

From: Alan D. Wertepny
Sent: Friday, August 4, 2017 11:31 AM
To: Michelle Bull
Cc: Angela Prymas; Jeff Needle; Anne Marie Capelli
Subject: Fw: TMDL Outfall Prioritization Plan for Lake Ida (PA#B6050.30)

Michelle,

Boynton Beach and Delray Beach have prioritized EPA's Lake Eden/Ida (Lake Ida) nutrient TMDL for more detailed assessment of the lakes' pollutant loading, identification of pollutant sources and possible restoration opportunities within the contributing watershed. Both permittees, as well as Palm Beach County and Florida Department of Transportation, have been actively participating in a Watershed Management Plan for the Boynton Inlet Contributing Area (Attachment 1- Boynton Sub-Watersheds/ Study Area) sponsored by the National Oceanic and Atmospheric Administration (NOAA). As part of this plan, the Lake Ida contributing area, sub-watershed 1 (Attachment 2) was selected for more detailed assessment. Many of the elements of NOAA's study and report address the MS4 permit requirements for Lake Ida's TMDL compliance, including: estimating current annual pollutant loading, identifying major sources of pollutants of concern, water quality monitoring, field assessments, stakeholder meetings and potential restoration opportunities. The schedule for completion of this Watershed Management Plan is February 2018. A copy of the current scope, completed activities and schedule is provided as Attachment 3.

Both Boynton Beach and Delray Beach have small MS4 areas with direct discharge into Lake IDA (Attachments 4 and 5, respectively). In fact, all MS4 areas discharging into Lake Ida's watershed (sub-watershed 1) is minimal when compared to the private development areas that are contributing (see Attachment 6). Most of Boynton Beach's outfalls to Lake Ida are 18-inch in diameter and serve a one block residential area. Delray Beach has two 36-inch outfall pipes, each serving about six blocks of residential area. Consequently, it is not logical, cost effective, nor beneficial to conduct storm event monitoring for these MS4s. Therefore, a watershed management plan with a target water quality monitoring plan is more appropriate for Lake Ida.

As an initial step in addressing the MS4 TMDL permit requirements for Boynton Beach and Delray Beach, I recommend that DEP support utilization of NOAA's Boynton Inlet Watershed Management Plan as fulfilling the MS4 permit requirements for an Outfall Prioritization Plan. Monitoring is included in this Watershed Management Plan. It is prudent to continue to cooperate with NOAA and review the work products which become available in early part of 2018.

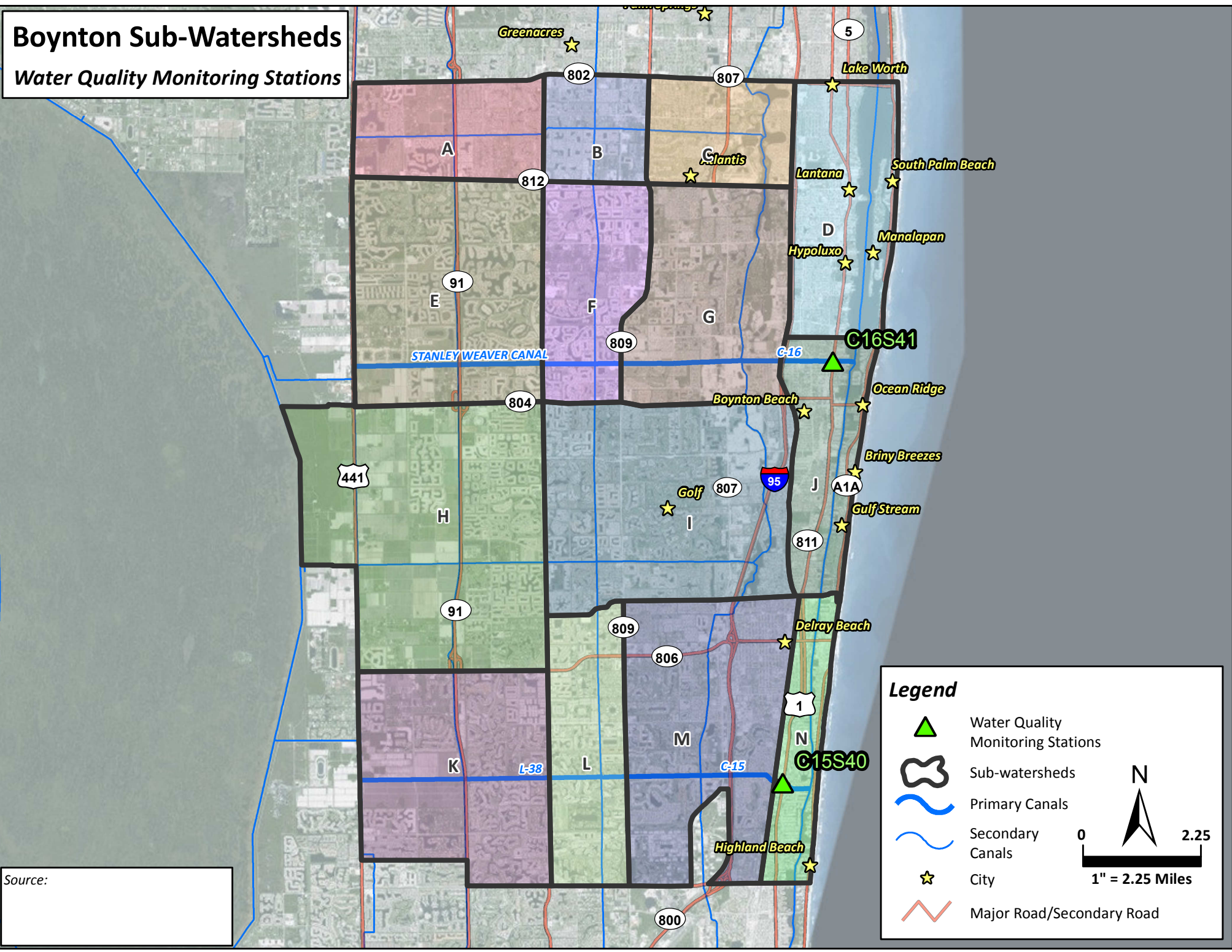
Please review the above information and provide DEP's concurrence with the utilization of the NOAA Boynton Inlet Watershed Management Plan.

