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19 July 2021

Mr. Robert E. Sauer, Jr., P.E.
Environmental Engineer
Safe Dams Program
Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive
Atlanta, Georgia 30334
404.651.8485

**Subject: Fiscal Year 2021 Quality Assurance Inspection Report
Petit Lake Dam
Pickens County
Permit #112-009-00462**

Dear Mr. Sauer:

Big Canoe Property Owners Association (POA) and its consultant Geosyntec Consultants, Inc. (Geosyntec) received the Georgia Safe Dams Program (GSDP) Fiscal Year 2021 (FY21) Quality Assurance Inspection Report (Report) for Petit Lake Dam (Dam) and the associated cover letter via email on 20 May 2021.

Background:

The POA and Geosyntec staff, including multiple Engineers of Record (EOR), developed a multi-year long-term planning document (LTP) in early 2021 that includes various engineering and planning support tasks and services associated with the ownership, operation, and maintenance of the Dam, including features such as the low-level outfall (LLO), upstream slope, downstream slope, and primary spillway. The development of the LTP included the review of available data and documentation for the Dam, including recent inspections (visual and by divers), which were used to develop Rough Order of Magnitude (ROM) costs and schedules to address data gaps and potential deficiencies or risks identified.

The current version of the LTP includes tasks to address the compliance and maintenance items identified in the FY21 Report, under the direction of an EOR. Per the comments and feedback provided by the GSDP during an 18 June 2021 teleconference between the GSDP, POA, and Geosyntec, the POA desires to bundle as many tasks as possible to efficiently address the issues identified by GSDP.

This letter is our response to these comments within the 90-day period, as requested. For continuity and clarity, we listed each of your items below, along with our responses immediately following.

TN7833/Lake Petit EPD Inspection Letter

Compliance Issues:

1. Seepage and a change in vegetation was seen on the lower half of the downstream slope. Additionally, it appeared that seepage was flowing in the lower concrete ditch and was also present on the lower left abutment. An Engineer of Record (EOR) must investigate the seepage.

Response – Seepage at Lake Petit Dam has historically been observed and is managed by a series of interceptor drains, concrete channels, and two weirs. The seepage identified on the downstream slope and the flow in the lower concrete channel has been documented in various inspection reports since 1974 and has historically decreased in the drier summer months. Geosyntec has monitored the flow in the concrete channels since 2018 and has not observed considerable changes in the qualitative flow rate. Additionally, an area of wetness on the first bench at the left abutment has been identified since 1979 and has been monitored recently for changes to flow quantity and has shown no signs of soil particle migration. During the June 2021 quarterly inspection, it was observed that the wet area near the left abutment had not improved, but appeared to have a slight increase in seepage flowing to the concrete channel. The overall cumulative flows in the concrete channel do not appear to have significantly increased. The LTP includes tasks to address the seepage and to make improvements to the interceptor drains and two concrete channels, under the direction of an EOR.

Geosyntec plans to submit a permit revision in early 2022 for the Dam for multiple items, including the interceptor drain and concrete channel improvements. Additionally, Geosyntec proposes to address the embankment seepage in the Fall of 2021 through an Operations and Maintenance (O&M) activity to install a graded filter to allow the seepage in the lower left abutment area to exit the embankment while preventing soil migration or piping. These activities will be conducted under the direction of an EOR.

2. The low-level outfall, located below the embankment and below the road, was flowing. An EOR must investigate if the low-level valve is slightly open or if leaks exist in the intake or within the dam into the low-level pipe. Be reminded that, in accordance with according with Rule 391-3-8-.10, all spillway and outlet gates and any other mechanical devices must be operated at least once per year, and you must certify that such gates and appurtenances are in good repair and working order.

Response – The LLO outfall is the discharge location for the LLO as well as for the two internal drainage system pipes from the central base of the dam. The flow

identified in the LLO outfall has been detected in previous inspections and continues to be monitored by Geosyntec and the POA for large changes in flow. No changes have been observed in the flow rate. In 2020, the POA engaged subcontractors to inspect the LLO infrastructure, including a diving inspection of the gate and trash rack, and a camera inspection of the LLO pipe and the two associated internal drainage system pipes. The infrastructure and pipes were observed to be in generally fair condition, and the majority of the flow collected in this outfall comes from the internal drains.

