Applicant Exhibit 29

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Oak Run Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Madison County, Ohio.	)))))	Case No. 22-549-EL-BGN
In the Matter of the Application of Oak Run Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Transmission Line in Madison County, Ohio.	))))	Case No. 22-550-EL-BTX

DIRECT TESTIMONY OF

Mike Ivy, P.E.
Senior Project Development Engineer
Savion, LLC

on behalf of
Oak Run Solar Project, LLC

May 2, 2023

/s/ *Christine M.T. Pirik*
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Attorneys for Oak Run Solar Project, LLC

1. Please state your name, current title, and business address.

My name is Mike Ivy. I am a Senior Project Development Engineer for Savion, LLC ("Savion"). My business address is 2102 Pilot Mountain Court, Apex, NC 27502.

2. Please summarize your educational background and professional experience.

In 2010, I received a Bachelor of Science in Civil Engineering from North Carolina State University. After working for 4 years, I obtained my Professional Engineering license in 2015 in the state of North Carolina. My 12 years professional experience consists of detailed design for linear projects including natural gas pipelines and roadways, and non-linear projects including residential and solar. I started my career creating construction plans for natural gas pipes lines, grading plans for access roads, drilling pads, and stormwater control devices. I learned how to conceptually layout Horizontal Directional Drills ("HDD") and incorporate them into the linear pipeline designs. 2 years later, I moved into solar land development and 3D modeling for surface-mines. A copy of my resume is attached to my testimony as Attachment MI-1.

3. On whose behalf are you offering testimony?

I am testifying on behalf of Oak Run Solar Project, LLC ("Applicant" or "Oak Run"), which is seeking to develop the proposed Oak Run facility ("Project") in Madison County, Ohio.

4. What is the purpose of your testimony?

The purpose of my testimony is to provide additional context and support regarding the following exhibits and commitments that are part of the Application for a Certificate of Environmental Compatibility and Public Need ("Certificate") filed with the Ohio Power Siting Board ("Board") by Oak Run in Case Nos. 22-549-EL-BGN and 22-550-EL-BTX on September 2, 2022, as supplemented on November 21, 2022, and March 22, 2023, and as further supplemented by responses to data requests that were received from the Board's Staff and filed in the docket ("Application"):

- Exhibit C - Site Plan and Grading

- Exhibit M – Horizontal Directional Drilling – Inadvertent Control Plan
- Exhibit N - the Geotechnical Engineering Reports ("Geotechnical Reports")
- Stormwater best management practices ("BMPs")

My testimony, together with the other witnesses testifying for Oak Run in this case, supports the Board's approval of Oak Run's Application for a Certificate to construct the Project.

5. Please describe the history of your involvement with the Oak Run Project?

I am the Project Development Engineer for the Oak Run Project. I am leading the various engineering development efforts to de-risk the Project by reviewing the geotechnical reports, hydrology reports, surveys (ALTA, Topo, and drain tile), and the information from the public outreach. In addition, I am using this information to generate our initial site plan for the Project.

6. Have you reviewed the Staff Report of Investigation filed in these dockets on March 28, 2023 ("Staff Report"), and the conditions found on pages 51-63 of that document recommended by the Board's Staff?

Yes, I have.

7. Has Oak Run committed to comply with, and for some conditions enhance, the conditions recommended by the Board's Staff in the Staff Report?

Yes, it has.

8. Please describe the Site Plan for the Project that is found in Exhibit C of the Application.

The Site Plan found in Exhibit C depicts the current Oak Run layout informed from Project reports to include the preliminary hydrology report, environmental reports, and the preliminary geotechnical report. In addition, it includes: various existing site conditions and landmarks; land and water features; initial array layout; initial underground collection lines; initial overhead transmission lines; alternate overhead transmission lines; initial

facilities layout to include substations and battery storage; fencing; inverters; site access and internal access roads; temporary laydown/staging areas; and typical details representative of features involved with construction (e.g., roadway cross sections, fence details, inverter details, tracker details, etc.). This level of design is performed to provide an initial layout of the Project to establish the basic scope of the Project in order to inform the detailed engineering and costing that occurs in the engineering, procurement, and construction ("EPC") phase of the Project. Furthermore, the layout takes into account the setback commitments made by Oak Run as listed in its Application. The final design of the Project will be informed from further investigations to include a georeferenced drain tile map that will be used to aid in the design of the layout to attempt to avoid drain tile impact or mitigate in advance.

