BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY SCS CARBON TRANSPORT LLC FOR A PERMIT TO CONSTRUCT A CARBON DIOXIDE TRANSMISSION PIPELINE

DOCKET NO. HP22-001

Direct Testimony of Brian Sterner
On Behalf of the Staff of the South Dakota Public Utilities Commission
June 23, 2023

Q: Please state your name and business address.

A: Brian Sterner, 2009 Mackenzie Way, Suite 100, Cranberry Township, Pennsylvania 16066

Q: Describe your educational background.

A: I have a Bachelor of Science in Biology from Grove City College. I also have professional trainings in wetland delineation, wetland mitigation, workplace safety and environmental impact studies.

Q: By whom are you now employed?

A: I have been employed by Environmental Resources Management, Inc. since November 2011.

Q: What work experience have you had that is relevant to your involvement on this project?

A: I have 33 years of experience as a biologist responsible for permitting and compliance under state and federal wetland and water quality laws and policy. I have extensive experience preparing National Environmental Policy Act (NEPA) environmental studies and documentation including Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements. As an environmental consultant, I have been responsible for project compliance under the federal Clean Water Act requirements for waterbodies, the National Pollutant Discharge Elimination System (NPDES), and related studies and analyses for water quality of surface waters and groundwater. I have also conducted studies under the Migratory Bird Treaty Act (MBTA), including recent preparation of a Bald Eagle and Osprey Management Plan. I have training and experience in freshwater mussel identification and aquatic ecology, and I have also conducted numerous field studies for threatened and endangered species, including several species of bats and numerous species of vegetation. I am recognized as a Qualified Botanist by the Pennsylvania Department of Conservation & Natural Resources (PACDNR). I have extensive experience in remote land use reconnaissance and aerial interpretations, particularly as it relates to wetlands and forest ecosystems. I also have formal training by the Federal Energy Regulatory Commission for environmental review and compliance. I have applied my experience throughout the United States, working on transportation, energy production and pipeline networks, remediation, and other infrastructure projects.

Q: What Professional Credentials do you hold?

A: Professional Wetland Scientist (PWS) through the Society of Wetland Scientists,

Qualified Botanist by the PADCNR,

Certified Pesticide/Herbicide Applicator by the PADCNR (for the purpose of invasive species control on mitigation projects).

Q: What is the purpose of your testimony?

A: To provide an assessment of the completeness and adequacy of the Hydrology section (5.2), Terrestrial Ecosystems section (5.3) and Water Quality and Uses section (5.6) of the Application. My testimony contains my professional opinion based on experience, review and comparison of other water-, land-, soil-, and ecosystems-related sections of the Application and Supplemental Application[1], and includes statements and recommendations regarding additional review, assessments, and supplemental information that SCS Carbon Solutions may conduct and include in the Application so that the impact analysis may be considered complete.

Q: What methodology did you employ for your hydrologic and water quality review?

A: The methodology that I employed to review and assess Section 5.2.1 – Surface Water Drainage, was first based on a full review of all water-related sections of the Application, as well as Section 5.1 – Physical Environment. Also, I referenced my extensive wetland delineation and mitigation experience and understanding of groundwater and drainage patterns. I also utilized my experience in the permitting and construction oversight of large and small pipeline projects that involved a wide range of soil conditions, limitations, and topographic limitations. I reviewed the topographic maps, soils maps, list of soils crossed by the Project, and land use land cover maps provided in Appendix 6 of the Application. I also referenced soil characteristics online from the National Resource Conservation Service (NRCS).

For reviewing and assessing Section 5.2.2 - Groundwater, was primarily the groundwater investigations that I conducted throughout my career during the preparation of hundreds of NEPA environmental documents, each having to address potential groundwater resources and impacts. Also, I recently conducted air quality and hydrogeological impact assessments for natural gas wells, and I am currently involved in assessing potential groundwater impacts and wetland dewatering from a stream relocation project at the Perry Nuclear Power Plant in Perry, Ohio. I also referenced my experience relating to groundwater conditions in wetlands and wetland mitigation, and construction oversight of large capital projects, including pipelines. I also reviewed the South Dakota Department of Agriculture and Natural Resources (DANR) requirements, resources, and related Codified Law to compare to the Application.

