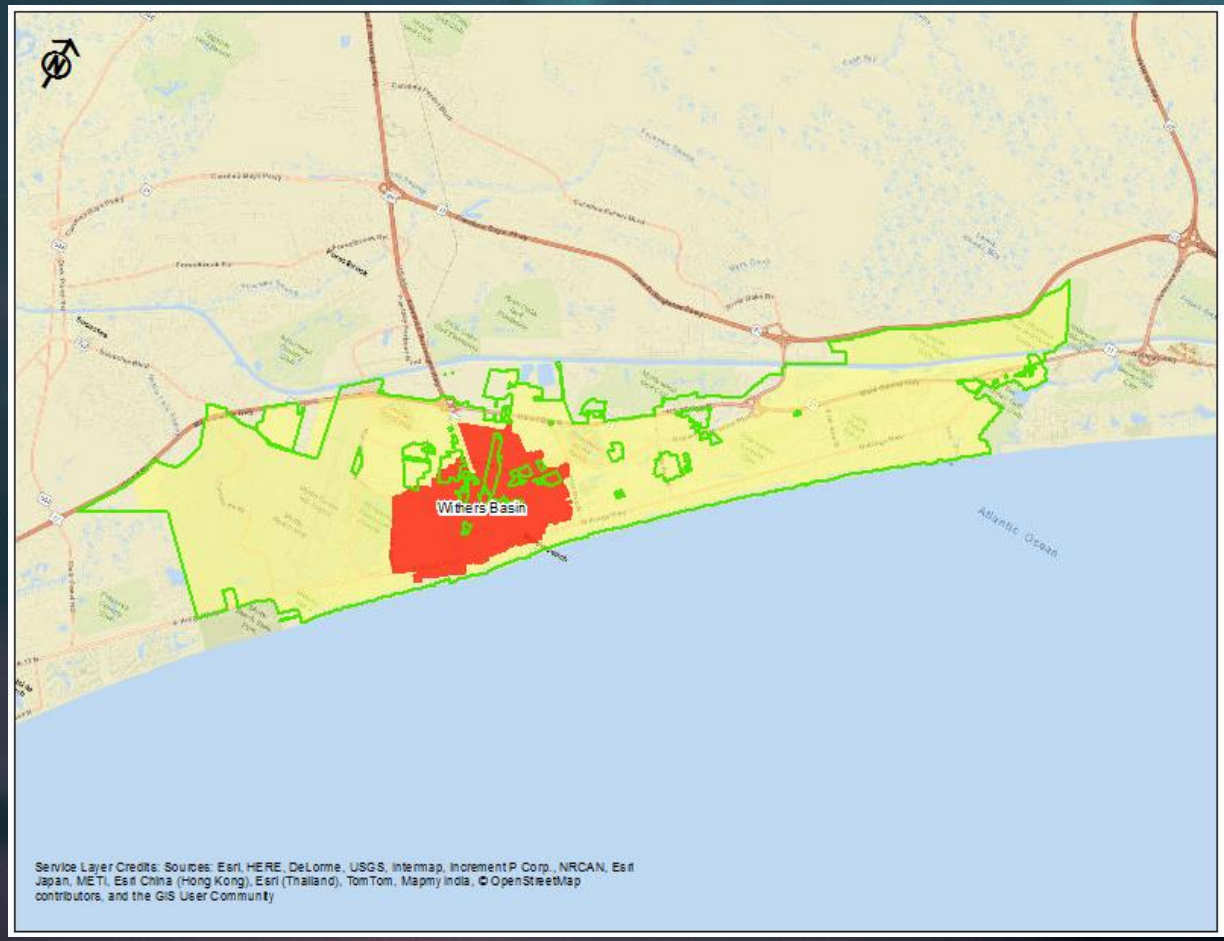
Stormwater Master Plan: Withers Basin

City of Myrtle Beach

October 3, 2019

- Withers Basin – 3.4 sq. miles
- Discharges directly to Ocean
- City Limits – 23.7 sq. miles



