

TOTAL SUSPENDED SOLIDS REDUCTION REPORT

Prepared for:

STACK ATLL2 Data Center

Alpharetta, Georgia – Fulton County

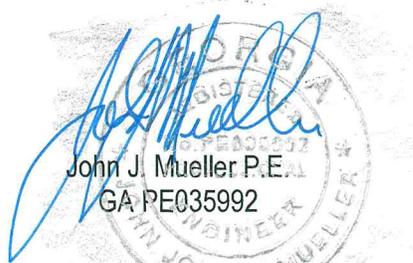
Project Developed by:

**STACK Infrastructure
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Denver, Colorado 80202**

Prepared by:

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August 31, 2020

Project No.: 1647-19

Narrative

STACK Infrastructure plans to construct a two-story 131,720 gross floor area data center to be built on a 6.53-acre site in Alpharetta, Georgia. Site improvements include the data center building, parking, sidewalks, and utility improvements. The total disturbed area for the proposed site improvements is approximately 5.18 acres and will create an additional 3.54 acres impervious area. All improvements will be made in accordance with the current zoning (O-I) and all applicable city, county and state requirements. Please refer to the proposed site plan in the appendix.

Method of Analysis

The analysis of the site and best management practices (BMPs) for total suspended solid removal was completed using the State of Georgia Site Development Review Tool Version 2.2. Output from this tool is included in this report.

Basin Conditions

In the existing conditions, the northern area of the site drains to a low area adjacent to Morris Road and then is conveyed by pipe to the South Pond in the Village Park Development. The southerly portion of the site currently drains into a stream area adjacent to Webb Bridge Road. The headwater of this stream is a head wall associated with the Webb Bridge Road drainage system which collects runoff from the Webb Bridge/North Point Roads area, approximately 11.31 acres. The stream then enters a headwall interior to the site and is conveyed through the site across Morris Road and around the north side Village park Phase 2 collecting runoff from the Opus Development along the way.

On the STACK 1 site, pre-treatment sediment basins areas were utilized for additional sediment removal when the site was designed, labeled as BMP 2 and 3 on the Basin Map.

The Preston Ridge Commons development information was obtained from the City of Alpharetta. The site provides a water quality pond with 50,800 cubic feet of water quality volume. The pond discharges to the Webb Bridge Road drainage system then into the overland flow area in the southwest area of the Stack 1 site and finally into the Village Park South Pond.

The Village Park South Pond has been designed to accept runoff from Village Park Phase 1, the existing STACK Infrastructure data center, the proposed data center site (this project), portions of Morris and Webb Bridge Roads, and areas south of Webb Bridge Road (please refer to the Basin Map).

The individual basin areas have been delineated on the Basin Map. For each area the amount of impervious was calculated or estimated depending on the availability of data for each of sites within the overall basin. A summary of the basins and the pertinent data is presented in Table 1.

Table 1 – Basin Hydrologic Conditions

Basin	Area							Comments
	HSG B		HSG D		Imp			
	ft ²	ac	ft ²	ac	ft ²	ac		
VP1	182081	4.18	16117	0.37	131986	3.03	7.58	Village Park Phase 1, data from report
STACK1	306825	7.04			215875	4.96	12.00	Exisitng data center, data from report
STACK2	102047	2.34			154042	3.54	5.88	This project site, data from site plan
MR	11631	0.27			104675	2.40	2.67	Morris Road, estimated impervious
WBR	23392	0.54			132553	3.04	3.58	Webb Bridge Road, estimated impervious
A-LEAVES	50845	1.17			89066	2.04	3.21	Autumn Leaves Impervious estimated from pdf
WBR-SOUTH	364162	8.36			0	0.00	8.36	Undeveloped area south of Webb Bridge Rd
P-RIDGE	425581	9.77			410335	9.42	19.19	Preston Ridge Commons, has pond
Totals	1466563.5	33.67	16117	0.37	1238532	28.43	62.47	

Site Development Tool

For determination of the suspended solids removal of the system, the Georgia Stormwater Management Manual Stormwater Quality Site Development Tool Version 2.2 was utilized. The pertinent input and out pages from the tool are included in the appendix.

Summary

The output from the Site Development Tool indicates 85% total suspended solid removal for the basin as a whole. This exceeds the minimum standard of 80%.