[1] For purposes of this testimony, I will hereafter refer to the Supplemental Application filed on October 13, 2022 as "the Application", as it is the most current version on file and was therefore the focus of my review.

The methodology that I employed to review and assess Section 5.2.3 - Water Use and Sources, referenced the DANR Water Quality requirements and related Codified Law to compare to the Application. Also, I used my experience with state level existing and designated water use classifications, experience related to permitting and construction oversight of Horizontal Hydraulic Drilling (HDD) operations.

Q: Did you review Sections 1.8, 5.2, 5.3, and 5.6 of Summit's Application?

A: Yes, all four sections were reviewed. Table 1: Anticipated Permits or Reviews for the Project in South Dakota identifies the permits and approvals that I anticipated to find listed. I did note, however, that the Section 401 Water Quality Certification was not listed on Table 1. This certification is required to be issued by DANR. Also, Table 1 indicates that the correct General Permits required for surface water discharges for stormwater associated with construction activities, as well as temporary discharges of hydrostatic test water, but the Table should also have referenced that these permits are part of the NPDES Program.

Q: In your opinion, did Summit's Application adequately identify all required permits and approvals applicable to protecting water resources? Please explain.

A: Based on the project description and the information provided throughout the Application, the anticipated permits, consultations, and approvals were included in the Application and listed in Table 1. However, the Section 401 Water Quality Certification was not discussed in Section 1.8 - Other Required Permits and Approvals or listed on Table 1. Section 5.6 – Water Quality and Uses does include a brief discussion on the need to adhere to Sections 401 and 402 of the Clean Water Act (CWA).

Q: In your opinion, did Summit's Application adequately address ARSD 20:10:22:15 (Hydrology)? Please explain.

A: No, the Application did not fully address ARSD 20:10:22:15 since there are several missing maps and drawings that would be used to identify and illustrate hydrologic features such as watersheds, drainage patterns before and after construction, planned water uses, groundwater sources, particularly the Spring Creek Aquifer that contains water wells from 20 – 200 feet deep. Also, there was no indication in the Application that the Applicant filed plans with any local, state, or federal agencies, any scale maps to indicate the current planned water uses by communities, agriculture, recreation, fish, and wildlife which may be affected by the location of the proposed Project and a summary of those effects. The items identified to be on the referenced maps and drawings are discussed in the Application, but they are not shown on maps and scale drawings.

Section 5.2.2 – Groundwater states that the Spring Creek Aquifer in northern South Dakota has an approximate well depth ranging from 20-200 feet. Section 1.2 - Project Overview and General Site Description states that the pipeline will be installed to a minimum depth of four feet (top of pipe). The Environmental Construction Plan (ECP) does not discuss the presence of aquifers near the ground surface. The location of near ground surface aquifers should be noted in the ECP and specific limitations should be included in the ECP and Spill Prevention Control and Countermeasure (SPCC Plan) Plan to avoid any chances of contamination or degradation of water quality.

Section 5.2.2 – Groundwater states that the majority of the route is not susceptible to groundwater contamination from fuel leaks during pipeline repairs or maintenance due to the depths of most aquifers and presence of confining materials. There's no further discussion about other areas of the pipeline route and presence of aquifers. This implies that there are some areas that are susceptible to groundwater contamination.

Section 5.2.2 – Groundwater states if there is a temporary release of carbon dioxide (CO2), there will be minor impacts to groundwater quality. Other than a reference to occurrences of naturally CO2 -charged potable water that shows the common chemical reaction products from dissolution of CO2 into freshwater include rapid buffering of acidity, no other information is provided about the referenced minor impacts to groundwater quality. The Application and Emergency Response Plan do not discuss water quality impacts if there is a release of CO2 to a waterbody and CO2 is known to rapidly dissolve in water.

Section 5.2.3 – Water Use and Sources states that the baseline centerline crossed/clipped seven Wellhead Protection areas and that the Applicant is working with municipal and rural water system districts to identify any well or surface water protection conflicts. The Application does not discuss if there were previous efforts to avoid these Wellhead Protection areas or if the pipeline route will be adjusted to avoid them. Wellhead Protection areas would be a feature to be shown on hydrology maps.

