

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF  
CROWNED RIDGE, LLC FOR A FACILITIES PERMIT TO  
CONSTRUCT A 300-MEGAWATT WIND FACILITY**

**Docket No. EL19-**

**DIRECT TESTIMONY  
OF KIMBERLY WELLS, PH.D.**

**January 28, 2019**



1 Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.

2 A. The purpose of my testimony is provide an overview of the environmental studies conducted for  
3 Crowned Ridge Wind, LLC (CRW) at the Crowned Ridge Wind Energy Project in Codington and  
4 Grant counties, South Dakota (the Project). The Project Area is approximately 53,200 acres  
5 spanning Codington and Grant counties.  
6

7 **ENVIRONMENTAL STUDIES**

8 Q. WHAT WAS THE OVERALL APPROACH TO ENVIRONMENTAL ANALYSIS OF  
9 THE WIND FACILITY SITE?

0 A. CRW completed desktop analyses and site-specific field studies to determine the potential for  
1 presence of sensitive natural resources. Surveys were designed to comply with applicable  
2 regulations and guidelines, including the U.S. Fish and Wildlife Service (USFWS) Land-based  
3 Wind Energy Guidelines, USFWS Eagle Conservation Plan Guidance, state cultural resource  
4 protection laws, and relevant water resource protection regulations (e.g., Clean Water Act). Data  
5 collected during these analyses and surveys informed an iterative process of refined infrastructure  
6 micro-siting, whereby CRW refined the Project configuration over a period of several months.  
7 The current Project site layout is compatible with existing land use, utilizes the wind resource in  
8 an efficient manner, and avoids and minimizes impacts to natural (e.g., wetlands, wildlife) and  
9 cultural (e.g., cairns, stone circles) resources.

0 Q. DISCUSS THE ENVIRONMENTAL SURVEYS AND/OR STUDIES CONDUCTED FOR  
1 THE WIND FACILITY.

2 A. The environmental studies and field surveys conducted for the Project, the dates of those  
3 studies/surveys, and the status of each are provided in the table below.

Environmental Studies and Surveys for the Project
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Study	Dates	Status
Raptor nest aerial surveys	April and May 2017; Spring 2018	Complete
Avian point count surveys	April – November 2017	Complete
Bat desktop habitat assessment	September 2018	Complete
Bat acoustic monitoring	April – November 2017	Complete
Dakota skipper/Poweshiek skipperling adult survey	June – July 2018	Complete
Whooping crane desktop habitat assessment	Summer 2018	Complete
Sound level modeling	2018 – 2019	Complete
Shadow flicker modeling	2018 – 2019	Complete
Level I cultural resources records search	May 2018	Complete
Level III intensive cultural resources survey of High Probability Areas within Project disturbance footprint (in accordance with the Cultural Resource Monitoring and Management Plan)	June – December 2017; April – November 2018	Complete
Wetland and stream delineation	Fall 2018	Ongoing

Additionally, numerous other wildlife studies were conducted for earlier iterations of the Project Area during the last decade and during the process of refining the Project location. Those studies are listed in the table below.

Environmental Studies and Surveys for previous iterations of the CRW Project		
Study	Dates	Survey Area
Avian use survey (spring)	March 2007 – June 2008	Earlier iteration of Project Area
Dakota skipper habitat delineation	June 2008	Earlier iteration of Project Area
Avian use survey (fall)	August – November 2008	Earlier iteration of Project Area
Dakota skipper habitat delineation	June – July 2009	Earlier iteration of Project Area
Avian use survey (fall)	August – November 2014	Earlier iteration of Project Area
Eagle survey	March – November 2014; November – March 2015	Earlier iteration of Project Area
Dakota skipper habitat evaluation	2015	Earlier iteration of Project Area
Bat habitat assessment	Summer 2015	Nearby study area
Bat acoustic monitoring	August – October 2015; April – October 2016	Earlier iteration of Project Area
Raptor nest survey	March – April 2016	Earlier iteration of Project Area
Lek survey	April – May 2016	Earlier iteration of Project Area
Bat acoustic monitoring	April – October 2016	Earlier iteration of Project Area
Dakota skipper/Poweshiek skipperling habitat assessment	September 2016	Earlier iteration of Project Area



1  
2 **Q. IS THERE ANY ENVIRONMENTAL STUDY WORK YET TO BE COMPLETED FOR**  
3 **THE WIND FACILITY?**

4 A. Yes. CRW is in the process of finishing wetland and stream delineation field surveys, and cultural  
5 resources surveys.

