project. Bison were known to roam beyond

the Plains into other regions of the United States and were observed on the Catawba River at Buffalo Ford in 1750 A.D. (Hornaday 1889).

The North American Atlas produced by the Commission for Environmental Cooperation, a NAFTA agency composed of the geographical agencies of the Mexican, American, and Canadian governments uses the "Great Plains" as an ecoregion synonymous with predominant prairies and grasslands rather than as physiographic region defined by topography. The Great Plains ecoregion includes five sub-regions: Temperate Prairies, West-Central Semi-Arid Prairies, South-Central Semi-Arid Prairies, Texas Louisiana Coastal Plains, and Tamaulipus-Texas Semi-Arid Plain, which overlap or expand upon other Great Plains designations (CEC 2010).

The High Plains are a sub-region of the Great Plains mostly in the Western United States, but also partly in the Midwest states of Nebraska, Kansas, and South Dakota, generally encompassing the western part of the Great Plains before the region reaches the Rocky Mountains. The High Plains are located in southeastern Wyoming, southwestern South Dakota, western Nebraska, eastern Colorado, western Kansas, eastern New Mexico, western Oklahoma, and south of the Texas Panhandle. The southern region of the Western High Plains ecology region contains the geological formation known as Llano Estacado which can be seen from a short distance or from miles away on satellite maps. From east to west, the High Plains rise in elevation from around 1,160 feet (350 m) to over 7,800 feet (2,400 m) (Physiographic 2006).

Designated turbine locations and access roads were originally platted by design engineers and the maps provided to the RST-CRMHPO were plotted using ESRI ArcGIS. Supplemental programs utilizing Garmin XMap, Topoquest, and GoogleEarth were used in addition to the ESRI program for locating of survey areas and the identified cultural resources. Road access into the investigation area are of three types; gravel surfaced roads with barrow ditches; road patrol cut roads with minimally modified edges; and two-track routes leading to cattle watering tanks, corrals, and/or used for hunting access. These routes are noted here as being in various states of disrepair and become particularly unusable when precipitation occurs.

Environmental Setting

This portion of the reservation is well known for the rolling prairie open vista terrain, with shallow draws, and high flats typical of Western South Dakota. A designation of the area as defined is the "Tertiary Table Lands (TTL) section of the Missouri Plateau division of the Great Plains Province (Rothrock 1943). The TTL are defined within a sub-category of the Missouri Plateau termed the Southern Plateaus. This area is dominated to the north and west by badlands topographic features which are known for their ruggedness and high erosion values. The badlands are resultant of parallel slope retreat along the edge of the TTL. The land reduction process is largely the result of erosion influenced by the rainfall, elevation, and characteristics of the erodible materials (Rothrock 1943), (Barr 2006).

The survey location is located within the exterior boundaries of the Rosebud Sioux Reservation. The natural topographic physiography of the project locale is moderately steep with the general area interspersed with relatively flat, small localized plateaus and *flats* (colloquial term). The vegetation and tree regimes associated with the physiographic features of this landscape are shrubs, forbs, and native grasses with a limited intrusive non-indigenous plant regime i.e. – Canadian thistle; the tree populations vary according to the slope, elevation, and general valley/upland configuration.

Deciduous populations (bur oak and ash predominant) of tree species occupy the lower reaches of the stream/draw valleys and bottoms.

The principle drainage for the local area is the Keya Paha River to the south of the project area. Interspersed within the project are smaller seasonal ephemeral drainages, and eroded draws. The equilibrium of the watershed in this area is dependent upon the vegetation communities and low shrub populations by which erosion controls such as heavy grass cover characteristically stabilizes the soils within the regional ecosystem.

Geology of the Proposed Project Location

The proposed project route is located in the Unglaciated Missouri Plateau in the Great Plains physiographic province. Surface elevations range from 3,000 feet amsl in northwest South Dakota to 1,800 feet amsl in the White River Valley. Surficial geological materials are composed of Quaternary alluvium, colluvium, alluvial terraces, and aeolian deposits. The majority of bedrock in South Dakota consist of Upper Cretaceous rocks (Hell Creek/Fox Hills Formation, Pierre Shale), while Tertiary-aged (Ogallala Group and Ludlow Member of the Fort Union Formation) are present beneath the physio-graphic area of the southeastern area of Western South Dakota. The Hell Creek/Fox Hills Formation forms badland topography and consists of shale, mudstone, and lenticular coal beds. The Pierre Shale occurs under much of Western South Dakota and consists of bentonitic mudstone and shale. The Ogallala Group consists of well to poorly consolidated sandstone and conglomerate with occasional bentonite layers. The Ludlow Member of the Fort Union Formation consists primarily of sandstone, siltstone, mudstone, carbonaceous shale and lignite (Bryce et al.1996) (Figure 3).

White River Group (Phanerozoic | Cenozoic | Tertiary | Eocene Oligocene) *at surface, covers 0.8 % of this area*
Includes: Brule Formation (Oligocene)- White, pink, light-green, and light-brown, massive to thin-bedded, bentonitic claystone, tuffaceous siltstone, and well-bedded, calcareous, tuffaceous quartz sandstone. Thickness up to 150 ft (46 m). Chadron Formation (Eocene)- Upper beds are gray, light-brown to maroon bentonite, claystone, siltstone tuffaceous fine-grained sandstone, and local, silicified carbonate lenses. Basal portion consists of poorly cemented, white, coarse-grained arkose and conglomerate. Thickness up to 160 ft (49 m). Chamberlain Pass Formation (Eocene)- Pale olive to pale red, mottled mudstone containing white, cross-bedded channel sandstone with basal conglomerate. Thickness up to 32 ft (10 m). Slim Buttes Formation (Eocene)- White, grayish- to yellowish-orange,pale-red to pink siltstone, clayey siltstone, bentonitic claystone,medium- to fine-grained sandstone, and conglomerate. Thickness up to 48 ft (15 m).
Lithology: claystone; siltstone; clay or mud; sandstone; mudstone; conglomerate

Ogallala Group (Phanerozoic | Cenozoic | Tertiary Quaternary | Miocene Pliocene(?) Pleistocene-Early) *at surface, covers 0.8 % of this area*
Includes: Ash Hollow Formation- White, tan, and gray, well-cemented, calcareous sandstone and silty limestone often referred to as "mortar beds". Thickness 90-250 ft 27-76 m) Valentine Formation- Gray, unconsolidated, fine- to coarse grained, fluvial siltstone, channel sandstone, and gravel derived from western sources. Thickness 175-225 ft (53-69 m). Fort Randall Formation- Pink and gray claystone with interbedded sandstone. Also includes green to gray orthoquartzite, bentonitic clay, and conglomerate. Thickness up to 130 ft (40 m).
Lithology: sandstone; siltstone; claystone; limestone; gravel; clay or mud; conglomerate

Arikaree Group (Phanerozoic | Cenozoic | Tertiary | Eocene Oligocene) *at surface, covers 0.8 % of this area*
Includes: Rosebud Formation (Miocene)- Pink siltstone with channel sandstone and concretions. Thickness up to 250 ft (76 m). Harrison Formation (Miocene)- Gray, silty sandstone and reworked volcanic ash with calcareous siltstone and marl. Thickness 180 ft (55 m). Turtle Butte Formation (Miocene)- Light-green to gray siltstone with sandstone channels containing claystone pebbles. Thickness 65 ft (20 m). Monroe Creek Formation (Oligocene)- Tan to grayish-tan, massive sandy siltstone and reworked volcanic ash. Thickness 100 ft (30 m). Sharps Formation (Oligocene)- Pink siltstone and claystone with concretionary layers, paleochannels, and beds of reworked volcanic ash. Thickness 360 ft (110 m).
Lithology: siltstone; sandstone; claystone; volcanic ash; limestone

