



**Jacksonville
Stormwater Utility**

Stormwater Septic Tank Phase-Out Program

2015 Environmental Symposium
August 14, 2015

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Department of Public Works

General Information

Goal: “To support the City’s efforts to meet its FDEP TMDL BMAP obligation by improving surface water quality”

- **Purpose**
 - To remove those septic tanks which adversely impact surface waters
 - To obtain FDEP TMDL BMAP credit for the surface water quality improvements achieved by septic tank removals
 - To provide a phase-out program that has least financial impact on property owners ([encourage voluntary participation](#))
- **Resources**
 - Stormwater Utility
 - JEA Partnership
 - Florida Department of Environmental Protection
 - Duval County Health Department (DCHD regulates Septic Tank permits)
- **JEA Partnership**
 - Working hand-in-hand with Public Works to facilitate this Program
 - JEA responsible for all internal JEA management, design and construction management expenses associated with this Program...limited by annual cap
 - JEA responsible for all sewer connection Capacity Fees associated with this Program...limited by annual cap
- **Factors that define Tanks to phase-out**
 - Tank must be located where FDEP model identifies adverse impacts to surface waters...[removal of the tank will improve surface water quality.](#)
 - Prioritize by:
 - Most Cost Effective Tanks
 - Highest benefit from the Tank’s removal

General Information

- Approximately **65,000** Septic Tanks City Wide
- Stormwater Utility Program limited to Septic Tanks that adversely impact Surface Water (Provides FDEP BMAP Water Quality Benefit)
- Include private connection component (encourage voluntary participation)
- Focus funding and effort on most cost-effective and beneficial locations
- Two types of Phase Out Projects
 - Existing Infrastructure (Lateral Only Connections - “LOC’s”)
 - No Infrastructure (Expansion of Sanitary Sewer System)

Tool to Evaluate Septic Tank Phase-Out FDEP BMAP Water Quality Benefit Value

- FDEP developed model “ArcNLET”
- Model Factors that influence Water Quality Benefit from septic tank removal
 - Proximity to Waterbody
 - Water Table Slope
 - Soil Hydraulic Conductivity
 - Soil Porosity
 - Nitrogen Decay Rate

Existing Infrastructure (Lateral Only Connection “LOC”)

Estimated over **1,800** Septic Tanks City-Wide that potentially meet BMAP Criteria where Sanitary Sewer Infrastructure is in place:

- Identified those tanks located within an Impaired Tributary Basin.
- Identified those tanks located within a DCHD Failure Area
- Identified those tanks that adversely impact surface waters utilizing the FDEP ArcNLET Model
- Identified Tier I & Tier II Connections
- Identified Property Owners agreeing to Connect
- Facilitated Connection thru JEA Partnership

No Infrastructure (Expansion of Sanitary Sewer System)

Estimated over **38,000** Septic Tanks City-Wide that potentially meet BMAP Criteria where No Sanitary Sewer Infrastructure is in place:

- Estimated that 7,548 are located within an Impaired Tributary Basin
- Estimated that 11,787 are located within a Duval County Health Department (DCHD) Failure Areas
- Estimated that 2,137 are located within both an Impaired Tributary Basin & DCHD Failure Areas

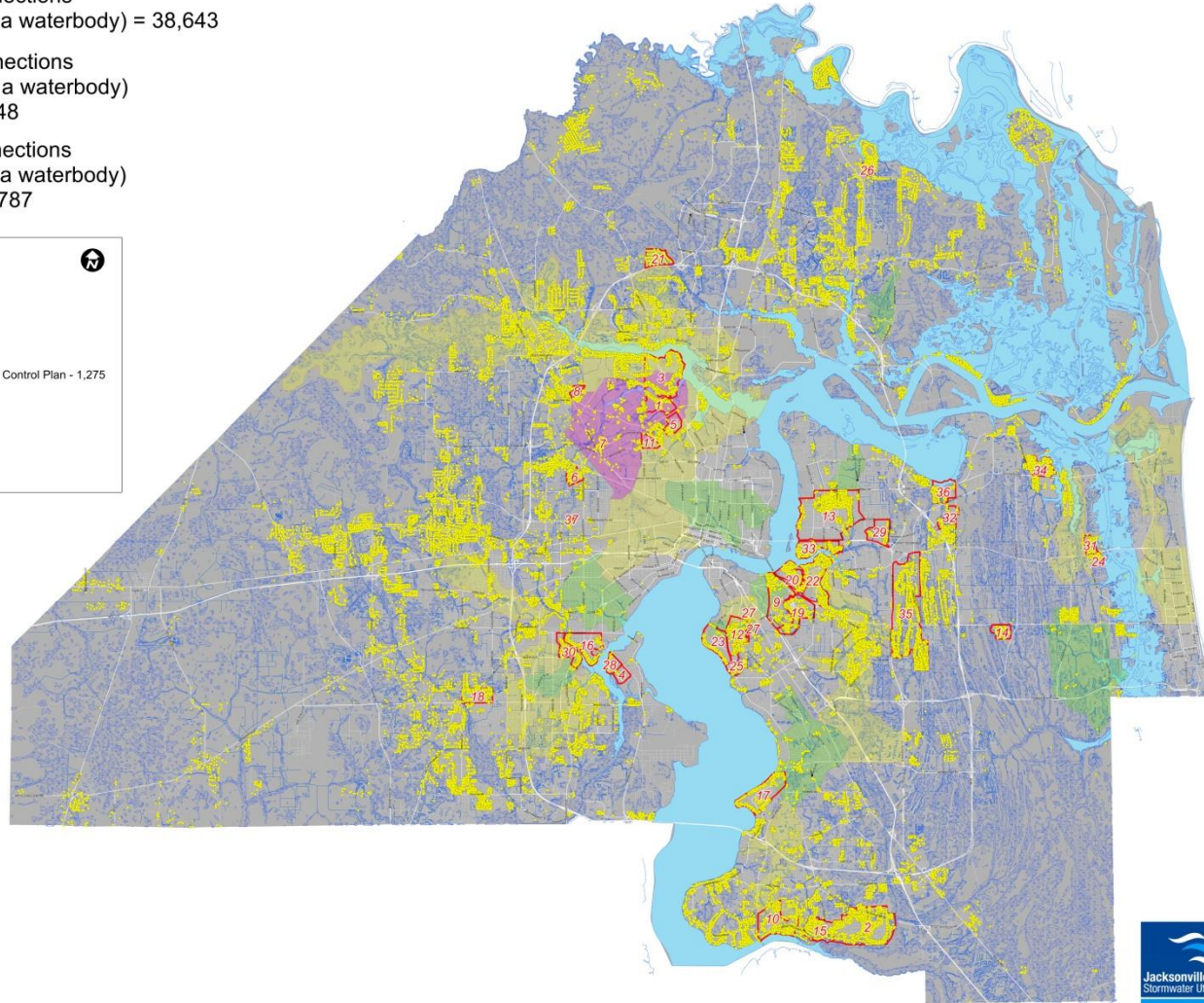
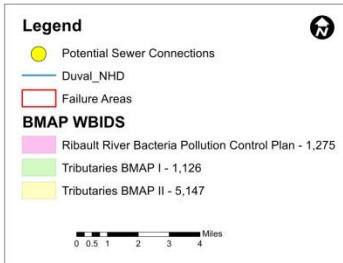
No Infrastructure (Expansion of Sanitary Sewer System)

Stormwater Utility - Potential Sewer Connections (BMAP Credit) - BMAP Tributaries / Failure Areas

Potential Sewer Connections
(within 150 Meters of a waterbody) = 38,643

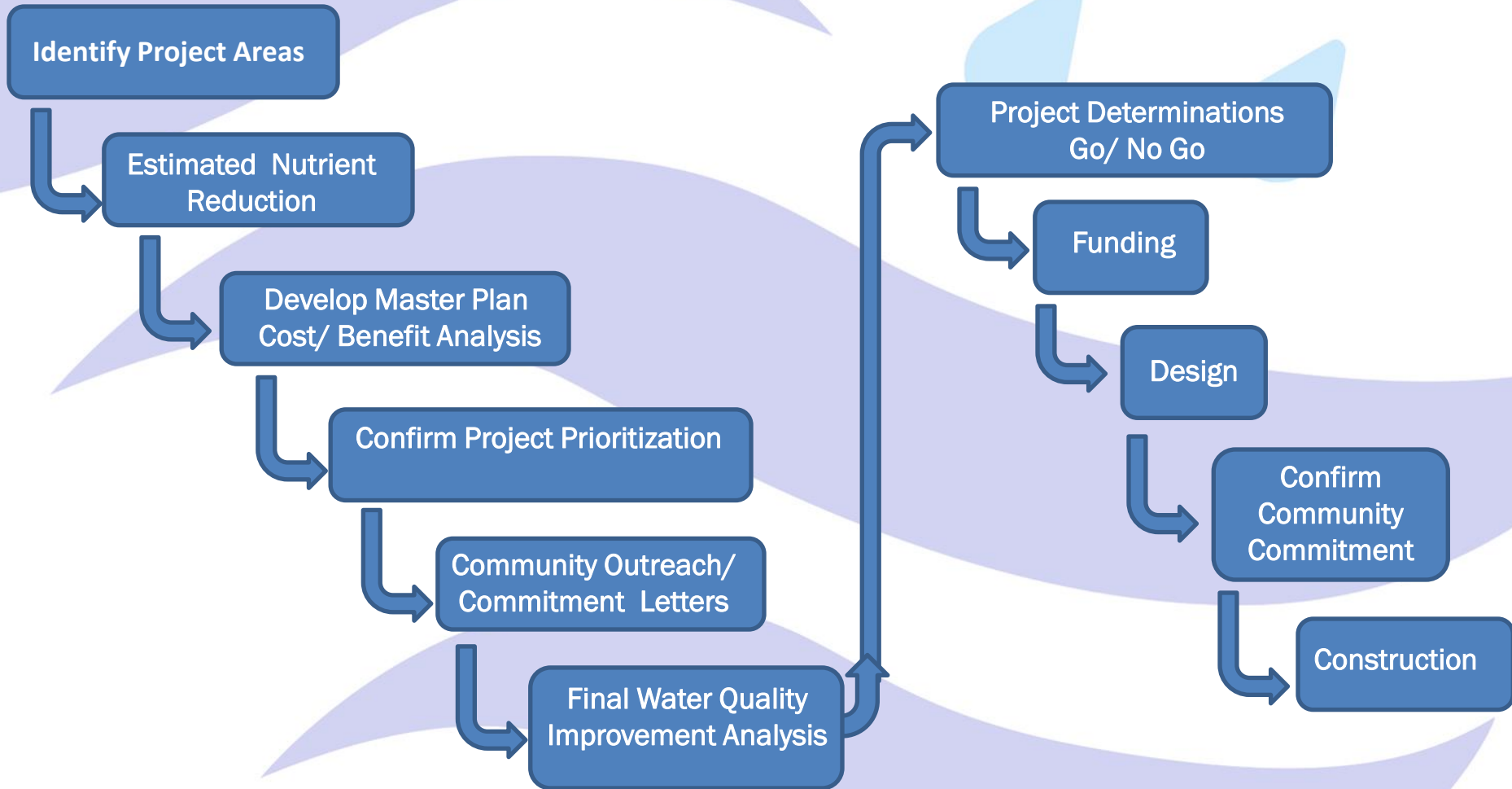
Potential Sewer Connections
(within 150 Meters of a waterbody)
in BMAP Areas = 7,548

Potential Sewer Connections
(within 150 Meters of a waterbody)
in Failure Areas = 11,787



RANK	FAILURE AREA NAME	COUNT
1	BEVERLY HILLS	282
2	JULINGTON CREEK	1281
3	RIVERVIEW	624
4	WESTFIELD	13
5	CHRISTOBEL	61
6	BILTMORE C	149
7	KNARD	58
8	WSEA LINCOLN VILLA	1
9	ST NICHOLAS	351
10	JULINGTON HILLS	436
11	ROYAL TERRACE	2
12	EMERSON	461
13	EGGLESTON HEIGHTS	1465
14	SANS PERRI	162
15	HOOD LANDING II	421
16	LAKESHORE	260
17	BEAULIERG GARDENS	359
18	CHAMPION FOREST	293
19	SPRING GLEN	418
20	EMPIRE POINT	213
21	NORTHLAKE	121
22	OAKHAVEN	528
23	POINT LA VISTA	141
24	ATLANTIC HIGHLANDS	61
25	OAK LAWN	222
26	THE CAPE	35
27	FREEMAN RD	27
27	INWOOD TERRACE	28
28	ORTEGA	30
29	MILL CREEK	142
30	CEDAR RIVER	281
31	PAOLO POINT	134
32	LONE STAR PARK	131
33	CLIFTON	310
34	MT PLEASANT	282
35	SOUTHSIDE ESTATES	1819

Septic Tank Phase Out Infrastructure Expansion Program Flowchart



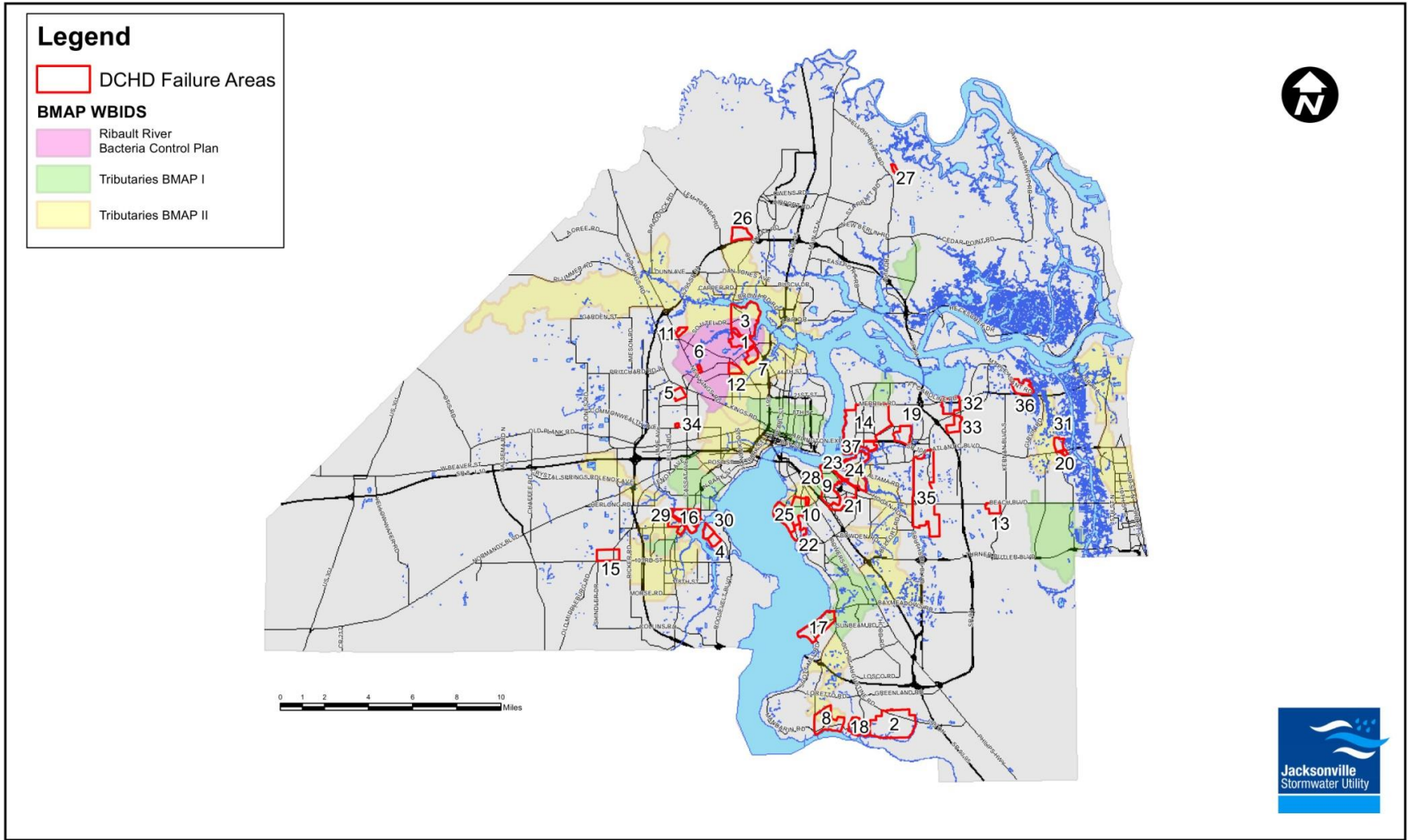
Potential Infrastructure Expansion Scope

- Project areas prioritized based on four criteria
 1. Main Stem Surface Water Quality Benefits
 2. Impaired Tributaries
 3. DCHD Septic Tank Failure Criteria
 4. Cost-to-Benefit Ratio

- Opportunities for other Infrastructure Improvements in combination with septic tank phase out
 - Stormwater Improvements
 - Curb & Gutter
 - Potable Water Expansion
 - Drainage Rehabilitation