Call or email me if you have any questions.

Alan

Boynton Sub-Watersheds

Water Quality Monitoring Stations



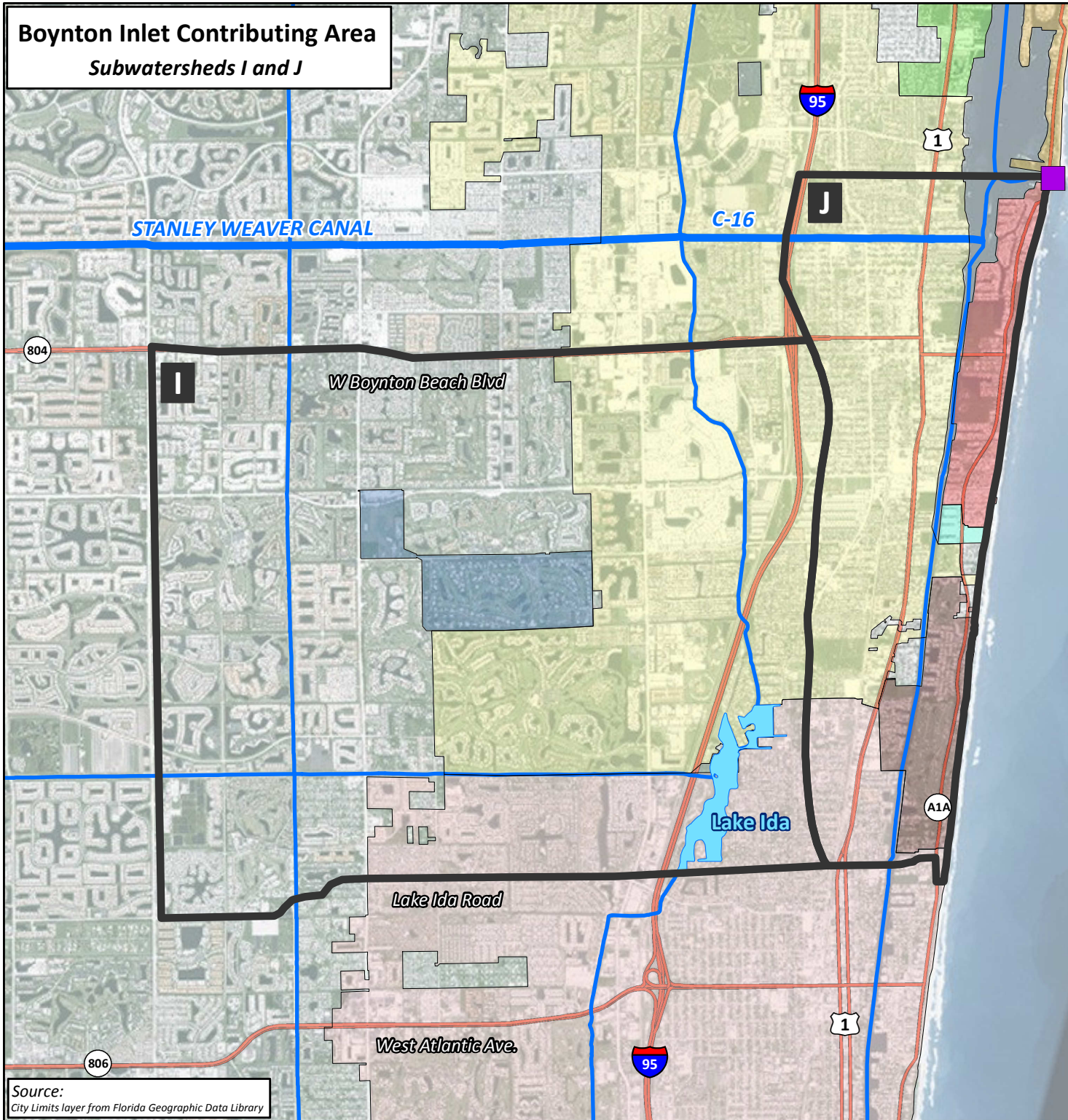
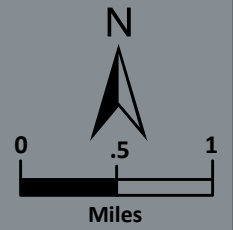
Legend