Appendix

Development Site Plan
Development Grading Plan
Basin Map
Site Development Review Tool

Georgia Stormwater Management Manual

Stormwater Quality Site Development Review Tool

Version 2.2

General Information

Name of Developer:	STACK Infrastructure	Date Submitted:	
Development Name:	STACK ATLL2	Permit Number:	
Site Location / Address:	Webb Bridge Road Alpharetta, GA 30005	Developer Contact:	John Brilliant
		Phone Number:	
		Name of Engineer(s):	John Mueller
Development Type:	Office/Professional	Maintenance Responsibility:	Stack Infrastructure

Site Summary

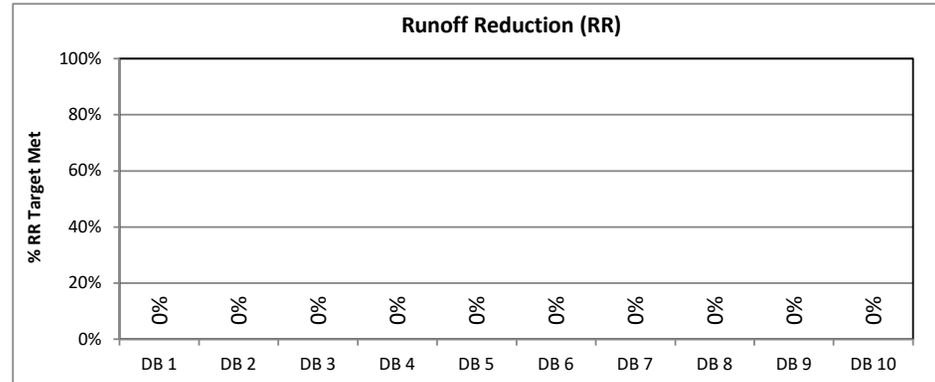
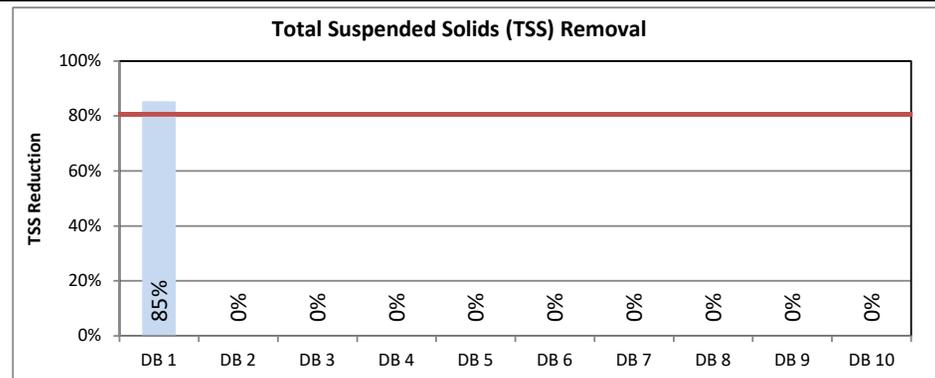
Total Pre-Development Area (ac): **62.47**
 Total Post-Development Area (ac): **62.47**
 Total Treated Area (ac): **62.10**
 Total Untreated Area (ac): **0.37**

		I (ac)	P (ac)	CA (ac)
VP1 (Village Park Phase 1)	DB 1	28.44	34.03	0.00
	DB 2	0.00	0.00	0.00
	DB 3	0.00	0.00	0.00
	DB 4	0.00	0.00	0.00
	DB 5	0.00	0.00	0.00
	DB 6	0.00	0.00	0.00
	DB 7	0.00	0.00	0.00
	DB 8	0.00	0.00	0.00
	DB 9	0.00	0.00	0.00
	DB 10	0.00	0.00	0.00
TOTAL		28.44	34.03	0.00

I = Impervious Area, P = Pervious Area, CA = Conservation Area

Target Runoff Reduction Volume Achieved? No
 Target TSS Removal Achieved? Yes

Total Target Runoff Reduction Volume (cf)	104,252
Runoff Reduction Volume Achieved (cf)	0
Total Target Water Quality Volume (cf)	125,102
% TSS Removal Achieved	85%



Official Use Only

Tracking #:		Conditions of Approval:	
Reviewed By:			
Date Approved:			

Georgia Stormwater Management Manual

Stormwater Quality Site Development Review Tool, v2.2

Development Name: **STACK ATLL2**
 Drainage Basin Name: **VP1 (Village Park Phase 1)**

data input cells
 calculation cells
 constant values

Site Data

Indicate Pre-Development Land Cover and Runoff Curve Numbers in the Site's Disturbed Area

Cover Type	HSG* A (acres)	CN	HSG B (acres)	CN	HSG C (acres)	CN	HSG D (acres)	CN	Total	% Cover
Woods - Good Condition		30	53.77	55		70	0.67	77	54.44	87%
Woods - grass combination (orchard or tree farm) - Good Condition		32	5.88	58		72		79	5.88	9%
Impervious		98	2.15	98		98		98	2.15	3%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Local Jurisdiction Input									0.00	0%
Other									0.00	0%
Total	0.00		61.80		0.00		0.67		62.47	100%

*HSG = hydrologic soil group

Impervious (ac) 2.15
 Weighted CN 57
 Potential Max Soil Retention, S_{pre} (in) 7.54

Indicate Post-Development Land Cover and Runoff Curve Numbers in the Site's Disturbed Area

