



October 13, 2021

Ms. Tiffany Myers, District Supervisor
Water Resources Division
Michigan Department of Environment, Great Lakes and Energy (EGLE)
Jackson District Office
301 E. Louis B. Glick Highway - 4th Floor
Jackson, Michigan 49201

Re: Flue Gas Desulfurization Wastewater (FGD) Voluntary Incentive Program (VIP) Notice
of Planned Participation (NOPP)
DTE – Monroe Plt
NPDES Permit No. MI0001848

Dear Ms. Myers,

On October 13, 2020, the Environmental Protection Agency (EPA) released the final version of the Effluent Limit Guidelines (ELG) Reconsideration Rule (2020 Rule) which updated the 2015 ELG Rule (2015 Rule). This 2020 Rule is the product of the EPA's "Reconsideration" of certain portions of the 2015 Rule, specifically addressing bottom ash transport water (BATW) and flue gas desulfurization wastewater (FGD WW).

The 2020 Rule established Best Available Technology (BAT) standard discharge limits for FGD WW discharges, and further, finalized the Voluntary Incentive Program (VIP) for FGD WW. Under the VIP, companies may choose to meet more stringent effluent limits established by EPA based on the model technology of membrane filtration or zero-liquid discharge. If a company chooses the VIP option, then the applicability date for FGD WW compliance will be December 31, 2028. The extended compliance deadline allows for additional time to design, pilot, procure, and install VIP compliant technologies since they are currently not as common and economically viable compared to physical and chemical plus biological treatment systems.

Per 40 CFR 423.19(h)(1), DTE Electric Company (DTE) is submitting this Notice of Planned Participation (NOPP). The following enclosures provide the information necessary to qualify for the compliance subcategory as required by 40 CFR 423.19(h)(2).

If you have any questions relative to this submittal please contact Matthew Goddard at (313) 235-7368 or via e-mail at matthew.goddard@dteenergy.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael Twomley". The signature is fluid and cursive, written over a light blue horizontal line.

Michael Twomley
Plant Manager
Monroe Power Plant
Energy Supply - DTE Electric Company
734-384-2203

Enclosures

Cc: Alexandria Seeger - EGLE, Jackson District Office
Christine Alexander – EGLE, WRD Permits Section
Lisa Lockwood – DTE EM&S, Monroe Power Plant
Amanda Kosch – DTE EM&S
Marcela Orlandea – DTE EM&S

Enclosure 1

Notice Planned Participation (NOPP) Contents Requirements

Facility Identification

Monroe Power Plant (MONPP) is located at 3500 East Front Street, Monroe, Michigan. MONPP consists of four B&W supercritical wall-fired boilers firing a blend of subbituminous coal, bituminous coal and petroleum coke and is rated for a maximum gross output of 3,280 MW. The units started commercial operation from 1971 to 1974. This flue gas desulfurization wastewater (FGD WW) voluntary incentive program (VIP) NOPP applies to all operational units at MONPP.

Technology Options

DTE is currently evaluating a suite of technologies for FGD WW treatment that would qualify for VIP compliance. These technologies include but are not limited to membrane treatment, thermal reduction (such as crystallization), encapsulation, and spray dryer evaporators. More information on each technology can be found in Enclosure 2. To achieve VIP discharge standards or zero-liquid discharge, these technologies would be used in combination with each other. Membrane treatment and thermal reduction are water treatment technologies that reduce the volume of FGD wastewater to be managed, disposed or discharged. Encapsulation and spray dryer evaporators are methods by which concentrated FGD WW can be disposed and not discharged. DTE will continue to evaluate these VIP eligible technologies which will include initial design, engineering, and pilot testing. All updates, including selection of final technology, will be provided in annual reports as required in 40 CFR 423.19(h)(3).

Engineering Dependency Charts

Enclosure 3 includes a schedule that has been developed to show the amount of time required for installation of an FGD WW treatment system capable of achieving compliance with the revised 2020 Rule for the VIP. Membrane-based treatment systems for FGD WW are not yet proven within the industry and there are no current systems installed at full scale. Therefore, the industry is still developing membrane-based treatment systems and they may be available as a proven and commercially available option in the future. EPA's recent announcement on July 27, 2021 of their intention revise the 2020 Rule to reconsider membranes as Best Available Technology for FGD WW has resulted in further consideration of membrane technology.