6 **Q. DOES THE REMAINING ENVIRONMENTAL STUDY WORK NEED TO BE**  
7 **COMPLETED IN ORDER TO DETERMINE WHETHER THE WIND FACILITY**  
8 **COMPLIES WITH STATE SITING REQUIREMENTS?**

9 A. No, the remaining survey work is not anticipated to affect the environmental analysis set forth in  
0 the Application, or the conclusion that the Project will meet all applicable State permitting  
1 requirements. Additionally, the Project has been designed (and will operate in a manner) so that  
2 remaining desktop analysis and in-field survey work will not affect the Project's ability to comply  
3 with other local and Federal permitting requirements.

4 **ENVIRONMENTAL SITE ANALYSIS**

5 **Q. PLEASE PROVIDE A GENERAL OVERVIEW OF THE WIND FACILITY SITE**  
6 **FROM A LAND USE PERSPECTIVE?**

7 A. The Project is located entirely on private land, which includes undeveloped rural areas,  
8 agricultural lands, and residential farmsteads. The predominant land use within the Project Area is  
9 grass/pasture (46.6% of total area) followed by agricultural (35.8% of total area). Within the  
0 Project Construction Easement, the predominant land use is agricultural (70.5% of total area)  
1 followed by grass/pasture (26.1%). Two active sand and gravel pits are present in the area and are  
2 located in T118N R51W Section 15 and 16. Additionally, rural residence and farmsteads are

located within the Project Construction Easement. For additional details see Sections 11.1 and 13.1 of the application.

**Q. WHAT STEPS WILL CRW TAKE TO AVOID, MINIMIZE, AND/OR MITIGATE IMPACTS TO THE EXISTING LAND USES?**

A. The Project is compatible with existing land use and is not anticipated to result in sizable permanent impacts to the surrounding land, including agricultural operations. Temporary impacts will occur from construction and installation of other ancillary features, such as collection and communication lines, or from crane walks and temporary access. Where temporary impacts occur, the land will be returned to pre-construction conditions. Long-term operation of the Project is not expected to adversely impact rural lifestyles or create hardships for rural residents. The Project will contribute to rural lifestyles by improving road conditions and access through the Project Area. Because operation of the Project is a compatible land use, the additional easement income for the agricultural landowners is expected to facilitate continued farming and ranching of the lands in agricultural production. Landowners also will be compensated for crop damage during Project construction and operations that impact agricultural lands.

**Q. DISCUSS THE EXISTING GEOLOGICAL AND SOIL RESOURCES, SEISMIC RISKS, AND SUBSIDENCE POTENTIAL IN THE WIND FACILITY AREA.**

A. The unconsolidated geologic materials within the Project Area are composed of glacial till consisting of ground moraine, end moraine, stagnation moraine, and undifferentiated moraine that generally are of low permeability, although sand and gravel glacial outwash deposits and aeolian dusts and sands are present in these materials. Compiled information indicates that economically valuable mineral deposits, such as sand and gravel, occur in three locales in the Project Area. One-hundred-two (102) soil associations were identified in the Project Area, while 69 soil associations were identified in the Project Construction Easement. Of the 69 soil associations in

the Project Construction Easement, 36 of those have an increased potential for erosion. Prime farmland comprises 43.2% of the Project Area and farmland of statewide importance comprises 17.9% of the Project Area. The risk of seismic activity in the Project Area is considered low, and there is no known subsidence potential or slope instability problems exist within the Project Area.

**Q. WHAT STEPS WILL CRW TAKE TO AVOID, MINIMIZE, AND/OR MITIGATE POTENTIAL IMPACTS TO GEOLOGIC AND SOIL RESOURCES?**

A. As discussed in Section 9.1.2 of the Application, the geological conditions, including geological formations, seismic risk, and subsidence potential are not anticipated to be impacted by the construction and operation of the Project.