Terrace Deposits (Phanerozoic | Cenozoic | Quaternary) *at surface, covers 0.8 % of this area*
Clay to boulder-size clasts deposited as pediments, paleochannels, and terrace fills of former flood plains. Thickness up to 75 ft (23m).
Lithology: clay or mud; silt; sand; gravel

Eolian Deposits (Phanerozoic | Cenozoic | Quaternary) *at surface, covers 0.8 % of this area*
(loess and sand dune) Silt to medium-grained sand. Deposited as sand sheets and barchan, linear, and dome-like dunes and as veneer on uplands. Thickness up to 300 ft (91m).
Lithology: silt; sand

Alluvium (Phanerozoic | Cenozoic | Quaternary) *at surface, covers 0.8 % of this area*
Clay to boulder-size clasts with locally abundant organic material. Thickness up to 75 ft (23m).
Lithology: clay or mud; silt; sand; gravel

Pierre Shale (Phanerozoic | Mesozoic | Cretaceous-Late) *at surface, covers 0.8 % of this area*
Blue-gray to dark-gray, fissile to blocky shale with persistent beds of bentonite, black organic shale, or light-brown chalky shale. Contains minor sandstone, conglomerate, and abundant carbonate and ferruginous concretions. Thickness 1,000-2,700 ft (305-823 m).
Lithology: shale; clay or mud; sandstone; conglomerate

Ogallala Group or Formation (Phanerozoic | Cenozoic | Tertiary | Miocene) *at surface, covers 0.8 % of this area*
Silt, sand, sandstone, gravel and conglomerate. Predominantly interfingered fine- to coarse grained, poorly sorted, arkosic, fluvial deposits of light-gray, light-olive-gray, and grayish-green calcareous silt and sand, and locally poorly consolidated conglomerate, sandstone, and siltstone.
Lithology: mudstone; sandstone; volcanic ash (DOI USGS 2014).

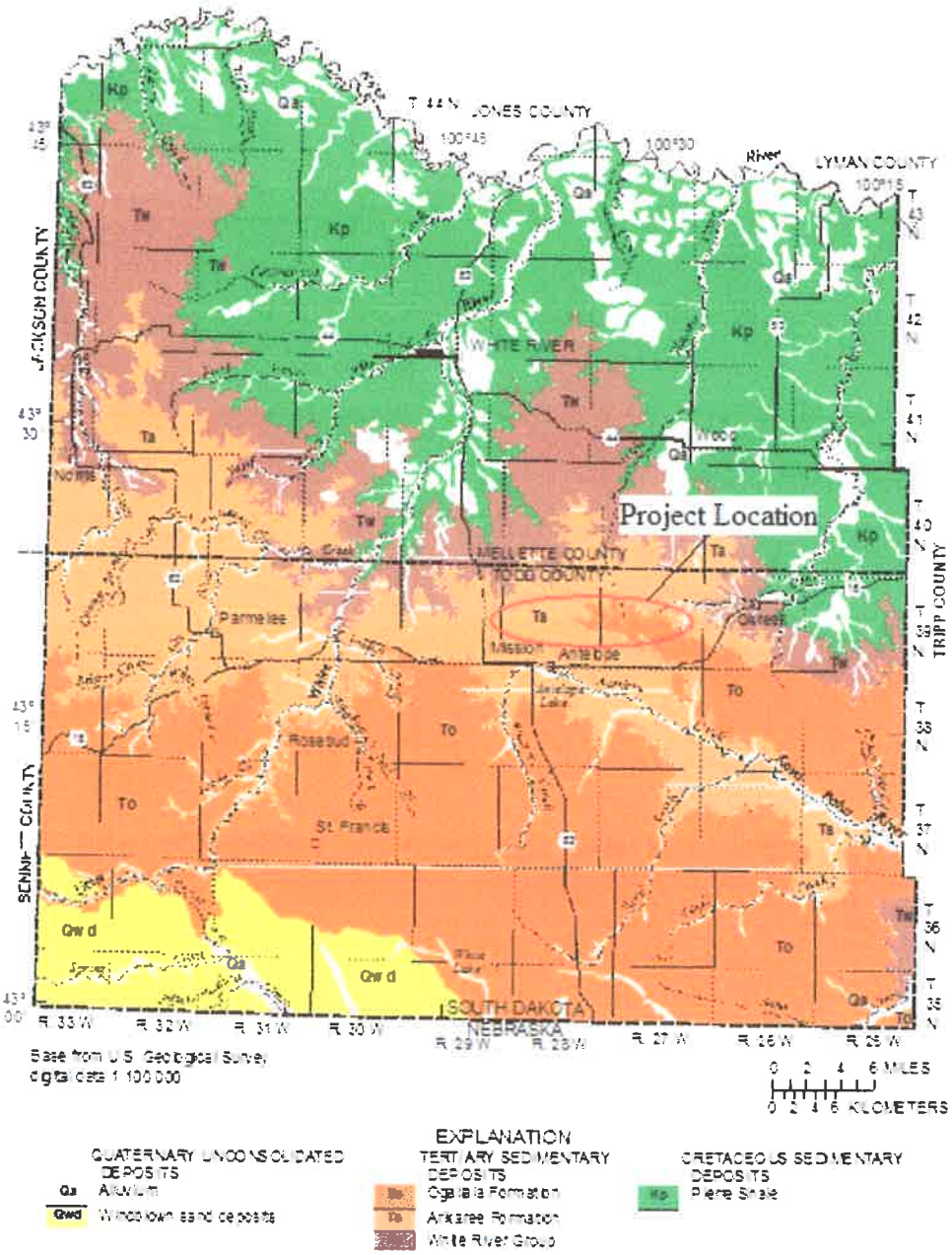


Figure 3: General area of geology and project area.

Regional Climate of the Project Area

South Dakota has a continental climate with four distinct seasons, ranging from cold, dry winters to hot and semi-humid summers. During the summers, the average high temperature throughout the state is often close to 90 °F (32 °C), although it cools to near 60 °F (16 °C) at night. It is not unusual for South Dakota to have severe hot, dry spells in the summer with the temperature climbing above 100 °F (38 °C) several times a year. Winters are cold with January high temperatures averaging below freezing and low temperatures averaging below 10 °F (−12 °C) in most of the state. The highest recorded temperature is 120 °F (49 °C) at Usta on July 15, 2006 and the lowest recorded temperature is −58 °F (−50 °C) at McIntosh on February 17, 1936.

Average annual precipitation in South Dakota ranges from semi-arid conditions in the northwestern part of the state (around 15 inches or 380 mm) to semi-humid around the southeast portion of the state (around 25 inches or 640 mm),[34] although a small area centered on Lead in the Black Hills has the highest precipitation at nearly 30 inches (760 mm) per year. South Dakota summers bring frequent, sometimes severe, thunderstorms with high winds, thunder, and hail. The eastern part of the state is often considered part of Tornado Alley and South Dakota experiences an average of 30 tornadoes each year. Severe weather in the form of blizzards and ice storms occurs often during winter (Wikipedia; Climate of SD).