- Water Quality Monitoring Stations
- Sub-watersheds
- Primary Canals
- Secondary Canals
- City
- Major Road/Secondary Road

0 2.25
1" = 2.25 Miles

Source:

Boynton Inlet Contributing Area
Subwatersheds I and J



Boynton Inlet

Legend

- Sub-watersheds
- Primary Canals
- Secondary Canals
- Major Road/
Secondary Road

City Limits

- Boynton Beach
- Briny Breezes
- Delray Beach
- Golf
- Gulf Stream
- Hypoluxo
- Manalapan
- Ocean Ridge
- Unincorporated
Palm Beach County

Source:
 City Limits layer from Florida Geographic Data Library

Delray Beach Stormwater System Lake Ida Area

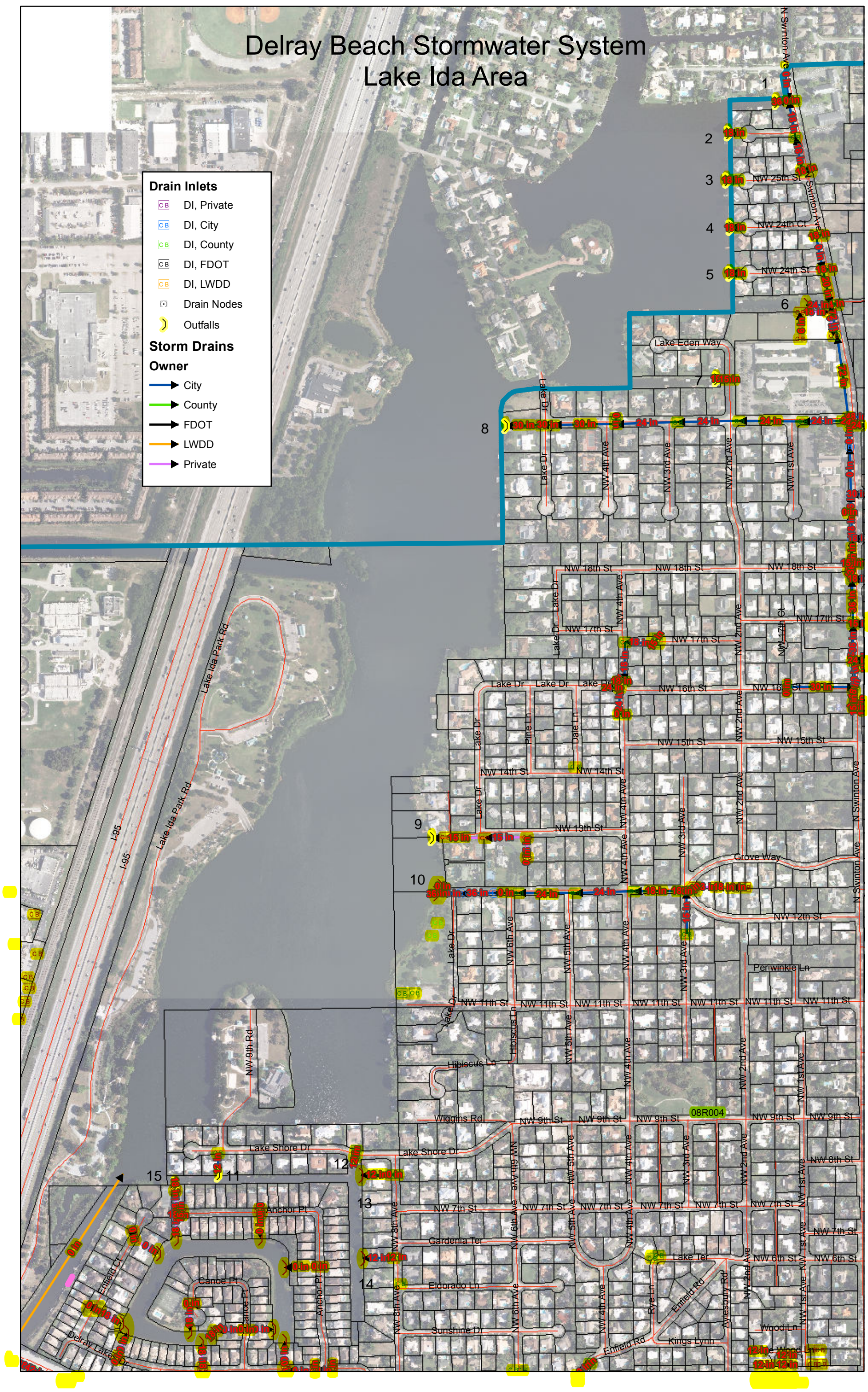
Drain Inlets

- CB DI, Private
- CB DI, City
- CB DI, County
- CB DI, FDOT
- CB DI, LWDD
- Drain Nodes
-) Outfalls

Storm Drains

Owner

- ▶ City
- ▶ County
- ▶ FDOT
- ▶ LWDD
- ▶ Private



Project:

Develop a Watershed Management Plan for the Boynton Inlet Contributing Area in Southeast, Florida.

