

Florida Department of Environmental Protection



Nutrient TMDLs to Be Adopted in The Ocklawaha River Basin - 2015

Florida Department of Environmental Protection
February 25, 2015



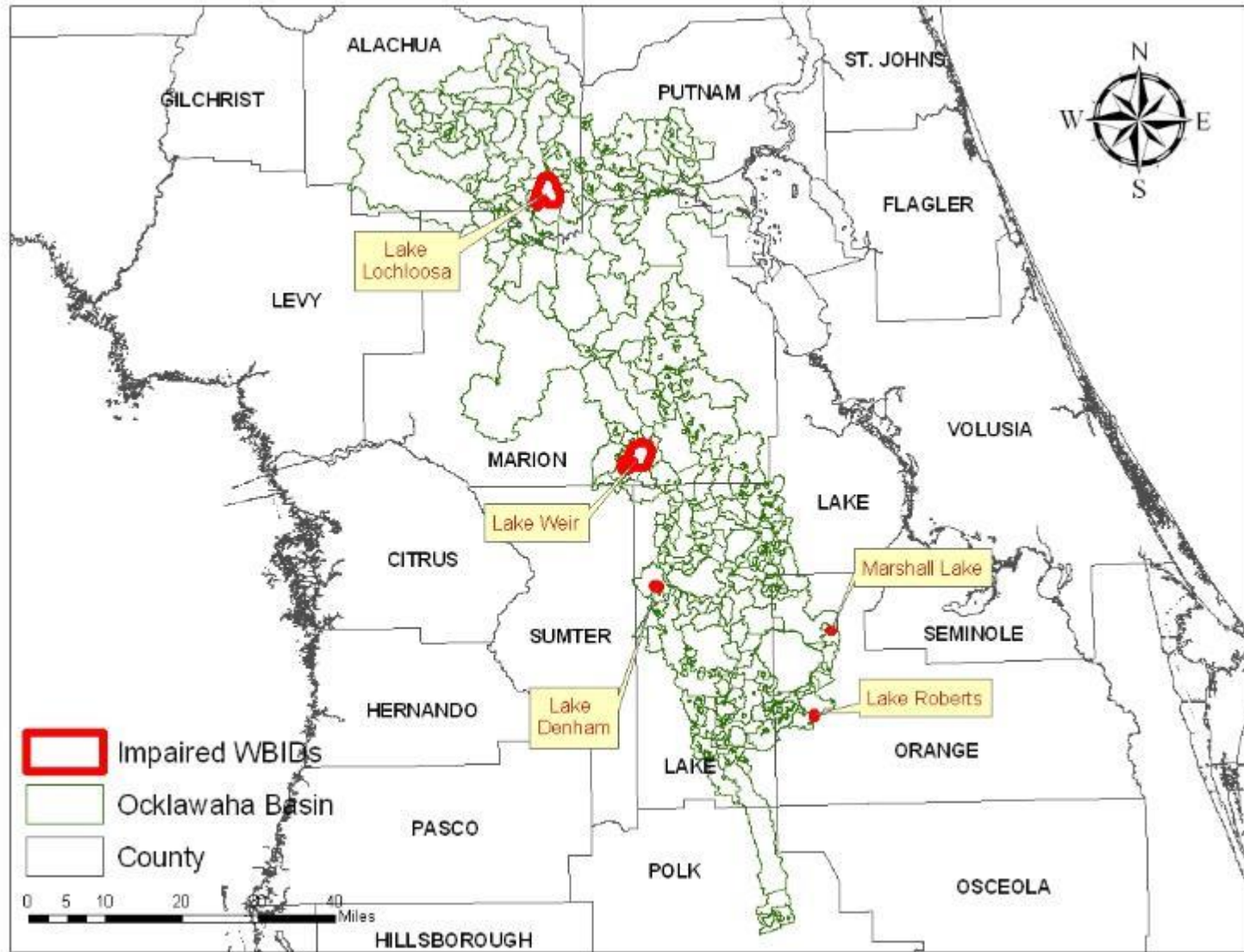


Waterbodies Impaired for Nutrients

- Lake Lochloosa (waterbody identification [WBID] number 2738A) in Alachua County.
- Lake Weir (WBID 2790A) in Marion County.
- Lake Denham (2832A) in Lake County.
- Lake Roberts (2872A) in Orange County.
- Marshall Lake (2854A) in Orange County.