Soils

The soil conditions prevalent in the direct area of the project and the surrounding region vary in complexity and composition. Primarily the soils fall within two (2) soil classification categories:

1) Kadoka-Tuthill-Huggins: Characterized by moderately deep and deep, nearly level to sloping, well drained, silty and loamy soils; on uplands.

2) Anselmo-Tassel-Dunday: Characterized by deep and shallow, gently undulating to steep, well drained and somewhat excessively drained mixed sandy soils, on uplands (Todd County Soil Survey 1974)

The Anselmo-Tassel-Dunday category is the predominant group of soil types covering the hills of the project area where the turbines are platted for placement. Due to this factor, the exposure of observable exposed ground surface averages 30% on these locales. The soil components, unless disturbance has occurred i.e. – rodent burrows, human activities, etc. are not conducive to growing of a thick grass layer or forbs. Upon disturbance of the components then typically seed materials can find a matrix favorable for germination (Soils of Todd County, 1974)

It is noted by field observation that the Tassel Rock outcrops are exposed on the edges and steeper slopes of the uplands. These outcrops are of sandstone which erodes at an accelerated rate in wet years which further adds to the Kadoka-Tuthill-Huggins category of soils in the level to gently sloping areas of the landscape.

Project Location and Surveyed Areas by Section, Township, and Range

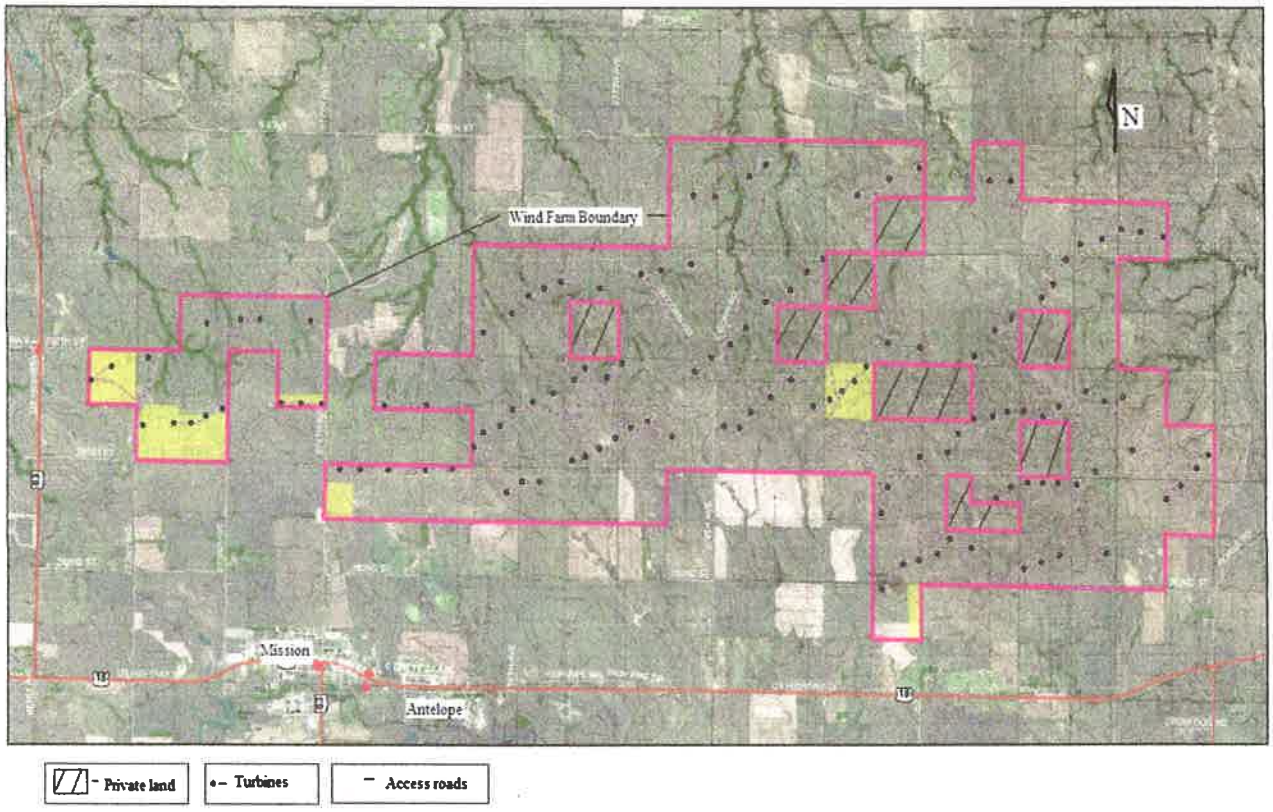
The locales of sections and townships/ranges of the proposed project investigation areas are as follows:

T37N, R29W, Section 24

T37N, R28W, Sections-12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, and 28.

T37N, R27W, Sections 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 32.

Figure 4: Project area, Citizens Wind- Antelope Project, Rosbud Sioux Reservation, Todd County, South Dakota, inclusive of boundaries.



Background Research

The watersheds of the Little White River and the Keya Paha River are well known by reservation and non-Tribal area residents. These watersheds served the prehistoric and historic populations utilizing those resources that allowed for survival within the landscape encompassing the present day Rosebud Reservation. The prevalence of sites in other areas of the Reservation beyond the watersheds is an objective to research during the performance of the present investigation.

The Class I records research was conducted at the RST-CRMHPO where records pertaining to cultural locational data, information of site types, and previous survey information is stored. The information within the data sets constructed by RST-CRMHPO personnel is confidential and not available for the individuals or non-RST-CRMHPO personnel. It is the policy of the RST-CRMHPO that non-preservation office persons do not have access or entrance to the records and data stored at the RST-CRMHPO.

A total of eighty (80) surveys were identified within a one-mile area of the investigation. No individuals or other tribes were contacted by the RST-CRMHPO concerning the proposed wind farm construction. No sites of significance have been recorded within the one-mile area surrounding the survey area.

As with every office housing sensitive cultural site information, locations, and archival materials pertaining to sites within the individual offices jurisdiction. This is a standard criterion whether the office is a state, federal, or institutional repository of sites information. The general public is not privy to the information contained within the records management of these offices.

Professional archaeologist, historians, ethnographers, and researchers who have met the proper Secretary of the Interior Standards criteria and have credentials, are given access to those records pertinent to their project. Reports containing locational; descriptive; or information considered sensitive to the RST-CRMHPO is not included in reports nor is the information sent to third party contractors, main party contractors, or to federal agencies. All site information is considered the confidential and intellectual property of the Rosebud Sioux Tribe.

Given this stipulation regarding the policies and procedures of the RST-CRMHPO the site information contained in this report is limited to the placement of a symbol, typically a dot, on the maps provided to denote cultural resource locations. Additionally, a UTM coordinate is provided to ensure exact locating of the resources position and a central data point from which a buffer zone is established to minimize impacts to site property. The priority of the RST-CRMHPO is avoidance of resources; testing (limited or formal) is not allowed nor is excavation of sites by personnel outside of the RST-CRMHPO program.

Historic Setting

The current research done to date in this area points to human use of this regional locale since approximately 11,500 years ago within the PaleoIndian Period. Extinct Late Pleistocene mega-fauna exp.- mammoth and bison, in association with big game hunter tools and implements, have been found within the region. These site types are recognized as the earliest forms of human use

of resources, both plant and animal, within the continents of North and South America. It has been surmised from demographic studies and research of PaleoIndian sites that theoretical constructs of small band configuration(s), were additionally supplemented by plant gathering and small game.