9. Please describe the design features Oak Run has included in the design of the facility to mitigate the potential for any flooding or increased stormwater runoff.

The design features that Oak Run has included in the design of the facility to mitigate potential for flooding or increased stormwater runoff include:

- Avoiding areas from the preliminary hydro report with inundation levels above 2 feet to avoid grading and erosive velocities;
- Incorporating buffers and setbacks from existing roads and existing environmental features that will be permanently vegetated;
- Retain existing drain tile and replace damaged drain tile during construction;
- Limit tree clearing;
- Change ground cover from row crop to permanent managed vegetation;
- Adequate spacing between rows to qualify for runoff reduction credits with establishment of dense, deep rooting vegetation;
- Ensure post-construction soils are in good hydraulic condition;
- Provide adequate room near high impervious areas including the substations and battery energy storage system ("BESS") to design and build stormwater management ponds; and
- Limit grading onsite to maintain the integrity of the soils to quickly establish vegetation.

10. Based upon your review and analysis, what do you conclude regarding any existing flooding and stormwater runoff in the area resulting from the construction and operation of the Project?

From the review of the preliminary hydrology report, there are areas within the Project boundary subject to flooding and erosive velocities due to the current conditions during a 100-year storm event. The flood depths range from 0.5-8 feet and the stormwater runoff velocities range from 0.25-10 feet across the site and within the channelized waterways. The majority of the higher flood depths and higher velocities occur within the channelized waterways within the site. There are areas, primarily to the east of the Project, near the roadway where there are higher flood depths. The stormwater runoff and flood depths in these areas should reduce, due to the stormwater BMPs and ground cover changes that Oak Run will be implementing as described below in response to Questions 17 and 18.

11. What is the purpose of Horizontal Directional Drilling?

The purpose of HDD is to install utilities such as water, sewer, power, telecommunications, etc. in a way that has less disruption or surface damage by running pipes or conduit underground instead of through traditional crossing methods like open cut trenching or jack and bore.

12. Please explain the Horizontal Drilling – Inadvertent Control Plan Contained in Exhibit M of the Application.

The Horizontal Drilling – Inadvertent Control Plan ("HDD Plan") was created to establish standards and guidelines for contractors performing the boring work to ensure that the work is performed in a way that protects the environment and minimizes the potential for an inadvertent return associated with HDD.

13. Please describe the requirements set forth in the rules of the Board and the documentation provided by Oak Run in response to the requirements pertaining to the geotechnical studies conducted for this Project.

In accordance with Ohio Administrative Code ("O.A.C.") Rules 4906-04-08(A)(4) and (5),

Oak Run is required to submit the following information as part of the Application:

- A description of the suitability of the site subsurface conditions and plans to remedy any inadequacies.
- A description of the suitability of soil for grading, compaction, and drainage, and plans to remedy any inadequacies and restore the soils during post-construction reclamation.
- A description of plans for the test borings, including closure plans for such borings and a timeline for providing the test boring logs and the following information to the Board: (i) subsurface soil properties; (ii) static water level; (iii) rock quality description; (iv) percent recovery; and (v) depth and description of bedrock contact.

14. Please summarize the findings of the Geotechnical Reports found in Exhibit N of the Application.

Two geotechnical studies were submitted with the Application: the Preliminary Geotechnical Investigation Report dated January 7, 2022, was performed by G2 Consulting Group ("G2"); and The Mannik & Smith Group ("MSG") prepared the Geotechnical Investigation Report dated June 21, 2022. The Geotechnical Reports found that:

Oak Run is located in the geologic region identified as the Salina Group Formation. The major lithological constituents within this geologic region generally include dolostone with incidental anhydrite, shale, and gypsum. According to the United States Department of Agriculture ("USDA") soil survey, the near surface soils across the site consist predominantly of clay, clay loam, silty clay, and silty clay loam. These soils are identified as having very low to high permeability rates between 0.01 and 2 inches per hour.