The LTP includes tasks to develop an intermediate O&M plan for lowering the reservoir without the use of the LLO (i.e., pumps) and to design, permit, and construct a permanent alternative or method to the LLO that generally meets the GSDP guidelines, under the direction of an EOR.

Geosyntec plans to submit a permit revision in early 2022 for the Dam for multiple items, including the permanent alternative method to drain the reservoir, under the direction of an EOR.

GSDP previously expressed concerns over issues that could occur should the LLO be operated in a letter dated 16 August 2005, and as of this writing Geosyntec understands they are still in agreement it should not be operated.

3. At the principal spillway chute, void space was noted behind the left wingwall at the base of the chute. Void space was also found in other spots behind the spillway wall on the left side of the chute. An EOR must investigate these voids.

Response – The void space identified at the base of the spillway chute by GSDP has been documented in various inspection reports since July 2020 and these areas have been monitored more frequently for additional changes by Geosyntec and the POA. The LTP includes tasks to dewater, inspect, and implement temporary O&M repairs to the principal spillway, which Geosyntec proposes to implement and address in late Fall 2021. The LTP also includes tasks to design, permit, and construct permanent improvements to the spillway. Geosyntec plans to submit a permit revision in early 2022 for the Dam for multiple items, including the permanent spillway improvements, under the direction of an EOR.

4. Portions of riprap appeared displaced down the upstream slope, into the water. Wave-action erosion was also apparent. An EOR must investigate this deficiency.

Response – The areas of displaced riprap and erosion identified on the shoreline of the upstream slope has been documented in various inspection reports since 2008 and

these areas have been monitored for additional changes by Geosyntec and the POA. The LTP includes on-going tasks to design and install replacement riprap on the upstream slope.

Geosyntec proposes to address the areas of displaced riprap and erosion through an O&M activity, planned for the Fall of 2021, under the direction of an EOR.

Maintenance Issues:

1. Multiple deteriorated black corrugated plastic pipes were observed on the downstream slope. Some were discharging into the lower concrete ditch and some may have been covered in vegetation. Similarly, the toe drains to the right of the low-level outfall could not be measured. These pipes were deteriorated, partially clogged, and partially submerged. Finally, seepage was emanating from behind the left wingwall, the location of another old CMP toe drainpipe. All surface and toe drainpipes must be cleared of vegetation and sediment clogs and allowed to flow. The vicinity of the discharges must also be cleared so that flow measurements can be taken with a small bucket. In terms of the black corrugated pipes, their deterioration may mean some need to be replaced. This office must be notified if replacement of these pipes requires intrusive work.

Response – The condition of the corrugated plastic pipes on the downstream slope have been documented in various inspection reports since 2013 and the qualitative flow rate in the concrete channels has not considerably changed. The LTP includes tasks to address the deteriorated piping, under the direction of an EOR.

The toe drains around the LLO outfall and the vicinity of the discharges will be cleared as part of routine O&M.

Geosyntec plans to submit a permit revision in early 2022 for the Dam for multiple items, including improvements to the corrugated plastic pipes on the downstream slope, under the direction of an EOR.

2. Bare spots were observed on the upstream slope. A low-growing grass species must be established across this area.

Response – POA staff have recently begun placing seed and straw mat on the bare spots observed and the areas are continuing to be inspected and monitored for additional changes by Geosyntec and the POA.

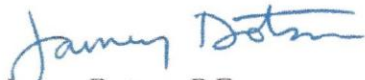
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On behalf of Big Canoe POA, Geosyntec thanks you for your review of our responses to the compliance and maintenance items identified during the FY21 Quality Assurance Inspection and looks forward to working with you to address these items. Please contact the undersigned, at 423.385.2316, if you have any questions.

Sincerely,



Jamey Dotson, P.E. GA, AL, NC, TN

Senior Principal Engineer and Engineer of Record

Geosyntec Consultants, Inc.

423.385.2316

cc: Mr. David Griffin, P.E., Safe Dams Program
Big Canoe Property Owners Association