Successive progression and development of cultural sustainability following the PaleoIndian Period has been defined as the Early Archaic and Middle Archaic Periods. These Periods have been time line defined as from 8.500 to 2,500 years ago according to site investigation research within the Northern Plains. An over-arching definition postulated by Frison compares the broader site typologies as associated with the Plains Archaic Period of the Northwestern Plains (Frison 1978). Investigated site characteristics recognized by the archaeological profession includes wild plant foods, waterfowl, small game, and large game in a broad spectrum economy strategy. The ecological diversity association of more dense populations utilizing broader spectrum strategies for subsistence within the Holocene Period is an indicator of changing climatic conditions that stimulated shifting environmental settings. The artifact assemblages recovered from these sites, especially projectile point typology and varieties, are indicators of the less specialized economies of this Period. Also, during this Period, ground stone tools emerge within the assemblages which reflect the increased reliance on plants (Buechler 2004).

Sequentially, the Late Archaic/ Woodland Period generally extends from 2,500 years to 1,500 years ago. Most Woodland Period components in the Middle Missouri sub-area date to 2,000 to 1,400 years ago. Woodland occupations are characterized by the introduction of ceramics; the occurrence of semi-permanent dwellings; a high dependence on bison; and a higher population density; and a degree of social organization which allowed for large scale and multi-community efforts in mound building and other aspects of ceremonial burial practices (Neuman 1975).

It is noted here that in all aspects, except the subsistence base, that the Woodland Period components in the Middle Missouri sub-area are definitively similar to the basic Woodland cultural tradition which dominated the eastern United States during the same period. Woodland Period manifestations within the Middle Missouri sub-area have been defined as the Sonota Complex based on excavations in Walworth County. These sites include the Boundary Mound, Arpan, Grover Hand, Swift Bird, and Seltzer sites reported by (Neuman 1975), (Buechler 2004), (Barr 2006).

The Plains Village/Late Prehistoric Period extends from about 1,100 years ago to the nineteenth century. In the nineteenth century the Plains Village way of life succumbed to hostile equestrian nomadic pressures and Euro-American disease and technology. Sites of this period have received the most archaeological attention within the Middle Missouri sub-area (Buechler 2004).

The Plains Village Period had manifestations in the Central Plains, as well as along the Missouri River Trench in the Dakotas. In the Dakotas, the Plains Village peoples are thought to have been culturally similar to their historical descendants; the Mandan, Hidatsa, and Arikara tribes. The historic and prehistoric lifeways involved a dependence on both maize horticulture, along the Missouri River floodplains, and bison hunting, to the east and west in the prairie grasslands (Buechler 2000).

A shift occurred in the region during the Extended Variant of the Coalescent Tradition. There is evidence that considerable conflict displaced the Middle Missouri Tradition people. Theoretically, the Middle Missouri Tradition people moved to North Dakota and settled into larger, more compact, fortified villages for protection (Buechler 2004), (Barr 2006).

Around *anno domini* (AD) 1675, the horse was introduced to these groups and to neighboring nomadic tribes/ European trade goods began to enter the area, and population pressures increased as easterly groups were driven westward in advance of EuroAmerican expansion. Following AD 1675, a confederation of the two distinct cultural traditions took place, marked by an exchange of ideas and material artifacts. This resulted in the emergence of a single Post Contact Variant of the Coalescent Tradition encompassing the ancestral Mandan, Hidatsa, and Arikara tribal groups (Buechler 2004).

By AD 1780, Euro-American technology and disease, intertribal hostilities with equestrian nomads began to shatter traditional lifeways. This disintegration marks the final native cultural grouping, known as the Disorganized Variant of the Coalescent Tradition. There is very little evidence of the Coalescent Tradition within the boundaries of the Rosebud Reservaiton, except in areas close to the Missouri River. The western portion of the reservation was most likely used for bison hunting, and more intensively so during the period in which nomadic hunters utilizing horses moved into the area. This time period marks the beginning of the Sioux Era (AD 1750 – present) (Buechler 2004).

Sioux property types are likely to include tipis log structures, battlefields, modern tribal centers, dance grounds, fasting sites, vision quest sites, and sweat lodge or ceremonial sites. Government constructed sites or structures include Agency buildings, hotels, boarding and day schools, hospitals, houses, offices, rodeo grounds, meat-distribution centers, and dance halls (State Historic Preservation Center 1989).

The Sioux culture is comprised of three major divisions. Dialectic, geographic, and historical distinctions distinguish the three divisions: the Santee Sioux (Eastern Division) speaking the Dakota dialect; the Yankton Sioux (Middle Division) speaking the Nakota dialect; and the Teton Sioux (Western Division) speaking the Lakota dialect. Within each of the divisions are several bands of tribal groups; the Santee Sioux bands include the Mdewankton, Wahpekute, Sisseton, and Wahpeton. The Yankton bands include the Yankton and Yanktonai. The Teton Sioux includes the Brule (Burnt Thigh), Oglala (Scatter Ones Own), Two Kettle, Minneconju (O'okju) (Plants By The Water), Sans Arc or Itazipco (No Bows), Hunkpapa (Camps At The End) and Sihasap (Blackfoot). The Oglala and the Burnt Thigh are the two largest numerically of the Teton Sioux (Buechler 2004).

The acquisition of the horse in the late 1700's allowed the western Sioux to become a dominant culture between the Missouri River and the Rocky Mountains. By the mid-1800's, white settlement began to infringe on Lakota territory from all directions. Throughout the 1840's small wagon trains of white settlers traveled west to Oregon along the Platte River. In 1849, these settlers were joined by a rush of others on their way to California to mine for gold. The migrants demanded protection from the Indians and the United States government responded by deploying the army to establish military outposts along the Platte River.

The 1858 discovery of gold in the Colorado Rockies began a rush of miners and merchants to the central plains. The discovery of gold in Montana in 1864 lured thousands to the northern plains. These settlers demanded supply lines and government protection and the resulting forts and supply routes were established on Lakota hunting grounds. In 1868, with the signing of the Fort Laramie Treaty of 1851, the federal government agreed to close the Bozeman Trail; abandon its western military posts; and granted the Lakota Sioux all of western South Dakota. The Lakota also agreed to central agencies from which each band would receive rations and annuities.

However, in 1874 hordes of miners moved into the Black Hills to mine for gold. The miners violated the terms of the treaty. Army patrols attempted to protect tribal rights, however they were unsuccessful. The invasion of the Black Hills enraged the Lakota and hostilities ensued. The federal government, under pressure from the miners and citizens of adjacent settled regions, attempted to negotiate for the sale or lease of the Black Hills from the Lakota. These efforts failed and the government gave up its effort to control access to the Black Hills.

The Sioux War of 1876 was a direct result of the invasion of the Black Hills. The most dramatic moment came in June 1876, when bands of the Lakota and Cheyenne defeated Custer's troops along the Little Bighorn River in southeastern Montana. In 1876, Congress voted to stop all appropriations to the Lakota until they relinquished claims to the Black Hills and returned to the reservations. A document signed in October of 1876 set new geographic boundaries for the Great Sioux Nation. The Lakota lost hunting rights in Wyoming and Montana and agreed to a reservation set at the 103rd meridian, except the land between the two branches of the Cheyenne River.

