Water Quality Study

Of the

1577 Roswell Street Lots

In
Land Lot 592, 17th District, 2nd Section,
City of Smyrna, Cobb County, Georgia

For

Brad Thompson

By:

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June 2022

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1 Site Description

This report studies the Water Quality impact of developed run-off on this subject property.

This 0.49 acre site is proposed to be developed with two new detached residential homes.

Access to the property is from Roswell Street.

Typical on-site slopes ranged from flat to some 10% slopes. Drainage is typically northward away from Roswell St.

2 Purpose

The purpose of this study is to calculate and detail the size of individual Water Quality Infiltration ponds, for each lot and sized for each lot at a maximum build-out of 35%, per zoning.

The areas and flow rates calculated for the developed condition are based on the site being developed as shown.

3 Methodology

Watershed area was determined by planimeter from topographic information supplied by the client and compiled from a client-provided topographic map, with surrounding areas enhances by County GIS topo maps.

The hydrological analyses were performed by computer modeling of the appropriate watershed characteristics.

As mentioned above, these ponds are sized for the worst-case scenario, i.e. full, maximum impervious areas of 35% per lot, as permitted by the zoning regulations.

4 Basin Information

As mentioned above, the lots have similar drainage patterns. Houses fronting Roswell Rd drains toward their rear lot lines. Proposed ponds will be located in their rear yards.

5 Recommendations & Water Quality Measures

Due to the increase in introduction of impervious surface (rooftops, walkways and driveways), run-off from these surfaces will have to be captured and treated by means of some water quality device.

We propose the use of individual WQ infiltration ponds on each lot. As mentioned before, the worst-case scenario with the largest amount of impervious surface allowed per individual lot of 35%.

All gutter downspouts off the roofs will be connected, underground, with a collector system and then connected to each pond with a drain pipe. No roof run-off will be allowed to surface drain towards the ponds. Run-off from the driveways will be allowed to surface drain, but it will sheet-flow over sodded yards, cleaning and settling out any debris, prior to reaching the ponds.

These ponds will be constructed at the lowest developed point on each lot, relatively parallel to the contour. They will have no outflow drains. They are sized to capture and detain the first 1.2" of rainfall from all hard, impervious surfaces. If they were to "fill up" and overflow, the length of the pond will cause it to act as a level spreader, allowing overflow to sheet-flow further downhill, in the same manner as the pre-developed condition.

6 Conclusions

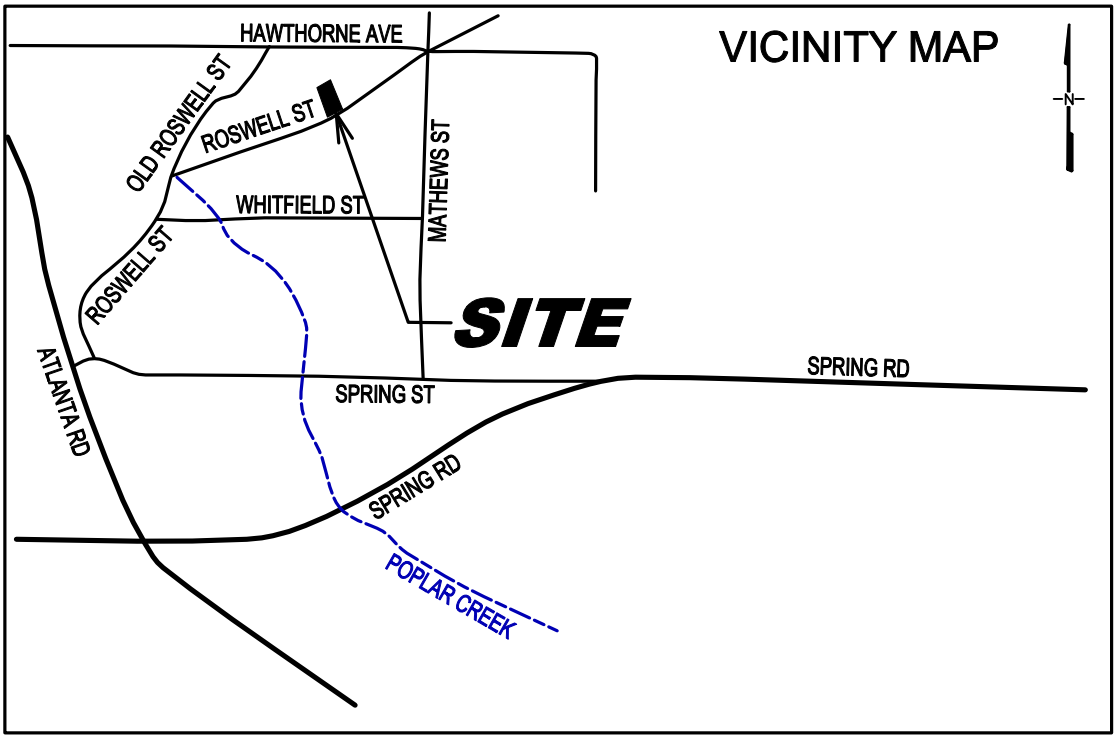
With the site developed as shown, and bio-ponds in place, the first flush from all impervious surfaces will be captured, treated and detained.