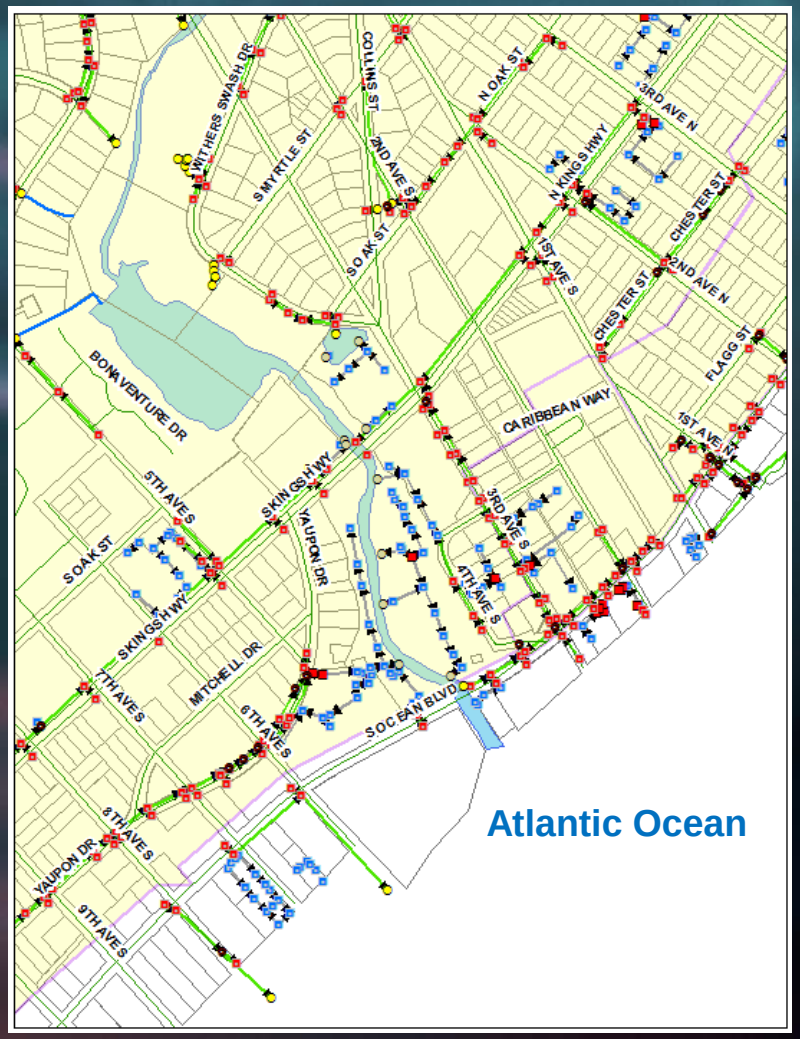
WK DICKSON

Project Goals

- Address stormwater quality
- Address stormwater quantity
- Preserve, improve and protect existing flow paths and infrastructure