The Rosebud Reservation was established for the Brule Band of the Teton Lakota. The Brule settled into twenty communities on the reservation. Most of these communities represented native settlements that had been established in the mid-1800's. These communities were organized as reservation districts (Grobsmith 1981). The original communities were essentially settlements composed of extended families (tiyospaye).

Between 1870 and 1890, agricultural settlement pushed into the Dakotas. In a rush known as the Great Dakota Boom; farm families encouraged by the railroads had settled nearly all eastern South Dakota. While local interests campaigned for their own benefit, eastern humanitarians urged a solution to the "Indian problem" they believed would aid assimilation of the tribes into American life. The reformers influenced Congress to pass the Sawed Severalty or Allotment Act of 1887.

In 1889, the Sioux Commission overcame Lakota opposition and won an agreement that opened nine million acres of reservation land to settlement under provisions of the Homestead Act. Indian people could take a quarter-section allotment on the ceded land rather than relocating to the six reservations created by the act. The government could then open any unclaimed lands to the homesteaders. According to the terms, the government would charge non-Indians a fee for these lands with the proceeds placed in a trust to benefit the Lakota people.

By the end of the allotment period, most reservations had been drastically reduced in size. After parceling out land to individuals, the remaining land was declared "surplus" and opened for sale to non-Indians. The Rosebud Reservation lost 2,195,905 acres by 1934, through sale, land ceded to the US government and miscellaneous land losses" (Ballas 1970).

In hopes of completing the assimilation process, the church and federal government constructed Indian schools to instill western values to teach the children English, and generally to separate the Sioux from indigenous traditions. In 1874, the Roman Catholic mission at St. Francis established a boarding school. By 1805, day schools were established in each district of the reservation. The St. Francis Historic District and the Rosebud Agency House have been listed on the National Register of Historic Places (Buechler 2004), (Barr 2006).

Survey Methods, Results, and Recommendations

The results of the surveying of approximately 5,928.87 acres of lands in block survey methodology resulted in a large number of sites identified. However, due to extended inclement weather conditions and resultant time restrictions, a concentrated methodology was adopted of focusing on strictly the presently plotted turbine APE's and access roads. The changed methodology accelerated the surveying time and field accomplishment of acres investigated.

A variety of site types were located while performing the block areas and the APE surrounding turbines locations and access roads. The site types ranged from one relatively late in archaeological determined temporal time with an estimation of approximately 11 A.D. ceramic site to paleontological sites of the Late Pleistocene Epoch (10 million years B.P. <>). Predominantly the cultural sites located are attributable to Lakota peoples with the exception of the pottery site located. Effigies, stone alignments, cairns, burials, lithic scatters, offering loci, and depressions were identified as culturally attributable resources.

It is noted here that due to the sensitivity of the site locational data, which is retained in-house at the RST-CRMHPO, no locational information is included in this report. As can be viewed in Figure 5, the site areas are defined by a red circle without an explanation of the site type located at that particular setting. The purpose of non-disclosure of site type locations is the RST-CRMHPO has been in several previous situations involving non-Native corporations, agencies, and third party contractors where sites located within and outside of the reservations boundaries have been looted out of existence after locational information was divulged. Therefore, the RST-CRMHPO is extremely cautious when reports require locational information of sites deemed and determined to be significant to the Rosebud Sioux Tribe.

The TCS's began the survey over the broader areas surrounding the APE of the project using 10 m. transects giving 100% coverage of all available surfaces. The terrain, in selected areas, determined whether the TCS's could safely traverse the area. A standard instruction for all surveys on the Rosebud Reservation is that surveyors are not to attempt surveying on inclines of 30 degrees to protect all personnel from potential injury.

A total of 73 sites were located and identified during the field seasons of November 3-5, 2014 and April 4, 2015 - June 30th, 2015. Of the total of sites located and recorded twenty-five (25) are

within proximity to or on the actual APE of proposed turbine pads and or access roads. The sites, while not identified for purposes of confidentiality, are located on Figure with the corresponding number on the Excel spread sheet provided.

For each site a recommendation of a 30 meter buffer zone is made and in addition a recommended direction from the site is made to lessen the potential of impact to the integrity of the site.

The sites recorded are considered as significant cultural resources and properties of the Rosebud Sioux Tribe. As standard methodologies of cultural resource investigations involves observing surface indicators of site presence, sub-surface or buried sites are present on much of the Reservation landscapes. This is especially a factor within the Sandhills Region of Todd County where Aeolian deposits modify the landscape surface especially in dry years when the grasses are sparse. Therefore it is recommended that during construction within all areas scheduled to be effected by this project that a Rosebud Sioux Tribe TCS monitor the exposed ground surfaces for possible exposure of buried sites. It is further recommended that the TCS have stop work authority until a professional assessment can be made of the site area.

The presence of 73 prehistoric and historic sites within this cultural landscape prompts the recommendation that the culturally derived materials and sites will be adversely effected by this proposed project. As a mitigation measure involving the cultural resources of the Rosebud Sioux Tribal Reservation, those sites located during this investigation will endure an **Adverse Effect** to the integrity and significance of these sites. Avoidance of the sites, as recommended within this report, will serve in the best interest of the sites and the project.

The sites identified during this investigation are recommended for avoidance. A buffer zone of 30 meters is listed here with each site and a direction from the resource is recommended:

Site 1- relocate the turbine APE 30 meters to the east of the presently proposed location
Site 2- relocate the turbine APE 30 meters to the northwest of the presently proposed location.
Site 3- relocate the turbine APE 30 meters to the east of the presently proposed location.
Site 4- relocate the access road 30 meters to the south of the presently proposed location.
Site 5- relocate the access road 30 meters to the southwest of the presently proposed location.
Site 6- relocate the access road 30 meters to the north of the presently proposed location.
Site 7- relocate the turbine APE 30 meters to the northwest of the presently plotted location
Site 8- relocate the access road 30 meters to the south of the presently plotted location.
Site 9- relocate the turbine and access road 30 meters to northwest of the presently plotted location.
Site 10- relocate the access road 30 meters to the west-southwest of the presently plotted location.
Site 11- relocate the access road 30 meters to southwest of the presently plotted location.
Site 12- relocate the turbine 30 meters to the south of the presently plotted location.
Site 13- relocate the access road 30 meters to southwest of the presently plotted location.
Site 14- relocate the access road 30 meters to the east of the presently plotted location.
Site 15- relocate the access road 30 meters to the east-southeast of the presently plotted location.
Site 16- relocate the access road 30 meters to the east-northeast of the presently plotted location.