To reduce adverse effects to soils, the Project will develop and implement a Storm Water Pollution Prevention Plan (SWPPP) and use Best Management Practices (BMPs) during construction to protect topsoil and minimize soil erosion. Soil areas disturbed during construction will be decompacted and returned to pre-construction contours to the extent practicable and in accordance with landowner agreements. The goal is to have all surfaces drain naturally, blend in with the undisturbed natural terrain, and for the surfaces to be left in a condition to facilitate re-vegetation, provide for proper drainage, and prevent erosion. Construction laydown areas and temporary travel paths will be restored in accordance with landowner agreements and the SWPPP.

**Q. DISCUSS THE HYDROLOGIC RESOURCES, INCLUDING SURFACE AND UNDERGROUND RESOURCES, PRESENT WITHIN THE WIND FACILITY AREA.**

1 A. Section 10.0 of the Application describes the following types of hydrological resources within the  
2 Project Area:

3 Groundwater. Most groundwater resources in the Project Area occur in deposits of sand and  
4 gravel or the Dakota Formation that are generally at depths greater than 100 feet (ft.) below the  
5 land surface. The Antelope Valley Aquifer is in a northwest/southeast-trending belt in  
6 northeastern Codington County and southwestern Grant County, while northeast/southwest-  
7 trending outwash deposits are present in the southwestern portion of the Project Area, which is  
8 associated with the Big Sioux Aquifer. Additionally, shallow groundwater occurs in the soils  
9 within the Project Area at depths ranging from 0 inches at the soil surface to greater than 80  
0 inches.

1 Surface Water. The Project is in one hydrologic region (the Missouri), covers five major  
2 watersheds within Hydrologic Unit Code (HUC) 10 (e.g., South Fork Whetstone River, North  
3 Fork Yellow Bank River, South Fork Yellow Bank River, Big Sioux Basin, and Willow Creek),  
4 and encompasses 12 sub-watersheds (HUC 12), as defined by the USGS. Three named streams  
5 and multiple unnamed tributaries to these streams are located within the Project Area. According  
6 to the National Wetland Inventory data, most wetlands within the Project Area are freshwater  
7 emergent and comprise 2,291.7 acres of the Project Area. Electronic FEMA floodplain data  
8 indicates that one water body within the Project Construction Easement contains 100-year-  
9 floodplains. USFWS managed wetland easements and South Dakota Game, Fish, and Parks  
0 managed waterfowl production areas are present within the Project Area. In the Project Area,  
1 there are no National Park Service Nationwide Rivers Inventory designated stream or river  
2 segments and no impaired waters present.

3 Q. WHAT MEASURES WILL CRW EMPLOY TO AVOID, MINIMIZE, AND/OR  
4 MITIGATE POTENTIAL IMPACTS TO HYDROLOGIC RESOURCES?



1  
2 A. Temporary impacts to groundwater may occur from dewatering activities, but permanent impacts  
3 to groundwater are not expected. If construction dewatering is anticipated, a Temporary Water  
4 Right will be obtained from the SDDENR and the CRW will ensure that required discharge  
5 monitoring is conducted, appropriate BMPs are utilized, and the SWPPP will be amended  
6 accordingly.

7 Project facilities have been sited to avoid both temporary and permanent impacts to wetlands and  
8 waterbodies to the extent possible. Through avoidance measures, the CRW has limited impacts to  
9 wetlands and waterbodies to minimal areas associated with access roads. Impacts to wetlands and  
0 waterbodies that may result because of access road construction are minor and would be  
1 authorized under USACE Nationwide Permit (NWP) 12 for utility lines and associated facilities  
2 in waters of the U.S. These authorized, permanent impacts to wetland areas may remain beyond  
3 the Project's operational lifetime. Disturbed surfaces would be restored as nearly as possible to  
4 their preconstruction conditions during Project decommissioning.

5 Collector lines will be sited to avoid intersecting wetland or other waterbodies to the extent  
6 practical. Where collector lines must intersect wetlands or other waterbodies, the CRW will bore  
7 under these features to the extent practical to minimize impacts to these resources.

8 To limit impacts to hydrological resources caused by soil erosion, groundwater contamination, or  
9 stormwater runoff, CRW will obtain a South Dakota General Permit for Storm Water Discharges  
0 Associated with Construction Activity (SDR100000), develop and implement a SWPPP, and use  
1 BMPs to reduce impacts during construction. As required by SDR100000 and the SWPPP, any  
2 vehicle fueling within the Project Area will employ appropriate BMPs and will occur at an  
3 appropriate distance from waterways determined by site-specific conditions, such as ground  
4 cover, slope, and soil type.