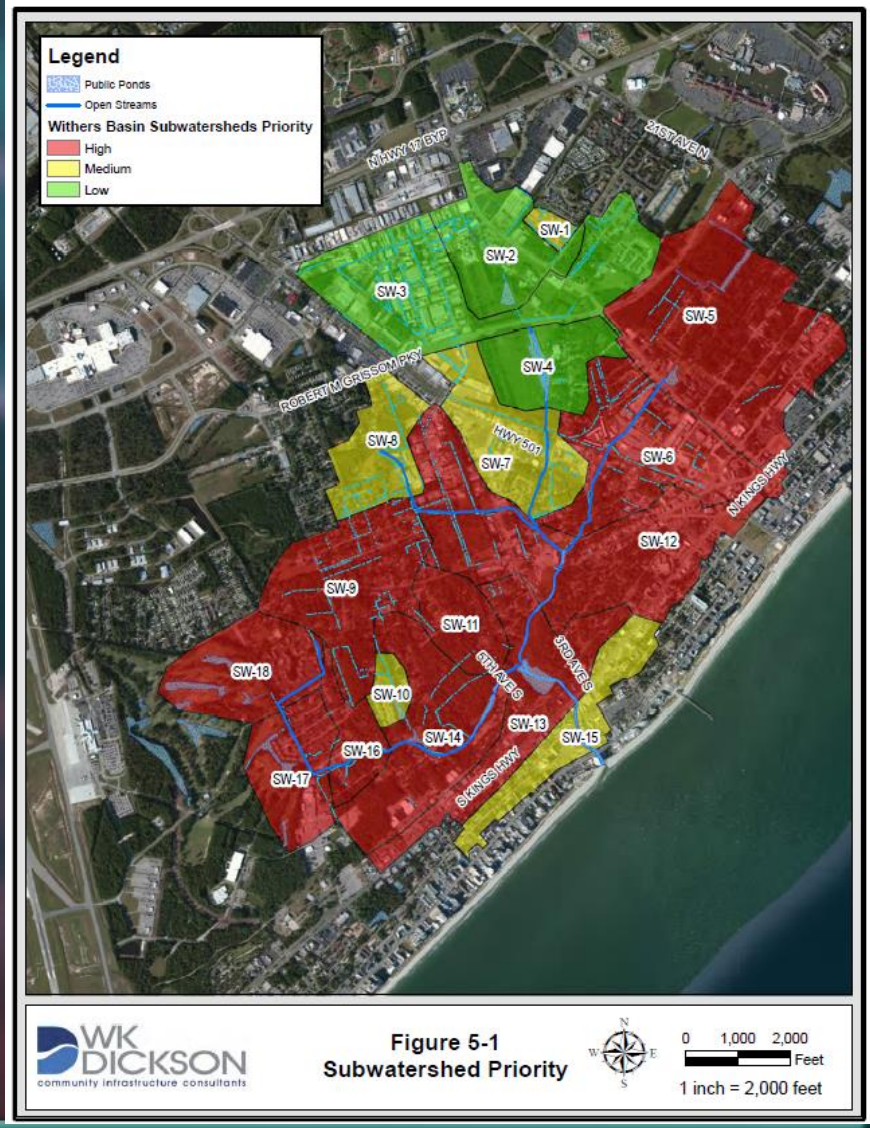
By the Numbers – Withers Basin

- 3.4 square miles
- 3,500 drainage structures
- 40 miles drainage pipe
- 21 miles streams and channels