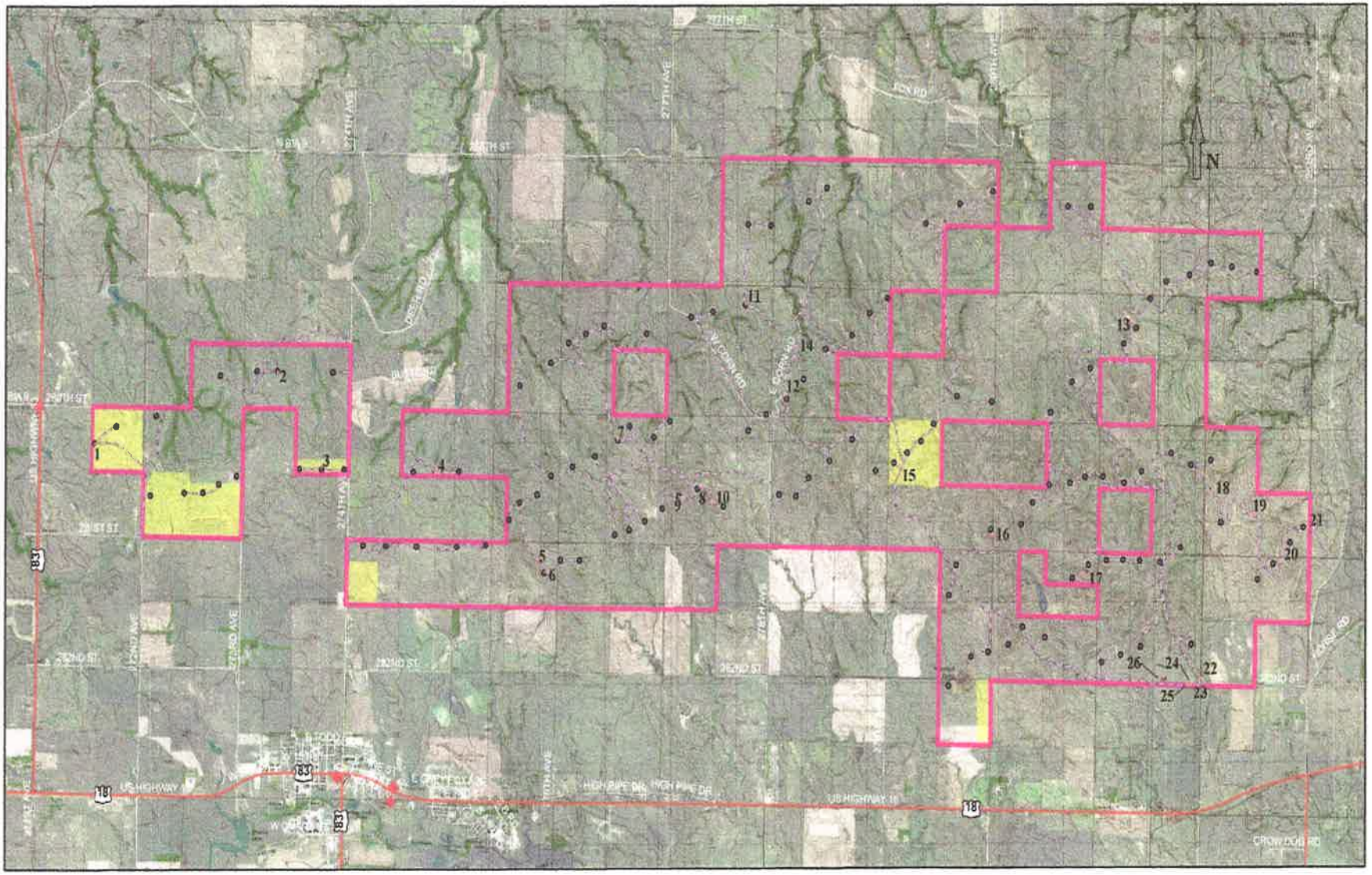
Site 17- relocate the access road 30 meters to the east-southeast of the presently plotted location.
Site 18- relocate the access road 30 meters to the west-southwest of the presently plotted location.
Site 19- relocate the access road 30 meters to the southwest of the presently plotted location.
Site 20- relocate the access road 30 meters to the southeast of the presently plotted location.
Site 21- relocate the access road 30 meters to the north of the presently plotted location.
Site 22- relocate the access road 30 meters to the west of the presently plotted location.
Sites 23, 24, 25 and 26: relocate the access road 30 meters to the north of the presently plotted location. For a distance of one-half (1/2) mile west of the section corners of Sections 26, 27, 34, and 35 maintain the 30 meters distance.

Each location is identified in the following table (Table 1) and on the map provided (Figure 5).

Table 1: Site data; UTM coordinate system NAD83.

Site #		Section		Township		Range		UTM- NAD 83	
1		24		T39N		R29W		362179E	4800235N
2		17		T39N		R28W		364959E	4801074N
3		20		T39N		R28W		365625E	4799968N
4		21		T39N		R28W		367399E	4799832N
5		27		T39N		R28W		358957E	4798757N
6		27		T39N		R28W		369137E	4798597N
7		23		T39N		R28W		370185E	4800265N
8		24		T39N		R28W		371464E	4799682N
9		24		T39N		R28W		371180E	4799489N
10		24		T39N		R28W		371616E	4799478N
11		13		T39N		R28W		372129E	4801910N
12		18		T39N		R27W		372897E	4801398N
13		15		T39N		R27W		377963E	4801778N
14		18		T39N		R27W		372716E	4800873N
15		20		T39N		R27W		374464E	4799796N
16		21		T39N		R27W		375939E	4798968N
17		28		T39N		R27W		377388E	4798582N
18		23		T39N		R27W		379296E	4799750N
19		23		T39N		R27W		379936E	4799317N
20		23		T39N		R27W		380321E	4798917N
21		23		T39N		R27W		380683E	4799057N
22		27		T39N		R27W		379073E	4797245N
23		27		T39N		R27W		378993E	4797198N
24		27		T39N		R27W		378929E	4797213N
25		27		T39N		R27W		378897E	4797197N
26		27		T39N		R27W		378369E	4797213N

Figure 5: Site locations corresponding to Table 1.



References Cited

Ballas, Donald
1970 *A Cultural Geography of Todd County, South Dakota and the Rosebud Sioux Indian Reservation.* Dissertation; University of Nebraska, Lincoln, Nebraska.

Barr, Victoria
2006 *Class III Survey of Fire Trail #18, Rosebud Reservation, Todd County, South Dakota Township 38 North, Range 32 West, Section 35 And Township 37 North, Range 32 West, Section 2.* Bureau of Indian Affairs, Aberdeen, South Dakota.

Bryce, S.A., Omernik, J.M., Pater, D.A., Ulmer, M., Schaar, J., Freeouf, J., Johnson, R., Kuck, P., and Azevedo, S.H.
1996 *Ecoregions of North Dakota and South Dakota,* (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000).

Buechler, Jeffery
2004 *An Intensive Cultural Resources Inventory Survey of the West River Lyman/Jones Rural Water Systems, Inc's. Mellette East Project Area in Mellette and Todd Counties, South Dakota".* Dakota Research Services, Rapid City, South Dakota.

Frison, George
1978 *"Prehistoric Hunters of the High Plains".* Academic Press, New York.

Grobsmith, Elizabeth S.
1981 *"Lakota of the Rosebud. A Contemporary Ethnography".* Holt, Rinehart and Winston, New York.

Griffith, Glenn E. and Omerick, M. James
2008 *"Ecoregions of North and South Dakota".* http://www.epa.gov/wed/pages/eco-regions/na eco.htm., environmental Protection Agency, Washington, DC.

Hornaday, William Temple
1889 *"The Extermination of the American Bison".* Illustrated Edition, Paperback, 2008.

Neuman, Robert
1975 *"The Sonata Complex and Associated Sites on the Northern Great Plains".* Publications in Anthropology 6. Nebraska State Historical Society, Lincoln, Nebraska.

Council of Environmental Cooperation (CEC)
2010 *"Physiographic Regions".* U.S. Department of the Interior. U.S. Geological Survey. *Retrieved 2010-10-06.*
https://en.m.wikipedia.org/wiki/High_Plains_%28United_States%29

Rothrock. E.P.
1943 *"A Geology of South Dakota, Part 1, the Surface"*. Bulletin 13. State Geological Survey, Vermillion, South Dakota.