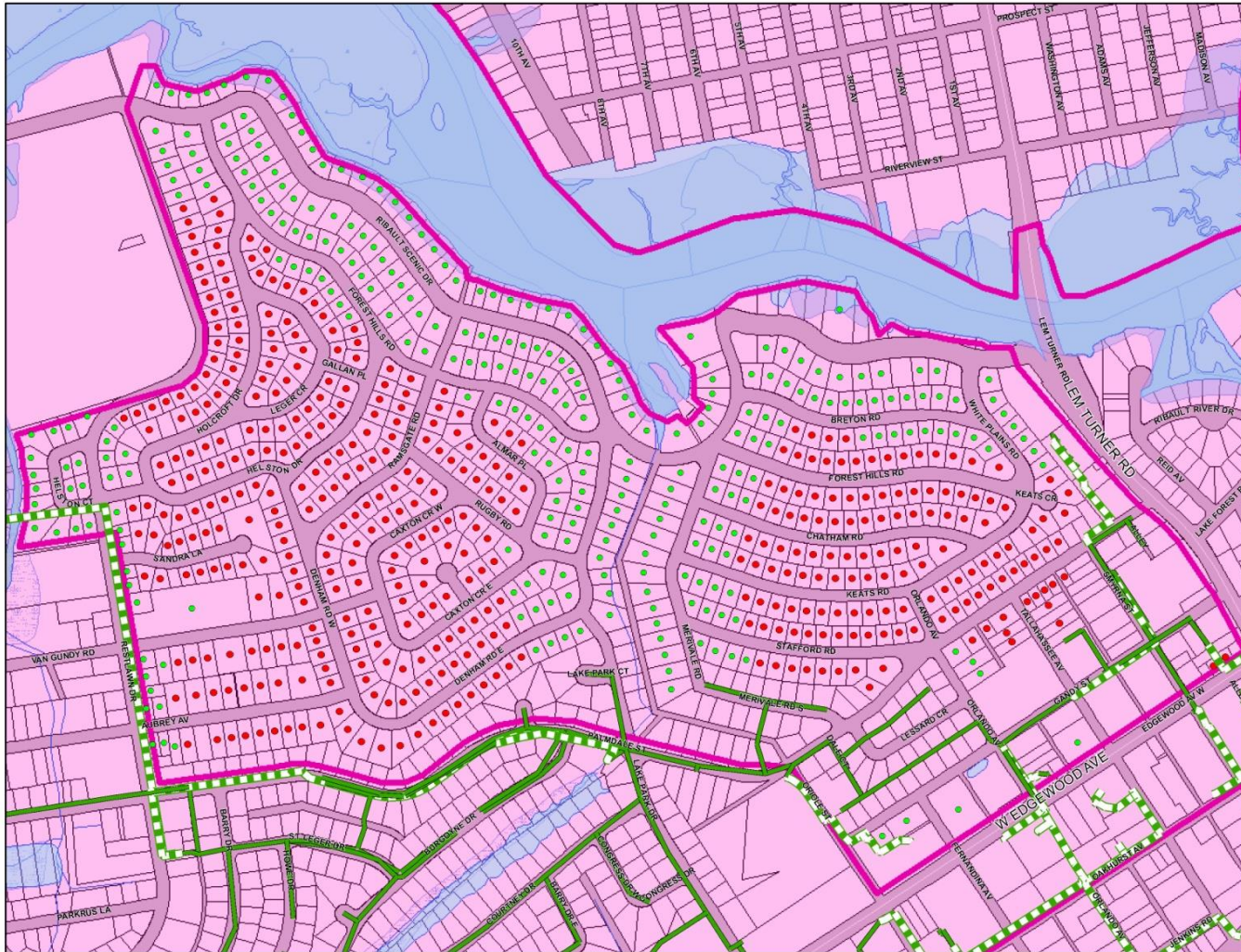
Septic Tank Combined Areas of Concern

Septic Tank Combined Areas of Concern






Potential Septic Tank Phase Out Area

1 - Beverly Hills Potential Septic Tank Phase Out Area






Legend

JEAS SEWER MAINS


-  Forcemain
-  Collection
-  Trunk


Main Extension Required - 706
Within 150M Water Buffer

-  NO = 421
-  YES = 285

 DCHD Failure Areas


BMAP WBIDS

-  Ribault River Bacteria Control Plan



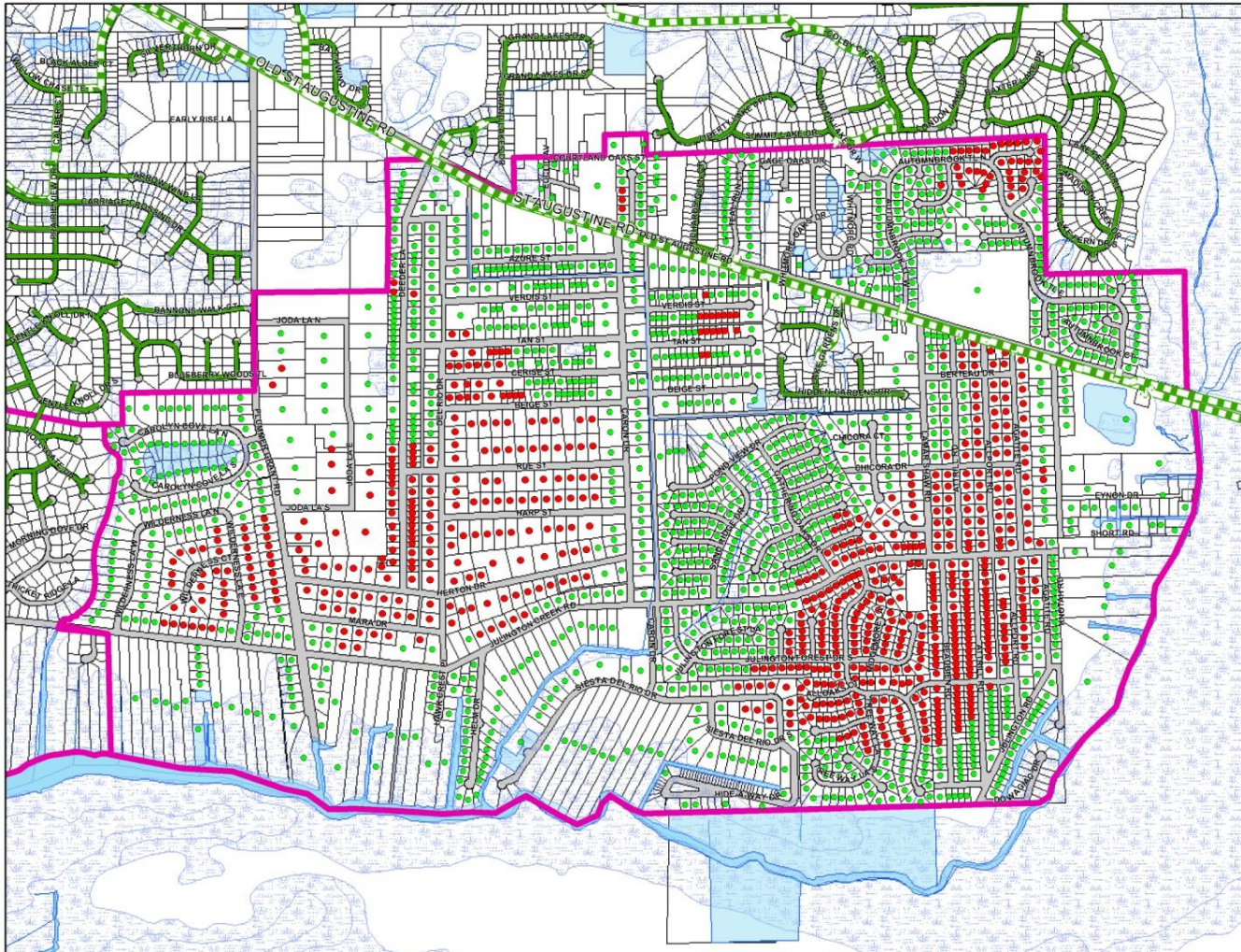
0 100 200 400 600 800 1,000 Feet

1 inch = 500 feet





Potential Septic Tank Phase Out Area

2 - Julington Creek Potential Septic Tank Phase Out Area




Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

**Main Extension Required - 2,011
Within 150M Water Buffer**


-  NO = 718
-  YES = 1293

 DCHD Failure Areas



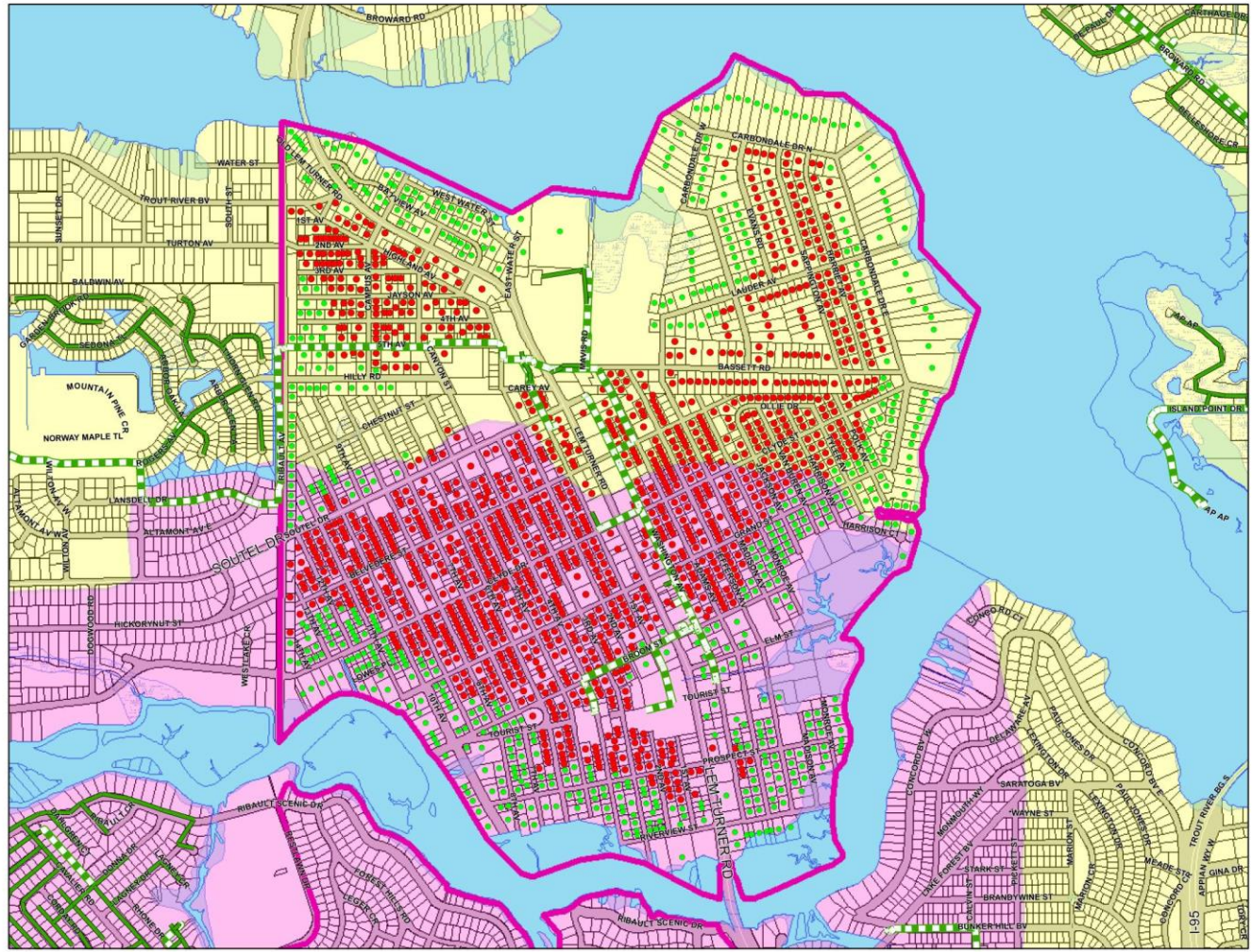
0 200 400 800 1,200 1,600 2,000
Feet

1 inch = 1,000 feet






Potential Septic Tank Phase Out Area

3 - Riverview Potential Septic Tank Phase Out Area






Legend

JEA SEWER MAINS



-  Forcemain
-  Collection
-  Trunk


Main Extension Required - 1,897
Within 150M Water Buffer

-  NO = 1,266
-  YES = 588

 DCHD Failure Areas


BMAP WBIDS

-  Ribault River Bacteria Control Plan
-  Tributaries BMAP II



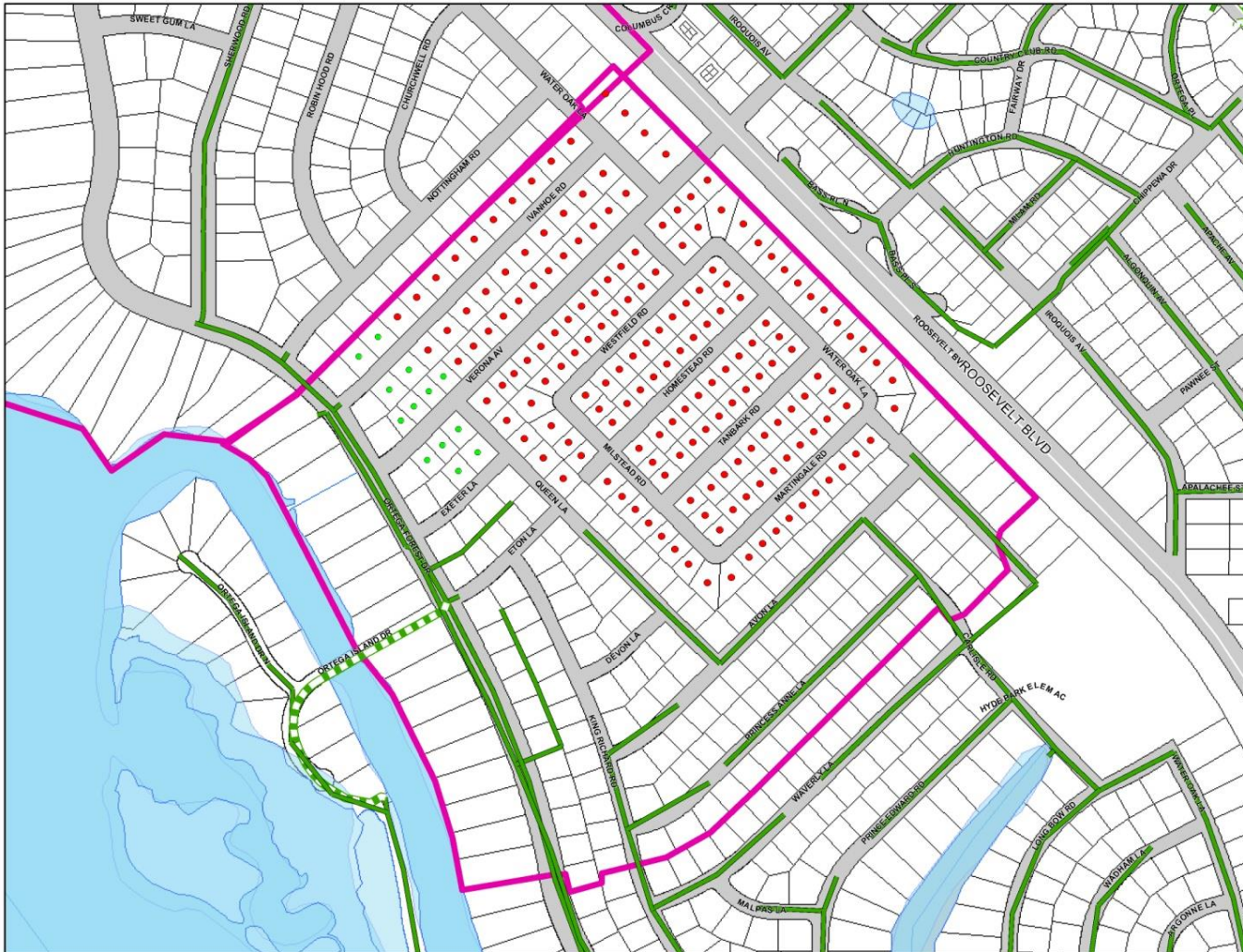
0 200 400 800 1,200 1,600 2,000
Feet

1 inch = 1,000 feet



Potential Septic Tank Phase Out Area

4 - Westfield Potential Septic Tank Phase Out Area



Legend


JEA SEWER MAINS

 Forcemain

 Collection

Main Extension Required = 183

Within 150M Water Buffer

 NO = 170

 YES = 13

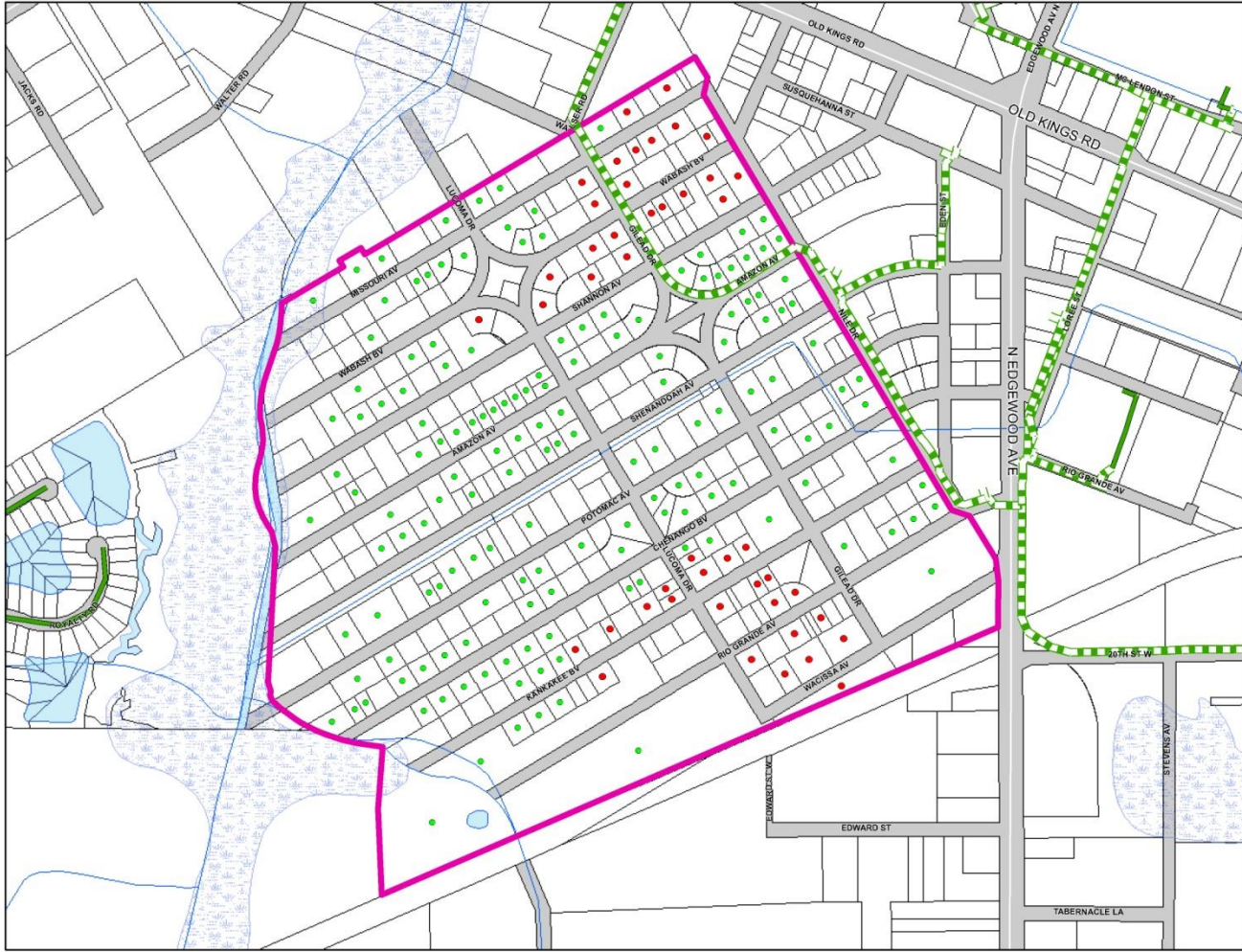
 DCHD Failure Areas



1 inch = 400 feet



Potential Septic Tank Phase Out Area

5 - Biltmore C Potential Septic Tank Phase Out Area






Legend


JEASER MAINS


-  Forcemain
-  Collection

Main Extension Required - 201
Within 150M Water Buffer


-  NO = 45
-  YES = 156

 DCHD Failure Areas



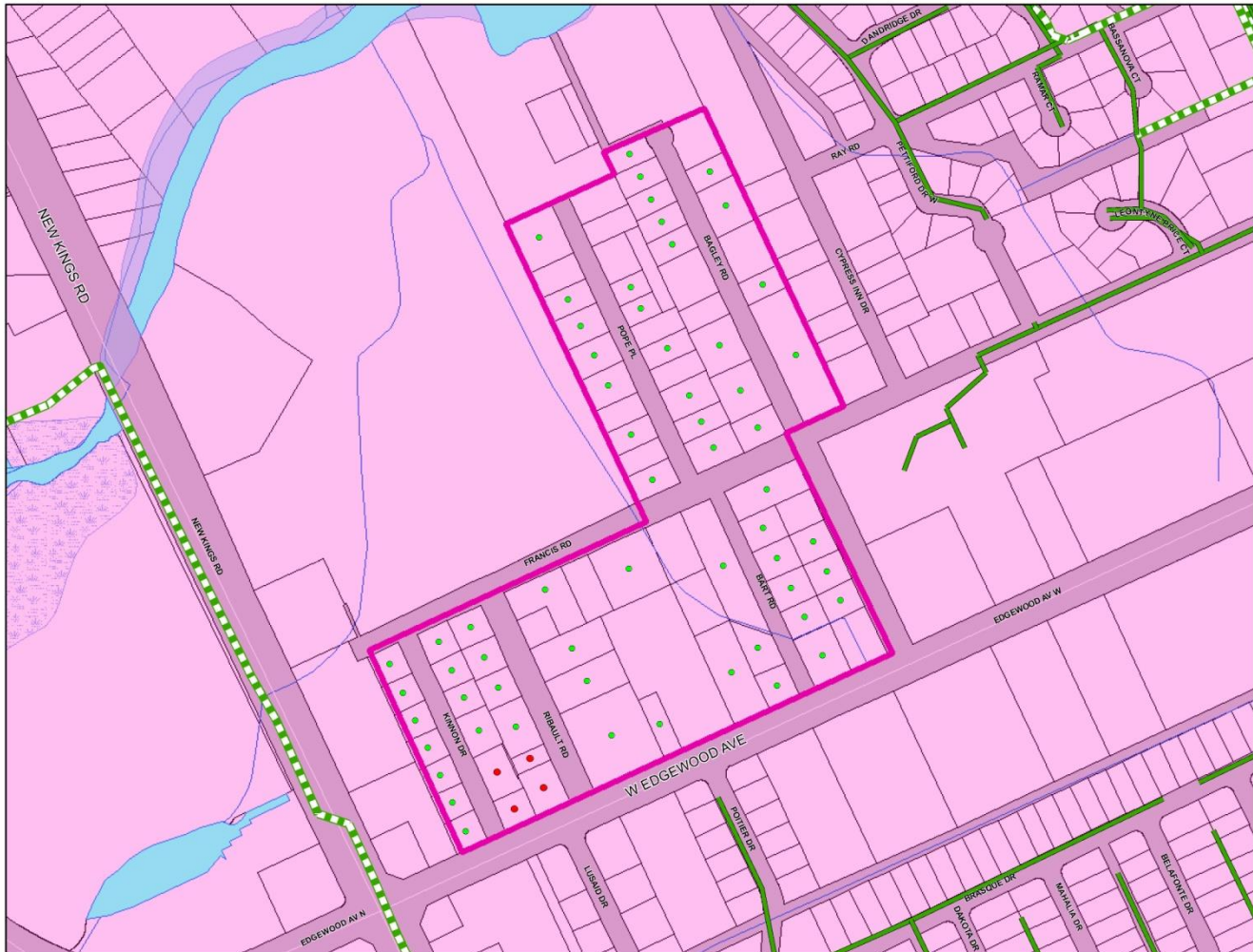


1 inch = 400 feet



Potential Septic Tank Phase Out Area