Hydrology and hydrologic features typically include watersheds, waterbodies, wetlands, aquifers, springs, seeps, general groundwater elevations and flow direction. The Application does not discuss springs, seeps, nor groundwater flow directions. Section 5.3.3.3 - Sensitive Aquatic Species states that the Topeka Shiner, listed as endangered by the U.S. Fish and Wildlife Service (USFWS), generally occupies small, prairie streams with groundwater inputs (springs). Thus, without knowing the location of springs and seeps, I cannot determine whether the Project could have an adverse effect on the habitat of the Topeka Shiner or other species that rely on similar sources of water.

Section 5.2.3 – Water Use and Sources – Construction Impacts discusses using the One-Call system to locate public water lines. The location of other public

utilities in the construction right-of-way (ROW), such as natural gas lines, fuel lines, and buried electric lines, is not discussed in the Application. In addition, the Application does not discuss the location of private utilities and underground hazards within the construction ROW using techniques such as ground penetrating radar or electromagnetic detectors. Privately owned underground utilities and hazards such as water lines, electric lines, fuel and home heating tanks are common around farmsteads and remote residential areas.

Section 5.2.3 – Water Use and Sources – Operation Impacts states that the Project would have minor impacts on water supply, but it doesn't discuss what those impacts would be, the extent of impacts, nor what water supplies would be impacted. This section also states that a temporary release of CO2 could result in a temporary increase of CO2 within a waterbody, but it will dissipate through mixing within the waterbody. It further states that CO2 is a naturally occurring compound in the environment and will have no permanent impacts. Based on my knowledge and experience of aquatic resources, I conducted some research regarding the specific effect of CO2 in water to obtain current sourcing. According to the United Nations Food and Agriculture Organization (FAO), CO2 is highly soluble in water and one volume of CO2 dissolves in an equal volume of water. The source further states that high levels of CO2 interfere with the binding capacity of hemoglobin with oxygen. CO2 dissolved in water depresses the ability of hemoglobin to bind with oxygen. Although shellfish use hemocyanin to transport oxygen instead of hemoglobin, the effect of high levels of CO2 is the same. High pressure CO2 reduces maximum blood oxygen capacity. Also, according to the National Oceanic and Atmospheric Administration (NOAA), CO2 dissolves in water as carbonic acid, which lowers the pH. All of these factors adversely affect aquatic organisms and can potentially result in their death.

Section 5.2.3 – Water Use and Sources – Operation Impacts states that minor surface disturbance activities within waterbodies from pipeline inspection and maintenance may occur infrequently and at widely spaced locations. The Application does not state how inspections and maintenance activities would impact waterbodies or if it would affect water quality.

Section 5.4.2.1 Potential Impacts to Fisheries – Construction Impacts discusses the potential for inadvertent returns to occur during HDD. This section discusses the use of non-toxic drilling fluids as a way to minimize impacts to fisheries. Summit provided an HDD Inadvertent Return Plan as part of their response to Data Request #5. This Plan was reviewed and it discusses measures to mitigate impacts from inadvertent returns, but it does not discuss methods to avoid or minimize inadvertent returns in the first place (i.e.site-specific geologic information to avoid fractured rock or soft soils, or increase thickness of drilling mud).

Q: In your opinion, did SCS's Application adequately address ARSD 20:10:22:20 (Water Quality)? Please explain.

A: The Application did not fully address ARSD 20:10:22:20 Water Quality. Section 5.6 – Water Quality and Uses states that based on the Project's proposed construction activities, permits or certifications may be required to adhere to Sections 401 and 402 of the CWA. The CWA requires DANR to certify there are no adverse water quality impacts or impairments based on the state designated water quality designations. Thus Section 401 WQC and Section 402 NPDES Permits will be required prior construction of the Project. The Application states that SWPPP plans will be prepared for the Project, but they were not available for review prior to preparing this testimony.

Q: Does Summit correctly identify the permits required for hydrostatic test water withdrawal and discharge?