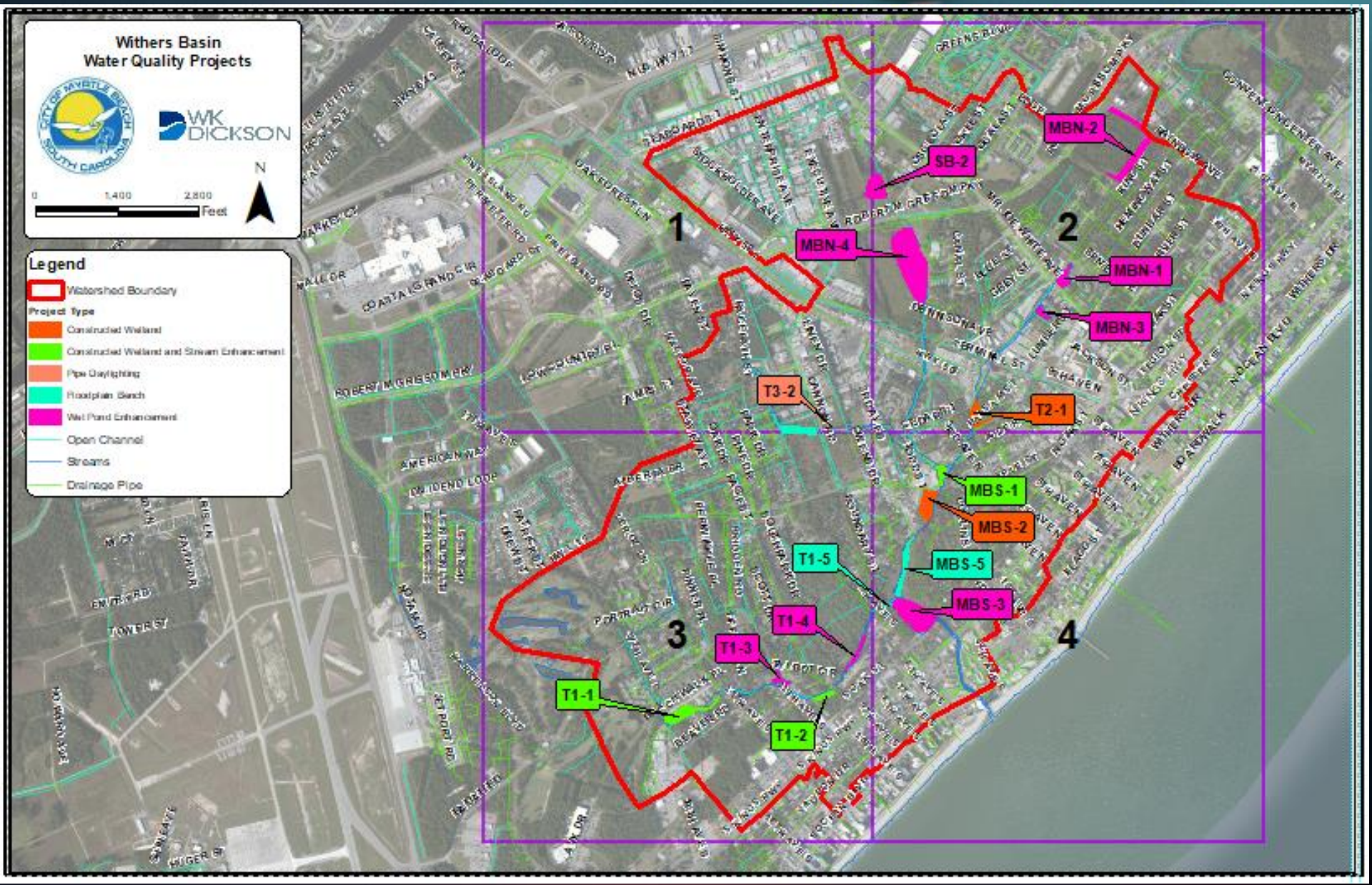
Existing Conditions Analysis

- GIS files
- Field reconnaissance
- Water quality sampling
- Staff input
- Public feedback
- Hydrologic and hydraulic modeling



Project Identification

- 16 water quality treatment projects focused on bacterial removal
  - Enhancement of existing ponds with wetland features
  - New wetland facilities
  - Buffer restoration
  - Floodplain reconnection
- 11 major infrastructure projects to improve quantity LOS
  - Large culvert and pipe infrastructure
  - Utility conflicts
  - Easements
- 7 minor infrastructure quantity projects
  - Smaller pipe replacement and ditch maintenance
  - Potential to be built by City crews