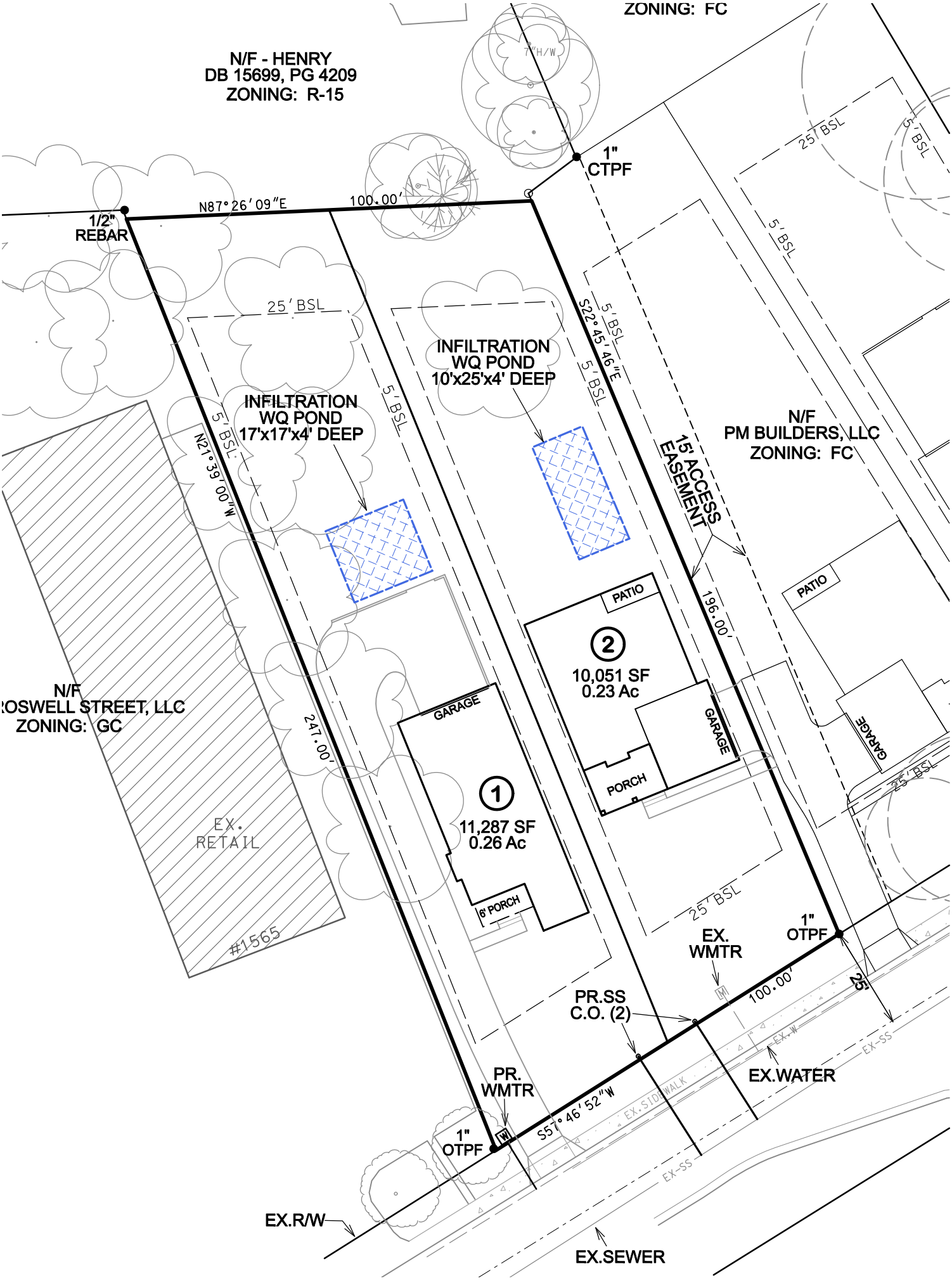
No adverse WQ effects are being anticipated to any other properties, downstream of these lots.