South Dakota
1974 *"Soil Survey of Todd County, South Dakota"* U.S. Department of Agriculture, Soil Conservation Service and the United States Department of the Interior, Bureau of Indian Affairs, South Dakota Agricultural Experiments Station, SDSU, Brookings, South Dakota

South Dakota Historical Preservation Center
1989 *"Historic Contexts for Historic and Architectural Resources in South Dakota"*. State Historical Preservation Center, Vermillion, South Dakota.

Schweitzer, Peter
2014 *"U.S. Department of the Interior | U.S. Geological Survey"* URL: http://mrdata.usgs.gov/Geology/state/fips-unit.php?code=f46121. Retrieved September 28, 2015.

Springer, Robert
1974 *"Soil Survey of Todd County, South Dakota"*. Research bulletin for the United States Department of Agriculture, Soil Conservation Service, Washington, DC.

Wikipedia
2015 *"Dakota Territory, South Dakota, and North Dakota: Individual County Chronologies"*. Dakota Territory Atlas of Historical County Boundaries. The Newberry Library. 2006. *Retrieved March 31, 2015*

Wikipedia
2008 *"Climate of South Dakota"* National Climatic Data Center. Retrieved November 26, 2008. Contents 1.3.

Wishart, David
2004 *"The Great Plains Region, In: Encyclopedia of the Great Plains*, Lincoln: University of Nebraska Press, pp. xiii-xviii.

RECORD SEARCH
RST THPO-CRM
BY: Bernadette Emery
September 30th, 2015

Akard, William: 2002
Letter of No Findings on A Cultural Resource Survey of the Proposed Project Area for the Proposed Mission-Antelope Lagoon Expansion, a portion of Bureau of Indian Affairs Case Number AAO-967/RB/02

Akard, William: 2003
A Letter of No Findings for Two Housing Addition Sites and a Home Site on the Rosebud Sioux Reservation, Todd County, done for Sicangu Wicoti Awanyakape (SWA) Corporation, Bureau of Indian Affairs Case Number AAO-1069/RB/03

Akard, William: 2003
A Letter of No Findings for a Cultural Resource Inventory Survey for Thirty Two Home Sites on the Rosebud Sioux Reservation done for the Aberdeen Area Indian Health Service (AAIHS), Bureau of Indian Affairs Case Number AAO-1070/RB/03

Akard, William: 2004
Proposed Findings of No Historic Properties Affected in the Section 106 Review of Two Construction Sites for Telecommunication Towers on the Rosebud Sioux Reservation, Todd County, South Dakota done for RESCOM Environmental Corporation, on behalf of the Bureau of Indian Affairs (BIA) and the Federal Communications Commission (FCC) BIA Case Number AAO-1176/RB/04

Akard, William: 2004
A Report of a Cultural Resources Inventory Survey for Three Sites to be considered for a New Airport Facility on the Rosebud Sioux Reservation done for the Rosebud Sioux Tribe, in conjunction with Professional Land Arts Associates, Bureau of Indian Affairs Case Number AAO-1179/RB/04

Bradely, Larry: 1985
An Intensive Cultural Resources Survey of The Mission S.D. Wastewater Treatment Facility, Todd County, South Dakota

Buechler, Jeff: 1977
An Archaeological Reconnaissance Survey of Eleven Proposed Construction Locations on the Rosebud Sioux Reservation in Gregory, Mellette, Todd, Tripp Counties, South Dakota

Buechler, Jeff: 2004
An Intensive Cultural Resources Inventory Survey of West River/Lyman-Jones Rural Water Systems, Inc.'s Mellette East Project Area in Mellette and Todd Counties, South Dakota

Buechler, Jeff: 1998

A Short Format Report of An Intensive Cultural Resource Inventory Survey of The Proposed Todd County Middle School in Todd County, South Dakota

Chevance, Theresa: 1987
An Intensive Cultural Resources Inventory of A Proposed Gravel Site Development in Todd County, South Dakota

Chevance, Nicholas: 1987
An Intensive Cultural Resources Survey of Proposed Work Along U.S. Highway 18 North of Antelope, Rosebud Sioux Indian Reservation, Todd County, South Dakota

Chevance, Nicholas: 1991
Intensive Cultural Resources Inventories of Forty-Six Home Site Projects at The Rosebud Agency, Gregory, Mellette, Todd and Tripp Counties, South Dakota

Donohue, James; 1990
An Intensive Cultural Resources Survey of Proposed Improvements of US Highway 18 East of Mission to Okreek, Todd County, South Dakota

Ferris Kade: 2009
A Class III Cultural Resources Survey of Nine Selected Sicangu Wicoti Awanyakape Corporation Housing Projects on the Rosebud Sioux Reservation, Todd County, South Dakota

Galindo, Jennifer: 2002
A Cultural Resource Survey of a 2.5 acre Homesite for Michael Herman on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2002
A Cultural Resource Survey of a 15 Home and Business Site Locations on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2002
A Cultural Resource Survey of the Proposed Location for the New Sinte Gleska University Radio Station on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Harvey Provancial on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Delilah Becker on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Walter and Dolly Bear Shield on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Renae Pacheco on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of Two 2.5 acre Homesites One for Belva Black Lance and one for Noah One Star, on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Armita Larvie on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Theresa Poignee on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of a 2.5 acre Homesite for Sharon Brandis and Richard Larvie on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2004
A Cultural Resource Survey of the Sinte Gleska University Antelope Lake Campus on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Edward Charging Elk on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Francis Kincaid on the Rosebud Sioux Reservation in Todd County, South Dako

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Vonda Peneaux on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Sharisse Sitting Bear on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Karen Waln on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 1.5 acre Site for the Boys and Girls Club on the Rosebud Sioux

Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 10 acre Site for the Boys and Girls Club Expansion on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Site for the Proposed Habitat for Humanity Housing on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2005
A Cultural Resource Survey of a 2.5 acre Homesite for Keith Lunderman Jr. on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer 2007
A Cultural Resource Survey of a 10 Acre Area for the Proposed Advanced Electronics Rosebud Integration (AERI) Building on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2008
A Cultural Resource Survey of a 2.5 acre Homesite for Sara and Richard Herman on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2008
A Cultural Resource Survey of a 2.5 acre Homesite for Rhanada Watts on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2008
A Cultural Resource Survey of an 80 Acre Area for the Proposed Rosebud Sioux Tribe Grocery Store, on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2009
A Cultural Resource Survey of a 2.5 acre Homesite for Shantel Wright on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2009
A Cultural Resource Survey of a 2.5 acre Homesite for Eugene Watts on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2009
A Cultural Resource Survey of 1683 Acres within the Antelope Community Residential Zone, on the Rosebud Sioux Reservation in Todd County, South Dakota

Galindo, Jennifer: 2009
A Cultural Resource Survey of a 5.8 acre are for Belva Black Lance's Driveway on the Rosebud Sioux Reservation in Todd County, South Dakota

Haberman, Thomas: 1983
South Dakota Department of Transportation Materials Pit Survey

Haberman, Thomas: 1985
Cultural Resources Survey of The Highway 18 Project Between Mission and The Todd/Bennet County Line, South Dakota

Hovde, David: 1980
South Dakota Department of Transportation Gravel Pit Survey, Bennett and Todd Counties