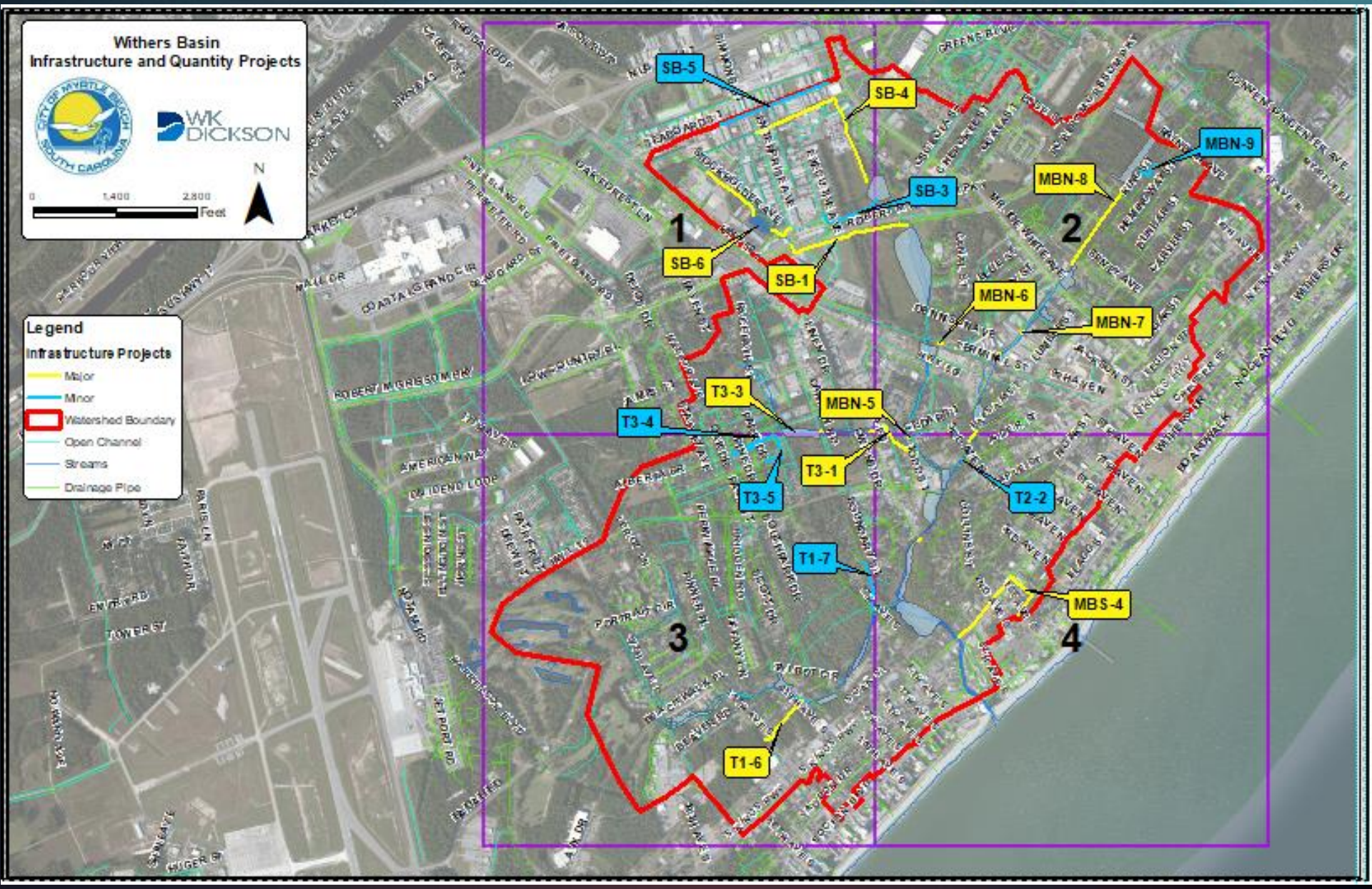

Withers Basin
Water Quality Projects
WK DICKSON
N
0
1,400
2,800
Feet
Legend
Watershed Boundary
Project Type
Constructed Wetland
Constructed Wetland and Stream Enhancement
Pipe Daylighting
Floodplain Bench
Wet Pond Enhancement
Open Channel
Streams
Drainage Pipe
1
2
3
4
SB-2
MBN-2
MBN-4
MBN-1
MBN-3
T3-2
T2-1
MBS-1
MBS-2
T1-5
MBS-5
MBS-3
T1-4
T1-3
T1-1
T1-2

Water Quality Projects

Project ID	Quadrant	Original Name of Project	Treatment Area (acres)	Property Requirements	Conceptual Construction Cost	Percent Bacteria Reduction*
MBS-3	Q4	Withers Swash Pond Enhancement 5.8-acre retrofit of existing pond	2,000	Public	$686,000	30
MBS-1	Q4	Broadway Wetland and Stream Improvements Expand existing 0.7 acre pond to 1.0 acre wetland with 900 LF Stream Enhancement	1,350	Public and Acquisition	$319,000	70
T1-1	Q3	Beach Walk Wetland and Stream Enhancement New 2-acre wetland and 1,000 LF Stream Enhancement	200	Acquisition	$733,000	70
MBS-2	Q4	New Town Park Wetland New 1.5-acre wetland	1,450	Acquisition and Easement	$1,311,000	65
MBN-4	Q2	Canal Street Pond Enhancement 4.5-acre retrofit of existing pond	400	Easement	$549,000	30
MBN-1	Q2	Futrell Park Wet Pond Enhancement 1.3-acre retrofit of existing pond	205	Public	$170,000	30
MBS-5	Q4	3rd Avenue South Floodplain Bench and culverts 1.7-acre floodplain reconnection	1,450	ROW and Easement	$653,000	15
T1-4	Q3	KOA Pond Enhancement 1-acre retrofit of existing pond	400	Easement	$286,000	30
T3-2	Q1	Cannon Road Pipe Daylight Project Daylight 750 LF of closed pipe	270	Easement	$298,000	15
SB-2	Q1	Osceola St Pond enhancement (Seaboard Phase 1) 1-acre retrofit of existing pond	160	Easement	$182,000	30
T1-2	Q3	Spivey Wetland and Stream Enhancement 0.75-acre wetland and stream enhancement	400	Acquisition	$489,000	70
MBN-2	Q2	Grissom Parkway Wet Pond Enhancement 2-acre retrofit of existing pond	110	Public	$365,000	30
T1-5	Q4	5th Avenue South Floodplain Benching 0.4-acre floodplain reconnection	480	ROW and Easement	$259,000	15
T2-1	Q2	Balsam Street Park Wetland Enhancement 1.5-acre wetland	20	Acquisition, and Easement	$985,000	65
T1-3	Q3	Carolina Cove Pond Enhancement 0.75-acre retrofit of existing pond	280	Public	$235,000	30
MBN-3	Q2	Fulton Street Wet Pond Enhancement 0.6-acre retrofit of existing pond	13	Public	$166,000	30