Work Assignment Managers for Project:

Kurtis Gregg and Rob Ferguson, NOAA

Contractor:

Horsley Witten Group

Activity 1: Characterization and Prioritization of Drainage Units within the C-15 and C-16 Watersheds (COMPLETE – see note for 1.5)

The purpose of this task is to demonstrate a rapid approach for delineating smaller ICA drainage units, and for selecting priority subwatersheds of concern.

1.1) Data compilation and review (COMPLETE)

The most recent mapping, water quality monitoring, and regional modeling information will be collected and reviewed by the project team. This includes ensuring that the most updated GIS layers for canals (with ID/names and flow direction), monitoring stations (particularly up in the canal network), Waterbody IDs, and land use are available for use. Other useful GIS information includes stormwater and wastewater infrastructure (e.g., stormwater ponds, drainage network, package plants, and septic systems) impervious cover, subdivisions/neighborhoods, publicly-owned or operated lands. Relevant studies, reports, or other documents to be reviewed include, but are not limited to:

- Relevant flow and water quality monitoring data (FL STORET, Palm Beach County);
- 2016 South Florida Environmental Report;
- St Lucie’s Inlet TMDL report;
- SWET 2008 Report;
- 2013 Lake Worth Lagoon Management Plan;
- Most recent MS4 NPDES reports, including the MS4-NPDES Palm Beach County Joint Annual Report Cycle 3 Year 3: October 1, 2012 to September 30, 2013;
- Most recent DEP 303(d) Impaired Waters list;
- 2015 DEP Guidance on Developing Restoration Plans as Alternatives to TMDLs – Assessment Category 4b and 4e Plans;
- Preliminary TMDL reports for waters within the Boynton Inlet ICA (see Mock Roos and Associates);
- 2012 City of Lake Worth Stormwater Master Plan (or other relevant master plan); and
- Palm Beach County Watershed Management Model (WMM) from CDM Smith.

1.2) Delineation of the Boynton Inlet ICA into subwatershed units (COMPLETE)

Smaller drainage units will be delineated within each of the C-15 and C-16 watersheds using existing mapping information on canal flow directions, strategic locations of existing canal monitoring stations (see Palm Beach County), and input from the Lake Worth Lagoon Drainage

District. NOAA estimates that each watershed will be divided into 5-10 subwatersheds of ~10 square miles or less. Delineating catchments outside the C-15 and C-16 watersheds (i.e., within the areas of direct discharge to the Lake Worth Lagoon or ICW) may be completed where existing GIS includes outfall and drainage pipe network mapping.

There are some discrepancies between the WIBDs and the ICA boundaries delineated during the previous NOAA project that will need to be reconciled as part of this effort.

A map and tabular summary will be prepared to help compare basic characteristics of each subwatershed including: size, canal length, # of jurisdictions, and # of existing monitoring stations. A summary of flow and water quality information available for each subwatershed, as well as a comparison of land use loading coefficients (EMCs or export rates) from previous modeling efforts will also be compiled.

1.3) Estimates of pollutant loading for each subwatershed (COMPLETE)

Land use maps will be created for each subwatershed using GIS and starting from delineations done recently under a previous NOAA-CRCP project. Where additional breakdown of urban land use is needed, a limited interpretation of orthophotos can be used to group land use into no more than six categories (e.g., commercial, industrial, institutional, residential (H, M, golf), agricultural, and transportation). A simple loading model (e.g., WTM, WMM, or other) will be used to estimate current nutrient and sediment loads for each subwatershed based on land use. Land use pollutant loading coefficients previously established for the St. Lucie's inlet, Lake Okeechobee, or Palm Beach County (see below) will be used to generate relative loads (i.e., to compare magnitude between subwatersheds rather than establishing an absolute value). Land use loading factors will be adjusted in Activity 2 based on known water quality data and other watershed-specific updates.

In addition, a simple hydrologic model may be used, if an understanding of relative conditions under three hydrologic regimes (normal, flooding, and water conservation) is deemed necessary. Use of a complex estuary model at this stage is beyond the scope of this work.

1.4) Subwatershed prioritization and selection (COMPLETE)

Subwatersheds will be ranked based on level of contribution to water quality problems in the estuary using results of the loading analysis and known water quality data for each subwatershed. This ranking will be used with input from the working group, regulatory drivers and programmatic needs, and logistical constraints, to prioritize and select one subwatershed for advanced watershed assessment (Task 2). Ideally, the subwatershed selected may be part of a TMDL planning area, within an MS4 needing restoration attention, or within a subwatershed that offers a diversity of potential restoration opportunities that can be exported to other parts of the ICA. Given the uniformity of land use across the ICA, findings from the subwatershed-scale assessment will then be up-scaled to provide more general management recommendations for the rest of the ICA.