6 - Kinard Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection

Main Extension Required - 63
Within 150M Water Buffer

- NO = 4
- YES = 59


DCHD Failure Areas

BMAP WBIDS

- Ribault River
- Bacteria Control Plan

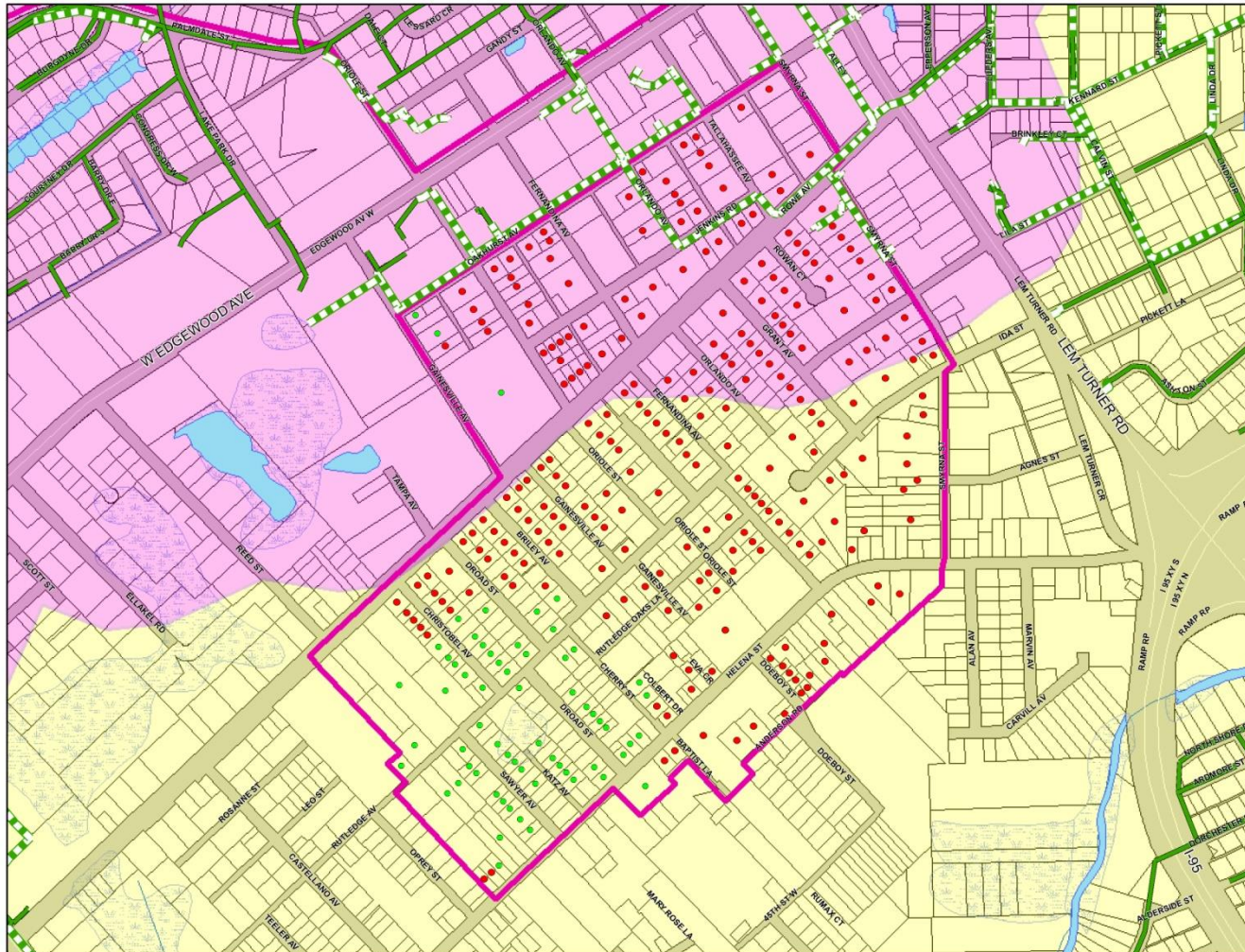
Scale:
0 75 150 300 450 600 750 Feet
1 inch = 300 feet

North Arrow



Potential Septic Tank Phase Out Area

7 - Christobel Potential Septic Tank Phase Out Area



Legend

JEASER MAINS

- Forcemain
- Collection

Main Extension Required - 307
Within 150M Water Buffer

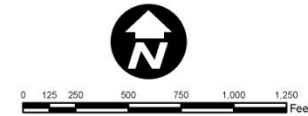

- NO = 244
- YES = 63

DCHD Failure Areas

BMAP WBIDS

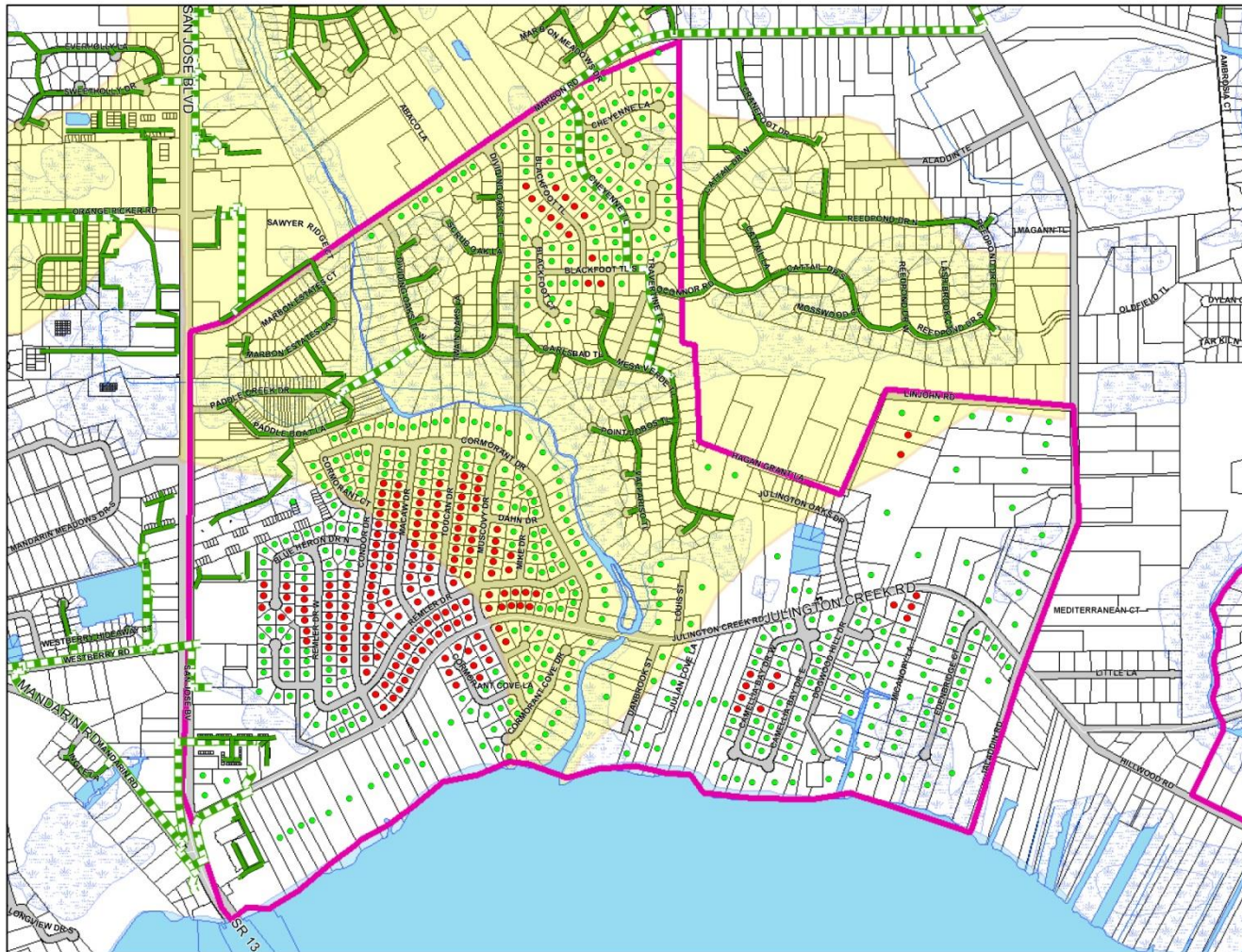
- Ribault River Bacteria Control Plan
- Tributaries BMAP II

1 inch = 500 feet

Potential Septic Tank Phase Out Area

8 - Julington Hills Potential Septic Tank Phase Out Area



Legend

JEAS SEWER MAINS

- Forcemain
- Collection

Main Extension Required - 632
Within 150M Water Buffer

- NO = 186
- YES = 446

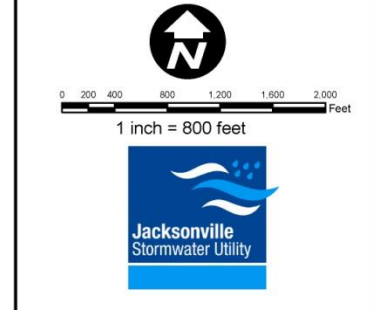
DCHD Failure Areas

BMAP WBIDS

- Tributaries BMAP II

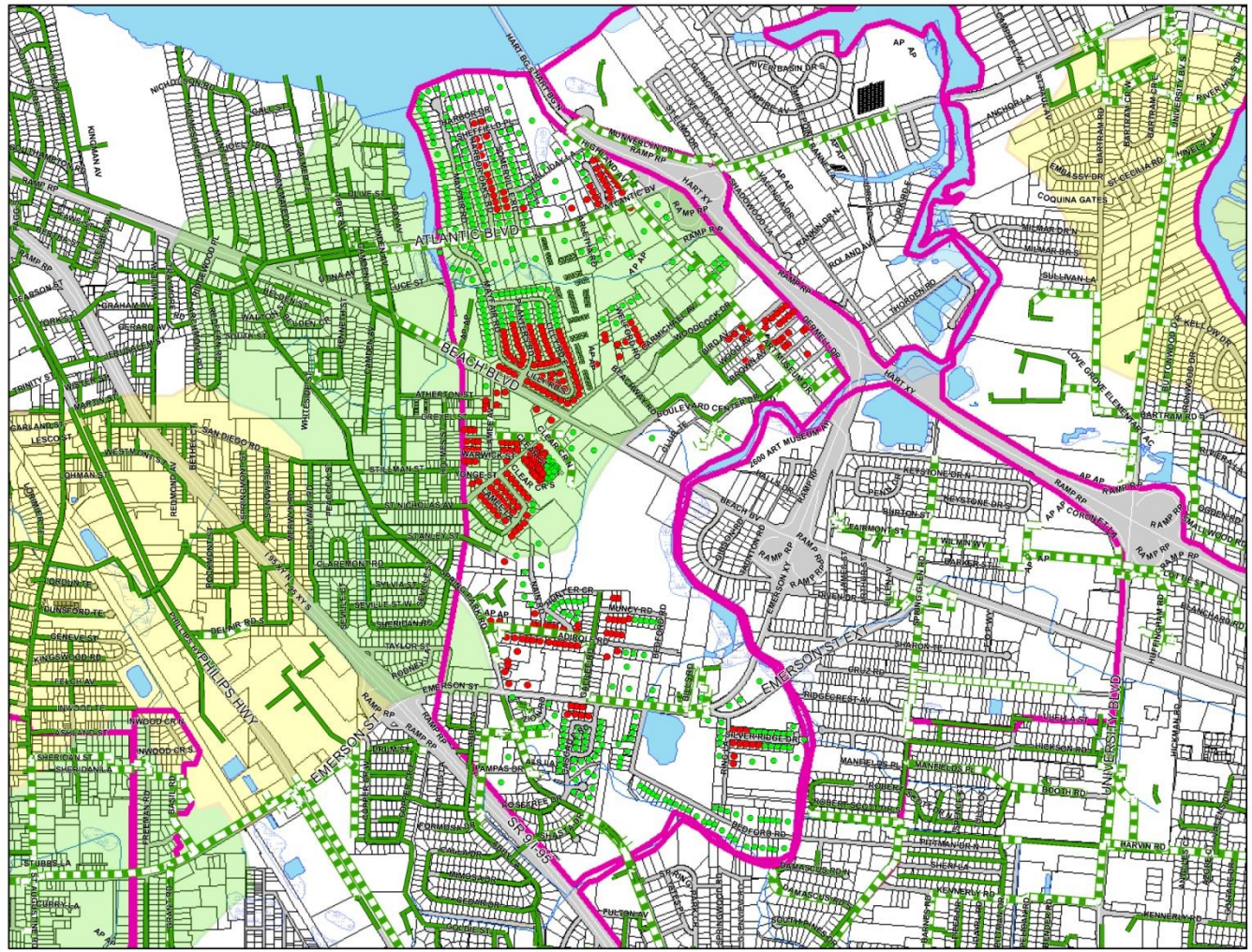
0 200 400 800 1,200 1,600 2,000 Feet

1 inch = 800 feet



Potential Septic Tank Phase Out Area

9 - St Nicholas Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection


Main Extension Required - 681
Within 150M Water Buffer


- NO = 306
- YES = 375

DCHD Failure Areas


BMAP WBIDS

- Tributaries BMAP I
- Tributaries BMAP II



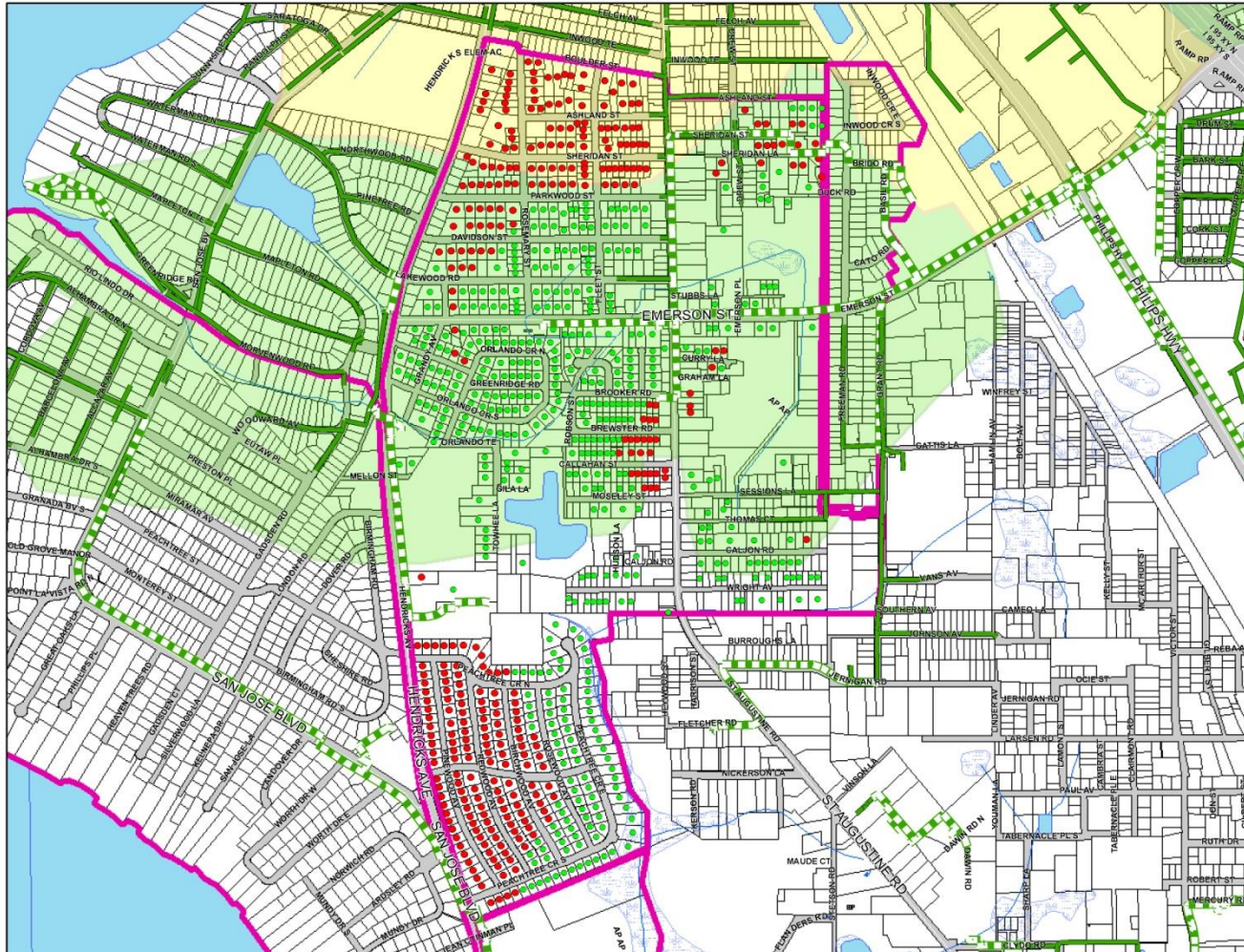


1 inch = 1,200 feet



Potential Septic Tank Phase Out Area

10 - Emerson Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection

Main Extension Required = 796


Within 150M Water Buffer

- NO = 328
- YES = 468

DCHD Failure Areas


BMAP WBIDS

- Tributaries BMAP I
- Tributaries BMAP II



0 200 400 800 1,200 1,600 2,000 Feet

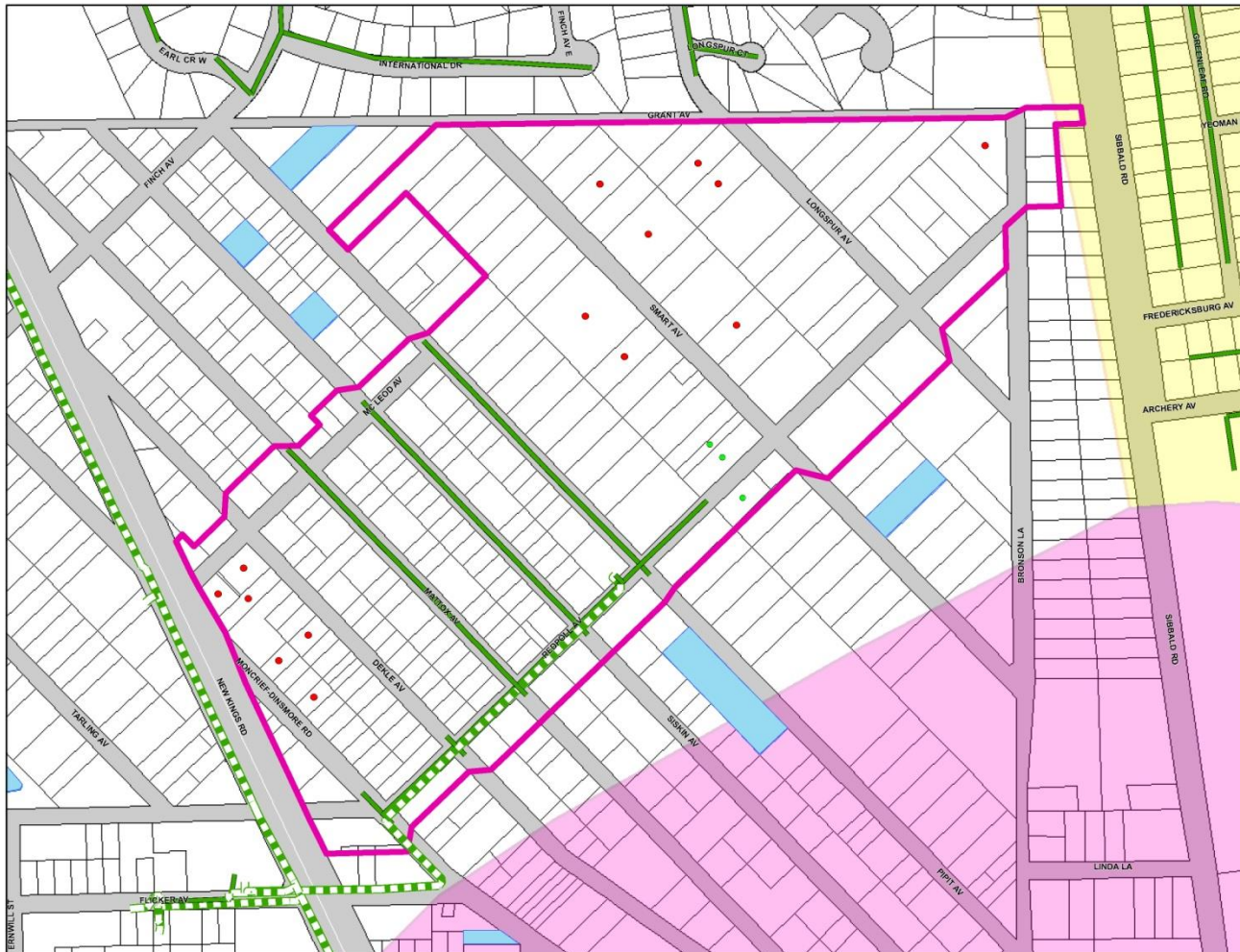
1 inch = 800 feet



Potential Septic Tank Phase Out Area

11 - WSEA Lincoln Villa Potential Septic Phase Out Area

(5/29/2015)