Approximately 1 to 24 inches, with an average thickness of 11 inches, of predominately fat clay tilled earth is present at the ground surface. In general, the surface soils throughout most of the Project area have been tilled for agricultural purposes. The resulting tilled earth is comprised of native soil that has been disturbed by these agricultural processes and includes varying quantities of organic matter. Predominantly native cohesive soils,

consisting of lean to fat clay and sandy fat clay, underlie the tilled earth. The native cohesive soils are generally stiff to hard in consistency with unconfined compressive strengths ranging from 2,000 to 13,060 pounds per square foot.

Groundwater was encountered during and upon completion of drilling operations. The groundwater was observed in the G2 report at depths ranging between 3 feet and 19 feet in 6 of the 16 borings in the array area and in the MSG report at depths ranging between 8 feet and 18.5 feet in both bores at the step-up substation. Fluctuations in groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation. It should be noted that groundwater observations made during drilling operations in predominantly cohesive soils are not necessarily indicative of the static groundwater level. This is due to the low permeability of such soils and the tendency of drilling operations to seal off the natural paths of groundwater flow.

In the event of an earthquake episode, there is a low potential for localized liquefaction to occur within the observed predominantly native cohesive soils. Given that the site is also in an area with a low probability for seismic activity, we believe there is very little to no risk of liquefaction occurring at this site. No site remediation for seismic activity is recommended from the G2 report.

System design for thermal resistivity typically focuses on the thermal resistivity values at a soil moisture content of 2 percent. This is appropriate for most soil types that relatively easily transmit moisture through the soil's pore spaces. Fat clay soils of the type predominantly observed beneath this site have extremely small pore spaces and a significantly higher polar bond attraction to water molecules. As such, the fat clay will tend to resist the loss of water content around buried electrical cabling. Given these conditions, the designers may consider a higher moisture content when evaluating the impact of thermal resistivity.

In-situ soil electrical resistivity testing was performed at 8 test locations within the array area by G2 and in one location at the step-substation by MSG. In addition, laboratory soil

electrical resistivity testing was performed on bulk soil samples. Based on the test results from both reports, the upper soils should generally be considered mildly corrosive to corrosive.

Earthwork operations are expected at Oak Run. The native cohesive soils are highly prone to instability due to fluctuations in moisture content and will become very unstable during prolonged precipitation periods. As such, it is recommended from the G2 report that site grading operations be performed during extended periods with low precipitation. If grading operations are performed during or after recent precipitation events, it may be necessary to provide supplemental subgrade stabilization along construction traffic routes. Once the proposed subgrade has been exposed, and prior to placement of any engineered fill and/or construction of pavement sections, the exposed subgrade in proposed pavement and auxiliary structure areas should be thoroughly proof-rolled using a heavy rubber-tired vehicle, such as a fully-loaded dump truck or front-end loader, and should be visually evaluated for instability and/or unsuitable conditions.

Where buildings or auxiliary structures supported on shallow spread footing foundations or mat foundations are planned, it is recommended by G2 that any fill soils placed beneath these structures shall consist of engineered fill. Where site access, perimeter, and interior maintenance roads are planned, any fill soils placed beneath these roads shall also consist of engineered fill. The on-site high plasticity soils should not be used for engineered fill, however, there are areas of granular soil that are acceptable for use as engineered fill. Slope stability analyses indicate that permanent fill slopes, consisting of properly compacted engineered fill, may be designed at inclinations as steep as 2H:1V. Permanent fill slopes, consisting of general fill, may be designed at inclinations as steep as 3H:1V. For open cut temporary excavations where space is available, above the groundwater table and where personnel will enter the excavations, temporary slopes may be sloped back to a maximum depth of 5 feet without shoring.