Location of Impaired Waterbodies





TMDL Nutrient Targets Setting

- A multiple lines of evidence approach is taken:
 - Numeric nutrient criteria.
 - Lake region specific target.
 - Lake morphology and hydrology specific target.
 - Lake specific chlorophyll-a and nutrient relationship.
 - Model simulated background condition.
- The final target is the medium value of the target numbers from all lines of evidence.



Source of Nutrients Examined in These TMDLs

- No National Pollutant Discharge Elimination System (NPDES) permitted wastewater facilities were identified discharging into these waterbodies.
- Load from anthropogenic land use areas.
- Load from natural land use areas.
- Load from atmospheric deposition directly onto the lake surface.
- Load from ground water (including loads from septic systems).
- Possible sediment nutrient release and nitrogen fixation.



Modeling Approach

- Lake Lochloosa:
 - Watershed nutrient loads were simulated using the Hydrologic Simulation Program – Fortran (HSPF) model developed by the St. Johns River Water Management District (SJRWMD).
 - Receiving water eutrophication was simulated using the Bathtub model.
- Lakes Weir, Denham, Roberts, and Marshall:
 - Watershed nutrient loads were simulated using the Natural Resource Conservation Service (NRCS) curve number spreadsheet developed by SJRWMD.
 - Receiving water eutrophication was simulated using the BATHTUB model.



Expected Rule Adoption Timeframe

- Lake Weir and Lake Denham:
 - February 6, 2015: posted draft TMDL reports to the Department's TMDL webpage for public review.
 - February 17, 2015: held a TMDL public workshop in Lady Lake.
 - March 9, 2015: public comment period ends.
 - April 30, 2015: propose the TMDL rules.
- Lake Lochloosa:
 - Week of March 9, 2015: post the draft TMDL report to the Department's TMDL webpage for public review.
 - Tentative March 31, 2015: hold a TMDL public workshop.
 - Week of April 6, 2015: public comment period ends.
 - April 30, 2015: propose the TMDL rule.



Expected Rule Adoption Timeframe, continued

- Lake Roberts and Marshall Lake:
 - March 5, 2015: post draft TMDL reports to the Department's TMDL webpage for public review.
 - March 20, 2015: hold a TMDL public workshop in Orlando.
 - April 5, 2015: public comment period ends.
 - April 30, 2015: propose the TMDL rules.



Potential Sources of Nutrients

- Land use break outs for each lake.
 - First cut at identifying potential watershed sources.
 - Land use is used to estimate stormwater loadings in TMDL development.
 - Provide an indication of amount of contribution of a source to nutrient loading.
 - Provide summary of controllable sources of nutrients in each lake basin.
 - BMPs can be applied to a source.



Lake Denham





Lake Denham Land Use

Land Use	Percent of Area 2009	Percent of Area 2004	*Draft Percent of Mean TN/TP Stormwater Total Load 2000-2012
Urban	13.4%	11.4%	6.7%/13.1%
Mining	0.4%	0.3%	0.0%/0.0%
Muck Farm	5.1%	5.1%	29.0%/44.4%
Forest/Rangeland	11.9%	14.9%	1.0%/0.6%
Agriculture/Tree Crop	16.2%	15.3%	4.5%/8.8%
Wetlands	51.8%	52.0%	58.2%/32.9%
Water	0.9%	1.0%	0.4%/0.1%
Open Land Recreational	0.3%	0.0%	0.0%/0.0%