1.5) Characterization Report (Meeting Presentation and Meeting Summary Complete – no formal report completed)

A report will be prepared that summarizes findings from the review of existing materials, subwatershed delineations, initial modeling results, and that documents the subwatershed selection process.

Activity 2: Detailed Subwatershed Assessment

One subwatershed area (Subwatershed I, which includes Lake Ida) was selected for more detailed assessments that will include field investigations, a regulatory program evaluation, modeling, and monitoring. In addition, agricultural land use and land use patterns found in Subwatershed J that represent coastal development along the Intracoastal Waterway and coastal areas will be incorporated into this assessment. This task will be supplemented with stakeholder input meetings under Activity 5. A map of Subwatersheds I and J is attached for reference.

2.1) Field assessment

The contractor will conduct one watershed field assessment to verify on-the-ground conditions, identify sources of pollution, and identify potential structural and non-structural restoration opportunities within the subwatershed. Candidate sites for field investigation will be identified in advance of field work and shared with the project team for input and assistance in gaining access to sites. Field teams should include a combination of contract staff and knowledgeable, local project partners familiar with the area. Field data will be collected using protocols adapted from the Center for Watershed Protection's Urban Subwatershed Restoration Manual Series on mobile data collection devices with GIS capabilities. Effort will be made to evaluate a wide variety of land uses in order to determine the representative restoration potential of various land uses, which will be important in subsequent efforts to upscale findings to the broader ICA. Field assessments may include:

- Investigation of older residential developments built prior to modern stormwater management requirements;
- Windshield survey and hotspot inventory to identify pollution sources;
- Random inspection of commercial, residential, and publicly-owned detention basins to evaluate level of performance and retrofit options to increase water quality treatment;
- Inspection of publicly-owned properties (e.g., schools, college, libraries, highway ROW, public works yards) to identify retrofit options and source control opportunities; and
- Tour of constructed retrofit or other restoration projects.

Recommendations and potential projects will be summarized in tabular format and located on a subwatershed map. Up to 10 project concepts will be prepared with a planning level construction cost estimate.

Note: The Municipalities of Boynton Beach and Delray Beach, and the County of Palm Beach, are active partners in this project, and participated in the selection of subwatershed I, which includes Lake Ida, for this portion of the project. We anticipate that a subset of the sites visited and investigated in this site assessment task will be located within or discharge to the regulated

municipal separate storm sewer systems (MS4) under these jurisdictions. We also anticipate that at least one retrofit concept will address the City of Boynton Beach discharges contributing to Lake Ida, and at least one retrofit concept will address City of Delray Beach discharges contributing to Lake Ida.

2.2) Regulatory and programmatic review

In addition to understanding conditions on the ground, it is important to also identify programmatic gaps or barriers that hinder watershed restoration efforts. The team will review:

- Relevant land development codes and regulations related to wetland protection, site design and drainage requirements, and wastewater and reclaimed water requirements;
- MS4 stormwater program elements, particularly related to post-construction water quality, illicit discharge detection and elimination, BMP maintenance tracking, and public education;
- Local comprehensive plans, and capital improvement budgets will be reviewed to obtain an understanding of community visions, future development and land conservation objectives, as well as planned infrastructure investments;
- The LWMD canal maintenance program will be reviewed to provide insight on capacity and maintenance requirements; and
- Relevant habitat and stormwater restoration programs/projects in Palm Beach County and the local jurisdictions will be reviewed to see the types of projects they are funding/implementing and to look for advantageous linkages between watershed and in-water projects.

This review may help identify opportunities for updating local codes to better encourage green infrastructure during redevelopment activities or for improving local stormwater programs to better address pending TMDLs.

Note: The Municipalities of Boynton Beach and Delray Beach, and the County of Palm Beach, are active partners in this project, and participated in the selection of subwatershed I, which includes Lake Ida, for this portion of the project. We will be assessing the programmatic gaps or barriers within and among the multiple jurisdictions in the subwatershed, including the Cities of Boynton Beach and Delray Beach, as well as Florida Department of Transportation, and Palm Beach County.

2.3) Additional monitoring

If additional water quality monitoring would provide important information to help prioritize areas for investigation or implementation, then collecting samples or deploying monitoring equipment during this assessment period can be done. Examples of additional monitoring effort that may be useful include: event based water quality outfall sampling; dry weather sampling of suspicious discharges; installing a sediment trap at one of the major control structures; or sampling at additional stations at strategic upstream locations within the canal network.

Note: The Municipalities of Boynton Beach and Delray Beach, and the County of Palm Beach, are active partners in this project, and participated in the selection of subwatershed I, which includes Lake Ida, for this portion of the project. To the extent that these partners are willing to provide water quality sampling and analysis services for a limited number of targeted locations, we will work with these partners to identify appropriate sampling locations to provide some basic additional data for comparison purposes around the watershed.

