MGS CNP 1, LLC
109 Post Oak Lane, Suite 140
Houston, TX 77024

FIDELIS

May 6, 2025

Laura M. Crowder, Director
WV Department of Environmental Protection (WVDEP)
Division of Air Quality (DAQ)
601 57th Street SE
Charleston, WV 25304

Re: Application Status: Incomplete
MGS CNP 1, LLC/BECCS Plant
Permit Application No. R13-3708
Plant ID No. 053-00134

Ms. Crowder,

Please find our responses to each of your questions/comments in the incomplete application notice sent to MGS CNP 1, LLC (MGS) on April 25th 2025. MGS has provided a detailed response in *italics* to address all the questions surrounding the application for the BECCS plant.

The following items will be attached to address comments.

- Updated emission calculations
- Fuel analysis
- Updated Equipment Table (Attachment I)

If you have additional questions, please do not hesitate to contact us.

Sincerely,

William D (Jack) Calhoun, P.E.
Vice President, HSE

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WVDEP Questions and MGS Response
MGS CNP 1, LLC/BECCS Plant
Permit Application No. R13-3708
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WVDEP Question NO.1:

1. Missing an discussion on the purpose (e.g. sell of electricity) of the excess electricity generated by the proposed boiler/steam turbine generator. If your proposed generation is to be used for a data center or other use that requires a redundant (backup) supply of electrical, please identify this alternative/backup source of electricity for the primary end user. This discussion needs to clearly answer whether the electricity is being sold, the planned amount of electricity to be sold, is there a purchase power agreement in place, please note the source of required electricity for normal startup operations will be purchased/supplied from local electricity wholesaler/another generating unit, and the nameplate rating of the generator. Please note if the facility is going to be connected to the electrical grid system (e.g. PJM), please explain the relationship (e.g., solely purchaser/consumer, wholesaler/generator).
   MGS Response
   a. *All electricity generated by the steam turbine generator will be consumed by the biomass feed handling, biomass boiler, flue gas treatment, ash handling, post-combustion carbon capture, compression, chemical storage, raw water treatment, wastewater treatment, and utilities. The biomass boiler will combust sufficient biomass to produce approximately 2,300 metric tonnes per day of CO2 (210,000 lb/hr), which is the amount of carbon dioxide required to achieve the project's targeted carbon dioxide removal (CDR) credits. Steam generated in the boiler from the heat of combustion from the biomass is sent to the steam turbine generator to produce electricity to support the operating load of the facility. Any excess steam produced from the boiler will bypass the steam turbine generator to produce low-pressure steam or be condensed in the surface condenser. The steam turbine generator only produces electricity to support the operation of the facility and does not produce excess electricity for the local electrical grid or any onsite user such as a datacenter. The facility will be built to start-up and operate in island-mode and does not have a connection to the local electrical grid. Please note that only the onsite administration building, warehouse, and laboratory will have a connection to the local grid. Electricity for start-up will be provided by a 3,000 hp natural gas generator and start-up emissions from the natural gas generator have been accounted for in this application at emission (129-PKG-0001– EP)* .

   Please note the amount of excess steam will be utilized to provide heat energy for the amine regenerator (temperature and pressure is also needed). Please provide details of the energy consumption of the facility, type of energy consumed (e.g. electricity, steam,

natural gas) for the CO2 dehydration unit and compression and whether these energy requirements for these activities will be part of the auxiliary load of the facility or require additional combustion units.

MGS Response

Electricity and steam for CO2 dehydration and compression are included in the total energy consumption of the facility. The total normal operating electrical demand for the facility is approximately 40,000 hp, of which, 23,275 hp is required for the carbon capture unit, CO2 compression and conditioning systems (i.e., dehydration and deoxygenation). The biomass boiler produces approximately 572 klb/hr of high-pressure steam (1,710 psig at 1,000°F), of which, approximately half of the high-pressure steam bypasses the steam turbine and is flashed to generate 314 klb/hr of low-pressure steam (100 psig at 338°F) of which 257 klb/hr is used by the carbon capture unit. The balance of the high-pressure steam is used to generate electricity in the steam turbine.

The DAQ has an unclear understanding of what will be the source of the electricity to start the proposed emissions units. Please keep in mind, the emergency engine for the emergency generator can only be operated for 50 hours per year of non-emergency use. This discussion needs to describe the electrical system that the steam turbine/generator will be connected to and the source of the electricity needed for normal startup/shutdown operations. Please explain in further detail exactly how the fluidized bed boiler will be preheated for startup with the use of steam from an auxiliary boiler or other steam generator.