Legend

JEAS SEWER MAINS

- Forcemain
- Collection

Main Extension Required = 17
Within 150M Water Buffer


- NO = 14
- YES = 3

DCHD Failure Areas

BMAP WBIDS

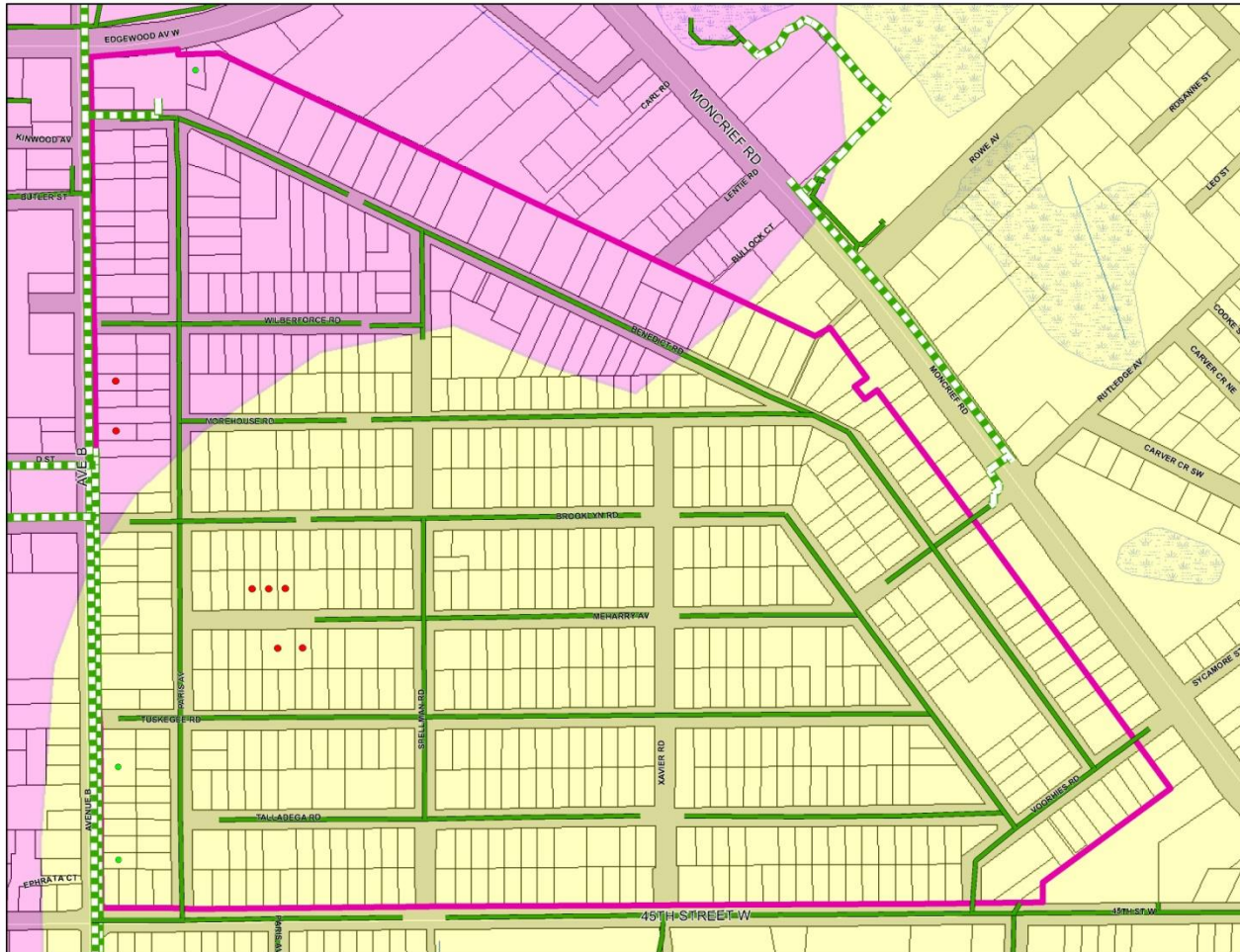
- Ribault River Bacteria Control Plan
- Tributaries BMAP II

North arrow and scale bar: 0 75 150 300 450 600 750 Feet
1 inch = 300 feet



Potential Septic Tank Phase Out Area

12 - Royal Terrace Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection

**Main Extension Required - 10
Within 150M Water Buffer**

- NO = 7
- YES = 3

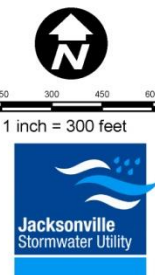
DCHD Failure Areas

BMAP WBIDS

- Ribault River
- Bacteria Control Plan
- Tributaries BMAP II

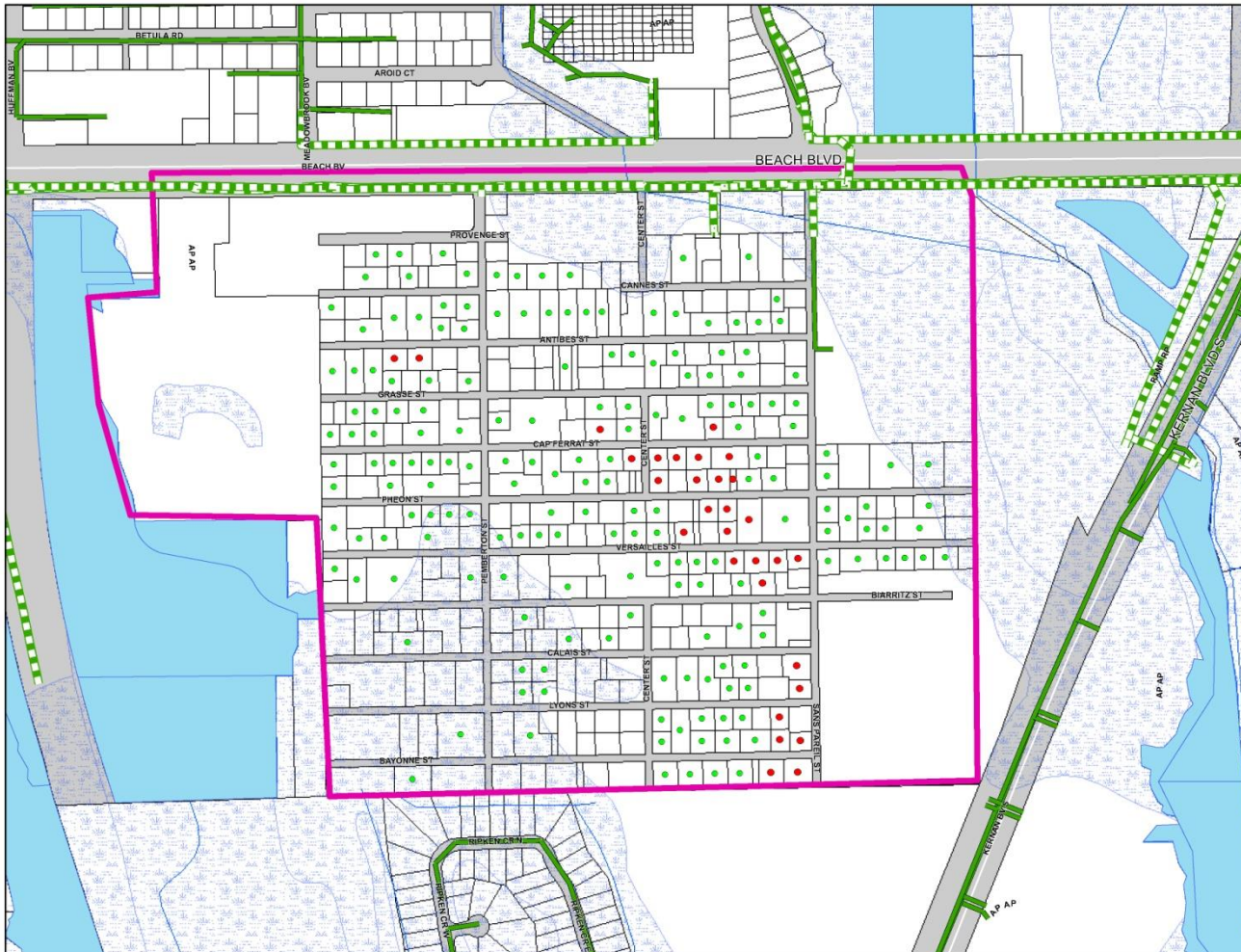
0 75 150 300 450 600 750 Feet

1 inch = 300 feet




Potential Septic Tank Phase Out Area

13 - Sans Peril Potential Septic Tank Phase Out Area






Legend


JEASER MAINS

-  Forcemain
-  Collection

Main Extension Required = 212
Within 150M Water Buffer


-  NO = 30
-  YES = 182

 DCHD Failure Areas



0 100 200 400 600 800 1,000
Feet

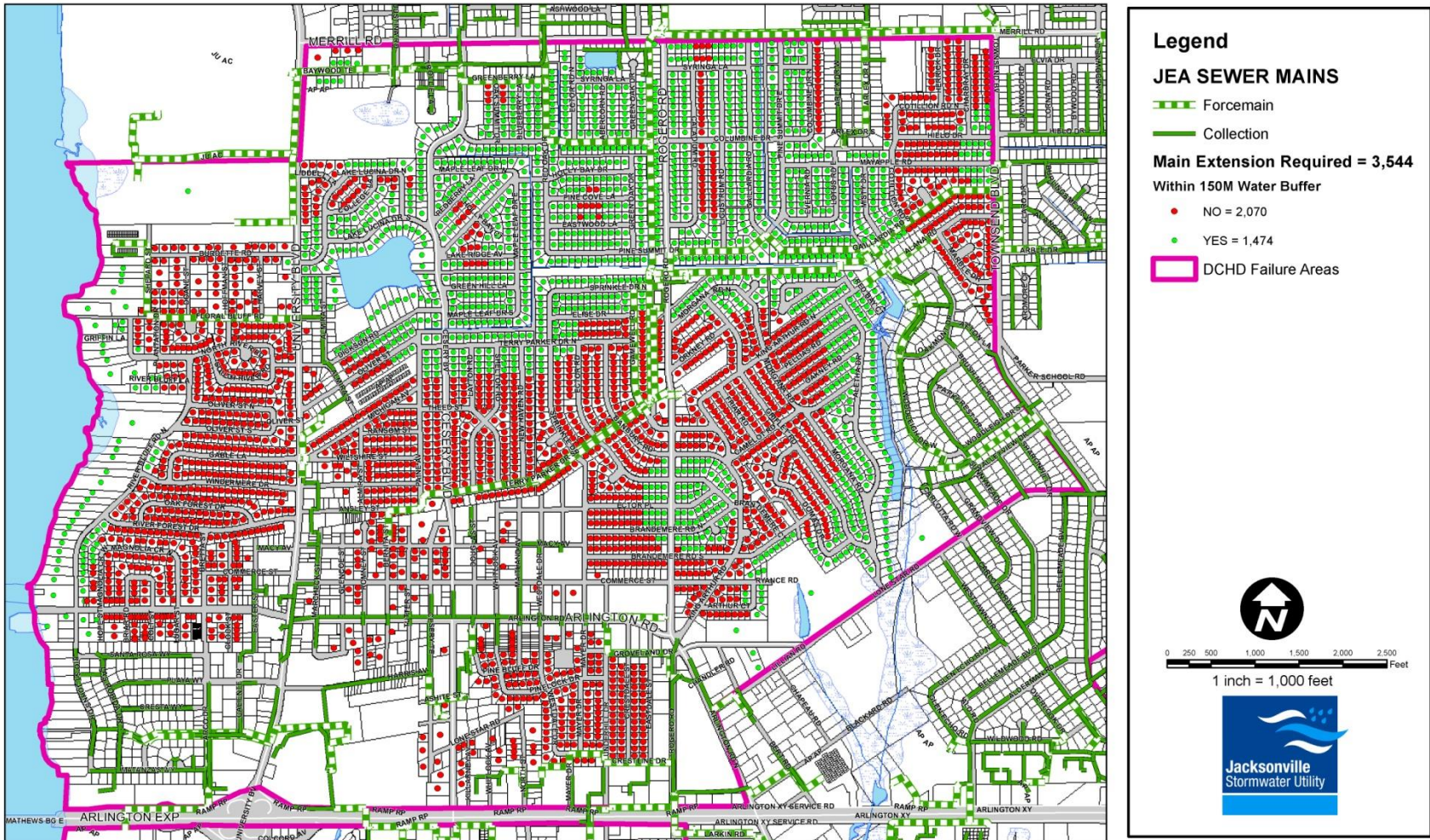
1 inch = 400 feet



Jacksonville
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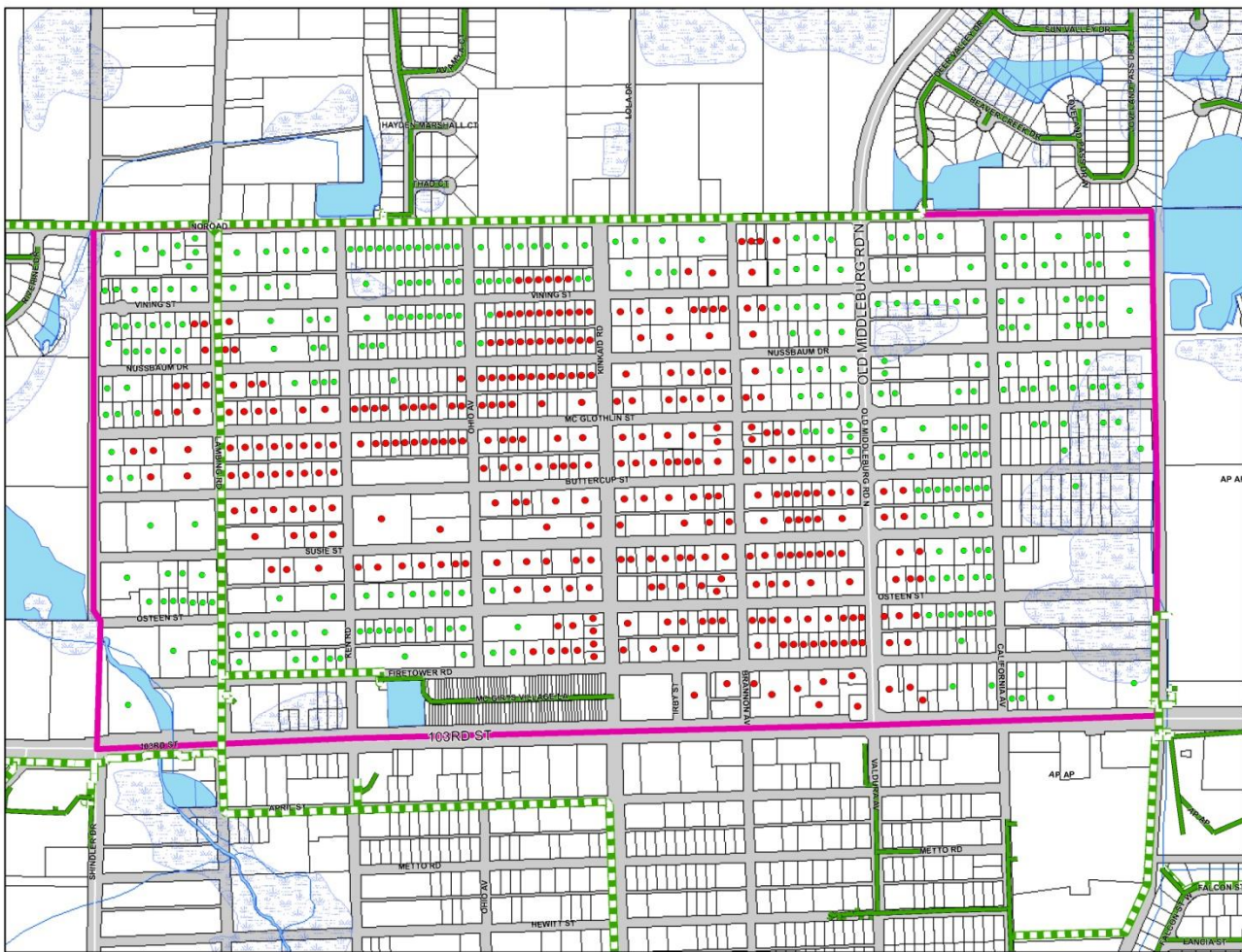
Potential Septic Tank Phase Out Area

14 - Eggleston Heights Potential Septic Tank Phase Out Area



Potential Septic Tank Phase Out Area

15 - Champion Forest Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection

Main Extension Required = 631
Within 150M Water Buffer


- NO = 335
- YES = 296

□ DCHD Failure Areas

North Arrow

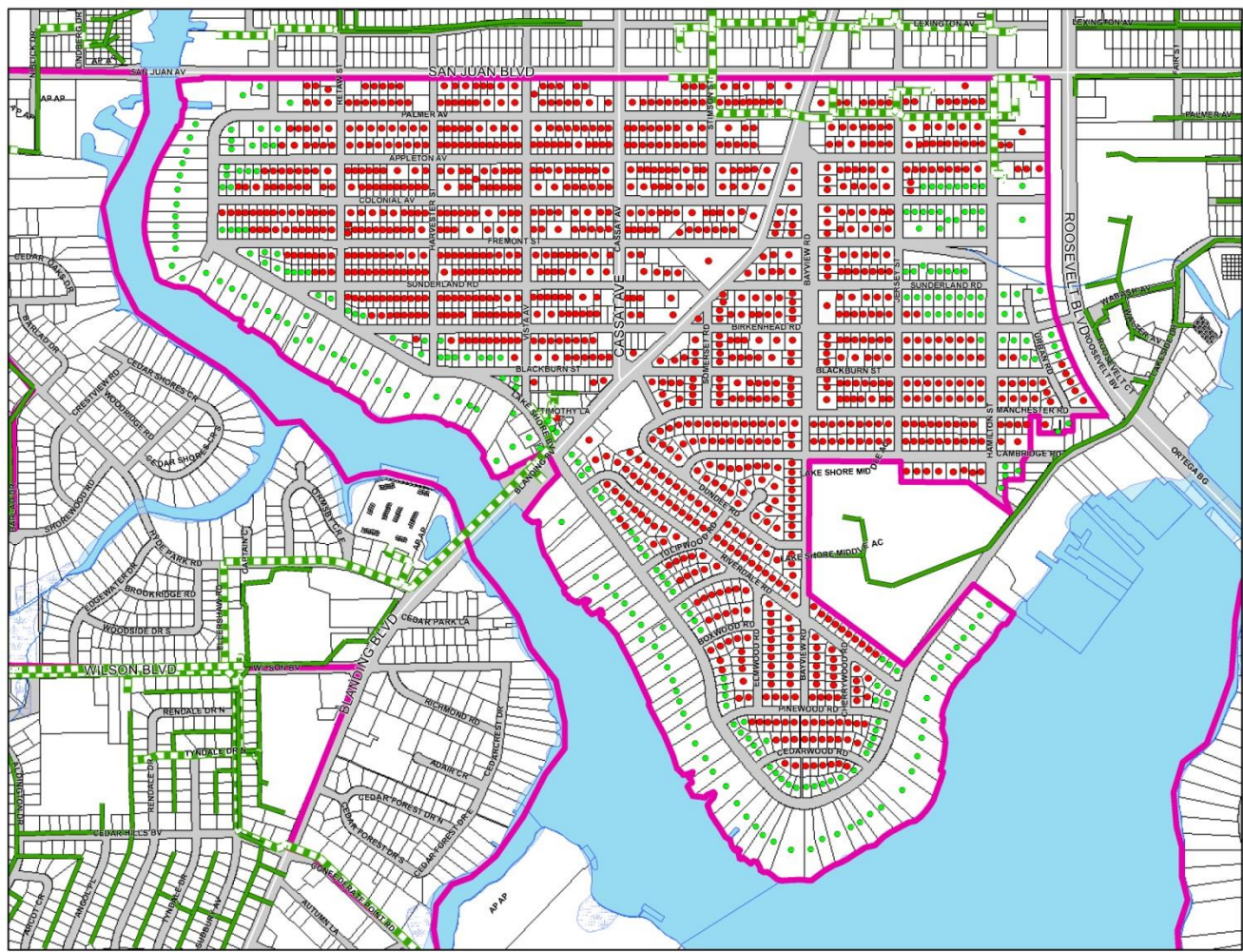
0 125 250 500 750 1,000 1,250 Feet

1 inch = 500 feet





Potential Septic Tank Phase Out Area

16 - Lakeshore Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 1,408
Within 150M Water Buffer