1 Q. ARE AQUATIC ECOSYSTEMS PRESENT IN THE WIND FACILITY SITE AND, IF SO,  
2 WHAT MEASURES WILL CRW EMPLOY TO AVOID, MINIMIZE, AND/OR  
3 MITIGATE POTENTIAL IMPACTS?

4  
5 A. As discussed above, wetlands and waterbodies are present within the Project Area, but impacts  
6 have been avoided and minimized to the extent practicable. The primary potential for impact to  
7 any aquatic ecosystem would be as a result of increased sediment or total suspended solids in  
8 aquatic resources due to construction-related soil erosion. Where activities must occur in or near  
9 wetland areas, standard construction BMPs will be implemented to minimize impacts. Impacts  
0 resulting from the construction of access roads would be minor and authorized under the United  
1 States Army Corps of Engineers Nationwide Permit 12 for utility lines and associated facilities in  
2 waters of the U.S. Permanent impacts resulting from disturbed surfaces would be restored to  
3 nearly as possible to their preconstruction conditions during Project decommissioning. Based on  
4 current species information, no federally- or state-listed aquatic species would be impacted by the  
5 Project.

6  
7 Q. WHAT VEGETATION IS PRESENT WITHIN THE WIND FACILITY AREA, AND  
8 HOW WILL IMPACTS BE AVOIDED, MINIMIZED, OR MITIGATED?

9  
0 A. As presented in Section 11.1 of the Application, the predominant land cover type in the Project  
1 Construction Easement is agricultural (70.5% of total area) followed by grass/pasture (26.1% of  
2 total area). Wooded areas are limited (0.3% of total area) within the Project Construction  
3 Easement. Fifteen species of noxious weeds regulated within Codington and/or Grant Counties  
4 have the potential to occur.

1 The project components have been sited to avoid treed and native prairie areas to the extent  
2 practicable. In areas where impacts cannot be avoided, temporary impacts would be minimized  
3 through construction BMPs as described in the Project SWPPP. Where temporary impacts occur,  
4 the land will be returned to pre-construction conditions. Additionally, to avoid the spread of  
5 noxious weeds, CRW will use native vegetation (weed-free) seed mixes to revegetate disturbed  
6 areas where feasible and pending landowner preferences.

7 **Q. ARE ANY FEDERALLY-LISTED SPECIES, FEDERALLY-DESIGNATED CRITICAL**  
8 **HABITAT, OR STATE-LISTED SPECIES PRESENT WITHIN THE WIND FACILITY**  
9 **SITE?**

0 A. No federally-listed species or federally-designated critical habitats are known to occur or have  
1 been detecting occurring in the Project Area. For more information see Section 11.3 of the  
2 Application.

3 **Q. IS THE WIND FACILITY ANTICIPATED TO IMPACT FEDERALLY-LISTED**  
4 **SPECIES, FEDERALLY-DESIGNATED CRITICAL HABITAT, OR STATE-LISTED**  
5 **SPECIES?**

6 A. No impacts to federally-listed species or federally-designated critical habitats are anticipated.  
7

8 **Q. DISCUSS THE ANALYSIS CONDUCTED OF EAGLE USE OF THE WIND FACILITY**  
9 **AREA.**

0 A. Several avian use and raptor nest surveys have been completed for nearby study areas, for earlier  
1 iterations of the Project Area, and for the current Project Area. In the spring and fall of 2008,  
2 avian surveys were conducted for an earlier iteration of the Project in Grant, Codington, Deuel,  
3 and Brookings Counties. In 2015, studies in a nearby study area were conducted, in which a total

of 453 hours of survey were conducted over all four seasons. Most recently, large bird use surveys were completed for the current Project Area from April through November 2017, in which a total of 232 surveys across 29 points were completed. Additionally, eagle nest aerial surveys were conducted within the Project Area and a 10-mile buffer in 2017 and 2018.

Surveys indicate the presence of eagles in the vicinity of the Project Area, but none have been observed in the current Project Area. In 2008, three golden eagles and no bald eagles were observed in the study area. In 2015, four bald eagles and no golden eagles were observed. In 2017, no bald eagles or golden eagles were observed within the current Project Area. Aerial surveys documented three bald eagle nests within 10 miles of the Project Area, but no nests were observed in the current Project Area. The nearest bald eagle nest is approximately 0.83 miles south of the Project Area boundary.