Permanent access and internal maintenance roads will be aggregate surfaced. It is expected that the most severe traffic conditions will occur during the construction phase, including

heavy construction equipment and construction material delivery vehicles. We anticipate the construction traffic loading conditions will range from 7,000 to 18,000 equivalent 18-kip single-axle loads ("ESALs"). Based on the analyses in the G2 report, periodic access by emergency fire apparatuses weighing up to 75,000 pounds may be supported on roads consisting of a minimum of 5 inches of Ohio Department of Transportation ("ODOT") aggregate base placed on properly prepared lime treated subgrade.

The undisturbed native clay soils are generally conducive to support of shallow foundation types, such as shallow spread footing or mat foundations for auxiliary systems and structures, provided some risk of differential soil expansion and/or settlement can be tolerated.

The undisturbed native clay soils will generally provide suitable support for embedded shallow driven pile or drilled pier foundations that support solar array panels or structure foundations; however, some minor loss of capacity should be expected if the surrounding native clay is allowed to shrink or swell during moisture fluctuations. The likelihood of significant soil moisture fluctuations occurring is considered relatively low in this region.

All spread footing and mat foundations should bear on non-organic native soils or imported engineered fill but should also bear at a minimum depth of 32 inches below the final adjacent grade. If native soils are undercut and replaced with granular engineered fill, the undercut should extend laterally beyond the foundation perimeter a minimum distance equal to the undercut depth. If granular fill is used to backfill the undercut up to the minimum foundation bearing depth of 32 inches, supplemental drainage of the granular backfill must be provided to prevent pooling of water within the granular fill.

If the recommendations outlined in the G2 report are adhered to, total and differential settlement of mat foundations bearing on undisturbed native non-organic soft to hard cohesive soil, granular soil, or engineered fill should be less than 1-1/2 inches and 3/4 inch, respectively. If the recommendations outlined in the G2 report are adhered to, total settlements of individual spread footing foundations and differential settlement between

adjacent foundations bearing on the aforementioned soil types should be less than 1 inch and 1/2 inch, respectively.

Based on the pile installation observations and the encountered subsurface conditions from the G2 report, it is anticipated that drive hammers with drive energy ratings greater than 700 ft-lbs class should be capable of achieving design pile embedment of 6' to 10'; however, the use of a drive hammer having a drive energy less than 700 foot pounds ("ft-lbs") may experience reduced driving rates, particularly at depths greater than 7 feet below existing grade.

In combined consideration of the climatic conditions, observed soil consistency (generally stiff to hard), soil impermeability, as-tested natural moisture contents, observed minimal depth of root growth, and observed groundwater depth, the effects of seasonal fluctuations in soil moisture are anticipated to be moderate. Based on these combined conditions, it is estimated that an effective active zone of moisture fluctuation extending to an approximate depth of 2-1/2 feet for use in foundation analyses.

Per the local building code, foundations must extend below a design frost depth of 32 inches. Lightly loaded photovoltaic ("PV") array pile foundations may be susceptible to the effects of frost penetration that may occur within the near-surface soils. In the nearby Columbus, Ohio area, the mean annual air temperature is 53F, and the air freezing index with a 25-year return period is 840. Based on these conditions, it is recommended that an effective frost depth of 30 inches (2-1/2 feet) be assumed in design of PV array pile foundations.

15. Please explain Condition 26 of the Staff Report and the Applicant's commitment regarding the engineering drawings of the final Project design and the applicable geotechnical studies.

The requirements set forth in Condition 26 of the Staff Report state that the Applicant shall submit one set of detailed engineering drawings of the final project design and mapping in PDF form and geographically referenced data such as shapefile or KMZ to confirm that

the final design is in conformance with the certificate at least 45 days prior to the preconstruction conference. Mapping shall include:

- Limits of disturbance;
- Permanent and temporary infrastructure locations;
- Areas of vegetation removal and restoration;
- Specific denotation of any adjustments made from the Project detailed in the Application. Any and all applicable geotechnical studies shall be included in this final submission.

16. Please explain Condition 27 of the Staff Report and the Applicant's commitment regarding the final geotechnical engineering report.