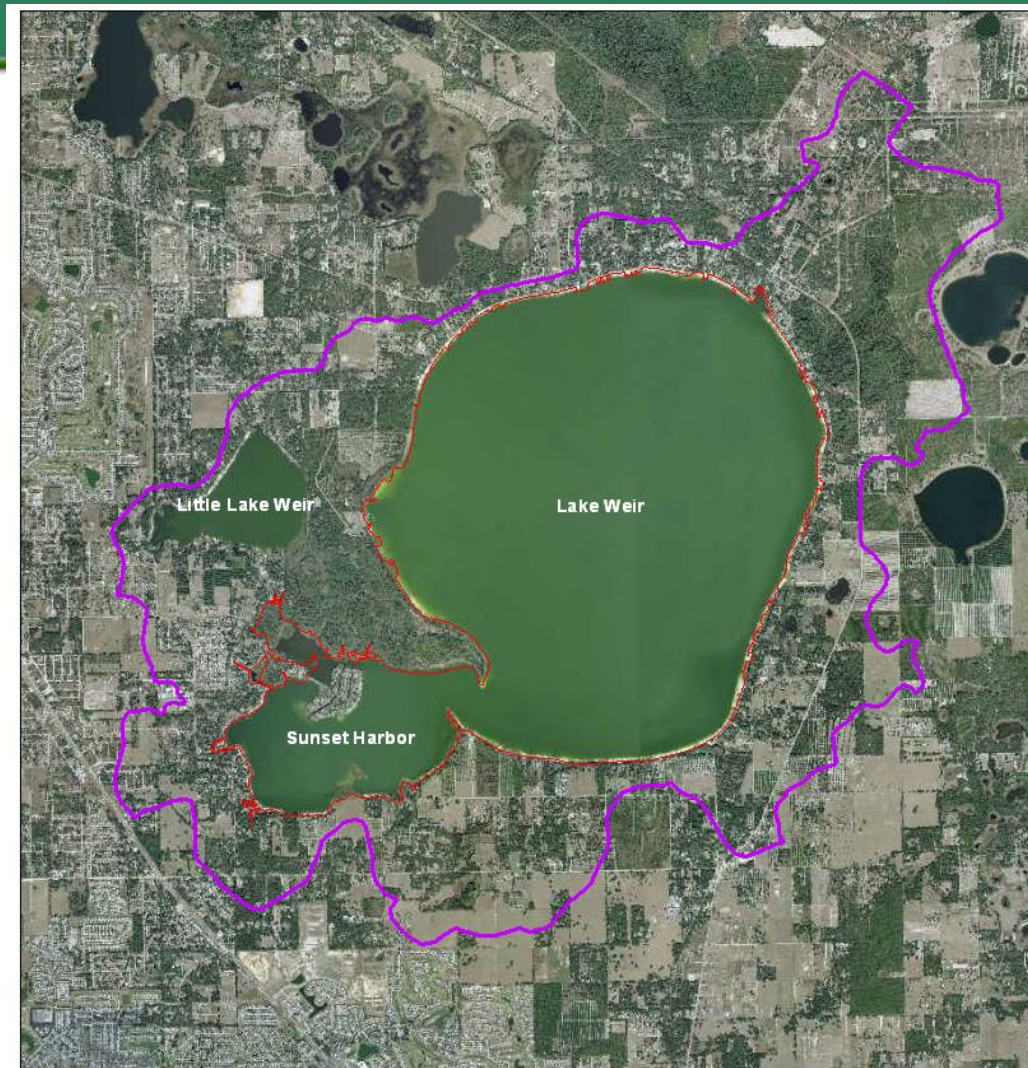
*Draft loading percentages are subject to revision



Lake Denham Predominate Land Use

- **Predominant Watershed Land Use Sources by Area:**
 1. Wetlands – are they functioning or a source of nutrients?
 2. Agriculture.
 3. Muck farm.
 4. Urban stormwater.

Lake Weir



Legend

-  Lake Weir Watershed
-  Lake Weir 2790A



Lake Weir Land Use 2009

Land Use	Percent of Area 2009	Percent of Area 2004	*Draft Percent of Mean TN/TP Stormwater Total Load for 2000-2012
Urban	29.8%	32.4%	26.0%/44.8%
Mining	0.0%	0.4%	0.0%/0.0%
Agriculture	20.7%	18.8%	5.6%/12.3%
Forest/Rangeland	24.6%	22.1%	3.1%/2.2%
Wetlands	11.3%	11.4%	54.5%/36.8%
Open land/recreation	8.7%	7.4%	1.0%/0.7%
Water	6.1%	6.1%	9.5%/3.2%

