



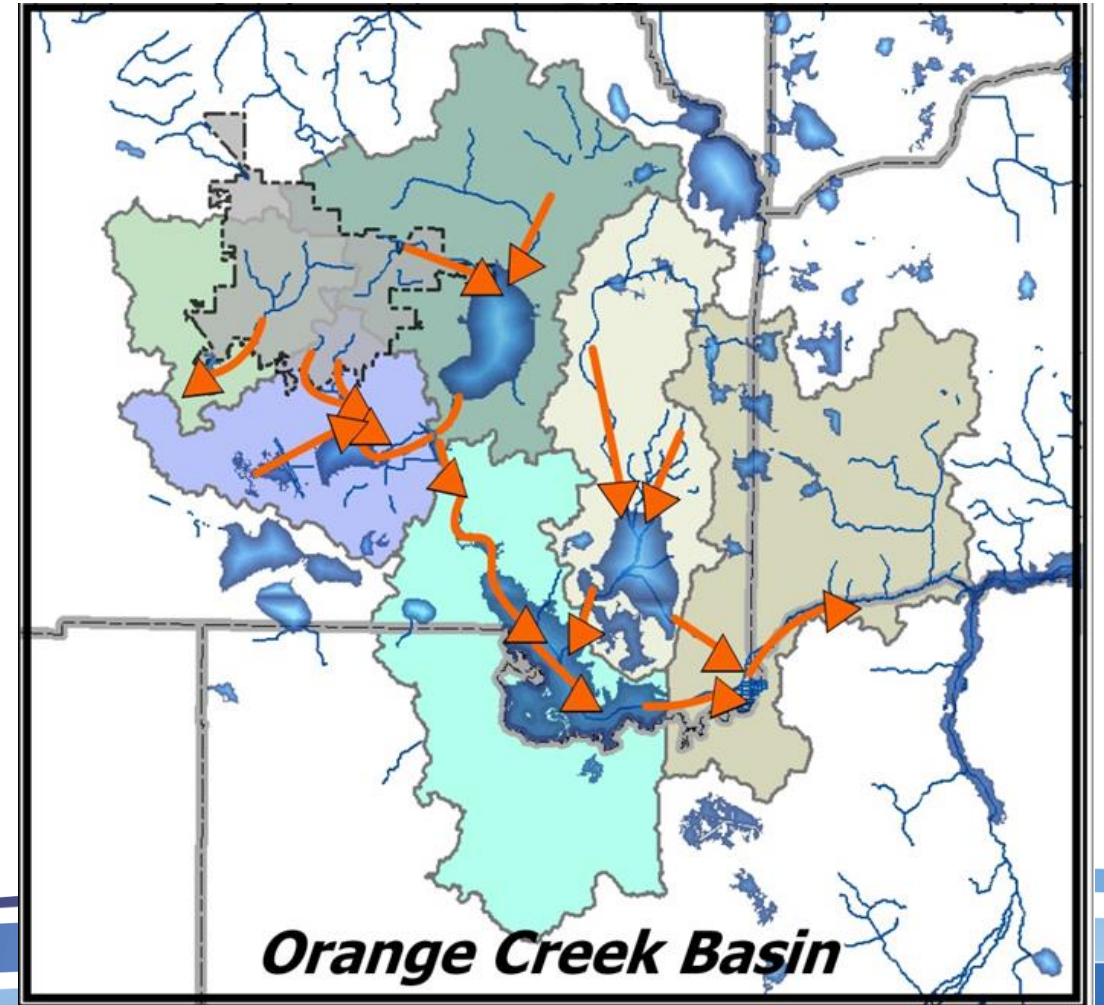
Newnans Lake Initiative Update

November 2019

Environmental Protection Department

The Orange Creek Basin

- Newnans Lake is part of the Orange Creek Basin.
- The lakes and creeks in the Orange Creek Basin are impaired due to excessive nitrogen and phosphorus loads.



Newnans Lake

- Tributaries to Newnans Lake:
 - Hatchet Creek
 - Little Hatchet Creek
 - Lake Forest Creek
- Outflow to Paynes Prairie through Prairie Creek.



Work Completed to Date

- Phase 1:
 - Identify sources and dynamics of phosphorus loading in Little Hatchet and Hatchet Creeks.
 - Identify load reduction projects.
 - Completed December 2018
- Phase 2:
 - Construction of a load reduction pilot project.
 - Additional assessment and project identification on Hatchet Creek.
 - Construction start: December 2019.



Phosphorus Source

- Phosphorus from exposed sections of Hawthorn Group is transported by base flow in Little Hatchet and Hatchet Creeks.
- Hawthorn Group exposed from erosion occurring during high flows.