A: Yes. Table 1 correctly identifies that a General Permit SDR070000 Authorizing Temporary Discharges Activities under the South Dakota Surface Water Discharge System would be needed to address the discharge of hydrostatic test water. Table 1 also identifies that the issuance of a Permit to Appropriate water would be needed for water withdrawal for temporary use. Although Table 1 identifies the correct General Permit for the discharge of hydrostatic discharge water, it does not mention that it is part of the NPDES program. It does correctly identify DANR as the issuing agency through the Water Rights Program.

Q: Do you have any additional recommendations regarding either hydrostatic test water withdrawal or discharge?

A: Yes, I have a recommendation regarding hydrostatic water discharge. Hydrostatic testing utilizes high pressure water to test the integrity of the piping system and connected facilities. The pressurization of this water generates heat so an immediate discharge to the ground, surface water, or groundwater can have adverse thermal impacts. A hydrostatic testing plan should address the depressurization of the pipeline and facilities, as well as maintaining that water within that system until the temperature of the testing water achieves a minimum of ambient air temperature and is safe for discharge to avoid thermal impacts.

Q: Did you review Stormwater Pollution Prevention Plan (SWPPP) for the Project?

A: No. The Application stated that SWPPP plans will be prepared but they were not available to review prior to preparing this testimony. While reading through the Application, it was noted that Section 2.2 - Alignment Sheets, Construction Line List, and Permits in the ECP states that SCS will prepare Environmental Plan Sheets that accompany the SWPPP required under the Minnesota Pollution Control Agency (MPCA) NPDES Disposal System Construction Stormwater General Permit (MNR100001). The ECP further states that SCS will prepare an Iowa Agricultural Impact Mitigation Plan (AIMP) that will accompany the Iowa Utility Board Filing for Hazardous Liquid Pipeline Projects. The AIMP will comply with the

provisions of Iowa Code § 479B.20 and the rules and regulations promulgated by the Utilities Board during and after pipeline construction. For agricultural areas in Iowa, the AIMP will supersede this document. The referenced text from Section 2.2 appears to be from a different document since the cited permits and state agencies do not apply to the Summit project application for the SDPUC.

Q: Will a jurisdictional determination be requested from the U.S. Army Corps of Engineers (USACE) prior to application for a Nationwide Permit or Section 404 Permit?

A: The Wetland Report discussed that field wetland delineations are about 85% complete and are anticipated to be completed in fall 2023. The Application did not mention anything about obtaining a jurisdictional determination from the USACE. The federal water resource permits, such as the USACE Nationwide Permit 58 and Section 404 Permit will require that wetlands be delineated and a jurisdictional determination provided.

Q: What methodology did you employ for your review of terrestrial impacts?

A: The methodology that I employed to review and assess Section 5.3.1 Vegetative Communities included reference to various online resources, including the U.S. Geological Service (USGS) National Land Cover Database map, data and mapping from the DANR, and SouthDakota.gov to obtain relevant and current information to compare to the Application.

The methodology that I employed to review and assess Section 5.3.2 - Wildlife, which includes protected species and game species, I initially reviewed the entirety of the Application since there are discussions involving terrestrial species and potential impacts located throughout the Application. I also referenced the U.S. Fish and Wildlife Service (USFWS) occurrences database and Environmental Conservation Online Database (ECOD), the South Dakota Endangered and Threatened Species Codified Law Chapter 34A-8, and online data and mapping from the South Dakota Game, Fish, and Parks (SDGFP) to compare with the Application. I also referenced the SDGFP Wildlife Action Plan, Species in Greatest Conservation Need list, and Natural Heritage Database to compare with the Application.

The methodology that I employed to review and assess ecosystems, I referenced many of the sources listed above, as well as the U.S. Environmental Protection Agency (EPA) Ecoregions for North America and the land use land cover maps provided in Appendix 6C of the Application (October 13, 2022 version) for use in remote mapping interpretation to compare with the information provided in the Application.

The methodology that I employed to review and assess noxious weeds, I referenced the South Dakota Noxious Weeds Codified Law 38-22 and the South

Dakota Noxious Weeds list maintained by the South Dakota State University Extension to compare with the Application. I also utilized my work experience identifying and managing noxious plants on wetland and habitat restoration projects, including my Pennsylvania Pesticide Applicator's license training.