This draft schedule allows appropriate project execution time to implement either a membrane-based treatment system or a thermal / evaporative / encapsulation treatment system to meet the VIP limits. A period of pilot testing and sampling is required for implementation of any of these treatment solutions, especially for membranes as it is not commercially available or proven. After pilot testing has proven that any of the treatment systems can meet the VIP limits for discharge, development of cost estimates is required to establish the overall cost and get internal approvals to move forward with the project. Following final cost estimate, detailed engineering can begin with finalization of the project design basis and overall scope of work.

Notice of Change to Initial NOPP

The information presented in this NOPP represents the best information available to meet the requirements of the initial NOPP submittal. DTE has identified the following factors that could result in modifications of information submitted in this NOPP:

1. Integrated Resource Plans – The next IRP is required to be submitted by the end of 2023, but DTE plans to file the IRP approximately one year early. Modelling and other analyses to be conducted in conjunction with that submittal may result in changes to this NOPP.
2. Other Regulatory Filings – The IRP will provide the plan by which DTE will provide affordable and reliable electricity to its customers. However, many of the projects that will be required to achieve compliance with the 2020 Rule will need to be approved within other future DTE regulatory filings, including electric rate cases. The outcome of future regulatory matters regarding future projects may result in modifications to this NOPP.
3. Regulatory Changes / Rule Modifications – On July 26, 2021, the EPA announced that it will initiate a new rulemaking to revise the 2020 Rule for certain wastewater discharge limits. The proposed rulemaking or other potential future regulatory changes could impact DTE's ELG compliance strategy including the use of the VIP compliance subcategory and associated NOPP process.
4. Other Factors to Be Determined – Other factors including, but not limited to, legal challenges of EPA's ELG rules or rulemakings conducted by future federal administrations.

The factors detailed above could result in changes to DTE's ELG compliance strategy and may result in modification of this NOPP. DTE will submit appropriate documentation pursuant to 40 CFR 423.19(h)(3) if changes to the NOPP are needed or transition to other compliance options pursuant to 40 CFR 423.19(o).

Enclosure 2

Summary of VIP Technologies

The following contains technology descriptions for the FGD WW technologies that can achieve the VIP limits.

Thermal / Evaporative Options

Several types of thermal evaporator systems are available (evaporators / brine concentrators / falling-film evaporators / forced circulation crystallizers) and these systems use waste heat, steam, and/or the heat of compression to elevate the temperature of the wastewater and evaporate pure water leaving behind a more concentrated wastewater brine solution. Distillate from a thermal evaporative system is cooled and recovered as condensate that can be reused in the facility or discharged. The recovered distillate could be discharged to the plant outfall and would have to meet the 2020 Rule VIP limits for wastewater quality. Brine from the thermal evaporative systems would be collected and disposed of in a landfill through several different mechanisms including paste encapsulation, wetting of fly ash, and formation of crystalline solids.

Spray Dryer Evaporator

A waste heat or bypass spray dryer is another form of an evaporative solution that can process the FGD wastewater and achieve 2020 Rule VIP compliance limits. The bypass spray dryer takes a small portion of the flue gas and routes it around the air preheater to a spray dryer vessel where the FGD WW is injected. The heat from the flue gas evaporates the wastewater leaving behind residual solids and fly ash from the flue gas. These solids are captured in the existing particulate collection device or a small fabric filter and landfilled. All the FGD wastewater is converted into a solid that is landfilled, eliminating any need to discharge FGD WW and achieving 2020 Rule VIP compliance.