50% cumulative bacteria reduction at watershed outlet

*Percent reductions based on type of facility sized for the drainage area. Removal rates may vary for undersized facilities.


Withers Basin
Infrastructure and Quantity Projects
WK DICKSON
N
0
1,400
2,800
Feet
Legend
Infrastructure Projects
Major
Minor
Watershed Boundary
Open Channel
Streams
Drainage Pipe
SB-5
SB-4
SB-3
SB-6
SB-1
MBN-9
MBN-8
MBN-6
MBN-7
MBN-5
T3-3
T3-4
T3-1
T3-5
T2-2
T1-7
MBS-4
T1-6
1
2
3
4

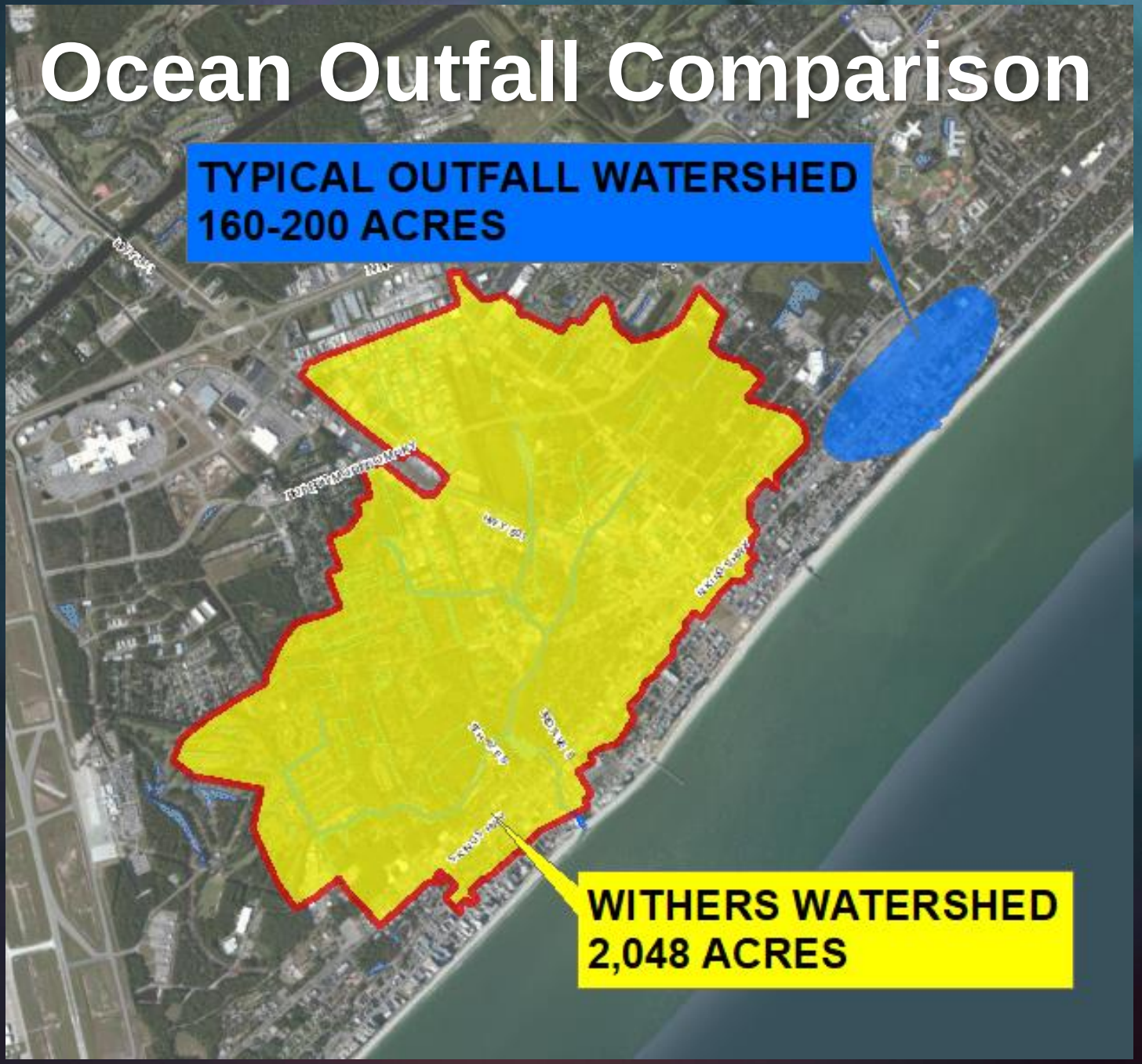
Major Infrastructure Projects

Project ID	Quadrant	Original Name of Project	Existing LOS	Proposed LOS	Property Requirements	Conceptual Construction Cost
SB-1	Q1	Grissom Street closed system (Seaboard Phase 1)	10-year	50-year	ROW	$2,453,000
SB-4	Q1	Seaboard Avenue to Osceola St Pond (Phase 2)	<2-year	10-year	Easement	$1,334,000
SB-6	Q1	Stockholder Avenue Pond and Pump Station (Phase 3)	<2-year	10-year	Easement and Acquisition	$1,940,000
T3-3	Q1	Holly Drive Culvert replacement and floodplain benching	<2-year	10-year and 25-year	Easement	$720,000
MBN-6	Q2	Canal Street box culverts	<2-year	10-year and 25-year	ROW	$551,000
MBN-7	Q2	Campbell Street box culverts	<2-year	2-year	ROW	$504,000
MBN-8	Q2	Booker T. Washington Phase I (Grissom - Futrell Pond Pipe Project)	<2-year	10-year	Easement	$993,000
T1-6	Q3	Holly Park closed system improvements and outfall treatment	<2-year	10-year	Acquisition and Easement	$563,000