Q: Did you review Section 5.3 of Summit's Application?

A: Yes, I reviewed all of Section 5.3 – Terrestrial Ecosystems, including the related Appendices. Several observations were noted and discussed in more detail in the applicable answers below. These include that there is a need to finalize agency consultations regarding the project impact on the Dakota Skipper and the Lined Snake. Also, Section 5.14 Soils discusses the potential for soil compaction and rutting by construction equipment, but it does not identify the presence or absence of high rutting hazard soil areas.

Q: Please summarize what information was included in Section 5.3 of Summit's Application.

A: Section 5.3 – Terrestrial Ecosystems discusses that the Project footprint in South Dakota is located within two U.S. Environmental Protection Agency Level III Ecoregions, the Northern Glaciated Plains Ecoregion, the Northwestern Glaciated Plains Ecoregion, and seven Level IV Ecoregions. The general vegetative communities were identified, including the presence of nearly 84% cultivated crops and pasture/hay and nearly 10% grassland/herbaceous areas traversed by the Project. This section includes a discussion regarding the HDD crossing of six USFWS grassland easements and three USFWS wetland easements after adjusting the project routing to minimize impacts. Surveys for noxious weeds have not been conducted as of the date of the Application and provided materials, but the known infestation locations were provided in the Application. This section, as well as others and the ECP, note that pre-construction surveys will be undertaken to identify pre-construction contours and drainage patterns.

Q: In your opinion, did Summit's Application adequately address ARSD 20:10:22:16 (Effect on terrestrial ecosystems)? Please explain.

A: No, I do not think the ARSD 20:10:22:16 was adequately addressed in the Application. Also, the Application includes a broad discussion on general vegetation, wildlife, and ongoing consultation with multiple agencies regarding protected species, however there are several additional issues that need to be addressed. The Application should have addressed the presence or absence of properties enrolled in the NRCS Conservation Reserve Enhancement Program (CREP) and the potential consultations with NRCS and the negotiations with landowners for crossing any properties enrolled in the CREP. There are specific requirements that landowners must follow to maintain properties in the CREP. Some of these requirements could conflict with the construction, operation, and maintenance requirements of the Project, such as: no driving on Walk-In areas

except on designated trails and parking areas; private CREP lands are leased to the SDGFP; every acre enrolled in CREP is open to the public hunting and fishing; and crop and cover vegetation restrictions. A consultation process should occur between Summit, the USDA and SDGFP to gain a full understanding of the South Dakota CREP program, limitations to the Project, and identification of all of the properties involved.

Q: In your opinion, did Section 5.3 of Summit's Application properly identify the potential impacts to vegetation?

A: No, I do not think that Summit's Application properly identified the potential impacts to vegetation. Section 5.3.1.4 - Impacts to Vegetation – Operation Impacts states that most of the ROW, including all of the temporarily impacted lands and much of the permanent ROW, will be allowed to revert to pre-construction vegetative conditions. This contradicts numerous sections of the Application, including the ECP, which provides details of revegetation and restoration measures. However, neither the Application nor the ECP is clear whether revegetation involving seeding with acceptable seed mixtures, would be applied to temporarily impacted lands. Disturbed lands should not be left to just revert to pre-construction vegetative conditions or issues with soil stabilization and noxious weeds would become an issue. Section 5.3.1.4 - Impacts to Vegetation – Construction Impacts states that the Contractor may also utilize cleaning stations to remove vegetative and soil materials using water at a high pressure in lieu of compressed air. These measures to remove vegetation (cuttings and seeds) with high pressure may very well result in the spreading of noxious weeds. DANR and SDGFP should be consulted for additional mitigation measures to avoid the spread of noxious weeds.

Q: Do you agree with the mitigation measures Summit plans to implement to minimize the potential impacts to vegetation?