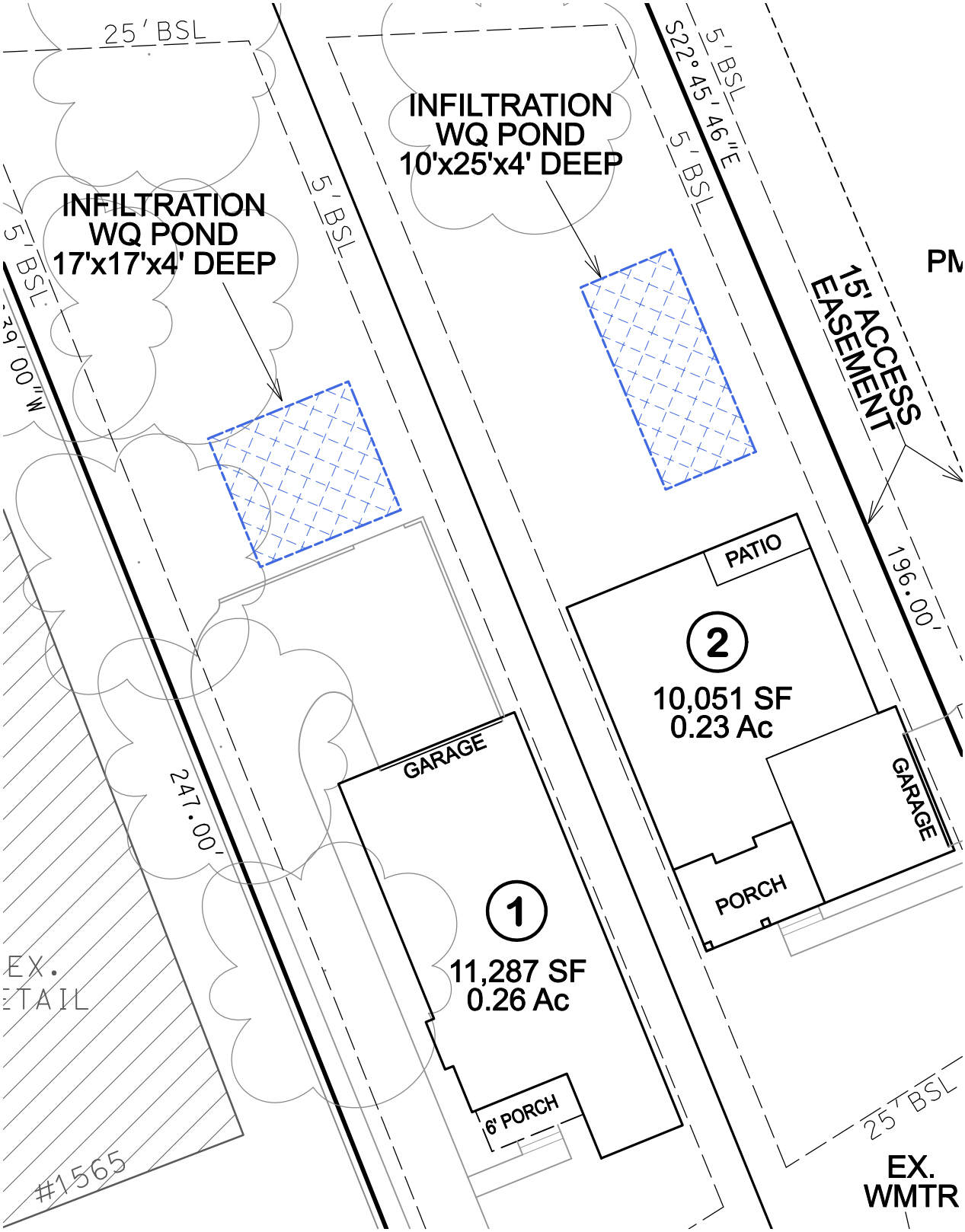
8 Attachments

Design Data
- Location map
- Site Plan
- Pond Plan
- WQ volumes calculations

DESIGN DATA


VICINITY MAP
N
HAWTHORNE AVE
OLD ROSWELL ST
ROSWELL ST
MATHEWS ST
WHITFIELD ST
ROSWELL ST
SITE
ATLANTA RD
SPRING ST
SPRING RD
SPRING RD
POPLAR CREEK


ZONING: FC
N/F - HENRY
DB 15699, PG 4209
ZONING: R-15
7" H/W
1"
CTPF
1/2"
REBAR
N87° 26' 09"E
100.00'
25' BSL
5' BSL
INFILTRATION
WQ POND
17'x17'x4' DEEP
INFILTRATION
WQ POND
10'x25'x4' DEEP
S22° 45' 46"E
15' ACCESS
EASEMENT
N/F
PM BUILDERS, LLC
ZONING: FC
N21° 39' 00"W
247.00'
N/F
OSWELL STREET, LLC
ZONING: GC
EX.
RETAIL
#1565
PATIO
2
10,051 SF
0.23 Ac
GARAGE
PORCH
196.00'
1
11,287 SF
0.26 Ac
6' PORCH
EX.
WMTR
1"
OTPF
PR.SS
C.O. (2)
100.00'
PR.
WMTR
S51° 46' 52"W
EX.WATER
EX.SIDEWALK
EX-W
EX-SS
EX.R/W
EX.SEWER


25' BSL
INFILTRATION
WQ POND
17'x17'x4' DEEP
5' BSL
5' BSL
INFILTRATION
WQ POND
10'x25'x4' DEEP
5' BSL
S22°45'46"E
5' BSL
15' ACCESS
EASEMENT
PM
PATIO
2
10,051 SF
0.23 Ac
196.00'
GARAGE
GARAGE
PORCH
1
11,287 SF
0.26 Ac
6' PORCH
247.00'
EX.
ETAIL
#1565
25' BSL
EX.
WMTR