Hovde, David: 1981
South Dakota Department of Transportation Gravel Pit Survey District 1 and 4; Day, Mellette, Roberts and Todd Counties, South Dakota

Miller, Paul: 2004
Records Search and Cultural Resources Inventory of Golden West Telecommunication, Inc.'s Mission Exchange Buried Cable Routes

Murdy, Carson: 2003
Reconnaissance Cultural Resource Surveys of Nine Home Sites for SWA Corporation, Rosebud Reservation, Gregory, Mellette, Todd and Tripp Counties, South Dakota

Murdy, Carson: 2004
Reconnaissance Cultural Resource Surveys of Eleven Home Sites for SWA Corporation, Rosebud Reservation, Mellette and Todd Counties, South Dakota

Nowak, Timothy: 1987
A Cultural Resources Evaluation of A Proposed Wastewater Treatment Facility for The City Of Mission, Todd County, South Dakota

Rhodd, Ben: 2005
Letter Report of A Class III Waterline Survey for Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2006
A Class III Survey Report of Ten Water and Wastewater Projects Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2006
Archeological Investigation Report of Twenty-One Waterline Projects for Mni Wiconi Rosebud Sioux Tribe, Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2006
A Class III Survey Report of Four Water and Wastewater Projects Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2006
A Class III Cultural Resources Survey of Two Water Pipeline Segments Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2006
A Cultural Resources Inventory of Nine Water and Wastewater Projects Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2007
A Class III Cultural Resources Survey of Two Water Pipeline Projects- Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2007
A Class III Cultural Resources Survey of Five Water Pipeline Project- Mni Wiconi Rosebud Sioux Reservation, Todd and Mellette Counties, South Dakota

Rhodd, Ben: 2007
A Class III Cultural Resources Survey of One Water Reservoir Tank Placement- Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2007
A Cultural Resource Inventory of Eleven Water and Wastewater Projects Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2007
A Class III Archaeological Survey of Seven Water and Wastewater Projects, Rosebud Sioux Reservation, Todd and Mellette Counties, South Dakota

Rhodd, Ben: 2007
Corrected: A Class III Cultural Resources Survey of Two Water Pipeline Projects Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2007
Letter Report of A Class III Survey of Six Water and Wastewater Projects Rosebud Sioux Reservation, Todd and Tripp Counties, South Dakota

Rhodd, Ben: 2008
A Letter Report Cellular Telecommunications Tower Survey SD03-Mission (TCNS#34243) Mission, Todd County, South Dakota, T2S, R22E, S30

Rhodd, Ben: 2008
A Class III Archaeological Survey of Seven Water and Wastewater Projects, Rosebud Sioux Reservation, Todd and Mellette Counties, South Dakota

Rhodd, Ben: 2008

A Class III Cultural Resources Survey of One House Site Location for Wamni Colombe Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2008
A Class III Cultural Resources Survey of One Water Pipeline Project- Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2008
A Class III Survey Report of One Water and Wastewater Project Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class I and Class III Cultural Resources Survey of Twenty-Three Home Site Locales Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Cultural Resource Inventory of Seventeen Water and Wastewater Projects Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class III Cultural Resources Survey of Eight Water Pipeline Projects- Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class III Cultural Resources Survey of Three Water Pipeline Projects- Mni Wiconi Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class I and Class III Cultural Resources Survey of Twenty-Two Home and Business Site Locales Rosebud Sioux Reservation, Todd, Tripp and Mellette Counties, South Dakota

Rhodd, Ben: 2009
Addendum: A Class III Survey Report of One Sewage Lagoon Locale, Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class I and Class III Survey Report of A Wastewater Project Rosebud Sioux Reservation, Todd County, South Dakota

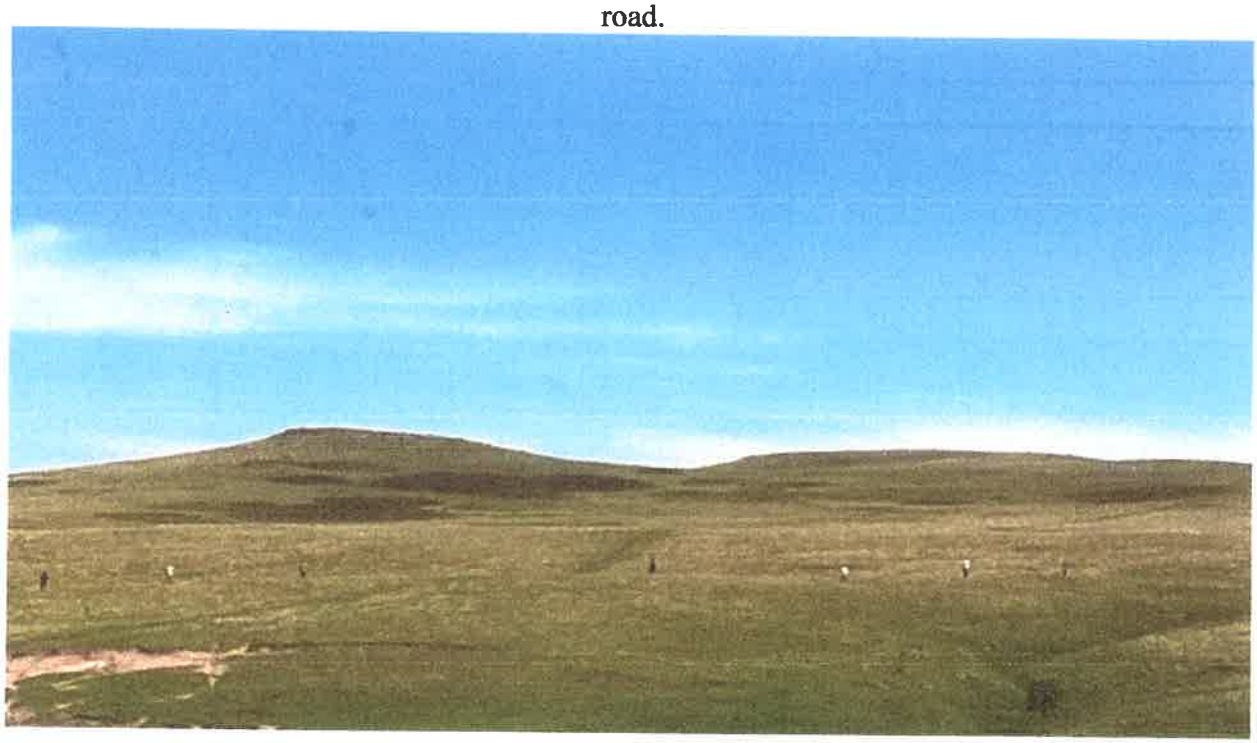
Rhodd, Ben: 2009
A Class III Cultural Resources Survey of A Housing Site Location and Road for Armita Larvie Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2009
A Class III Cultural Resources Survey of a House Site Location for Tyler Antoine Rosebud Sioux Reservation, Todd County, South Dakota

Rhodd, Ben: 2010
A Class III Cultural Resources Survey of One Water Pipeline Project- Mni Wiconi Mission Connector Rosebud Sioux Reservation, Todd County, South Dakota

Vaillancourt, Dana: 2009
A Level III Cultural Resource Letter Report for a Pipeline & Tank Project

Photographs

Photographs of Crew and Project Topography: Citizens Wind- Antelope Project, Todd County, South Dakota.

General view of crew surveying in controlled 10 meter transects to either side of a disturbed road.