A: No, I do not agree with the general language in the Application and ECP regarding the potential impact to vegetation and revegetation efforts. The Project should not let temporary disturbed lands revert back to pre-construction conditions. There are several sections in the Application and ECP that discuss the preparation of seed beds and application of seed to disturbed areas, but the ECP and the Weed Control Plan should be clear how to restore disturbed areas to satisfy permit requirements, avoid erosion and sedimentation issues, and avoid agricultural production loss issues.

Q: Do you have any recommendations for additional mitigation measures in order to minimize impacts to vegetation and terrestrial ecosystems? Please explain.

A: The Application includes numerous sections that repetitively state the "impacts from maintenance activities will be minor because disturbances will be isolated, short-term, and infrequent and include clearing the permanent pipeline ROW of

vegetation and identifying corrosion through regular inspections". However, neither the Application nor the ECP identify the frequency of said inspections. The only frequency of inspections found in the documents was related to erosion control devices. Vegetation restoration, erosion and sedimentation control measures are highly interrelated. The Application should have a discussion regarding the presence or absence of high rutting hazard soils. Frequent inspections and special measures should be taken in any of these areas to ensure that contractors install erosion control measures and best management practices in accordance with accepted specifications and permit conditions. Also, the Applicant's response to any needed repairs should be quick and comprehensive.

Q: In your opinion, did Section 5.3 of Summit's Application properly identify the potential impacts to wildlife?

A: No, the Application did not properly address the potential impacts to wildlife. Section 6.2 – Species Effect Determinations seems to indicate on Table 2 that final agency determinations have been made regarding several species. However, specific documentation from the regulatory agencies has not been provided to confirm the No Effect or Not Likely to Adversely Affect for the identified protected species. Specifically, this section states that the Applicant made the determinations based on literature and background review conducted prior to field survey efforts focused on determining if any of the listed species or their associated habitats were present. The Application and Appendices did not specify any additional surveys or identification methods. Section 5.3.2.5 - Potential Impacts to Wildlife - Construction Impacts does not address the possibility of wildlife becoming trapped in excavations. The trenching procedures and ECP should include a process to address the potential of wildlife entrapment and agency-involved mitigation measures.

Q: Do you agree with the mitigation measures Summit plans to implement to minimize the potential impacts to wildlife?

A: No, I do not agree with the very general measures that Summit identified in the Application and supporting documents that would potentially serve as mitigation measures. The Application and supporting documents did discuss implementing Best Management Practices (BMPs) but did not specifically identify mitigation measures for impacts. The Application and supporting documents included many general statements that impacts from maintenance activities will be minor because disturbances will be isolated, short-term, and infrequent. I recommend specific impact mitigation measures be presented to the SDPUC, along with the supporting information from the applicable source and regulatory agency.

Although Section 5.3.2.5 – Potential Impacts to Wildlife – Construction Impacts states that trench plugs, bridges, and gaps in construction areas may be implemented to facilitate wildlife crossings, the Application and ECP do not include any information about how to address any wildlife, and particularly big game

animals or even livestock that happen to enter the pipe trench or other excavated areas.

Q: Did the Applicant conduct species-specific field studies for protected species or only potential habitat identification and online database research?

A: As stated above, Section 6.2 – Species Effect Determinations seems to indicate on Table 2 that final agency determinations have been made regarding several species, including determinations of No Effect or Not Likely to Adversely Affect for the identified protected species. The Application and Appendices do not specify whether any field surveys utilizing specific identification methods (e.g., acoustic or mist net surveys for bats, traps, or other observation methods) were initiated or completed.

Q: Does this conclude your testimony?

A: Yes.

Brian Sterner

Principal Consultant, Scientist

Brian has extensive regional and local experience with major capital projects, including functioning as a NPDES compliance specialist and permitting SME for a major petrochemical complex. He has broad experience related to land and water resource impact analysis and permitting, including performing function and value assessments of terrestrial and aquatic habitats. Brian has led agency consultations, provided expert testimony to state and local agencies, sponsored partnering workshops and managed stakeholder coordination for permitting and resource mitigation and compensation projects. He has conducted thousands of wetland and stream delineations, as well as environmental assessments in DE, NJ, OH, PA, and WV. Brian is listed as a Qualified Botanist by the PA Department of Conservation and Natural Resources, Bureau of Forestry, and is a trained plant taxonomist.