MBN-5	Q4	Cedar Street box culvert	2-year	10-year	ROW	$305,000
MBS-4	Q4	2nd Avenue North closed system	<2-year	10-year	ROW	$1,020,000
T3-1	Q4	3rd Avenue South to Main Branch closed system improvements	2-year	10-year	Easement	$1,061,000

Minor Infrastructure Projects

Project ID	Quadrant	Original Name of Project	Existing LOS	Proposed LOS	Property Requirements	Conceptual Construction Cost
SB-3	Q1	Executive Avenue closed system(Seaboard Phase 1)	2-year	10-year	Easement	$307,000
SB-5	Q1	Seaboard Avenue road drainage (Phase 2)	<2-year	10-year	ROW	$997,000
MBN-9	Q2	Booker T. Washington Phase II (King St Pipe Improvements)	<2-year	10-year	ROW and Easement	$311,000
T1-7	Q3	Boundary open and closed system improvements	<2-year	10-year	ROW and Easement	$317,000
T3-4	Q3	Ramsey Acres Phase I	<2-year	2-year	ROW and Easement	$522,000
T3-5	Q3	Ramsey Acres Phase II	<2-year	10-year	ROW and Easement	$727,000
T2-2	Q4	3rd Avenue North culvert replacement	10-year	50-year	ROW	$314,000

Ocean Outfall Comparison



Ocean Outfall Comparison

- Withers Watershed
  - 2,048 acre drainage area
  - Water Quality Projects - $7.7 M construction
  - Major Infrastructure Projects - $11.4 M construction
  - Minor Infrastructure Projects - $3.5 M construction
- Ocean Outfall
  - 160-200 acre drainage area
  - $30 M conceptual construction cost
- Watershed wide improvements provides comprehensive solutions