-  NO = 1,147
-  YES = 261

 DCHD Failure Areas



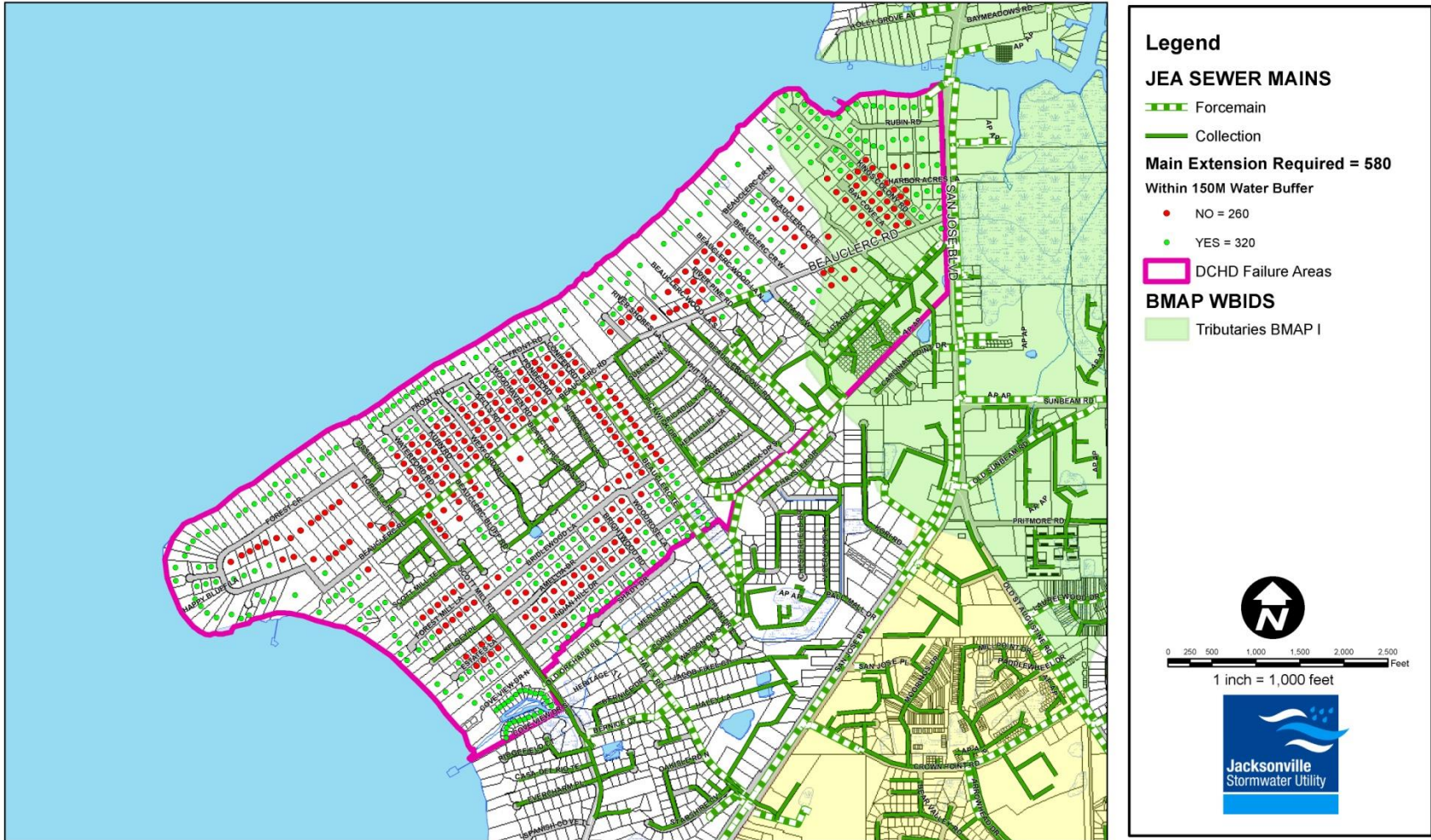
0 175 350 700 1,050 1,400 1,750 Feet

1 inch = 700 feet



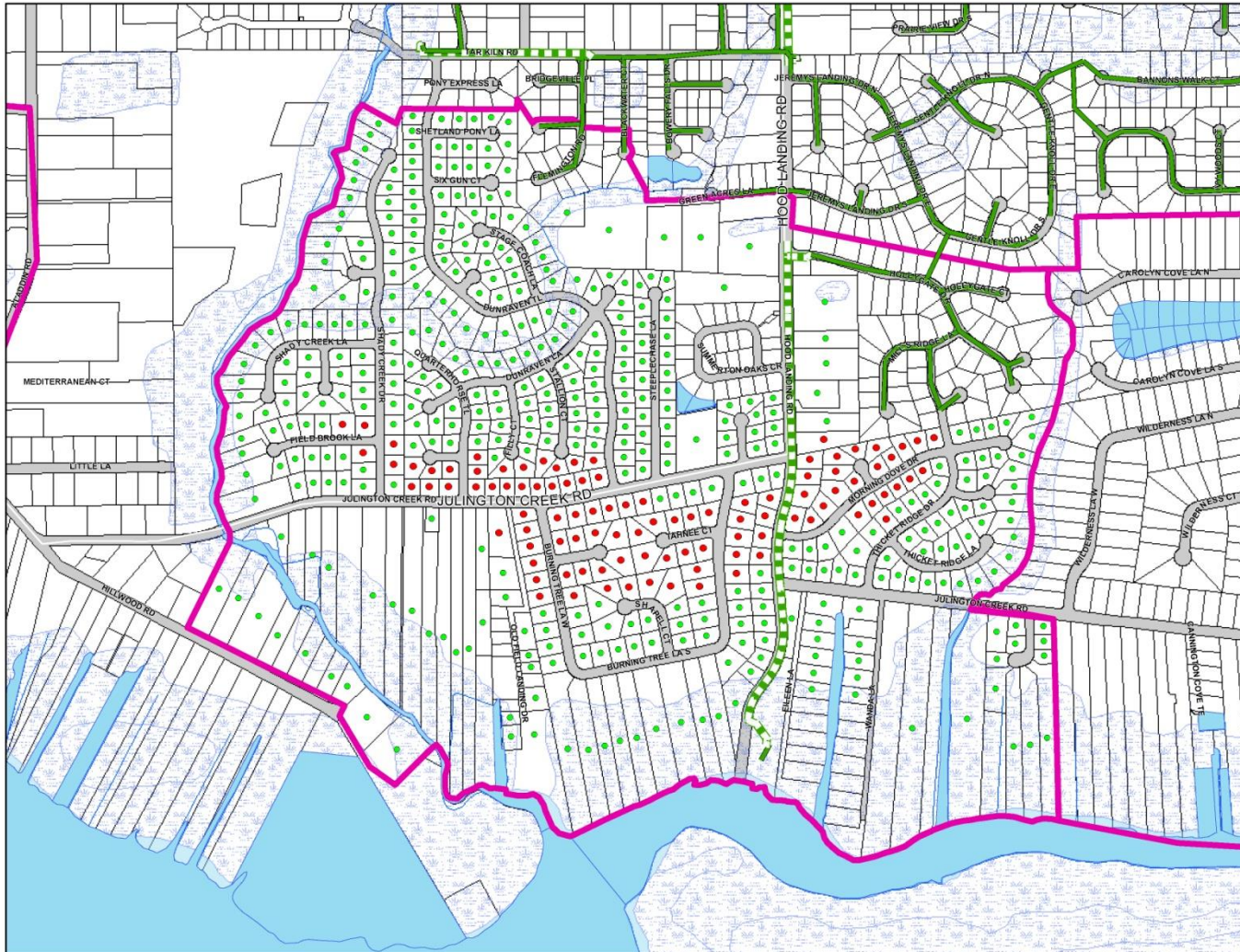
Potential Septic Tank Phase Out Area

17 - Beauclerc Gardens Potential Septic Tank Phase Out Area



Potential Septic Tank Phase Out Area

18 - Hood Landing II Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 523

Within 150M Water Buffer

-  NO = 99
-  YES = 424

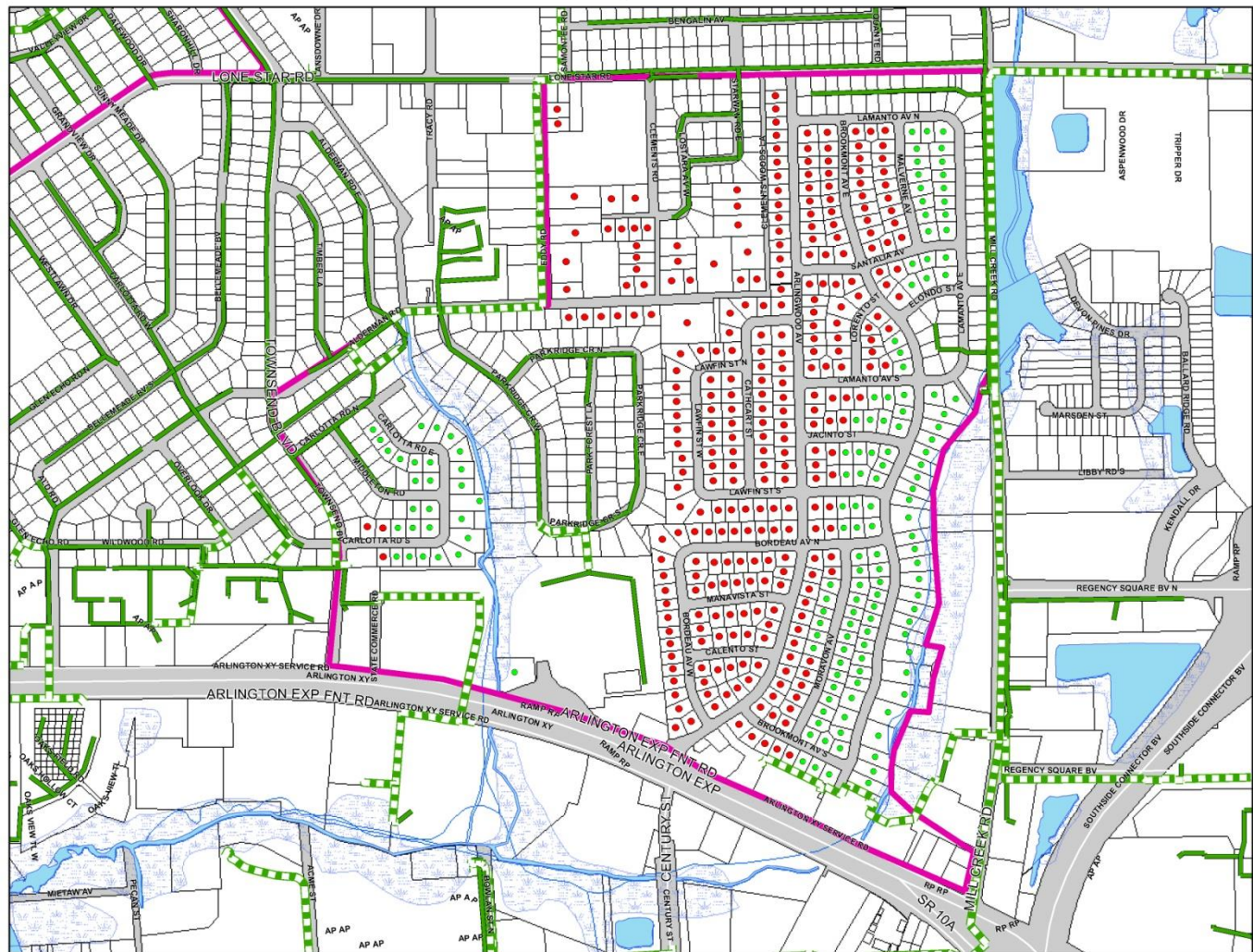
 DCHD Failure Areas



1 inch = 600 feet


Potential Septic Tank Phase Out Area

19 - Mill Creek Potential Septic Tank Phase Out Area



Legend

JEAS SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 437
Within 150M Water Buffer


-  NO = 294
-  YES = 143

 DCHD Failure Areas



0 150 300 600 900 1,200 1,500 Feet

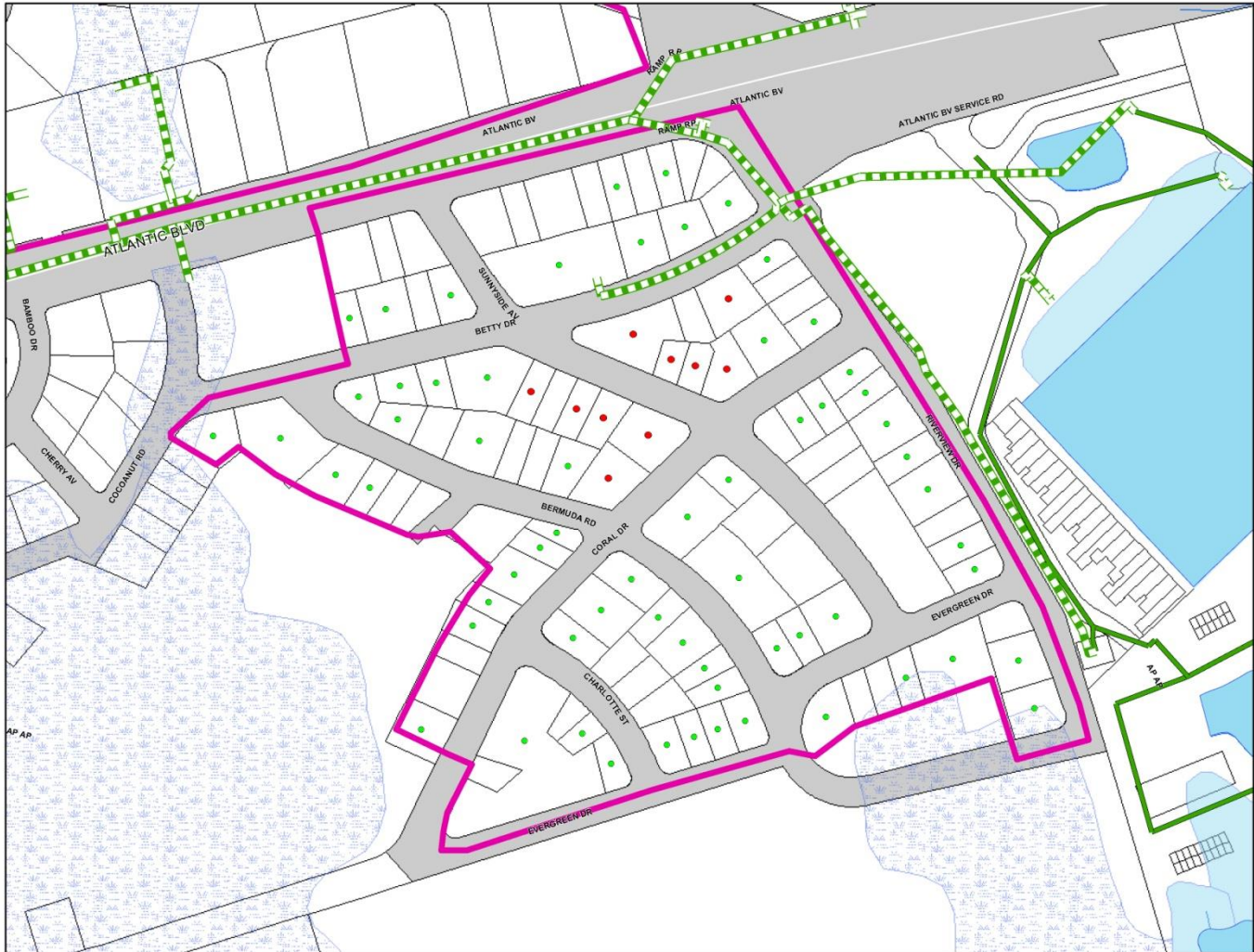
1 inch = 600 feet



29

Potential Septic Tank Phase Out Area

20 - Atlantic Highlands Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 73
Within 150M Water Buffer

-  NO = 10
-  YES = 63

 DCHD Failure Areas



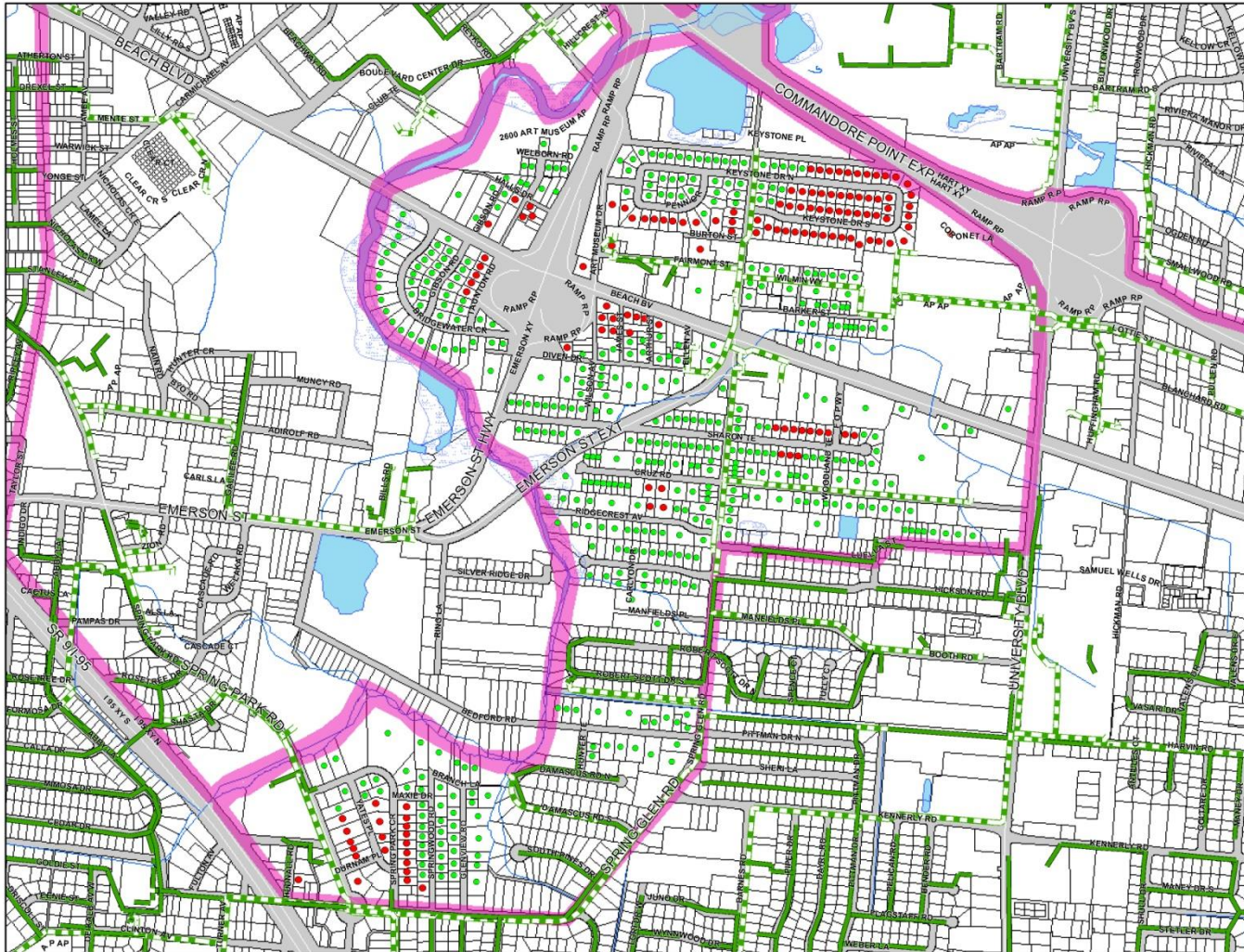
0 50 100 200 300 400 500 Feet

1 inch = 200 feet



Potential Septic Tank Phase Out Area

21 - Spring Glen Potential Septic Tank Phase Out Area



Legend

JEAS SEWER MAINS

-  Force main
-  Collection

Main Extension Required = 557
Within 150M Water Buffer

-  NO = 131
-  YES = 426

 DCHD Failure Areas



0 200 400 600 1,200 1,600 2,000 Feet

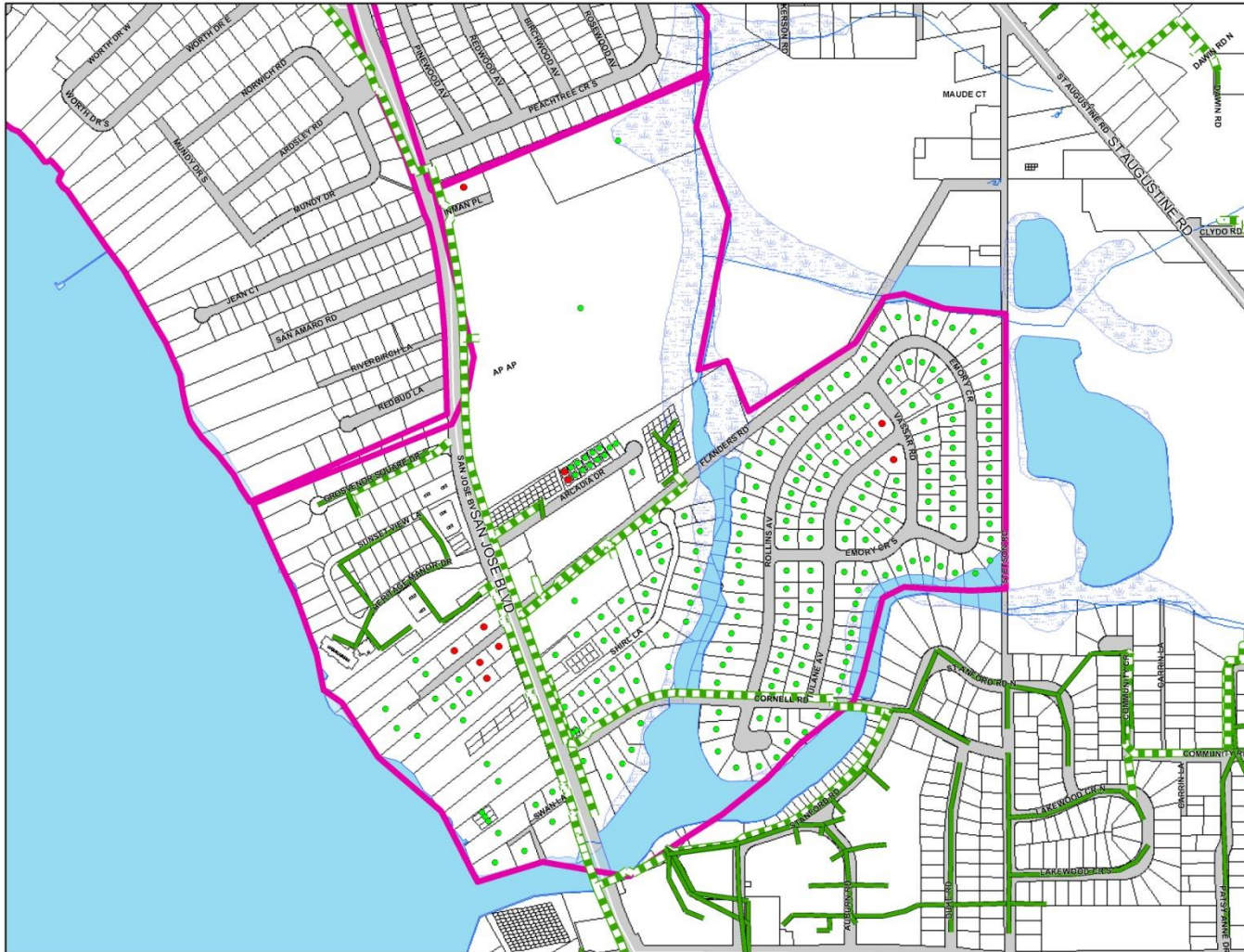
1 inch = 800 feet



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Potential Septic Tank Phase Out Area