Experience: 35 years experience in environmental, social, and cultural impact assessments, natural resource impact evaluation and permitting, construction management and compensatory mitigation.

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Education

- B.S. Biology, Grove City College, USA, 1988
- NPDES Permitting – USDA, NRCS
- USACOE Wetland Identification and Delineation
- ESCGP & Pipeline Permitting, PADEP
- Chevron Vetted QEF and HES GO trainer
- Shell Lifesaving Rules Certified
- OSHA 40 hour HAZWOPPER & 9.5 hr. O&G H&S Cert.
- SafeLands/SafeGulf, H&S Training
- ArcGIS - ESRI

Professional Affiliations and Registrations

- Prof. Wetland Scientist (Soc. of Wetland Scientists)
- PA Certified Pesticide/Herbicide Applicator
- Independent Oil and Gas Association
- Marcellus Shale Coalition (MSC)

Languages

- English, native speaker

Fields of Competence

- Project siting, environmental impact assessments & permitting (USACOE, US Coast Guard, Ohio EPA, PA DEP, WV DEP)
- NEPA and natural resource permitting
- Construction management / inspection
- NPDES compliance & permitting
- Environmental impact and cost reduction
- Wetland & stream surveys & mitigation
- Threatened & Endangered species surveys
- Agricultural land impact assessments
- FERC Environmental Review and Compliance
- GIS mapping and analysis
- Reforestation planning & design
- Due Diligence - Phase I & II ESAs
- Invasive species management
- HSE Trainer

Key Industry Sectors

- Oil & Gas – Upstream, Midstream, & Downstream
- Transportation
- Power
- Real Estate & Land Development
- Financial

Publications

1988. First Year Evaluation of Mitigated Wetlands on Two Mine Sites in Western Pennsylvania. US DOI, Bureau of Mines and Office of Surface Mining Reclamation and Enforcement.

Key Projects

Shell Polymers, Permitting, Compliance, Construction Management & Emergency Preparedness, 2011 to 2022
Developed and maintain environmental permit compliance register for new 6.1B world-class petrochemical facility which just recently completed construction in Beaver County, PA. Prepared reforestation plans and supervised the implementing contractor. Prepared an invasive species management plan and personally applied targeted herbicide in the reforestation areas. Prepared a bald eagle and osprey management plan, including construction of an osprey nest platform. Also prepared numerous support studies and documentation for NPDES permit applications, USCOE Section 404/PADEP Chapter 105 permit, FCC and FAA clearances, and local permits and approvals. Prepared detailed GIS mapping of complete drainage systems, firefighting system, and evacuation plan for Emergency Response Plan.

Dominion Natural Gas, JB Tonkin Compressor Station, Stormwater Management, 2020-2022
Construction Manager for the installation of a proprietary underground stormwater management collection and storage system. Presence of 100-year floodplain and elevation of surrounding features required installation of underground stormwater management system.

Apex Energy, Air Modeling & Hydrogeologic Assessments for Well Pad Development, 2016-2018
Project Manager for the preparation of air modeling and hydrogeologic studies for the development of eight well pads. Project including providing successful expert testimony at over two dozen Zoning Hearing Board meetings.

Columbia Gas, FERC EIS for Leach XPress Pipeline, 2014-2016
Deputy PM as third-party consultant to FERC to prepare Draft and Final EISs for approximately 160 miles of new 30-36" natural gas pipeline, compressor and regulator stations, and pig launchers in OH, PA, and WV. Responsible for all portions of project, prepared NOIs, Scoping Meetings and Hearings, Resource Reports, Data Requests, and coordination with FERC, and other federal and state agencies.

Huntsman Advanced Materials, Environmental Audit Corrective Actions, 2020 to 2022
Project Manager for completing corrective actions following an internal self-audit of environmental conditions of the chemical manufacturing plant. Prepared monthly progress reports to the USEPA and PADEP, Preparedness, Prevention, and Contingeny Plan, comprehensive site safety documents and procedures, including onboarding and refresher trainings, hazardous material labeling and handling, and detailed safety station GIS mapping.