2.4) Refined subwatershed modeling

Based on field observations or calibrated water quality results, the pollutant load and hydraulic model initially developed under Task 1 may be refined. The refined model may include:

- Updated drainage boundaries and land use information (ALREADY COMPLETE);
- Variable loading coefficients for older vs newer development and for urban land use categories, or include a load reduction coefficient that varies according to development type;
- Calibration based on known water quality data; (ALREADY COMPLETE)
- A better understanding of loads and runoff volumes associated with high water table agricultural areas, particularly where reclaimed water is used and pumping during rain events for flood control is common;
- Secondary sources, such as wastewater loads, MS4 program sophistication, and public education; and
- Estimates of load reduction benefits of implementing potential restoration projects, including known in-water restoration projects (e.g., mangrove restoration) or pending capital improvements.

2.5) Technical Report

A technical report will be provided that summarizes findings from the subwatershed assessments including field findings and any additional information generated from monitoring or modeling efforts.

Activity 3: Subwatershed Management Plan for Subwatershed I

A subwatershed plan will be developed based on information collected during Task 2 and from stakeholder input in Task 5. The plan will include all elements of EPA's watershed planning criteria, which simply include identification of sources and solutions, goals, a quantification of improvements anticipated based on implementation activities, a monitoring plan to measure achievement, a targeted education plan, and an implementation strategy.

The plan is expected to be less than 50 pages (including attached concept plans, maps, etc). A draft plan will be submitted electronically to project partners for review and one round of comment prior to posting/circulation of a revised draft for broader public review and comment. The final management plan will be submitted electronically to NOAA and project partners and will include a response to comments to document how review comments were addressed.

Activity 4: Boynton Inlet ICA Management Report

The goal of this effort is to establish a model approach for rapid assessment and planning that can be used to ultimately develop management plans at the ICA scale. We assume that the relative uniformity of the Boynton ICA offers the opportunity to apply sources and solutions identified at the subwatershed-scale to the full watershed. Under this task, the model refinements and any relevant monitoring information that was identified in Task 3 will be applied to the full C-15 and, potentially, C-16 watersheds to establish existing pollutant loading conditions. Assumption on the wide-spread application of structural and non-structural restoration projects identified at the subwatershed level will be made and subsequently applied at the watershed-scale.

A report documenting potential restoration and implementation costs at the watershed-scale will be presented, along with overall watershed management recommendations. Additional effort to review programs and regulations for other jurisdictions within the Boynton Inlet ICA beyond those identified at the subwatershed scale are beyond this scope of work.

Task 5: Stakeholder Engagement

5.1) Project Partners Coordination

The project team, including the contractor, NOAA, and local partners will meet on a regular basis throughout the duration of the project. Key project partners include Palm Beach County, City of Boynton Beach, City of Delray Beach, Lake Worth Drainage District, SFWMD, DEP, FDOT, Florida Fish and Wildlife Conservation Commission, academic institutions, NOAA, and NRCS. Project Partner meetings will occur at critical feedback junctures, including a kickoff meeting, subwatershed prioritization and selection, after subwatershed assessments, and after submittal of the draft subwatershed plan. Most meetings will be held via conference call and/or using WebEx. A project file sharing site (e.g., Dropbox, Google drive, etc) will be set up to provide easy upload and download capabilities among project partners.