22 - Oak Lawn Potential Septic Tank Phase Out Area



Legend

JEAS SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 236
Within 150M Water Buffer

-  NO = 10
-  YES = 226

 DCHD Failure Areas



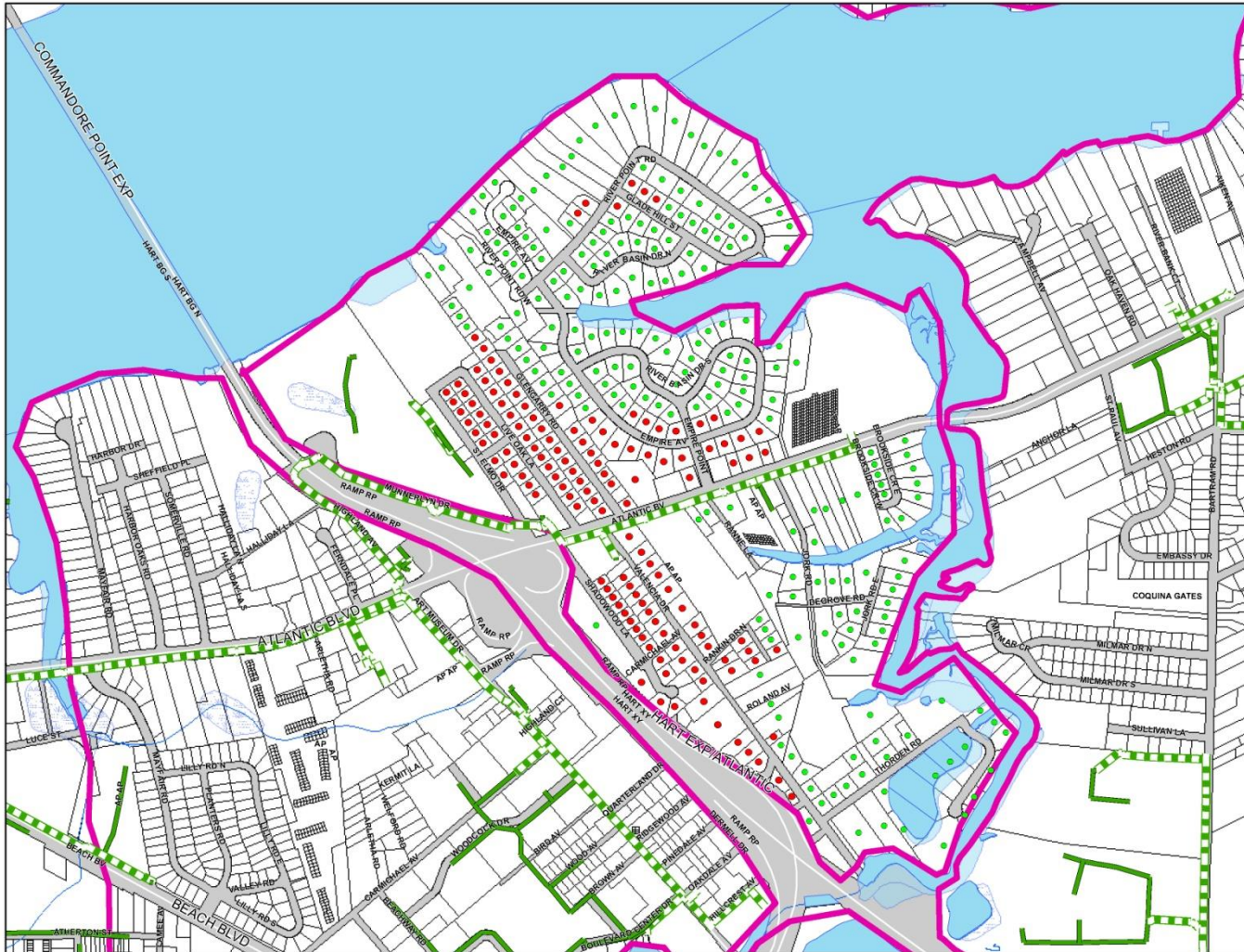
0 125 250 500 750 1,000 1,250 Feet

1 inch = 500 feet



Potential Septic Tank Phase Out Area

23 - Empire Point Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 350
Within 150M Water Buffer

-  NO = 134
-  YES = 216

 DCHD Failure Areas



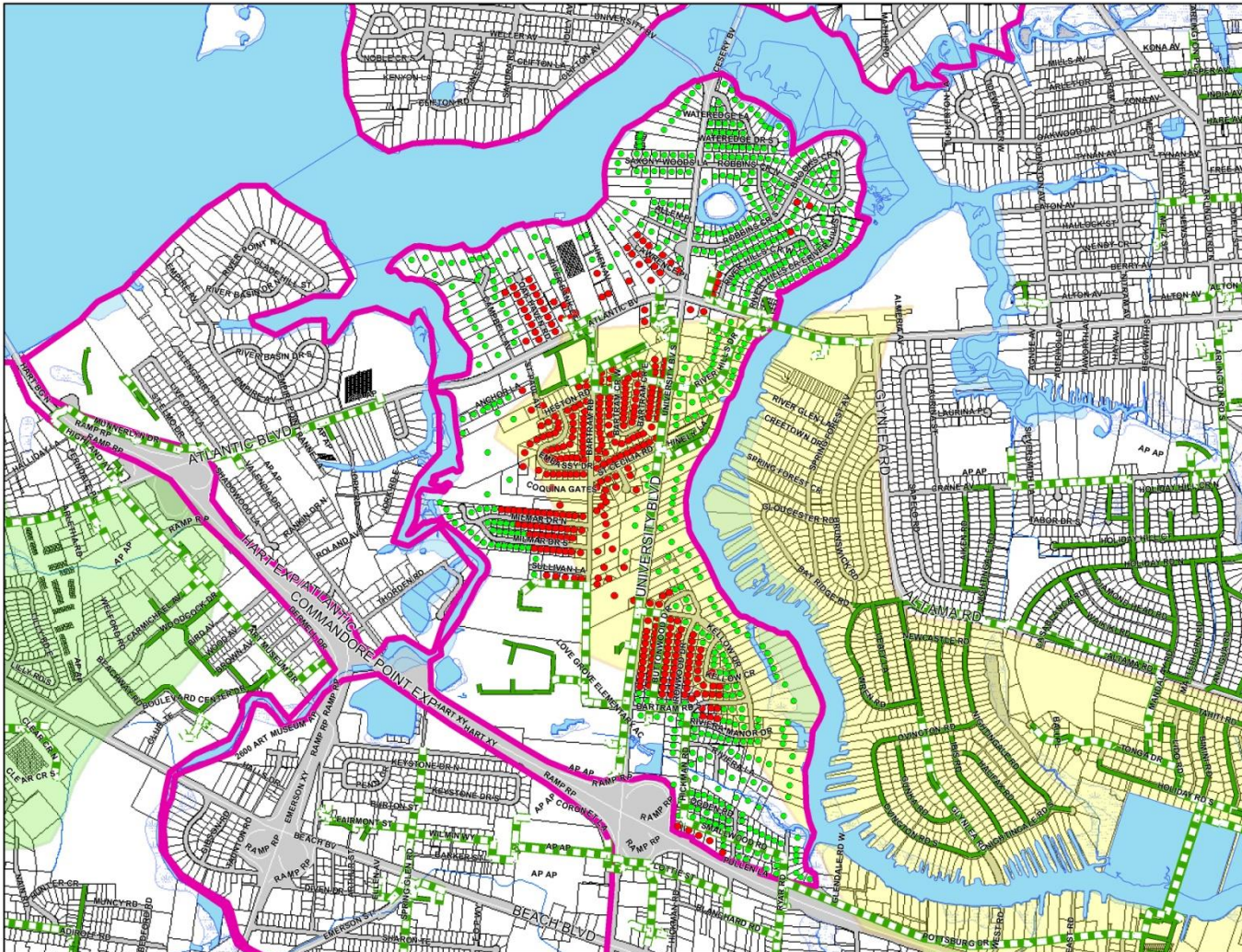
0 175 350 700 1050 1400 1750 Feet

1 inch = 700 feet



Potential Septic Tank Phase Out Area

24 - Oakhaven Potential Septic Tank Phase Out Area



Legend

JEAS SEWER MAINS

-  Forcemain
-  Collection


Main Extension Required = 881

Within 150M Water Buffer

-  NO = 346
-  YES = 535

 DCHD Failure Areas

BMAP WBIDS

 Tributaries BMAP II

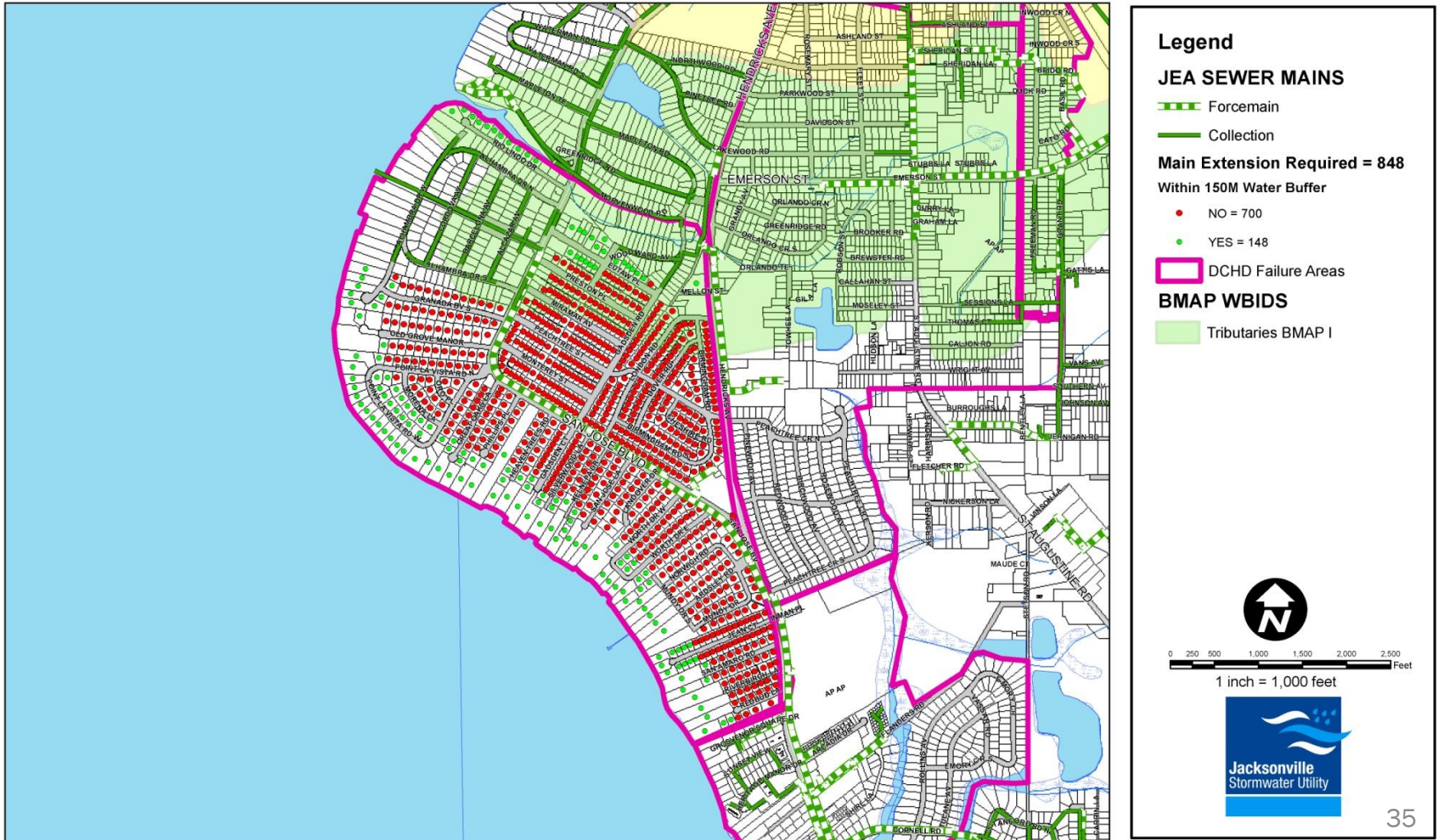


0 300 600 1,200 1,800 2,400 3,000
Feet

1 inch = 1,200 feet

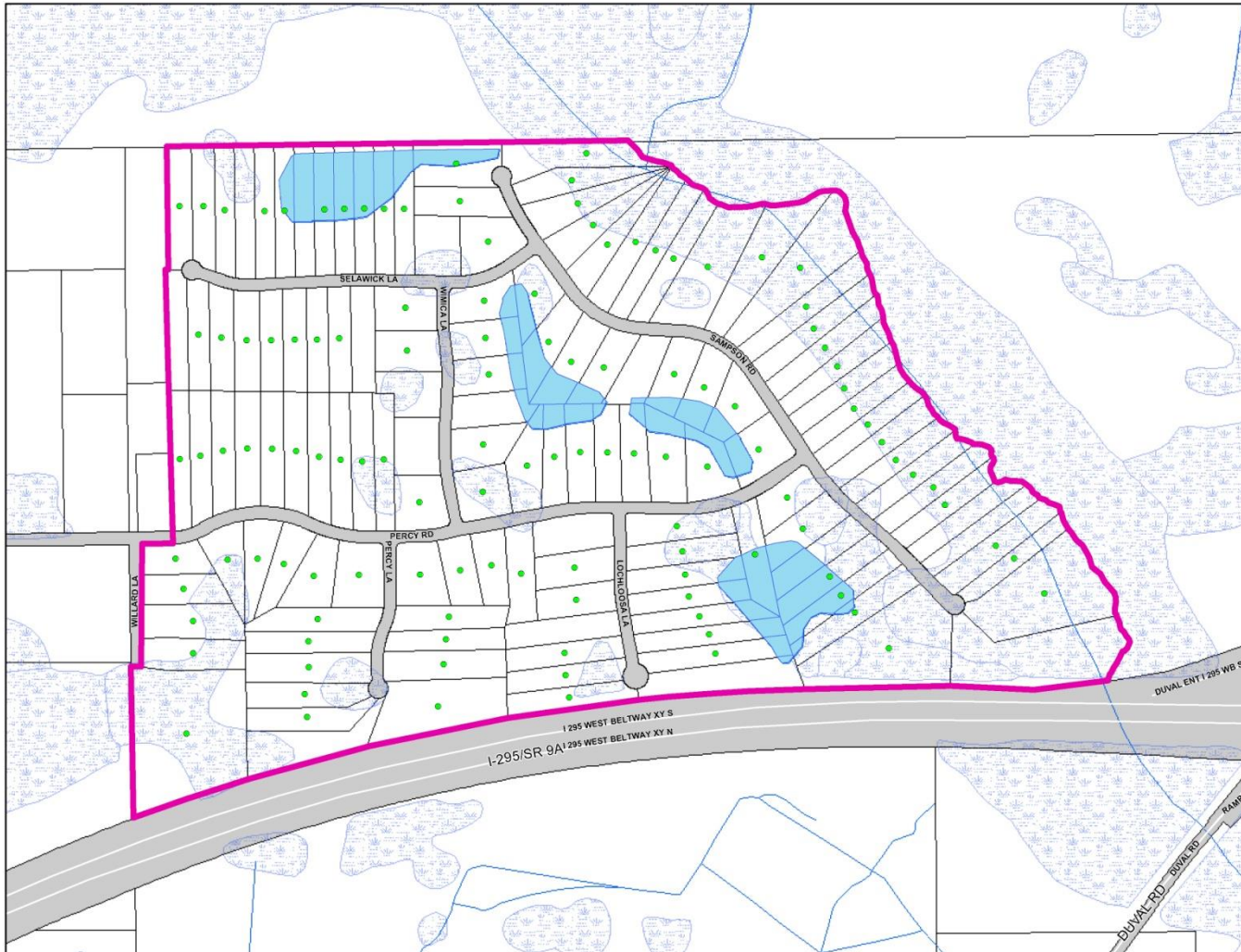
Potential Septic Tank Phase Out Area

25 - Point La Vista Potential Septic Tank Phase Out Area



Potential Septic Tank Phase Out Area

26 - Northlake Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

Forcemain

Collection

Main Extension Required = 121

Within 150M Water Buffer

• NO = 0

• YES = 121

DCHD Failure Areas



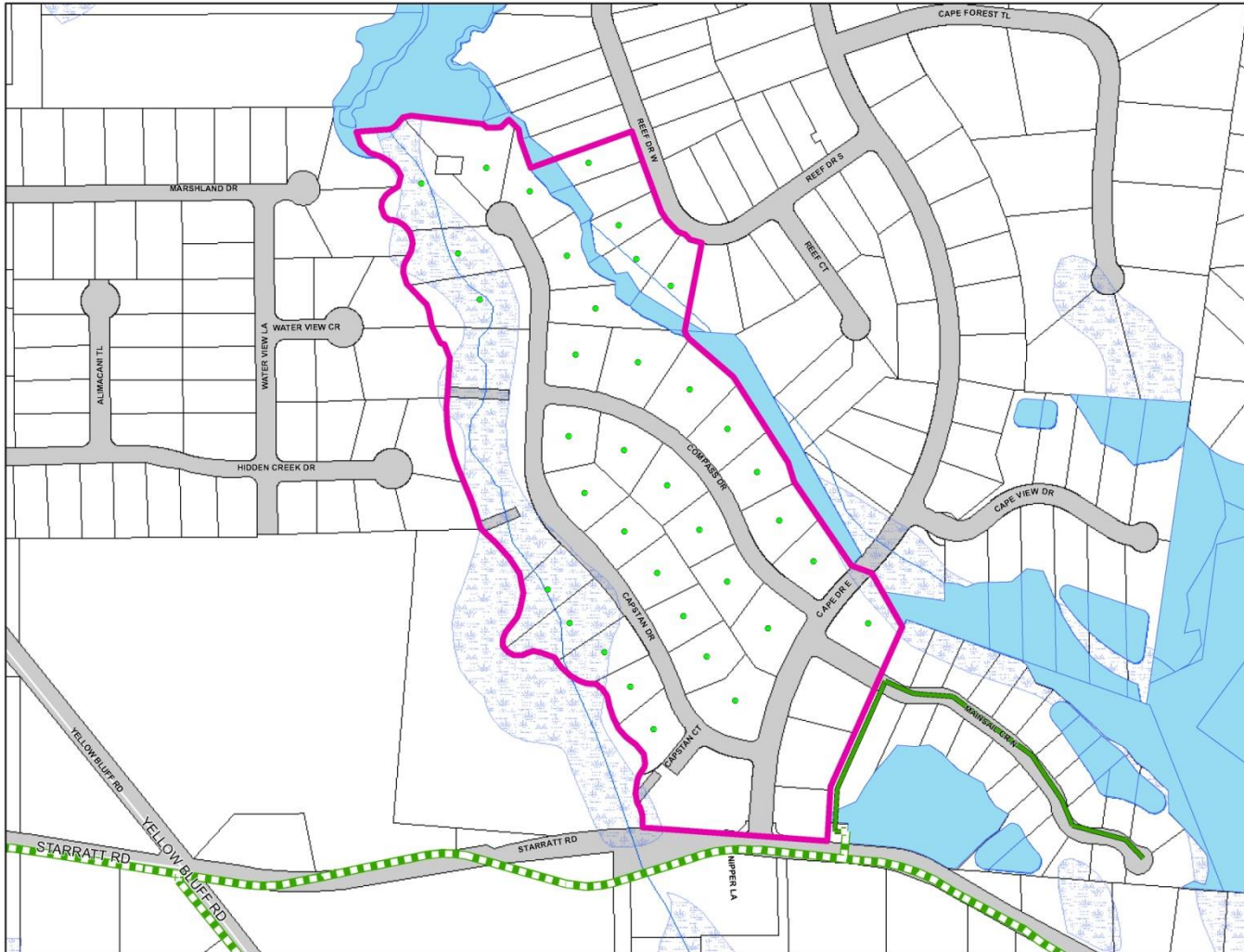
0 125 250 500 750 1,000 1,250 Feet

1 inch = 500 feet





Potential Septic Tank Phase Out Area

27 - The Cape Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Force main
-  Collection