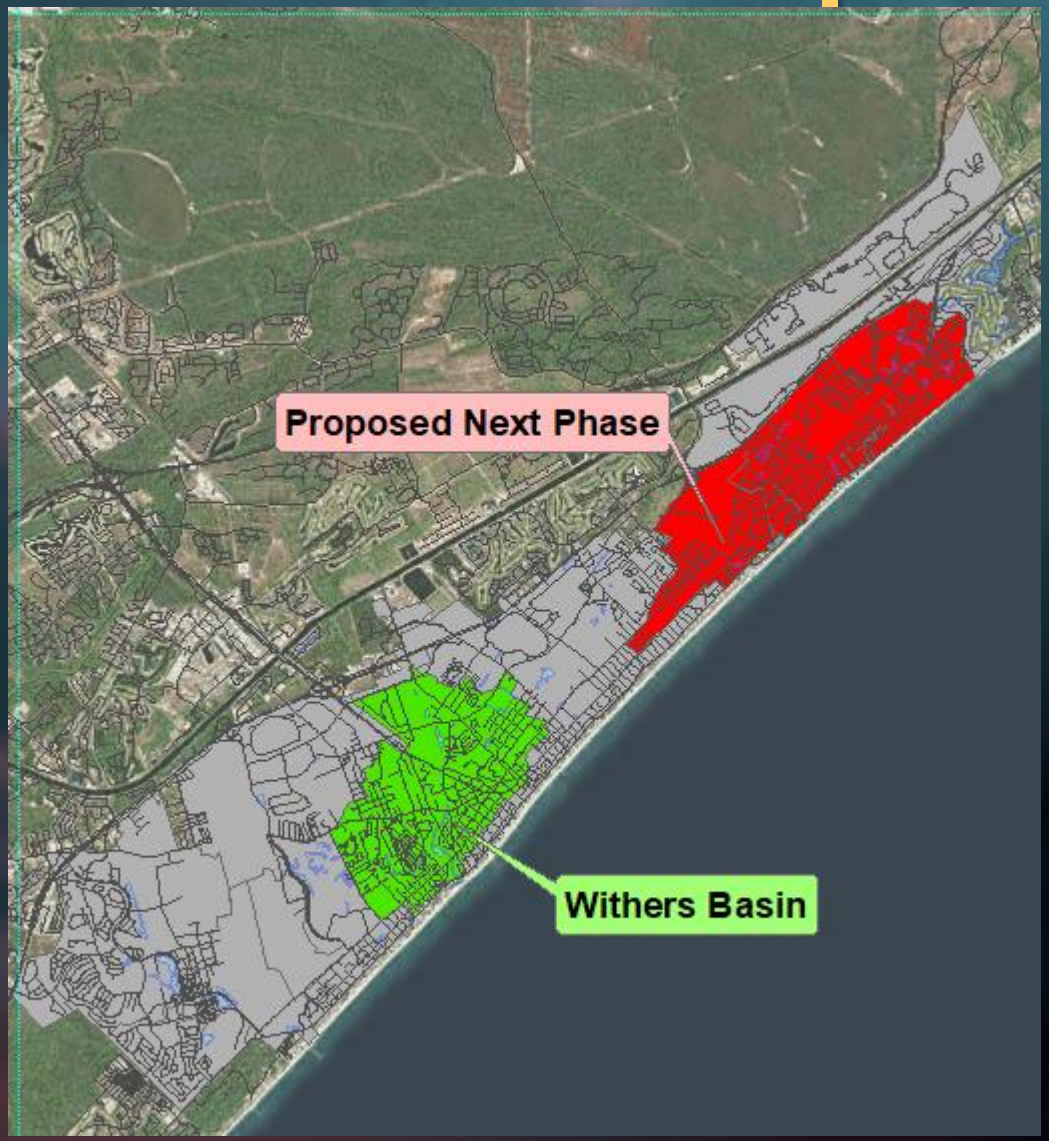
Solutions for Improving Water Quality

- Source reduction
  - Pet waste clean up
  - Identify sanitary sewer sources through smoke testing and dry weather monitoring
  - Enhance stream and pond buffers
  - Modify design guidelines for ponds and wetlands
  - Maintenance of ponds, wetlands, and infrastructure
- Capital projects
- Enhancement of existing facilities can be cost effective option for improving water quality

Outfall Treatment

Next Steps

- Public meeting November 2019
- Finalize Withers report
- Proceed to next planning phase in Deep Head Swash and Cane Patch
- Pursue grant funding opportunities for project implementation and dry weather source identification




Thank You