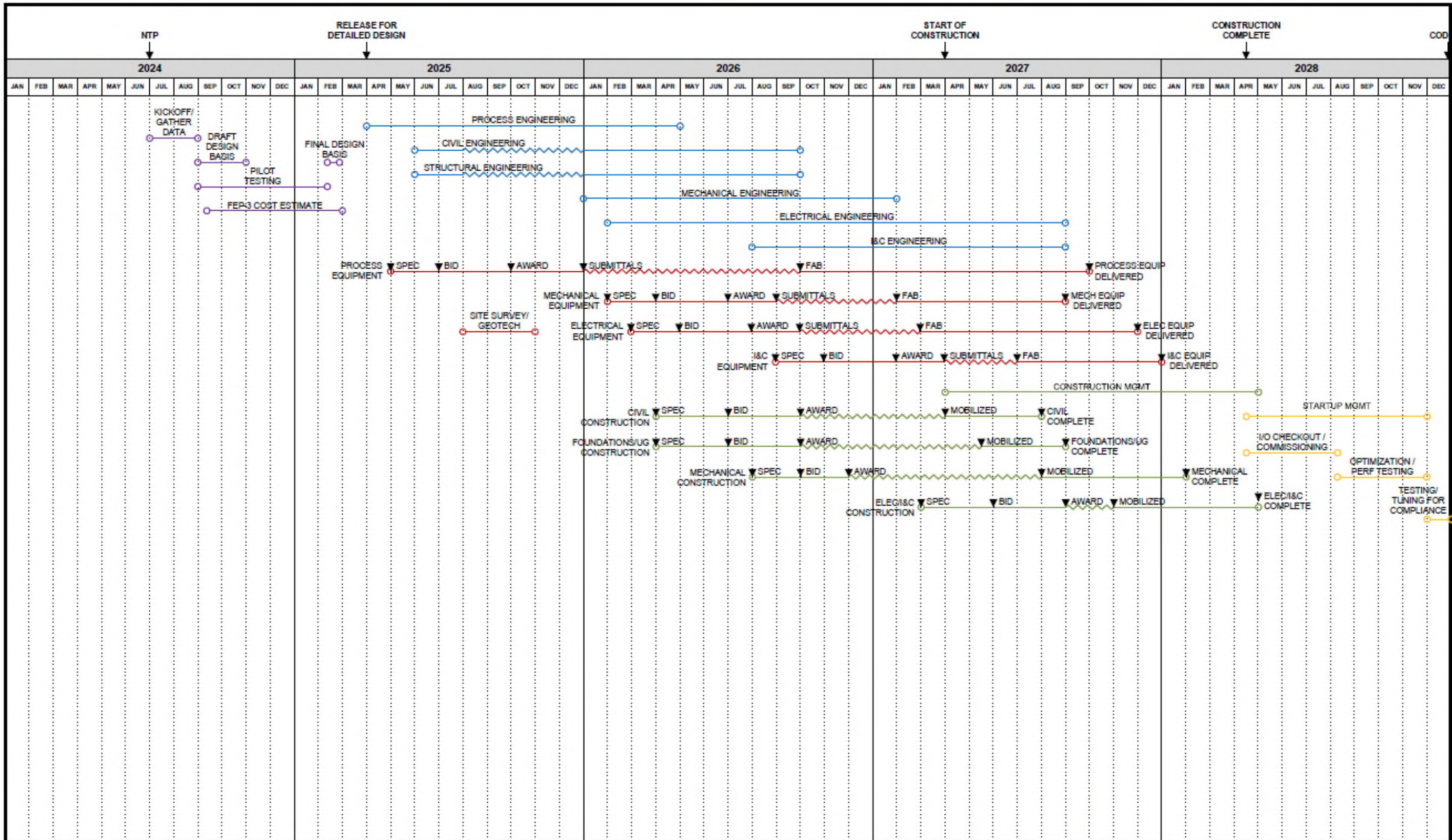
Membrane Base Options

Several different membrane options are actively being developed for treatment of FGD WW. All membrane options use pressure to force clean water across the membrane surface and reduce the overall volume of wastewater that needs to be treated. Permeate from the membrane options would typically be reused in the facility but it could also be discharged. If the permeate is discharged, it would have to meet the 2020 Rule VIP limits for wastewater quality. Reject from the membrane-based options would be collected and treated with brine management options like paste encapsulation, wetting of fly ash, and crystallization with the final waste product being landfilled.

Enclosure 3

VIP Implementation Schedule

The overall schedule follows a traditional general / multiple contractor approach. Following completion of the cost estimate, detailed engineering can begin with finalization of the project design basis and overall scope of work. A site survey and geotechnical report are developed for the project and the design basis is updated with this additional information. Procurement packages are developed for long lead equipment and the major process equipment. Submittal drawings and information are needed from the major process equipment for the balance of the detailed engineering activities to commence. The engineering deliverables involve development of process flow diagrams, piping & instrumentation diagrams, general arrangement drawings, one-line diagrams, lists, 3D models, isometric drawings, cable schedules, control narratives, etc. Procurement packages are developed for other balance of plant commodities. Major procurement activities include development of technical specifications, issuing packages to bid, evaluating bids received, negotiating and awarding contracts, receipt of submittals, review of submittal information, release of manufacturing to fabricate, fabrication of equipment / components, and delivery to site.



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DTE MONROE – NOPP VIP COMPLIANCE
TIMESCALE SUMMARY SCHEDULE

LEGEND	
	ACTIVITY
	FLOAT / CONTINGENCY
	PRELIM DESIGN
	DETAILED DESIGN
	EQUIPMENT
	CONSTRUCTION
	COMMISSIONING

By: D. RECKREY	Date: 10/13/2021	Project No: 133899
Dwg No: 133899-L1SCHED		