The requirements set forth in Condition 27 of the Staff Report state that the Applicant shall file the final geotechnical report 30 days prior to the preconstruction conference. This report shall include the results and analysis of the additional geotechnical investigations and studies Oak Run outlined in its responses to Staff's data requests. This will include any investigation of the switchyard or substations, BESS locations, and the 230-kilovolt ("kV") transmission route. This report will include a final summary statement addressing the subsurface suitability and addressing any inadequacies found.

17. Please summarize the requirements in Condition 36 of the Staff Report regarding stormwater management.

The requirements set forth in Condition 36 of the Staff Report state that the Applicant shall construct the Project in a manner that incorporates post-construction stormwater management under the National Pollution Discharge Elimination System ("NDPES") Permit No. OHC000005 Part III.G.2.e ("NDPES General Permit"),[1] in accordance with the Ohio Environmental Protection Agency's ("Ohio EPA's") Guidance on Post-Construction Storm Water Controls for Solar Panel Arrays. The purpose of the requirements in the NDPES General Permit Part III.G.2.e, is to ensure that streams are protected, that stream

[1] The Applicant notes that Permit No. OHC000005 expired on April 23, 2023, and was replaced by Permit No. OHC000006. The Applicant commits to comply with the current NDPES General Permit as required by the Ohio EPA. https://epa.ohio.gov/static/Portals/35/permits/OHC000006.pdf

function is maintained, and that post-construction stormwater practices provide long-term management of runoff quality (sized to treat the water quality volume ["WQv"]) and quantity (ensure compliance with Ohio EPA's Water Quality Standards). To meet these requirements, detailed drawings and maintenance plans must be provided for each BMP as selected from Tables 4a or 4b of the NDPES General Permit and be contained within a Stormwater Pollution Prevent Plan ("SWP3") that will live onsite during construction. In addition, there will be a stand-alone maintenance plan, which will contain the following: a designated entity for stormwater inspection and maintenance; routine and non-routine maintenance tasks to be performed; a schedule for inspection and maintenance; any necessary legally binding easements and agreements; construction drawings showing the plan view, profile and details of the outlets; a map showing all access and maintenance easements; and for Tables 4a and 4b listed BMPs that provide relevant elevations and associated volumes that dictate when removal of accumulated sediments must occur. Post-construction BMPs must be sized to treat 100% of the WQv associated with their contributing drainage area and an additional 20% for sediment storage. The WQv is defined as the volume of storm water runoff that must be detained by post-construction BMPs.

In addition to the water quantity and quality requirement, there are groundwater recharge requirements set forth in Appendix A of the NDPES General Permit since Oak Run is in the Big Darby Creek Watershed. The recharge requirements ensure that the overall site post-development recharge value equals or exceeds the pre-development. One way to help accomplish this is to use ground covers that help promote downward migration of water or higher infiltration. By converting a majority of the existing row crop to a permanent vegetation with deep roots, this will reduce stormwater runoff and increase groundwater recharge.

18. Please summarize the stormwater best management practices Oak Run has committed to for this facility.

Oak Run commits to using permanent and temporary runoff control practices, sediment control practices, soil stabilization practices, and post-construction stormwater management practices as listed in the Rainwater and Land Development Manual as issued

by the Ohio EPA[2] for construction stormwater and post-construction stormwater to include but not limited to: adequate stream and wetland setbacks; impervious surface disconnection; sheet flow to filter strips and/or conservation areas, grass swale, dry extended detention basin, outlet protection, temporary diversion ditches, rock check dams, sediment basin, sediment trap, silt fence, storm drain inlet protection, filter berm, filter sock, phase disturbance, tree and natural area preservation, construction entrance, dust control, temporary seeding, mulching, permanent seeding, and temporary rolled erosion control product. In addition, Oak Run will commit to using runoff reduction practices that include impervious surface disconnection, grass swales, sheet flow to filter strip, and sheet flow to conservation area. This also includes, as described above, the conversion of row crop to brush (brush, weeds, grass mixture where brush is the major element and more than 75% of the ground is covered).