5.2) Stakeholder Input

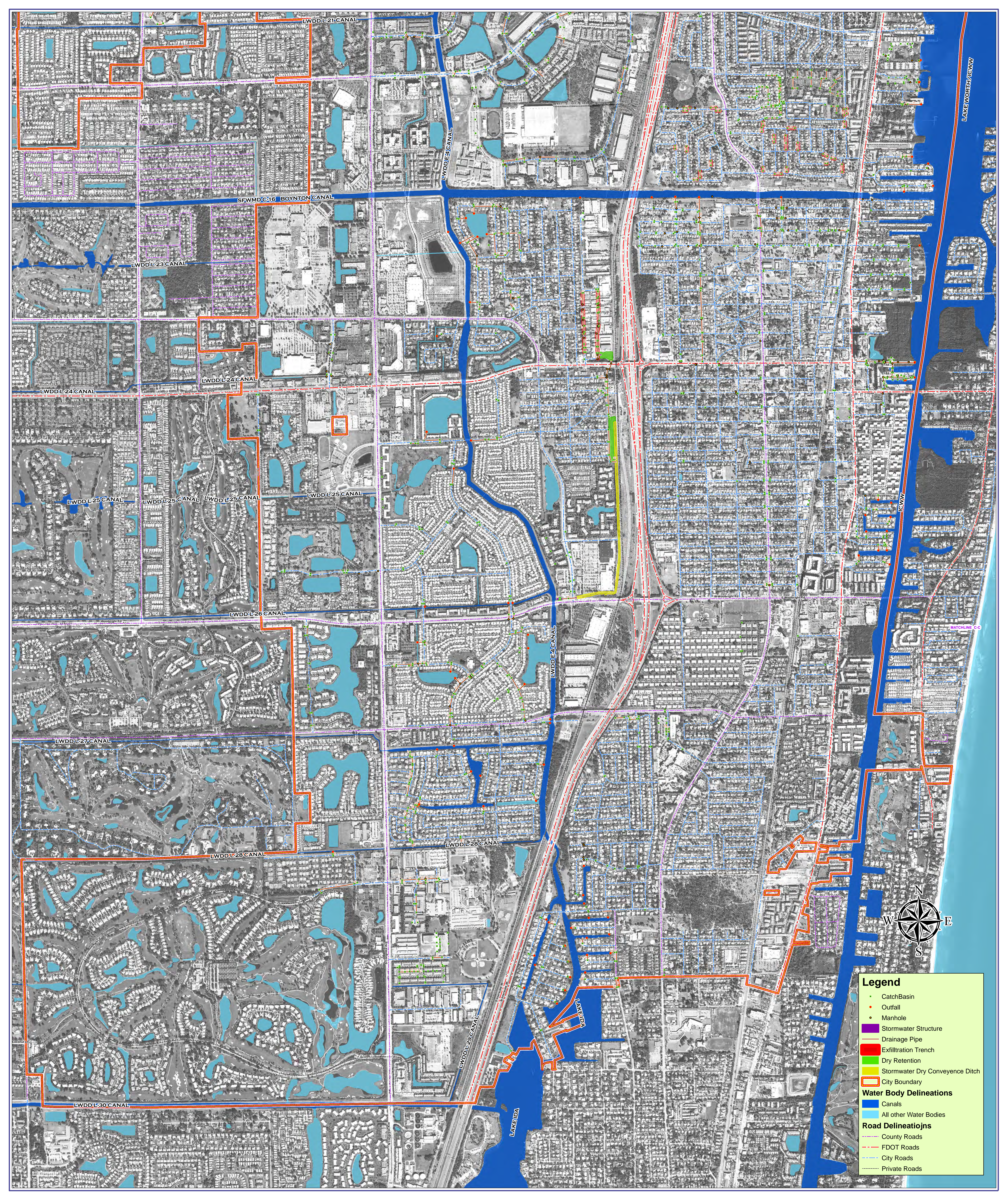
Four public meetings will be held: two during the week of field work; one to solicit input on the draft subwatershed plan; and one to present the final subwatershed plan and ICA watershed report. A website and/or facebook account will be set up to provide access to documents, maps, and project schedules, and a simple mechanism for a broader stakeholder group to provide input. We assume project partners can help identify free, public meeting spaces.

Task 6. Project Administration

This task includes internal team coordination, quality control, invoicing, progress reports, and other typical project administration activities that occur throughout the duration of the project.

A schedule of performance is recommended for this work as follows:

Activity Name	Subtask/Deliverable	Schedule (month)
Activity #1: Characterization	Data Compilation & Review	Complete
	Delineations	Complete
	Modeling	Complete
	Subwatershed Prioritization and Selection	Complete
	Report	Complete (Mtg notes)
Activity #2: Subwatershed Assessment	Field Assessments	Aug/Sept
	Program Evaluation	Aug/Sept
	Monitoring	July-Oct
	Refined Model and Assumptions	Sept
	Report	Oct/Nov
Activity #3: Subwatershed Plan	Draft	Dec
	Final	Jan
Activity #4: Scaled ICA Plan	Report	Jan/Feb
Activity #5: Stakeholder Engagement	Project Partner Meetings	Aug/Sep, Nov, Jan
	Stakeholder Meetings	Feb 2017, Dec
Activity# 6: Project Admin	Invoices, team meetings, progress reports	monthly



LWDDL-21 CANAL

SFWMD C-16 BOYNTON CANAL

LWDDL-23 CANAL

LWDDL-24 CANAL

LWDDL-25 CANAL

LWDDL-25 CANAL

LWDDL-25 CANAL

LWDDL-25 CANAL

LWDDL-26 CANAL

LWDDL-27 CANAL

LWDDL-28 CANAL

LWDDL-29 CANAL

LWDDL-30 CANAL

LAKEIDA

LAKEIDA

LAKE WORTH/ICWY

Legend

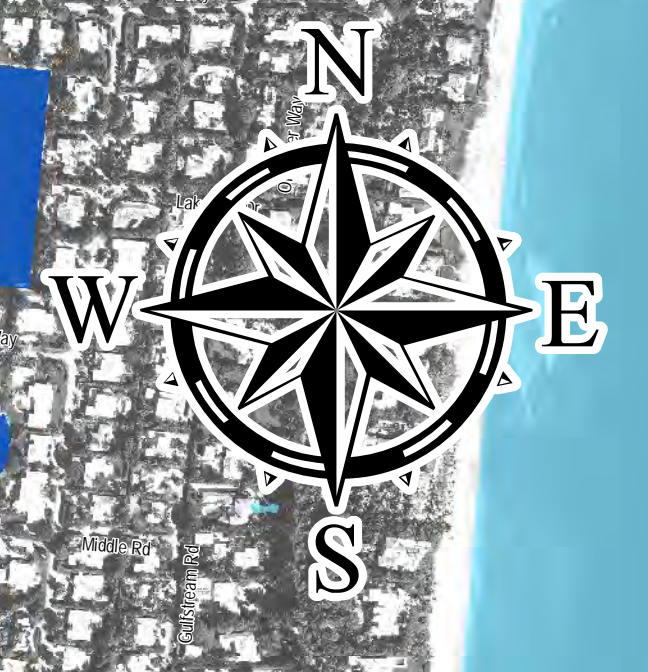
- CatchBasin
- Outfall
- Manhole
- Stormwater Structure
- Drainage Pipe
- Exfiltration Trench
- Dry Retention
- Stormwater Dry Conveyance Ditch
- City Boundary