MGS Response

A 3,000 hp natural gas generator will be used to provide electricity to start-up the auxiliary and utility systems (e.g., raw water treatment, boiler feedwater, instrument air, etc.) required prior to starting up the biomass boiler. The biomass boiler will combust natural gas to pre-heat the fluidized bed. Boiler feedwater will be introduced to the biomass boiler to generate high-pressure steam. Once the heat input on the boiler has been established, biomass is introduced to the boiler, natural gas to the boiler as fuel is decreased, and the high-pressure steam production rate increases. The high-pressure steam is sent to the steam generator to produce electricity to support the operation of the facility, and the natural gas generator is slowly phased out. The application includes durations for operating the natural gas generator (100 hours) and for start-up of the biomass boiler (55 hours).

Please note, the emergency engine is only used for the firewater pumps. The application includes a duration of 100 hours for emissions from the firewater pumps; however, these pumps are only anticipated to be operated for testing and maintenance. If this needs to be reduced to 50 hours, we are accepting the recommendation and emission calculation have been updated..

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DAQ Question No. 2:

2. Missing completed individual control device sheets for the SCR, OxyCat, Wet FGD, and DSI for the boiler. Please identify key parameters that will be monitored to ensure compliance with the proposed emissions with respect to the pollutant(s) being controlled by the associated control device. Also, provide additional information regarding your proposed wet FGD system to determine if the residual moisture exiting the scrubber will pose a possible interference issue with a continuous opacity monitoring system as required in 45CSR2 and 45CSR2A. Given that the application is proposed to be a synthetic minor source under the Title V Program, please provide a monitoring plan for the CO Catalyst, Wet FGD and DSI control device to ensure compliance with proposed emission limits.

MGS Response

a. *Currently MGS CNP 1 does not have specification sheets from its vendors for each of these control devices, as the design of the plant is ongoing, and equipment vendors have not been finalized yet. All emission calculations are based on minimum guarantees provided by the vendors.*
b. *At this Time MGS CNP 1 does not have a complete monitoring plan as the plant design is not complete. Once design is finalized a modification will be filed to update these requirements.*

DAQ Question No. 3:

3. Please provide supporting information to support the claim that the proposed fuel will have sulfur content to satisfy the exemption criteria of 40CFR60.42b(k)(2). Regarding the wood (primary fuel) to be used as fuel for the boiler, the application does not identify the source(s) and species of wood to be used as fuel. If the source(s) of the wood fuel is going to be discarded from a manufacturing process, this/these source(s) of wood need to be identified and evaluated whether the material is a waste/fuel in accordance with 40 CFR 241.

MGS REsponse

a. *At this time MGS CNP 1 has determined that the Biomass analysis is proprietary information and will be following all procedures to maintain confidentiality for this analysis and for any future biomass samples. A redacted analysis will be provided that will include only the necessary information to verify the emissions. The Natural gas sample will be attached to this response.*

DAQ Question No. 4:

4. separate the startup emissions for control devices that the performance is impacted/cannot be operated during startup conditions (e.g. SCR, oxidation catalyst, wet FGD) on startup event basis. If a control device performance is impacted during an shutdown, thus shutdown emissions on a short-term basis needs to be identified as well. Any bypassing of a proposed control device needs to be identified for startup and

shutdown events. Please define the ending of a startup event. The emission calculations are based on NG firing for 10 hours per startup and a total of 55 hours per year for start operations. This accounts for 5 startup events per year with 5 hours unaccounted for. Please explain these 5 unaccounted for hours per year for startup and are the emissions based on firing 100% wood for these hours on an uncontrolled basis.

MGS Response

a. *The SCR and CO Catalyst are bypassed for 11 hours during start-up of the biomass boiler (5 x 11 = 55 hrs). During this duration, the biomass boiler combusts natural gas for 10 hours to pre-heat the fluidized bed. The application includes allowances for start-up emissions based on guarantees provided by the biomass boiler vendor.*
b. *Please note, no reduction in emissions were assumed for the Direct Contact Cooler / Polishing Scrubber (DCCPS) – this is the same device as the wet FGD.*
c. *Emission have been separated into normal operation and startup operations and are attached to this email.*

DAQ Question No. 5:

5. Please justify reducing the organic HAPs emission factors published in AP-42 by 88% for the use of CO catalyst when the VOC removal efficiency of 60% for the CO catalyst was applied to account for the control VOC emissions for the boiler.