Main Extension Required = 36
Within 150M Water Buffer


-  NO = 0
-  YES = 36

 DCHD Failure Areas



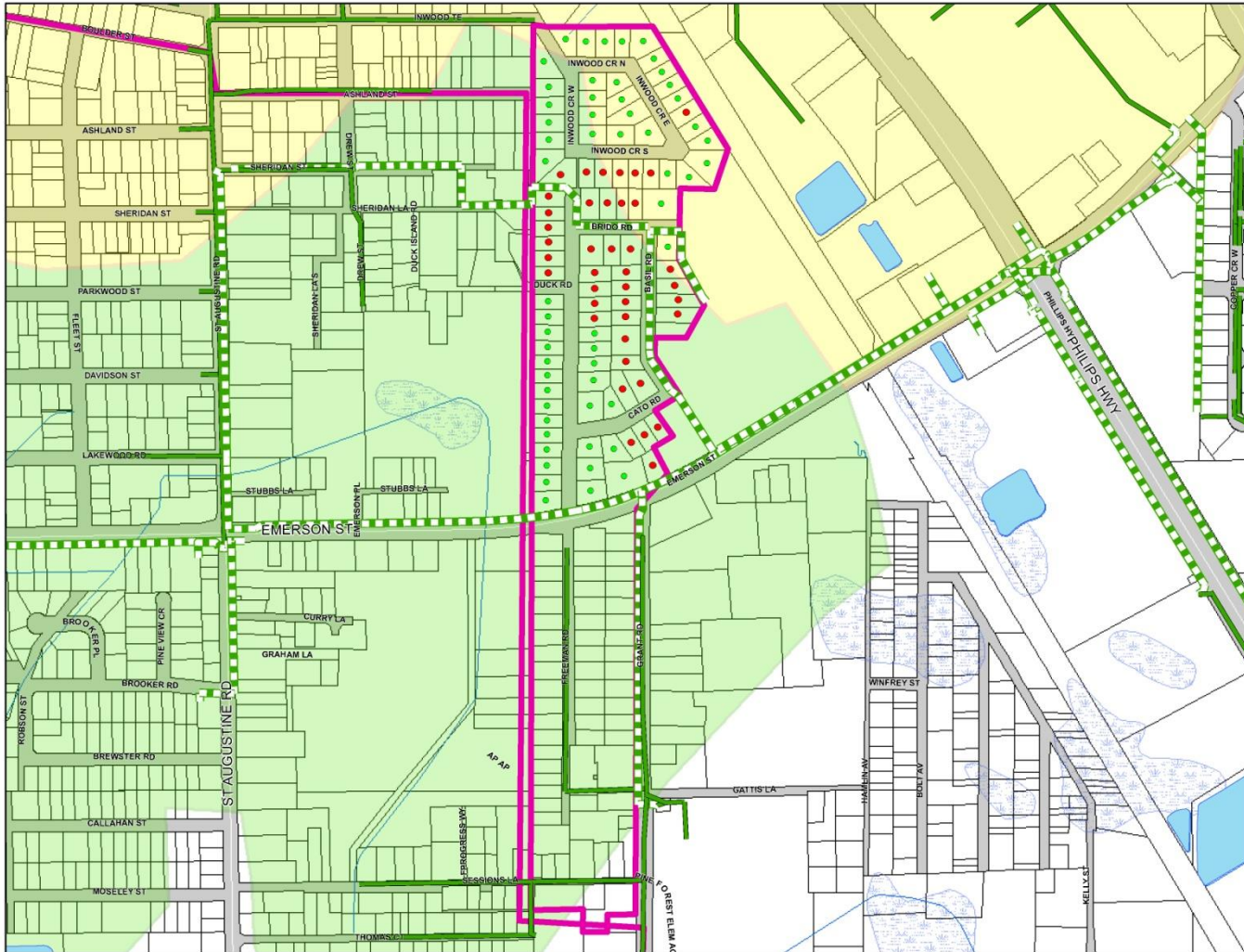
0 75 150 300 450 600 750 Feet

1 inch = 300 feet



Potential Septic Tank Phase Out Area

28 - Freeman Road/Inwood Terrace Potential Septic Tank Phase Out Area



Legend

JEA SEWER MAINS

- Forcemain
- Collection

Main Extension Required = 96
Within 150M Water Buffer

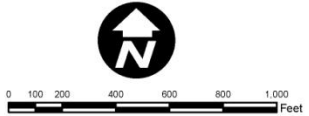

- NO = 40
- YES = 56

DCHD Failure Areas

BMAP WBIDS

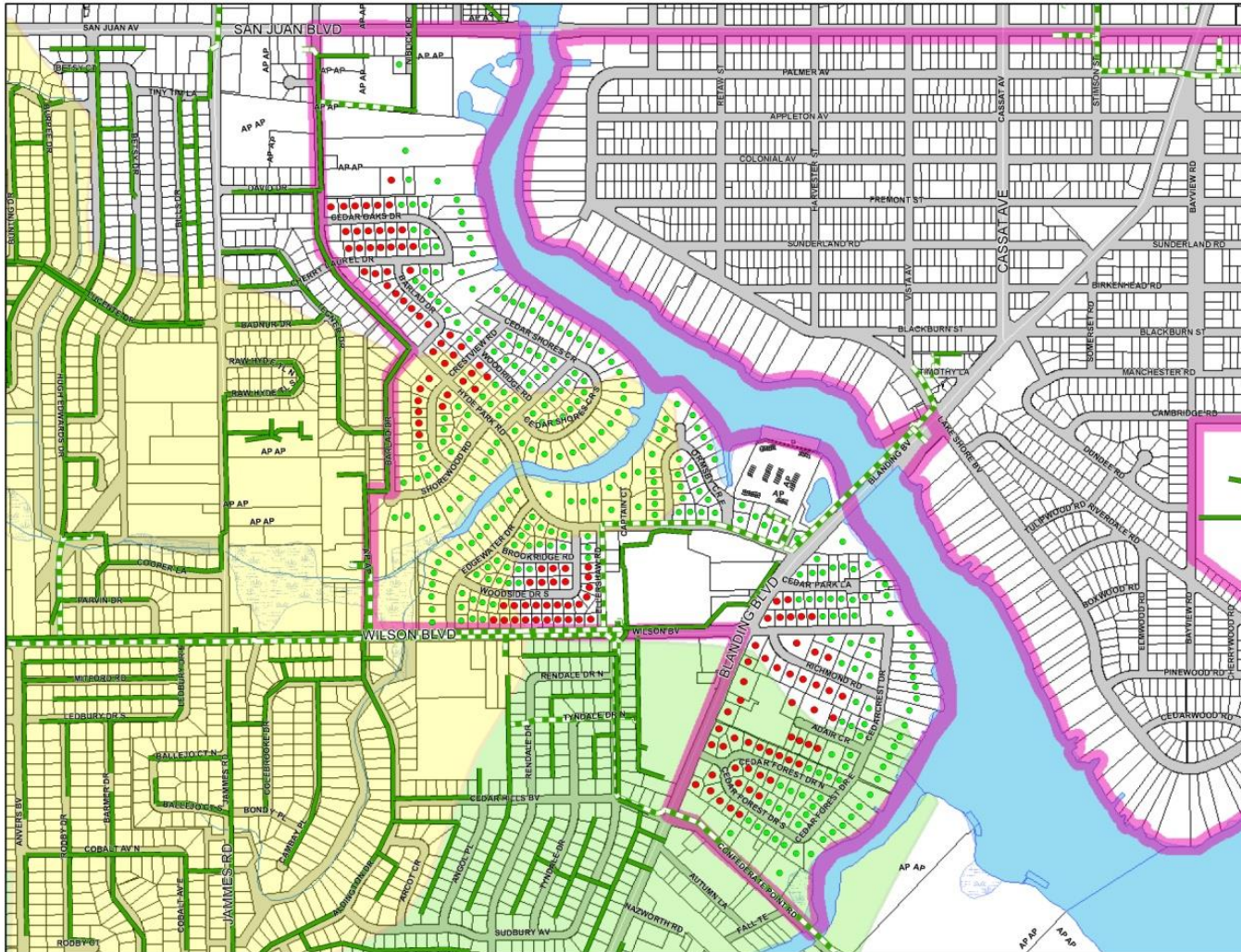
- Tributaries BMAP I
- Tributaries BMAP II

0 100 200 400 600 800 1,000 Feet
1 inch = 400 feet

Potential Septic Tank Phase Out Area

29 - Cedar River Potential Septic Tank Phase Out Area



Legend

JEASewer MAINS

- Forcemain
- Collection

Main Extension Required = 415

Within 150M Water Buffer

- NO = 130
- YES = 285



DCHD Failure Areas

BMAP WBIDS

- Tributaries BMAP I
- Tributaries BMAP II

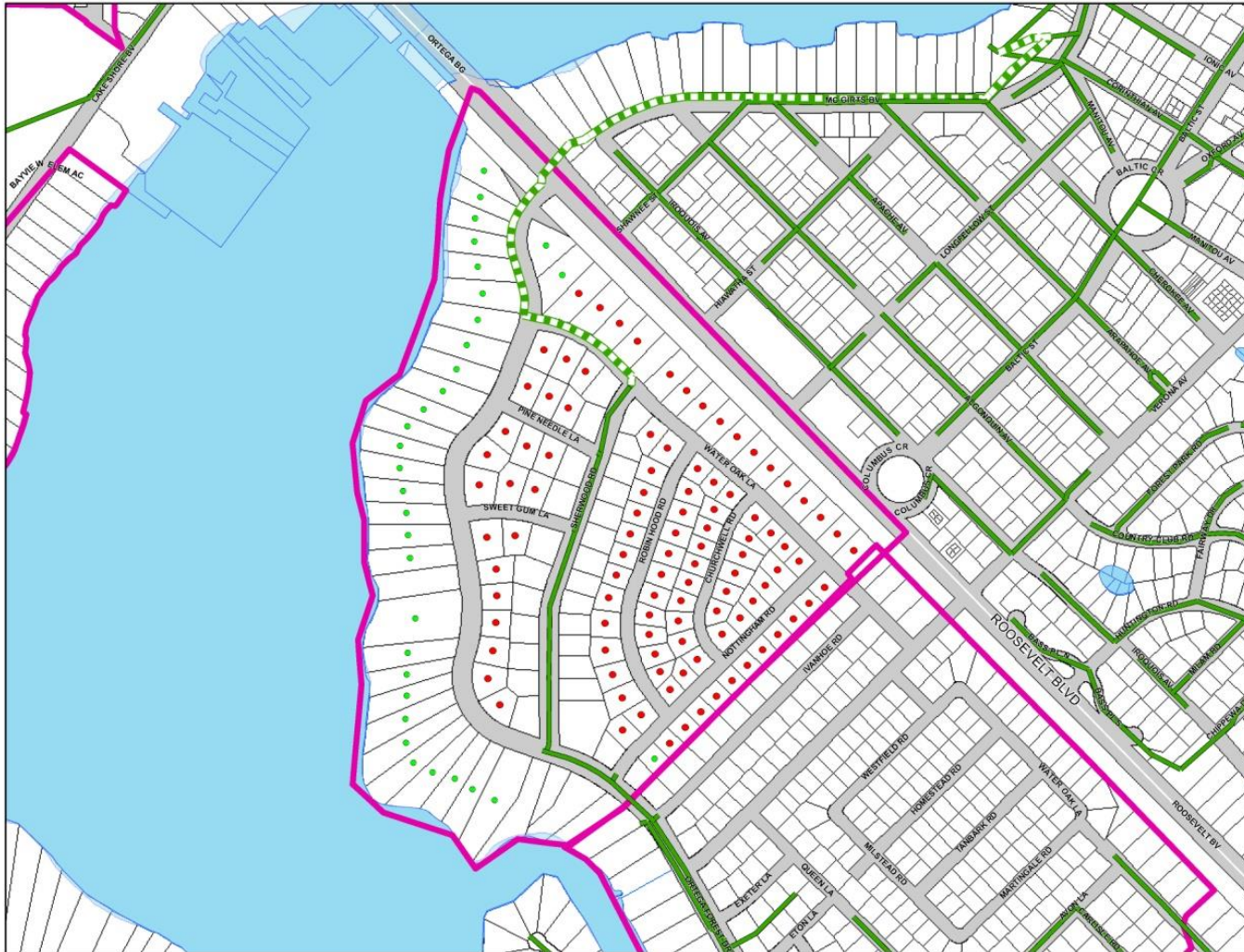
0 175 350 700 1,050 1,400 1,750 Feet

1 inch = 700 feet



Potential Septic Tank Phase Out Area

30 - Ortega Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 133
Within 150M Water Buffer


-  NO = 101
-  YES = 32

 DCHD Failure Areas



0 125 250 500 750 1,000 1,250 Feet

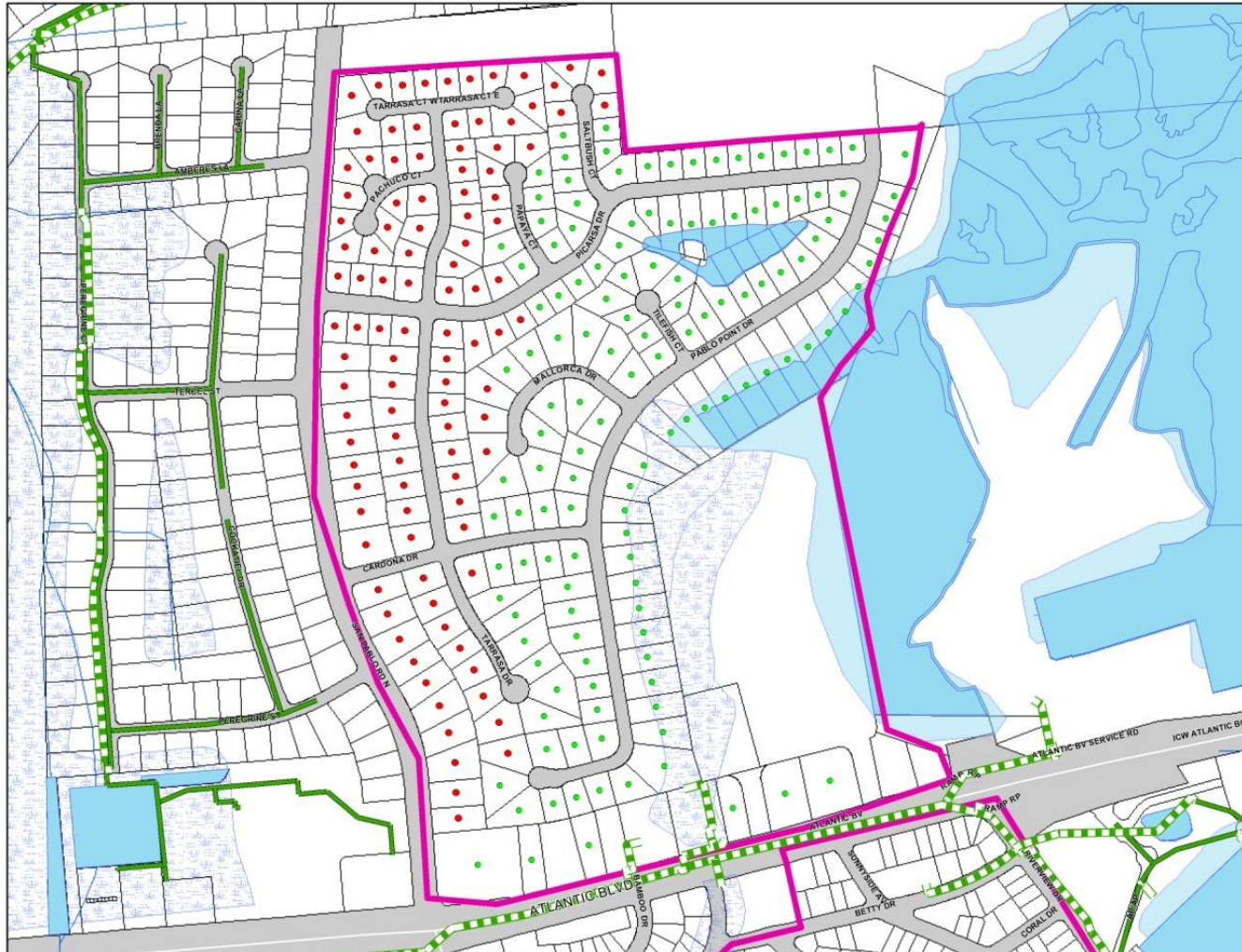
1 inch = 500 feet



Jacksonville
Stormwater Utility



Potential Septic Tank Phase Out Area

31 - Pablo Point Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 240
Within 150M Water Buffer