Nitrogen Sources

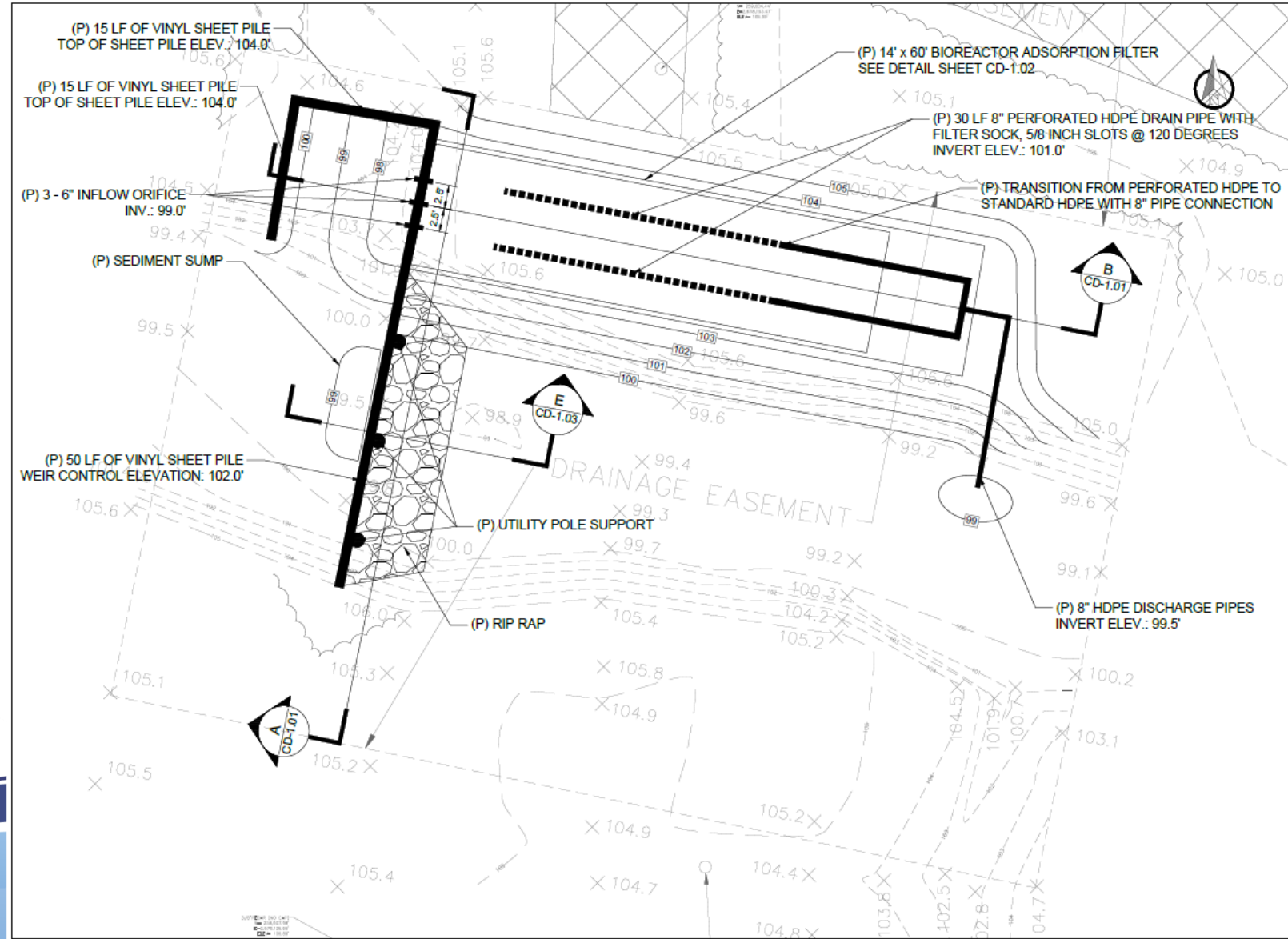
- The Brittany Estates Wastewater Treatment Plant was identified as one source of nitrogen in Little Hatchet Creek.
 - The Gainesville Raceway Wastewater Treatment Plant and UF/IFAS Beef Unit were identified as possible nitrogen sources in Hatchet Creek.
 - Septic Systems.
 - Stormwater.
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Internal Recycling of Nutrients