**Q. IS THE WIND FACILITY ANTICIPATED TO IMPACT BALD AND GOLDEN EAGLES?**

A. No impacts to golden eagles or to bald eagles are anticipated from the Project. No turbines have been sited within 1.5 miles of a known occupied golden eagle or bald eagle nest.

**Q. WHAT MEASURES WILL CRW IMPLEMENT TO AVOID, MINIMIZE, OR MITIGATE IMPACTS TO WILDLIFE SPECIES?**

A. The following avoidance, minimization, and mitigation measures have been developed by CRW to avoid, minimize, or offset potential adverse impacts to wildlife from the Project.

- Avoid siting turbines in wetlands or other waterbodies.
- Avoid placing structures, or conducting any activity, on USFWS grassland or USFWS wetland/grassland combination easements.
- Site turbines more than 1.5 miles from known occupied bald eagle nests.

- Site turbines with consideration of SDGFP-documented leks.
- Minimize tree clearing.
- Re-vegetate disturbed areas to as close to pre-construction conditions as possible in coordination with the landowner and per applicable permit conditions and requirements.
- Conduct pre-construction bird nest clearance surveys or observe seasonal clearing restrictions to minimize impacts to breeding birds, including raptors, and summering bats.
- Avoid activity in potentially suitable habitat for the Dakota skipper and Poweshiek skipperling where possible.
- Minimize impacts to Dakota skippers and Poweshiek skipperlings by avoiding construction during the adult flight period (approximately June 15-July 15) to avoid mortality of breeding adults.
- Implement standard erosion control measures, including temporary sediment barriers, slope breakers, and mulching to avoid sedimentation and runoff to avoid impacts to wetlands and streams.
- During revegetation efforts in potentially suitable Dakota skipper and Poweshiek skipperling habitat, use seed mixes that incorporate vegetation that supports these prairie butterfly species.
- Complete one year of post-construction mortality monitoring and adhere to the Wildlife Response and Reporting System (WRRS) Manual for the life of the project. The WRRS standardizes and prescribes actions taken in response to any wildlife fatalities and/or injuries found within the Project Area boundaries.

**Q. IS THE WIND FACILITY ANTICIPATED TO IMPACT EXISTING WATER OR AIR QUALITY?**

A. Limited temporary impacts to water and air quality from construction activities may occur, but they will be minimized through the use of BMPs and implementation of a SWPPP. See Sections 15.2 and 16.2 of the Application for more details.

**Q. WITH RESPECT TO CULTURAL RESOURCES, WHAT STEPS HAS CRW TAKEN TO IDENTIFY CULTURAL RESOURCES WITHIN THE WIND FACILITY SITE?**

A. In accordance with the *Guidelines for Cultural Resource Surveys and Survey Reports in South Dakota* (For Review and Compliance) (South Dakota State Historical Society 2005), cultural



resources reviews were conducted for an area that includes a 1-mile buffer of the Project Construction Easement. The records search was conducted on May 15, 2018 through the Archaeological Research Center at the South Dakota State Historical Society for the Project Area. Additional background research conducted for the Project Area included review of the historical General Land Office plat maps available online from the Bureau of Land Management and a historic architectural survey reviewed buildings and structures within a 1-mile radius of the turbine locations. This search determined that 133 previously documented archaeological sites, 6 previously documented historic bridges, 83 previously documented standing historic structures, and 5 previously documented cemeteries have been recorded inside and within 1 mile outside of the Project Area.

A Level III cultural resources survey of the Project Construction Easement was performed from June to December 2017 and April to November 2018. Study areas included at least a 300 ft. radius around each proposed turbine location center point; this area was expanded to a radius of up to 500 ft. around some turbines to allow for an expanded construction area; 200 ft. width along access routes to turbines; and 100 ft. width along collection lines from turbines. The Level III Survey identified 960 Native American sites and isolated artifacts including four previously recorded sites or site components during Project Construction Easement surveys and identified 34 historic European-American archaeological sites or isolated artifact occurrences, including seven previously recorded historic archaeological sites or site components. The historic architectural survey further field-checked approximately 982 standing building and structure locations within 1 mile but outside of the Project Area (the project is set back from standing buildings and structures by design). The historic architectural survey focused on those sites where historic setting and feeling may be important and considered the potential visibility of Project turbines.