19. Please summarize the requirements in Condition 23 of the Staff Report regarding the agricultural protection plan.

Prior to construction, the Applicant shall file an agricultural protection plan ("APP"), that consists of the following:

- pre-construction soil conditions to establish a baseline of topsoil and subgrade;
- a grading plan that limits grading to 20% of the agricultural lands within the Project area;
- geospatially referenced maps of the following: planned grading areas, agricultural lands within the Project area, and planned locations for stockpile; and
- a list of BMPs to preserve agricultural land.

20. Please explain the Pre-construction and Design commitment contained in Section 6 of Oak Run's memorandum of understanding ("MOU") term sheet presented to Madison County that was included in the Applicant's Supplemental Response to the Second Data Request from the Board's Staff filed on March 20, 2023 (Applicant Exhibit 14).

[2] https://epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/rainwater-and-land-development

Before construction begins and as part of the design process, the Project will:

- provide the County Engineer with a 30% design;
- incorporate the County Engineer's feedback into packages for the EPC;
- provide the County Engineer with a draft construction schedule;
- hold off finalizing the Power Sale before the previous two items are completed;
- design the layout to allow agrivoltaics and farming between the rows;
- implement a drain tile plan that will include the analysis of drainage and drain tile; and
- submit a Grading and Agricultural Protection Plan to the County Engineer at least 60 days prior to the preconstruction conference.

21. Based upon the commitments Oak Run has made through the Application, the HDD Plan, the Geotechnical Reports, and the stormwater BMPs, together with the conditions in the Staff Report committed to by the Applicant, is it possible to determine the nature of the probable impact of the facility in the area?

Yes.

22. Based upon the commitments Oak Run has made through the Application, the HDD Plan, the Geotechnical Reports, and the stormwater BMPs, together with the conditions in the Staff Report committed to by the Applicant, does the facility represent the minimum adverse impact considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations?

Yes. The facility does represent the minimum adverse environmental impact.

23. Are your opinions and conclusions in your testimony made with a reasonable degree of scientific certainty?

Yes.

24. Does this conclude your testimony?

Yes. However, I reserve the right to update my testimony to respond to any further testimony, reports, and/or evidence submitted in this case.

CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 2nd day of May, 2023.

/s/ Christine M.T. Pirik
Christine M.T. Pirik (0029759)

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4880-3342-5505 [88534-8]

Oak Run Solar Project, LLC
Case No. 22-549-EL-BGN
Case No. 22-550-EL-BTX

Attachment MI-1

Michael Ivy
Resume

DICKINSON WRIGHT PLLC

MICHAEL DAVID IVY, PE

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PROFESSIONAL REGISTRATIONS

Professional Engineer: North Carolina No. 042627

PROFESSIONAL EXPERIENCE

Savion Energy, Kansas City, MO February 2022-Present
Senior Project Development Engineer
Development engineer for regional solar portfolio with projects of varying sizes (100MW-800MW) in various geographical areas across the county. Works with a large team, using knowledge of the industry and professional guidelines to de-risk projects from early to late-stage development in various areas to include site civil, preliminary layout, hydrology, and geotechnical.

Responsibilities

- Works closely with various disciplines throughout Savion, including environmental, finance, meteorology, real estate, and EPC manager to de-risk projects and get them ready for construction.
- Works with external vendors, including geotechnical and hydrologic engineers, to ensure standards exist within the program to meet Savion requirements consistently and accurately for various projects.
- Works with internal construction team to transition development projects to construction.
- Works with project development team to prepare and present projects at public information meetings.

Key Results:

- Development engineer for 800MW project called Oak Run.
- Developed internal preliminary hydrological analysis and 3D modeling procedures.

Kleinfelder Inc., Morrisville, NC June 2019-February 2022
Senior Professional
Technical Civil Design Lead and Assistant Program Manager for regional solar program of projects of varying size (2MW-100MW) in various geographical areas across the county. Aids in identifying project scope, various design techniques, and pricing for civil scope on project proposals. Works independently, using knowledge of the industry and professional guidelines to establish/facilitate technical standards, protocols, and training curriculum for solar team. Works independently to perform and lead teams to design complex, multi-faceted solar projects.