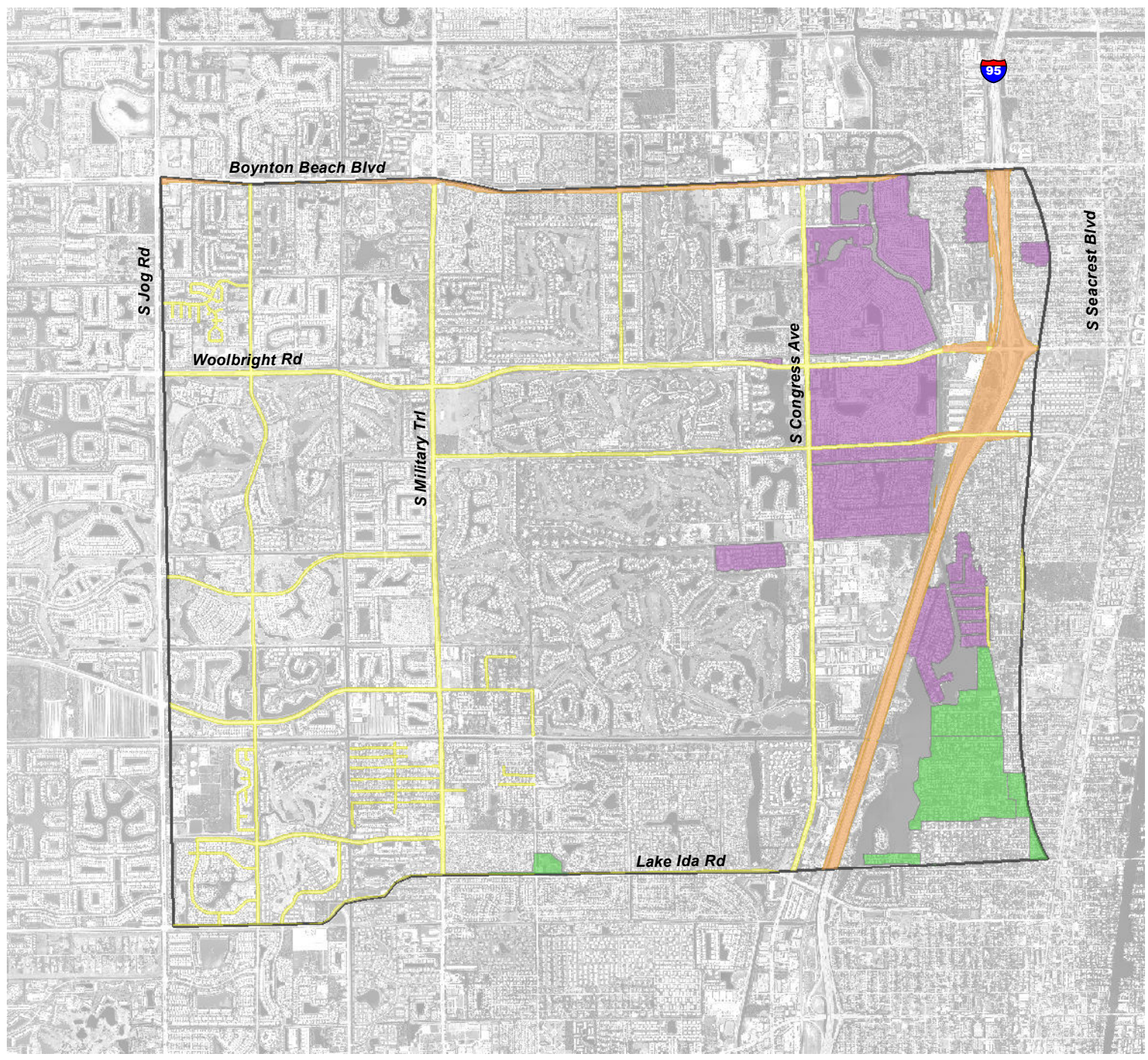
Water Body Delineations

- Canals
- All other Water Bodies








Road Delineations

- County Roads
- FDOT Roads
- City Roads
- Private Roads





Legend

-  Subwatershed I
- MS4 Boundaries**
-  Boynton Beach MS4
-  Delray Beach MS4
-  FDOT District 4
-  Gulfstream MS4
-  Ocean Ridge MS4
-  PB County MS4

MS4 boundaries last updated in 2017