Huntsman Advanced Materials, Streambank and Soil Management and Remediation, 2020 to Current
Project Manager for the remediation and restoration of a streambank adjacent to a chemical manufacturing facility. Site also has soil contamination under the concrete slabs that requires delineation of the contamination and monitoring for vapor intrusion. Prepared stream encroachment permit application, Opinion of Probable Cost remediation estimates, and teaming with state and local permitting agencies.

First Energy, Perry Nuclear Power Plant, Stream Relocation and Wetland Monitoring, 2016-2022
Served as an SME regarding wetlands and streams for the relocation of a stream with an extensive system of adjacent forested and emergent wetlands. Provided oversight of groundwater monitoring, wetland vegetation monitoring, and invasive species management.

Shell Appalachia, Integrated Vegetation Management for Natural Gas Exploration Sites, 2013-2016
Project Manager for the development of an integrated approach to implement restoration measures on oil and gas development & construction sites. Developed methodologies and specifications for post operation reconstruction, restoration, re-

vegetation with targeted species, management of invasive species, and a GIS-based impact and restoration tracking tool for sites and corridors.

Shell Appalachia, Impact Assessment & Cost Reduction Evaluation, 2013
Assessed and identified opportunities to reduce environmental and social impacts and implement cost-saving measures. Initiated focused alternatives and developed white paper on improving engineering design and material use to reduce costs by $8 to $14 million.

Nalco Water, HSE Practical Trainer, 2013-2021
Lead trainer for onboarding and legacy HSE practical safety training classes, including hands-on training for horizontal and vertical confined space entry, lock out/tag out, working at heights, ladder safety, chemical transfer/handling, risk assessments, permit to work, and ergonomics.

Shell Appalachia, EIS for Natural Gas Exploration & Production in NY, PA &, OH, 2012-2014
Project Manager to complete the Impact Assessment (IA) for a major exploration and production company's Appalachian unconventional shale gas asset. The IA was designed to be a flexible and evergreen tool, to adjust specifically to the company's evolving business and functional needs. The IA included the assessment of over 8 million acres, including 14 counties in PA, three counties in OH, and four counties in NY.

Apex Energy, Donegal South Pipeline, Westmoreland County
Project Manager and field inspection and documentation of erosion and sedimentation pollution control BMPs along 15 miles of pipeline corridor. The additional need for BMPs were identified, logged and tracked to ensure implementation and compliance with permits.

PA Turnpike Commission, Amos K. Hutchinson Bypass, Westmoreland County
Construction management and inspection of the construction of over 13 miles of new toll highway. Supervised the construction of numerous culverts, bridges, excavations and installation and maintenance of erosion and sedimentation controls and BMPs.

Apex Energy, Ninevah-15-17 E&S Plan for Gathering Line, Greene County, PA
Project Manager for the preparation of an Erosion and Sedimentation Pollution Control Plan (E&S) for the construction of a natural gas gathering line.

PA Turnpike Commission, I-76 North Park Wetland and Stream Mitigation Plan, Allegheny County, PA, 2011
Project Manager for design and restoration of over 2,450 lf of degraded streams and creation of over 2 acres of wetlands within Allegheny County's North Park. The project included wetland delineation, baseline aquatic resources survey, utility coordination, and coordination with Pine Township Watershed Association. The site planting plan included over 4,000 trees, shrubs, and willow cuttings, installation of bat houses, numerous stream stabilization features, and the installation of an elevated walkway for educational purposes. The site received public recognition and named, "Wahdo:Gwas" by the Seneca Nation. The PADEP allowed the required 5-year site monitoring to be concluded early due to the extensive diversity and overall site success.

PennDOT District 12-0, State Game Lands #297 Wetland Mitigation Bank, Washington County, PA, 2011
Project Manager for the preliminary design of the 8.5 acre wetland mitigation bank project in Washington County, PA. Project included delineation of existing wetlands and baseline aquatic resources survey, development of water budget, E&S Plan, Phase I Archaeology study, planting plan, threatened and endangered species clearances, coordination with lease farmer, site surveys, and implementation of safety measures for field work during hunting season to manage and avoid stakeholder conflicts.