Responsibilities

- Works closely with various engineering disciplines, including structural and hydrology, to ensure civil designs are met for inundation requirements and top-of-pile analysis.
- Works with a team to ensure design standards and standard operating procedures exist within the program to meet client requirements consistently and accurately.
- Aids in major proposal coordination to ensure accurate civil scope, technical assessment, and cost.
- Ensure technical training curriculum exists within the program to facilitate growth, efficiencies, and uniformity across the program.
- Resolve abstract problems and technical matters (independently or of a technical team) and serves as a technical resource regionally for solar program.
- Stewards the company's commitment to quality performance and technical work while supporting the broad implementation of the Company's Quality Program in the pursuit of reducing mistakes.
- Actively engages with and participates in the company-wide Technical Network.
- Promoted to Senior Professional from Project Professional in September 2021 to help lead a quickly growing Solar Program. Prior to that, worked as a Project Professional from June 2019 to August 2021.

Key Results:

- Designed and developed 20 +75MW solar facilities in 5 new states across the county to include Florida, Virginia, Texas, Nevada, and Arizona.
- Developed and presented a VDEQ Stormwater Management Presentation to various clients explaining the design and permitting process.

- Played a key role in the development of a CAD Manual for our office to help facilitate consistency and create efficiencies within the team.
- Created design workflow for civil component of Top of Pile Analysis and played a key role to innovate our program design process for Top of Pile Analysis for civil heavy sites.

Withers Ravenel, Cary, NC September 2018 – June 2019
Assistant Project Manager

- Assistant Project Manager for residential land development projects in Wake and Johnston Counties, including single residential and multi-lot residential designs. Typical tasks included lot layout, driveway and access design, road design and grading, stream crossing, site grading and drainage, temporary erosion and sediment control, permanent stormwater BMP design, and stormwater management design.

Kleinfelder Inc., Morrisville, NC April 2011 – September 2018
Project Professional

- Assistant Program Manager for the Raleigh Solar Program, managing and mentoring junior engineers to create site civil plans for utility-scale solar farms throughout the United States. Typical tasks included road design, grading, erosion and sediment control, storm water BMPs, and parking lot layouts.
- Program Design Lead for Surface Mining Program, supervising a team of three coworkers to create 3D ultimate pit models for limestone rock quarries located in the eastern United States.
- Supported high-level project management tasks, including writing proposals, developing budgets, managing client relationships, and performing quality site inspections.
- Utilized extensive contract-management techniques, such as developing scopes of work, creating project schedules, and staff leveraging, that would enable projects to be completed on time and within budget.
- Applied practiced communication skills with large contract clients by providing project updates on weekly conference calls and in-person visits.
- Completed Kleinfelder's Project Manager Qualifications Course, which focused on key subjects like proposing and winning projects, executing projects, and staff management.
- Promoted to Project Professional from Staff Professional II in August 2017 to help lead a quickly growing design center. Prior to that, worked as a Staff Professional I from April 2011 to May 2015.

Key Results:

- Designed and developed over 100 solar farm civil site plans, fifteen natural gas compressor stations, and four 3D ultimate pit modeling plans.
- Acted as the on-site engineer and Kleinfelder liaison at a solar energy firm in Asheville where I built a strong relationship with the client by assisting in day-to-day pre-construction and design activities.
- Assisted in developing a concrete foundation detail for local solar inverter system.
- Assisted in developing the Raleigh Office CAD onboarding training program.
- Developed monthly training courses for junior staff, ranging from CAD basics to more advanced site civil design for our Energy Program.

North Carolina Department of Transportation, **Raleigh, NC** January 2011 – April 2011
Engineer Intern

EDUCATION

North Carolina State University, Raleigh, NC

- **Bachelor of Science in Civil Engineering**: December 2010
- **President**: American Society of Civil Engineers, 2009-2010

COMPUTER SKILLS

AutoCAD Civil 3D, PVcase, HydroCAD, Revu Blue Beam, SEDCAD, Google Earth, Microsoft Office Suite