Cover Type	HSG A (acres)	CN	HSG B (acres)	CN	HSG C (acres)	CN	HSG D (acres)	CN	Total	% Cover
Impervious		98	28.44	98		98		98	28.44	46%
Open space - Good condition (grass cover > 75%)		39	33.66	61		74	0.37	80	34.03	54%
Select a land cover type...		0	0.00	0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Local Jurisdiction Input									0.00	0%
Other									0.00	0%
Total	0.00		62.10		0.00		0.37		62.47	100%

Impervious (ac) 28.44
 Rv 0.46
 Weighted CN 78
 Potential Max Soil Retention, S_{post} (in) 2.83

Conservation Area Credits

Scenario 1: Natural Conservation Area **See the GSMM Volume 2, Section 2.3.3.3 for more information.*

Check the box if a portion of the post-developed area is protected by a conservation easement or equivalent form of protection.

Area (ac) of development protected by a conservation easement or equivalent form of protection.

Note: The green cell will unlock if the Scenario 1 box above is checked

Scenario 3: Soil Restoration **See the GSMM Volume 2, Section 4.23 for more information.*

Check the box if a portion of the post-developed area employs soil restoration and is protected by a conservation easement or equivalent form of protection.

Area (ac) of development with restored soils and protected by a conservation easement or equivalent form of protection.

Note: The green cell will unlock if the Scenario 3 box above is checked

Scenario 2: Site Reforestation/Revegetation **See the GSMM Volume 2, Section 4.22 for more information.*

Check the box if a portion of the post-developed area employs site reforestation/revegetation and is protected by a conservation easement or equivalent form of protection.

Area (ac) of development reforested/revegetated and protected by a conservation easement or equivalent form of protection.

Note: The green cell will unlock if the Scenario 2 box above is checked

Scenario 4: Site Reforestation/Revegetation & Soil Restoration **See the GSMM Volume 2, Section 4.22 and 4.23 for more information.*

Check the box if the same portion of the post-developed area employs site reforestation/revegetation and soil restoration, and is protected by a conservation easement or equivalent form of protection.

Area (ac) with restored soils in a reforested & revegetated area and protected by a conservation easement or equivalent form of protection.

Note: The green cell will unlock if the Scenario 4 box above is checked

Total Conservation Area Credit (acres) 0.00

Georgia Stormwater Management Manual

Stormwater Quality Site Development Review Tool, v2.2

Development Name: **STACK ATLL2**
 Drainage Basin Name: **VP1 (Village Park Phase 1)**

data input cells
 calculation cells
 constant values

Water Quality Goals

Target Runoff Reduction Storm (in) **1.00**

Total Site Area for Water Quality Volume (acres)	62.47
Target Runoff Reduction Volume (cf)	104,252
Target Water Quality Volume (cf)	125,102

Select BMPs for Runoff Reduction and Water Quality

		Area Draining to Each BMP			Storage Volume Provided by BMP (cf)	RR Conveyance Volume Provided by BMP (cf)	Down-stream BMP	Runoff Reduction Calculations						WQ Calculations	
		On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)				RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ _v from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Stormwater Pond	22.56	15.82	0.00	74,039			58,650	45,502	104,152	0%	0	104,152	70,380	80%
BMP 2	Dry Detention Basin	0.00	2.30	0.00	11,897		BMP 1	7,932	0	7,932	0%	0	7,932	9,518	60%
BMP 3	Dry Detention Basin	1.34	0.89	0.00	4,978		BMP 1	3,312	0	3,312	0%	0	3,312	3,975	60%
BMP 4	Dry Extended Detention Basin	9.77	9.42	0.00	50,800		BMP 1	34,258	0	34,258	0%	0	34,258	41,110	60%
BMP 5	Select a BMP...							0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP...							0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP...							0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP...							0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP...							0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP...							0	0	0	N/A	0	0	0	N/A
TOTAL		33.67	28.43	0.00				104,152				0		124,982	
UNTREATED AREA (acres)		0.36	0.01												

Target Runoff Reduction Volume (cf)	104,252
Target Achieved?	No
Remaining Runoff Reduction Volume (cf)	104,252

Target Water Quality Volume (cf)	125,102
% TSS Removal Achieved	85%
Target Achieved?	Yes!
Remaining TSS Removal %	0%

Georgia Stormwater Management Manual

Stormwater Quality Site Development Review Tool, v2.2

Development Name: **STACK ATLL2**
 Drainage Basin Name: **VP1 (Village Park Phase 1)**

data input cells
 calculation cells
 constant values

Channel and Flood Protection Calculations

	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
Target Rainfall Event (in)	3.32	3.75	4.46	7.34

	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
Pre-Development Runoff Volume (in)	0.35	0.51	0.83	2.54
Post Development Runoff Volume (in) with no BMPs	1.36	1.69	2.26	4.78
Post-Development Runoff Volume (in) with BMPs	1.36	1.69	2.26	4.78
Adjusted CN	78	78	78	78

*See Stormwater Management Standards to Determine Detention Requirements.

Comments