MGS Response

a. *The organic HAPs were adjusted by multiplying the ratio of the biomass boiler vendor's guaranteed VOC emission factor to the AP-42 VOC emission factor. These adjusted emission factors are also used to calculate the biomass boiler's organic HAPs.*

DAQ Question No. 6:

6. Regarding haul road emissions: Please provide the minimum and maximum weight of the vehicles for each of the percentiles used to determine the average weight of the vehicle, and justification of the silt loading. Did the average weight of the vehicles and distance traveled account for equipment used to manage the open stockpile? Given that all haul roads are proposed to be paved, is the open stockpile going to be located on a paved surface?

MGS Response

a. *In the updated calculations, min and max weight for each vehicle type have been provided.*
b. *Due to BECCS facility not fitting into one of the defined categories in table 13.2.1-3. BECCS facility used Table 13.2.1-2. The Ubiquitous Baseline 0.6 g/m^2 and a multiplier of 4 is applied for low volume roads (< 500 Average Daily Traffic) to obtain a wintertime baseline silt loading of 4 X 0.6 = 2.4 g/m^2.*

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c. *The biomass stockpile will be placed on a paved surface.*

DAQ Question No. 7:

7. provide additional details on how the HCl emissions from the wastewater treatment unit were determined and how these HCl emissions will be determined when the wastewater treatment unit is in operation.

MGS Response

a. *It was conservatively assumed that approximately 10% of the HCl would be absorbed in the solution from the flue gas in the Direct Contact Cooler/ Polishing Scrubber. The solution is then sent to WWTP and it is conservatively assumed that all the HCl will be emitted to the atmosphere.*
b. *Once the operation of the plant begins, HCL emissions from the WWTP will be determined by sampling for HCl periodically at the inlet and outlet of the WWTP. Sampling data will be used to estimate HCl emissions and verify compliance.*

Additional DAQ Questions:

8. I notice that some (not all) of the control devices have the same ID number as the emission point. Also, the equipment id is also used as the emission point id. A different ID needs to be used for the emission point.

MGS Response

The attachment I have been updated to have separate Emission unit IDs and Emission Point IDs. Control Device IDs have changed as well.

9. From Attachment I, I read that the makeup sand and sodium bicarbonate storage silos are venting into the BFB boiler and therefore the exhaust is controlled by the same boiler control devices. Also, there is a by-pass stack for the CCU (122-T-1001).

MGS Response

Correct; however, the bypass stack is 121-PKG-3001 not 122-T-1001.

10. For the Sand Receiving Bin (121-S-1002), it lists as the control device that vent is piped to BFB. If that is the case, the emission point for the sand receiving bin would be either 121-PKG-3001 or 122-T-1001 and not 121-S-1002.

MGS Response

The Sand Receiving Hopper (121-S-1002) is not vented to 121-PKG-3001 (BFB Boiler Stack) or 122-T-1001 (Absorber). The Sand Receiving Hopper collects sand from the truck and directs it to the Inclined Sand Conveyor. The sand from the conveyor is stored in the Makeup Sand Silo (121-S-5001) which vents to the BFB Boiler Stack, when the carbon capture unit is not in operation or the Absorber during normal operation. The Sand Receiving Hopper is open to the atmosphere.

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11. For the capacity of silo and bins, please list the mass capacity for the silo or bin and not the throughput rate. The open storage pile for the wood chips needs a capacity value either on a mass or area basis.

    MGS Response

    All sizes are preliminary and not finalized. It should also be noted that the emissions from these sources are based on the throughput handled and not depended on size of the silo or bins.

    a. *121-LS-1001 – Biomass Receiving Hopper = approx. 6,000 ft3*
    b. *121-LS-1002 – Biomass Receiving Hopper = approx. 6,000 ft3*
    c. *121-S-1001 – Biomass Feed Hopper = 1,800 ft3*
    d. *121-S-1002 – Sand Receiving Hopper = 6,000 ft3*
    e. *121-S-2001A/B – Biomass Fuel Metering Bin = 4,200 ft3 each*
    f. *121-S-4001A/B – Fly Ash Storage Silo = 9,500 ft3 each (166 tons each)*
    g. *121-S-5001 – Makeup Sand Silo = 1,660 ft3*
    h. *121-S-9901 – Sodium Bicarbonate Storage Silo = 2,000 ft3*
    i. *Chip Pile = 14 days of storage (71,265.6 klbs = 212.1 klb/hr x 24 hrs/day x 14 days)*