-  NO = 105
-  YES = 135

 DCHD Failure Areas



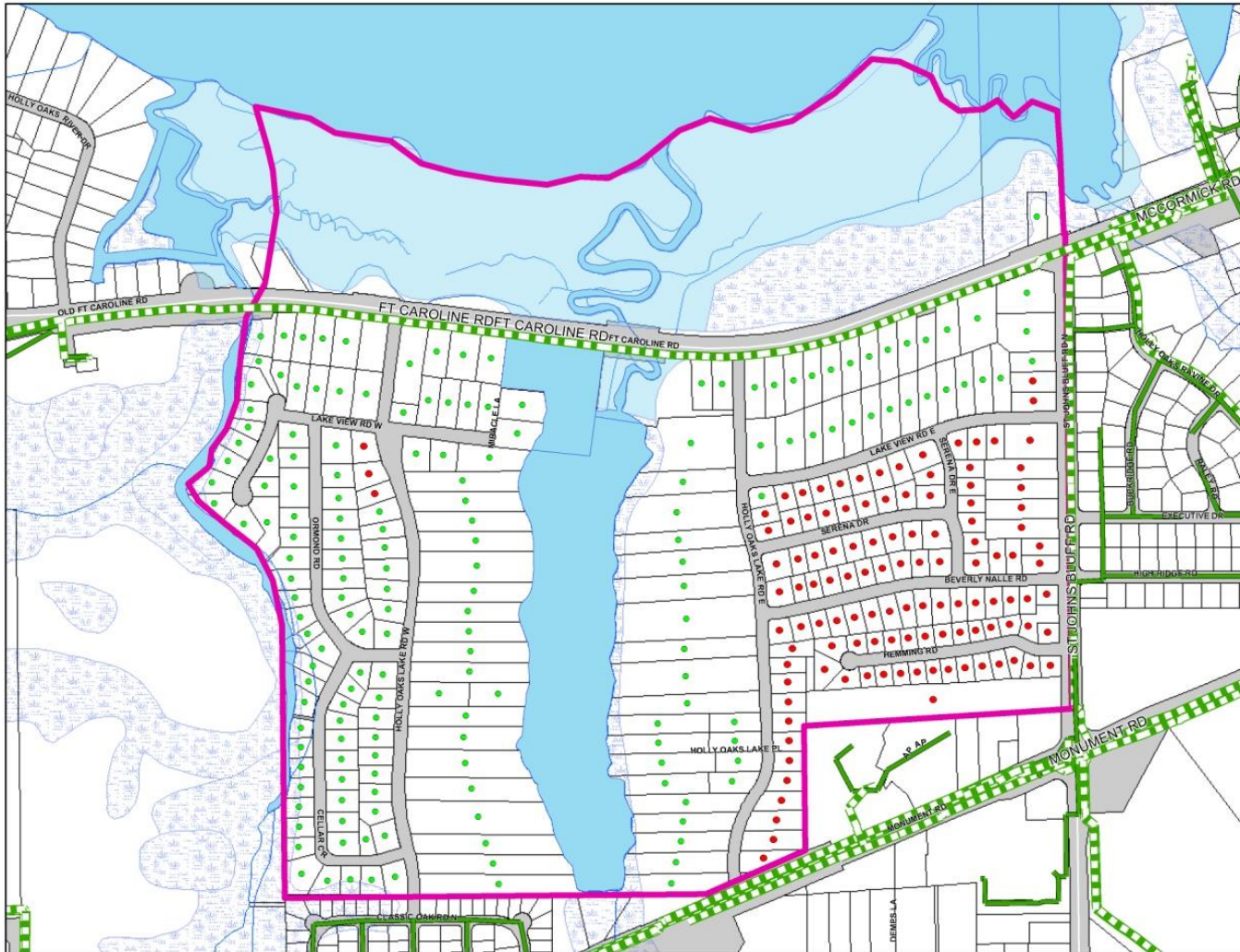
0 100 200 400 600 800 1,000
Feet

1 inch = 400 feet





Potential Septic Tank Phase Out Area

32 - Holly Oaks Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS


-  Forcemain
-  Collection

Main Extension Required = 291
Within 150M Water Buffer


-  NO = 117
-  YES = 174

 DCHD Failure Areas



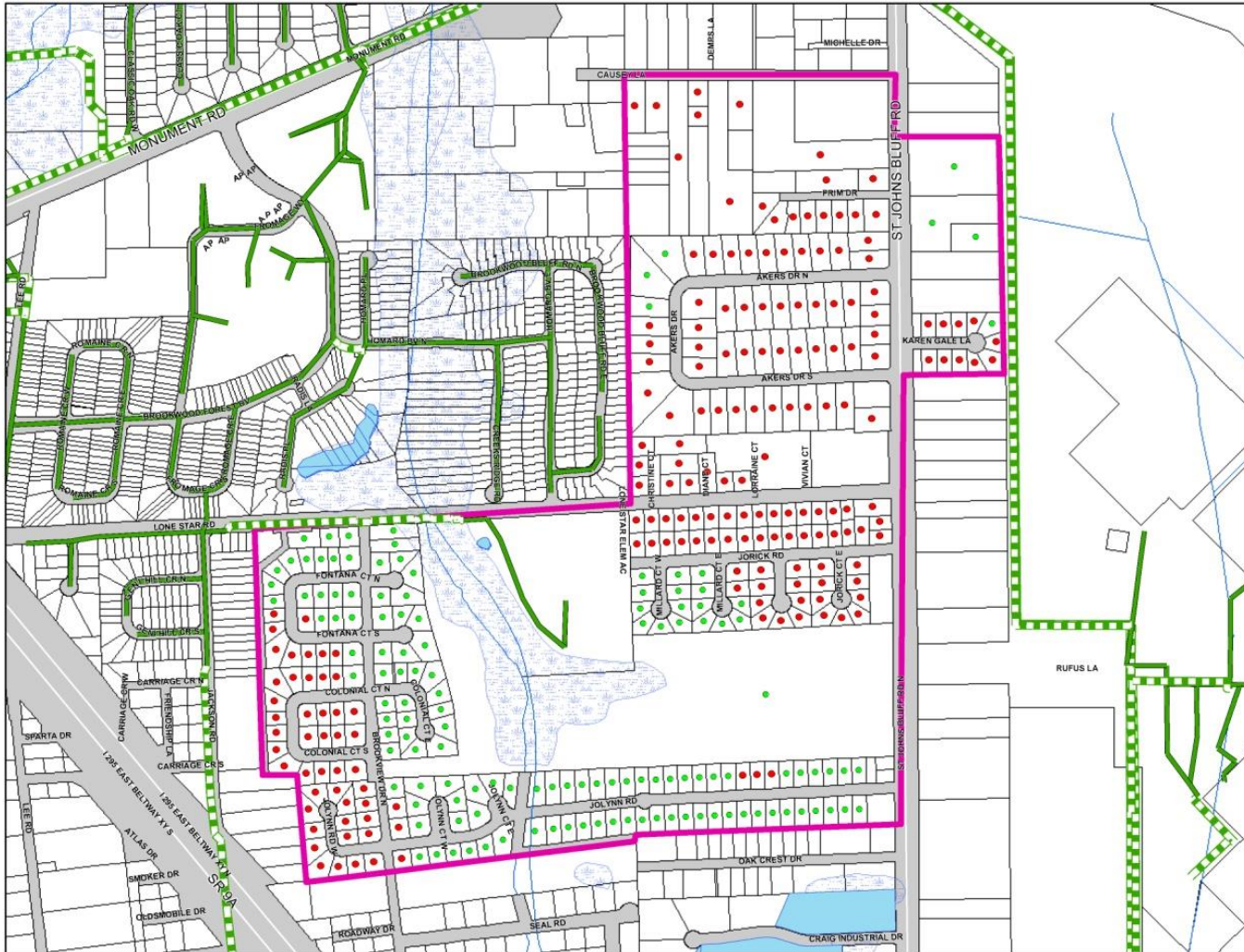


1 inch = 500 feet





Potential Septic Tank Phase Out Area

33 - Lone Star Park Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 328
Within 150M Water Buffer


-  NO = 195
-  YES = 133

 DCHD Failure Areas



0 125 250 500 750 1,000 1,250 Feet

1 inch = 500 feet



Jacksonville
Stormwater Utility

Potential Septic Tank Phase Out Area

34 - Odessa Potential Septic Tank Phase Out Area



Legend


JEA SEWER MAINS


 Force main

 Collection

Main Extension Required = 33

Within 150M Water Buffer

 NO = 2

 YES = 31

 DCHD Failure Areas

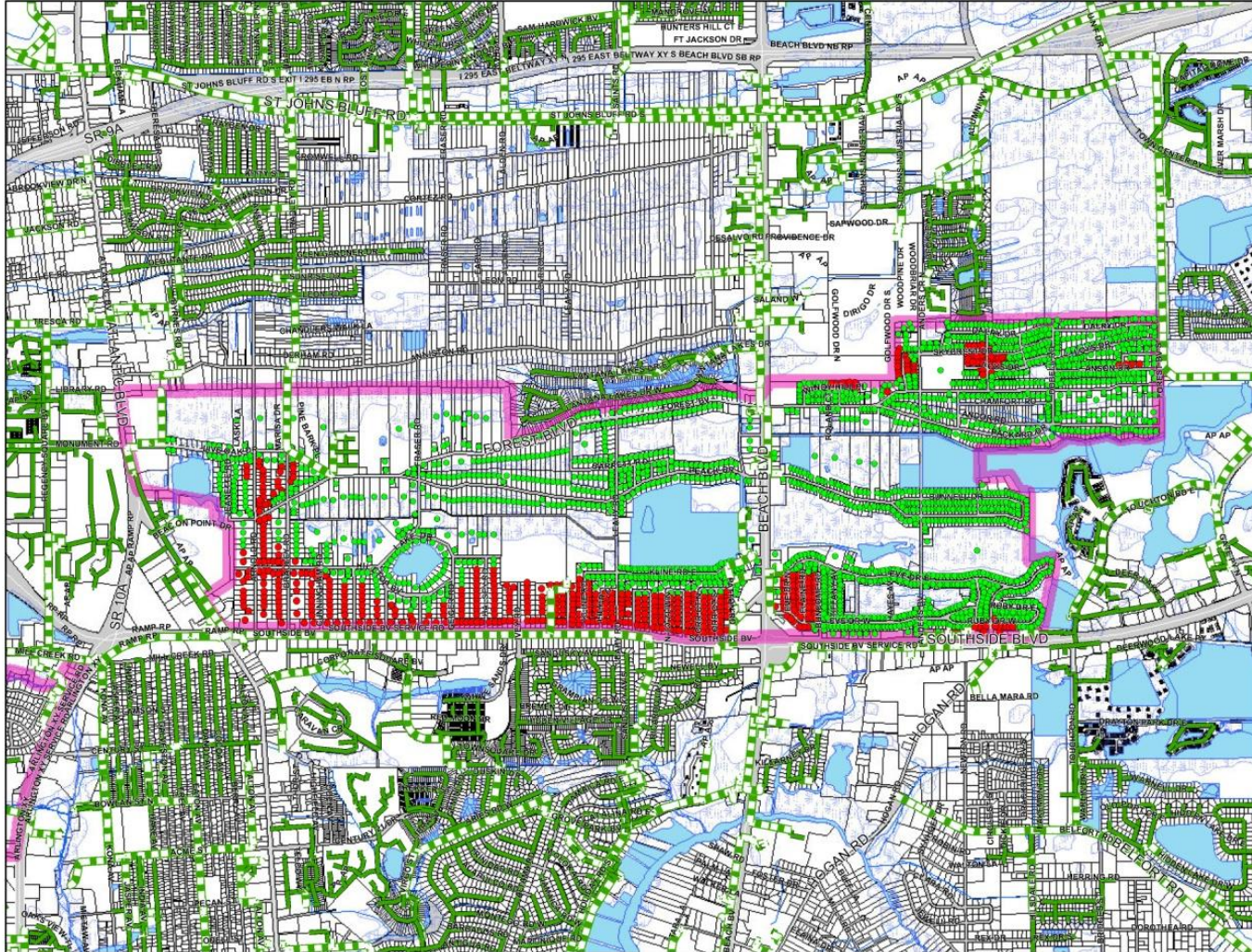


1 inch = 200 feet





Potential Septic Tank Phase Out Area

35 - Southside Estates Potential Septic Tank Phase Out Area






Legend


JEA SEWER MAINS

-  Forcemain
-  Collection

**Main Extension Required = 2,347
Within 150M Water Buffer**


-  NO = 520
-  YES = 1827

 DCHD Failure Areas



0 500 1,000 2,000 3,000 4,000 5,000 Feet

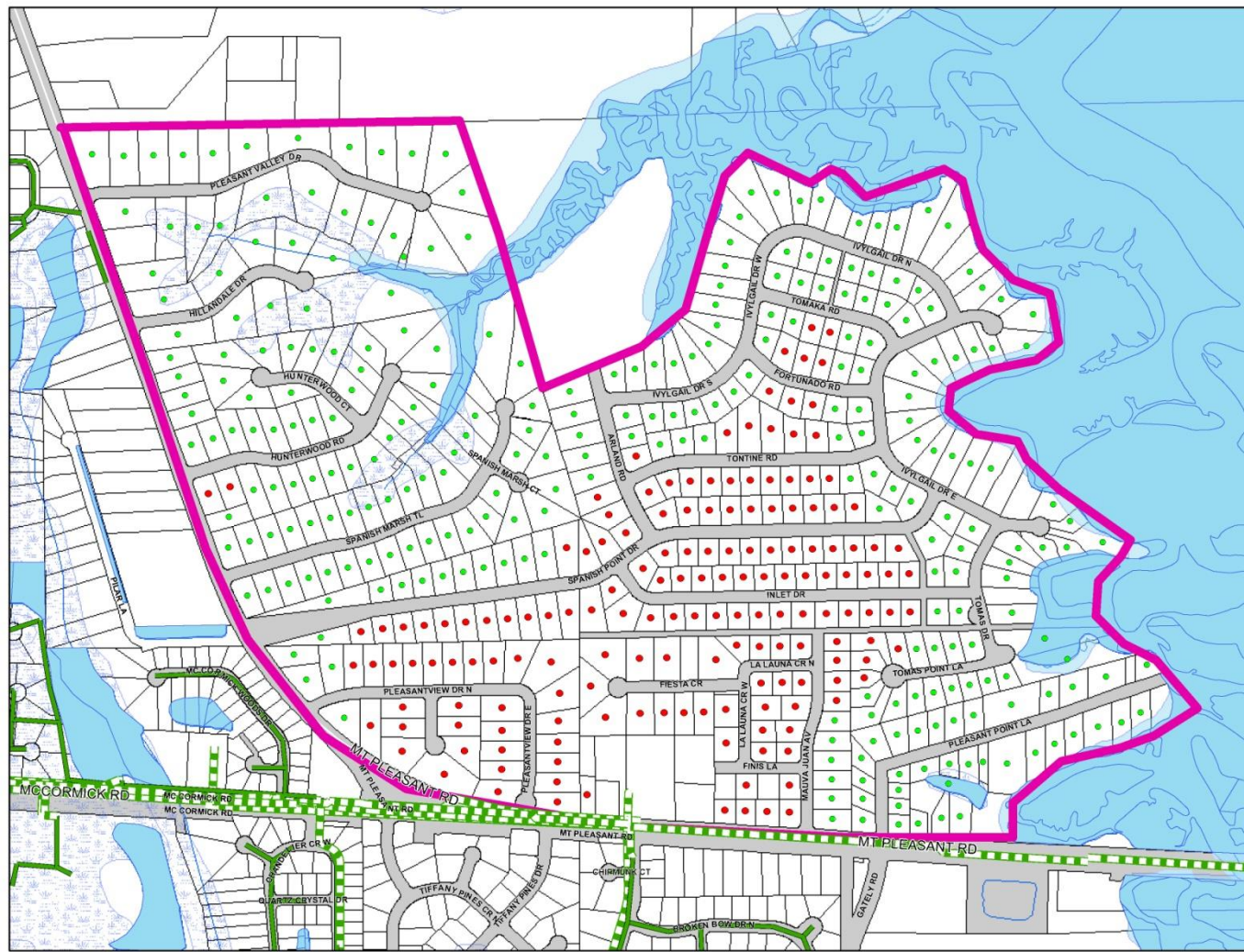
1 inch = 2,000 feet



Jacksonville
Stormwater Utility



Potential Septic Tank Phase Out Area

36 - Mt Pleasant Potential Septic Tank Phase Out Area






Legend



JEA SEWER MAINS

-  Forcemain
-  Collection


Main Extension Required = 446
Within 150M Water Buffer

-  NO = 164
-  YES = 282

 DCHD Failure Areas

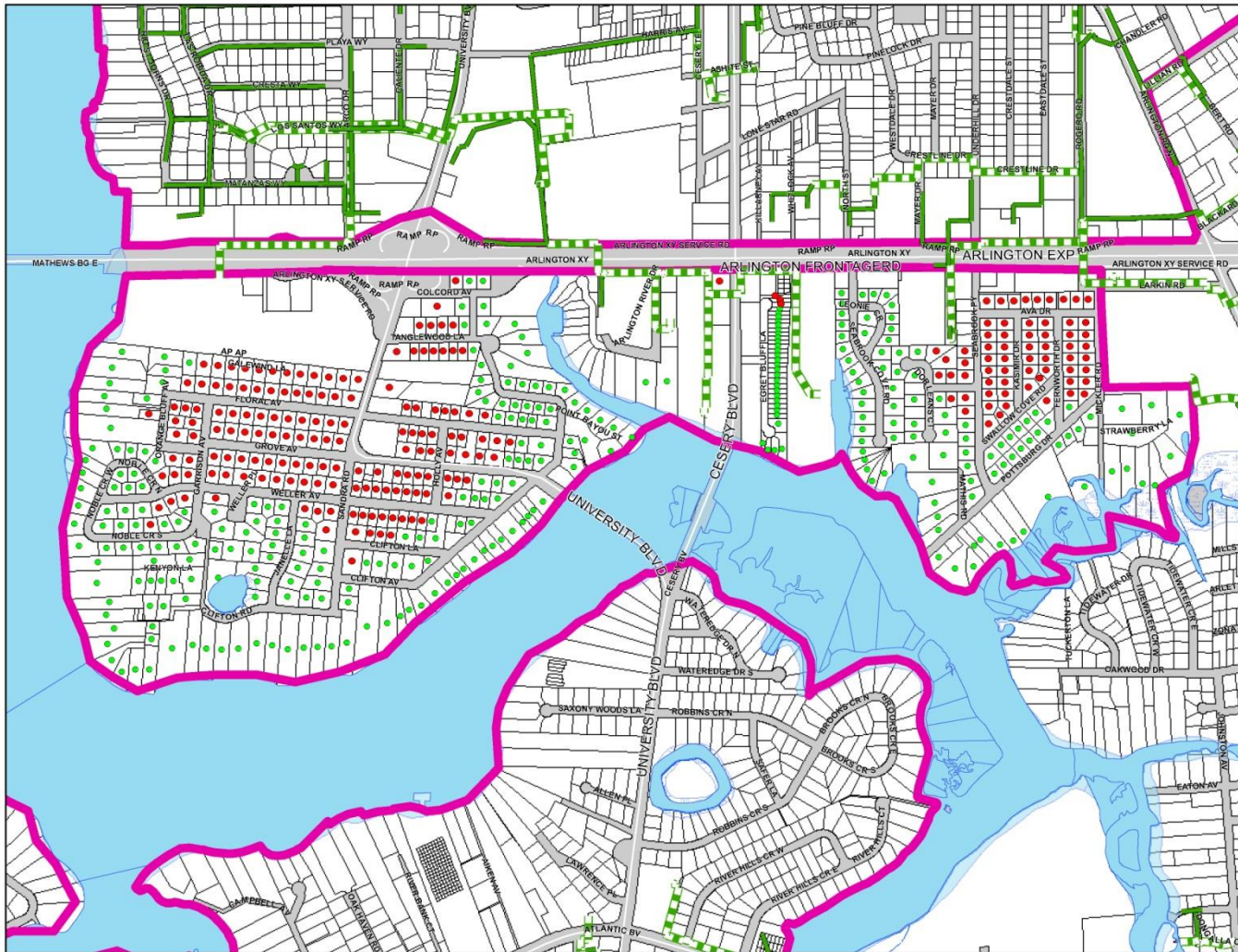



1 inch = 500 feet





Potential Septic Tank Phase Out Area

37 - Clifton Potential Septic Tank Phase Out Area






Legend

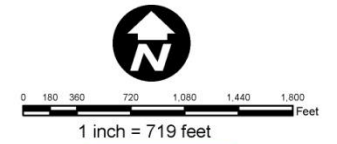
JEA SEWER MAINS

-  Forcemain
-  Collection

Main Extension Required = 535
Within 150M Water Buffer

-  NO = 222
-  YES = 313

 DCHD Failure Areas



Summary

- 38,643 potential Septic Tanks that meet BMAP Water Quality Benefit
 - 87 MT/Yr Potential Reduction
- 7,548 potential BMAP Tanks within Impaired Tributary
 - 17 MT/Yr Potential Reduction
- 11,787 potential BMAP Tanks within DCHD Failure Areas
 - 27 MT/Yr Potential Reduction
- 2,137 potential BMAP Tanks within Combined Impaired Tributaries & DCHD Failure Areas
 - 4.913 MT/Yr Potential Reduction
 - 13 Identified Potential Projects
- Factors evaluated during Master Plan effort affecting Project cost
 - Lift stations
 - Property acquisition
 - Off-site force main
 - On-site force main
 - Roadway condition
 - Density of parcels
 - Sewer system type
 - Location of existing utilities
 - % of Participating Property Owners



Potential Highest Priority Septic Tank Phase Out Project Areas Summary

DCHD Rank	Area Name	Total # of Tanks	# of WQ Beneficial Tanks (BMAP Main Stem & Tributaries)	Potential Water Quality Benefit (MT)
1	Beverly Hill	706	285	.655 MT
2	Julington Creek	2011		
3	Riverview	1897	588	1.35 MT
4	Westfield	183		
5	Biltmore C	201		
6	Kinard	63	59	.136 MT
7	Christobel	307	63	.145 MT
8	Julington Hills	632	230	.529 MT
9	St. Nicholas	681	167	.384 MT
10	Emerson	796	339	.780 MT
11	Lincoln Villas	17		
12	Royal Terrace	10	3	.007 MT
13	Sans Pereil	212		
14	Eggleston Heights	3544		
15	Champion Forest	631		
16	Lakeshore	1408		
17	Beauclerc Gardens	580	49	.113 MT
18	Hood Landing II	523		
19	Mill Creek	437		
20	Atlantic Highlands	73		

DCHD Rank	Area Name	Total # of Tanks	# of WQ Beneficial Tanks (BMAP Main Stem & Tributaries)	Potential Water Quality Benefit (MT)
21	Spring Glen	557		
22	Oak Lawn	236		
23	Empire Point	350		
24	Oakhaven	881	116	.267 MT
25	Point La Vista	848	31	.071 MT
26	Northlake	121		
27	The Cape	36		
28	Freeman Rd- Inwood Terrace	96	56	.129 MT
29	Cedar River	415	151	.347
30	Ortega	133		
31	Pablo Point	240		
32	Holly Oaks	291		
33	Lone Star Park	328		
34	Odessa	33		
35	Southside Estates	2347		
36	Mt. Pleasant	446		
37	Clifton	535		
	Totals	22805	2,137	4.913 MT

Green highlighted project areas have a BMAP Main Stem & Tributary water quality benefit

Questions