

TECHNICAL MEMORANDUM

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Project: Taylor Self Storage
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Subject: Erosion and Sediment Control
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The main erosion and sedimentation control Best Management Practices (BMPs) installed on the proposed Taylor Self Storage Site include¹:

- Storm Water Detention Pond retrofitted to act as a sediment detention pond
- Sediment Barriers/Silt fences
- Check Dams
- Storm water inlet and outlet protections

The sediment detention pond is the primary BMP for approximately 70% of the disturbed area on the Site. In order for a temporary sediment pond to efficiently remove sediments from storm water, the pond must provide sufficient residence time to allow the sediment loads in the storm water to be deposited and trapped within the pond. In the event where sufficient residence time is not provided, sediments will escape from within the pond as it discharges storm water. In order to ensure adequate residence time, the design standards require that the distance from pond inlet to its outflow must be at least twice (X2) as long as the width of the pond, i.e., a minimum 2:1 length to width ratio is required for the pond².

According to the design drawings the distance from the inlet to the outlet is approximately 48 feet and the width of the pond is 40 feet. As designed the temporary sediment pond has a 1.2:1 length to width ratio, far less than the required 2:1 ratio. Thus, as designed the temporary sediment pond does not have adequate retention time and sediments will escape the pond and discharge to Lake Burton.

The trapping efficiency of the sediment pond is also related to its surface area. The regulations require that the surface area be calculated based on the 2 year 24 hour peak discharge for the site. No hydrology analysis was provided for the surface area so this cannot be evaluated. It should be noted a requirement for issuance of the Construction Permit requires that all calculation related to BMP design must be provided on the construction drawings for review by the Local Issuing Authority or GAEPD.

¹ Site Construction Plans for Taylor Self Storage. Foothills Land Design. October 12, 2021.

² Manual for Erosion and Sediment Control in Georgia. 2016 Edition. Georgia Soil and Water Conservation Commission. Pg. 6-157.



The use of sediment barrier/silt fences is governed by rules outlined in the Erosion control Manual.³ To ensure that silt fences are not toppled by storm water carrying sediments down slopes a maximum slope length based on the land slope above the silt fence is provided in the Manual. Based on a review of the construction drawings the land slope especially on the northern boundary of the property is to be graded to 50%. According to the Manual the maximum continuous maximum slope length above a sediment fence protecting a 50% land slope is 15 feet. The construction drawings show slope length of greater than 60 feet above silt fences protecting land slopes of 50%. Thus, it is more likely than not that silt fences will be toppled resulting in sediments escaping the site and being discharged to Lake Burton.

As previously stated, a hydrology study was not provided in the information available from the county. It is unclear if one has been developed. The drawings indicate that currently, storm water generated from the property is discharged offsite primarily as sheet flow. As proposed, most of the storm water generated on the developed site will be collected, concentrated, and discharged as single point discharge, from the outlet pipe of the detention pond. This point discharge does not exist under current conditions. It will increase and concentrate the volume of flow to downstream areas and properties, changing the existing flow patterns and impact on downstream property owners. As designed it will likely causing flooding where it does not currently exist, while also increasing the peak discharge rates resulting in erosion of downstream offsite areas and impacting downstream property owners.

Compliance with state and county land disturbance regulations, as well as protection of downgradient property owners cannot be verified without a hydrology study. Such an assessment is essential to ensure that storm water discharges from the site via its detention pond and uncontrolled embankment slopes do not result in offsite impacts to downstream properties in the form of flooding and erosion that will impact both properties between the site and Lake Burton and Lake Burton itself.

In summary there are five deficiencies in the site design that will impact flooding and erosion on adjacent properties, and sediment loads into Waters of the State, including Lake Burton.

- 1) The sediment pond is not configured to effectively trap sediment eroded from the site during and after construction.
- 2) There is no data or calculations demonstrating that the sediment pond is sized correctly for the area of land disturbance.
- 3) The fill slopes along Murray Cove road are too steep and long for silt fences to be an effective control for sediment eroded from the slopes.
- 4) There is no hydrology analysis, or mention of the control of peak flows from the site to avoid flooding to downstream properties and increased offsite erosion in receiving drainageways.

³ Manual for Erosion and Sediment Control in Georgia. 2016 Edition. Georgia Soil and Water Conservation Commission. Pg. 6-137.



- 5) Flow from the site is concentrated in a point discharge where none currently exists, impacting adjacent property with the resulting change in flow patterns.