First Flush Volume (WQv) Calculations
LOT 1

Area # 1		*Area # 2*	
0.26	Ac = Total area	0.00	Ac = Total area
0.091	Ac Impervious (35%)	0.00	Ac Impervious
35.0	% Impervious	0.0	% Impervious

0.3 Ac total area (A), with
0.1 Ac total impervious.
35.0 % impervious (I) to be captured by 1.2", First Flush

Rv = 0.05 + (0.009 x I)
i.e., Rv = 0.365 **then,**
WQv = (1.2 x Rv x A)/12
i.e.,WQv = 0.009 Ac-ft
or, 413 cu.ft.
w/ 40% voids = 1033 cu.ft. required

1,156 CF available at elevation 4 ft in the pond for storage. Use 0 ft as typical bottom of pond.

First Flush Volume (WQv) Calculations
LOT 2

Area # 1		*Area # 2*	
0.23	Ac = Total area	0.00	Ac = Total area
0.081	Ac Impervious (35%)	0.00	Ac Impervious
35.0	% Impervious	0.0	% Impervious

0.2 Ac total area (A), with
0.1 Ac total impervious.
35.0 % impervious (I) to be captured by 1.2", First Flush

Rv = 0.05 + (0.009 x I)
i.e., Rv = 0.365 **then,**
WQv = (1.2 x Rv x A)/12
i.e.,WQv = 0.008 Ac-ft
or, 366 cu.ft.
w/ 40% voids = 915 cu.ft. required

1,000 CF available at elevation 4 ft in the pond for storac 0 ft as typical bottom of pond.