- Load resulting from internal recycling of nutrients:
 - 56% of phosphorus load, 78% of nitrogen load.
 - Nutrients accumulate in lake from past external inputs.
 - External nutrient inputs contribute to algal growth. Dead algae accumulates as muck on the lake bottom.
 - The muck is easily disturbed and releases nutrients.
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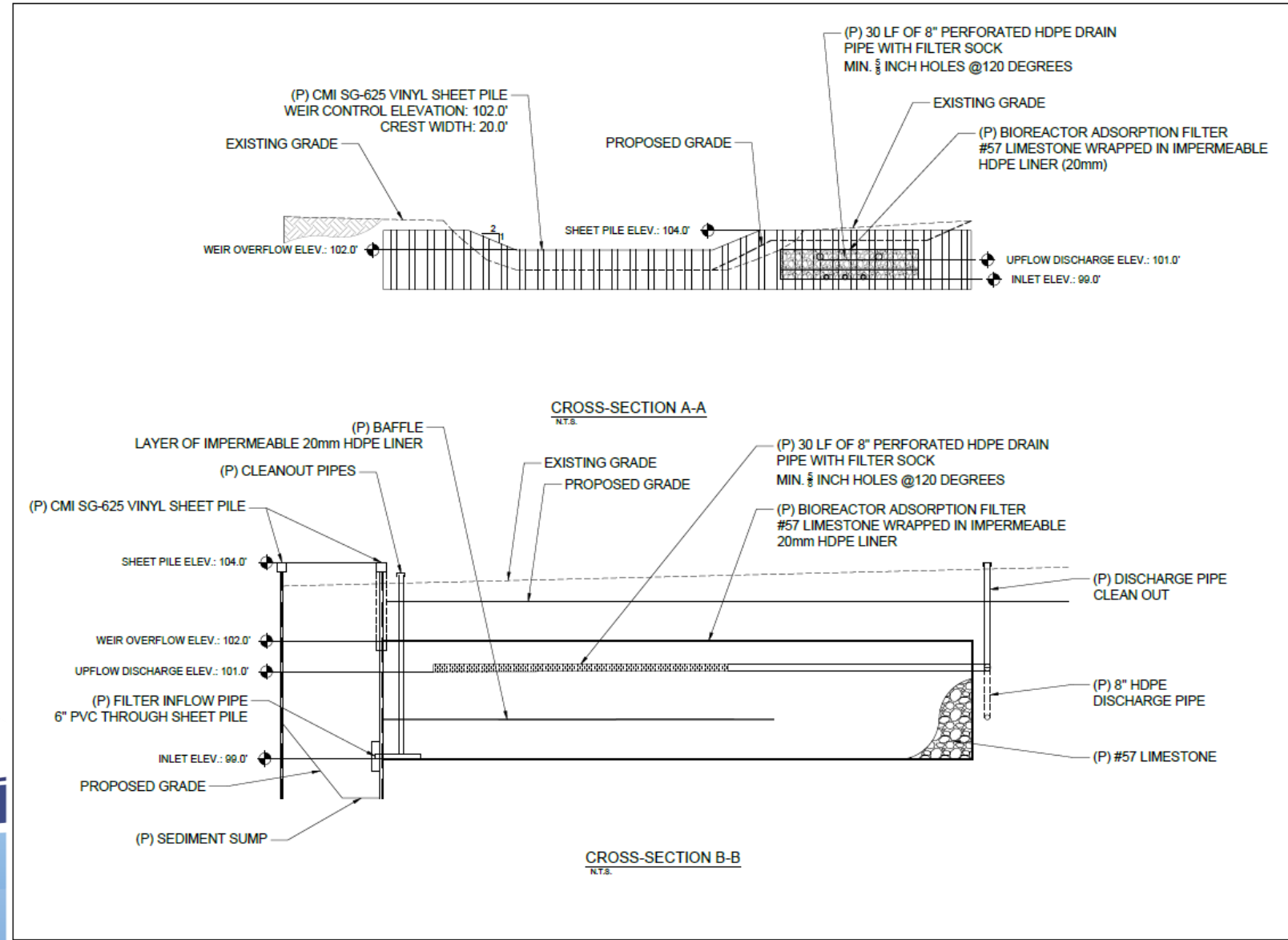
Nutrient Reduction Pilot Project

- Permeable reactive base flow weirs filter creek base flow.
- In-stream diversion weir and sediment sump.
- Bio-reactor to remove phosphorus built into stream bank.



Nutrient Reduction Pilot Project

- Adsorption media binds phosphorus.
- Potential for some nitrogen removal.
- Storm flows pass over the diversion weir.



Phase 2: Next Steps

- Original legislative funding allowed for construction and monitoring of one weir on Little Hatchet Creek.
 - SJRWMD funding will allow for construction of two weirs in series.
 - Construction is scheduled to begin by December 2019 and will be followed by performance monitoring.
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Phase 3: Treatment Wetland

- Feasibility and conceptual plan development for wetland-based treatment to address internal nutrient loads in lake.
 - Treat lake water
 - Remove and dewater sediments
 - Combination
- Paid for from the Stormwater Assessment.
- Feasibility study to be completed in 6 months followed by design and permitting.
- Wetland will also provide passive recreation opportunities.



Treatment Wetland Funding Options

- State appropriations or grants
 - Federal appropriations or grants
 - Financing:
 - Bonds
 - Water Infrastructure Finance and Innovation Act (WIFIA) programs (EPA/Corps of Engineers)
 - Stormwater Assessment
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Future Projects

- Nutrient reduction weirs for Hatchet Creek and Gum Root Swamp.
- Possibly septic tank upgrades.



Questions?