**Q. PLEASE DISCUSS FURTHER CRW'S CONSULTATION REGARDING POTENTIAL**



1       **TRIBAL RESOURCES WITHIN THE WIND FACILITY AREA.**

2       A. Tribal members from the Sisseton Wahpeton Oyate, Yankton Sioux, and Spirit Lake Nation  
3       selected to represent those tribes in identifying significant tribal resources were an integral part of  
4       the survey field team. Tribal members were responsible for identifying site of religious and  
5       cultural significance to the tribes, or traditional cultural properties (TCPs). The Level III Survey  
6       identified 960 Native American sites and isolated artifacts including four previously recorded  
7       sites or site components during Project Construction Easement surveys. All of the TCPs identified  
8       in this investigation are considered and recommended eligible for National Register of Historic  
9       Places (NRHP) listing. The Sisseton Wahpeton Oyate, Yankton Sioux, Rosebud Sioux and Spirit  
0       Lake Tribal Historic Preservation Officers and the Project developer have worked together to  
1       create a set of avoidance, minimization, and mitigation measures to address these impacts.

2       **Q. WHAT STEPS WILL CRW TO AVOID, MINIMIZE, AND/OR MITIGATE**  
3       **IMPACTS TO CULTURAL AND TRIBAL RESOURCES?**

4       A. The Project has been designed to avoid direct impacts to cultural resources. During Project  
5       activities, those sites that are evaluated as eligible for NRHP listing by the participating tribes or  
6       by SHPO, or of undetermined NRHP eligibility, will be protected by establishing avoidance  
7       measures at those portions of the resources that make them eligible for NRHP listing to exclude  
8       them from physical impacts from the Project. Indirect secondary effects from the introduction of  
9       new visual elements into the setting of NRHP-eligible tribal resources and historic buildings and  
0       structures could impact the integrity of these sites. However, regarding potentially affected  
1       historic and archaeological sites, state preservation law SDCL 1-19A-11.1 applies to those that are  
2       currently listed on the NRHP or South Dakota register of historic places, not simply those that are  
3       eligible for listing. Additionally, Project developers worked together with the consulting tribes

1 and archaeologists to create the avoidance, minimization, and mitigation measures identified for  
2 TCPs below:

- 3 • Standard avoidance or resource protection practices (e.g., barrier fencing, contractor training)  
4 where feasible in collaboration with the tribes listed here and the Project Developer.
- 5 • Identify possible willing and participating landowners (the landowners) who may be willing to  
6 work with the tribes on site preservation, accessibility, and protection of TCPs on their  
7 property.
- 8 • Conduct site revisits prior to construction.
- 9 • Facilitate post-construction site revisits for tribes with the landowners.
- 0 • Education/interpretation opportunities regarding tribal resource preservation and/or Native  
1 American perspectives, which may include sensitivity training when needed.
- 2

### 3 AGENCY COORDINATION

4 **Q. PROVIDE AN OVERVIEW OF THE FEDERAL AND STATE AGENCY**  
5 **COORDINATION CONDUCTED BY CRW.**

6 A. Throughout the Project planning process and development, CRW has coordinated with various  
7 Federal, State, Tribal, and local agencies to identify potential concerns regarding the Project. A  
8 summary of CRW's agency consultation efforts are provided in Section 24.2 of the Application  
9 and copies of agency correspondence and meeting summaries are included in Appendix B of the  
0 Application.

1  
2 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

3 A. Yes.

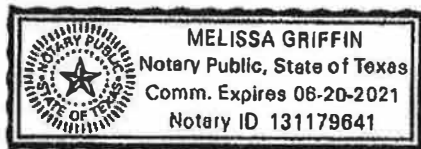
STATE OF TEXAS           )  
COUNTY OF HARRIS       ) ss

I, Kimberly Wells, being duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.

Kimberly Wells  
Kimberly Wells, Ph.D.

Subscribed and sworn to before me this 28<sup>th</sup> day of January  
2019.

SEAL



Melvin J. [Signature]  
Notary Public

My Commission Expires 6/20/21