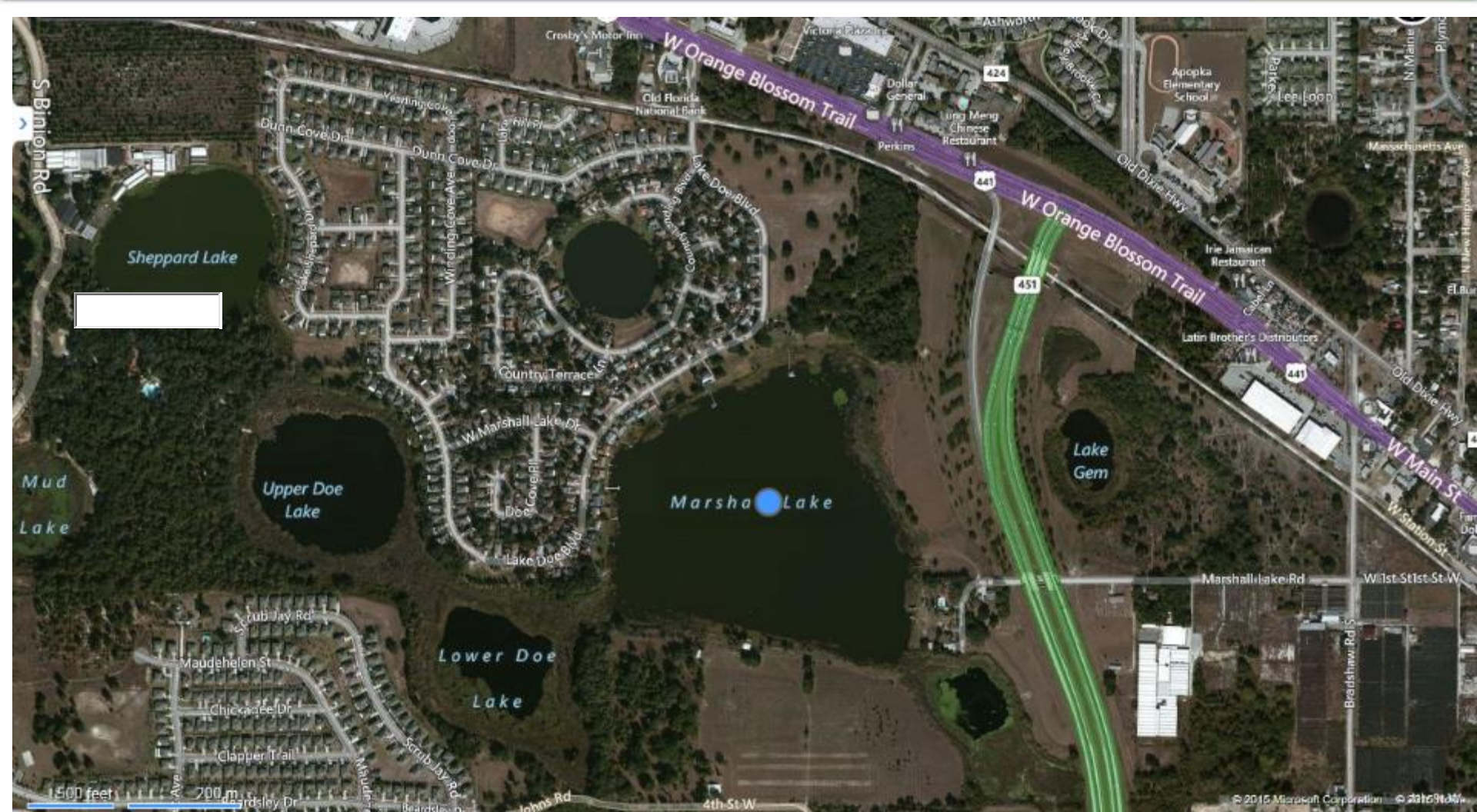
Predominant Watershed Land Use Sources by Percent Area:

1. Urban stormwater.
2. Agriculture.
3. Wetlands/water - are they functioning or a source of nutrients?

*Draft loading percentages are subject to revision



Marshall Lake

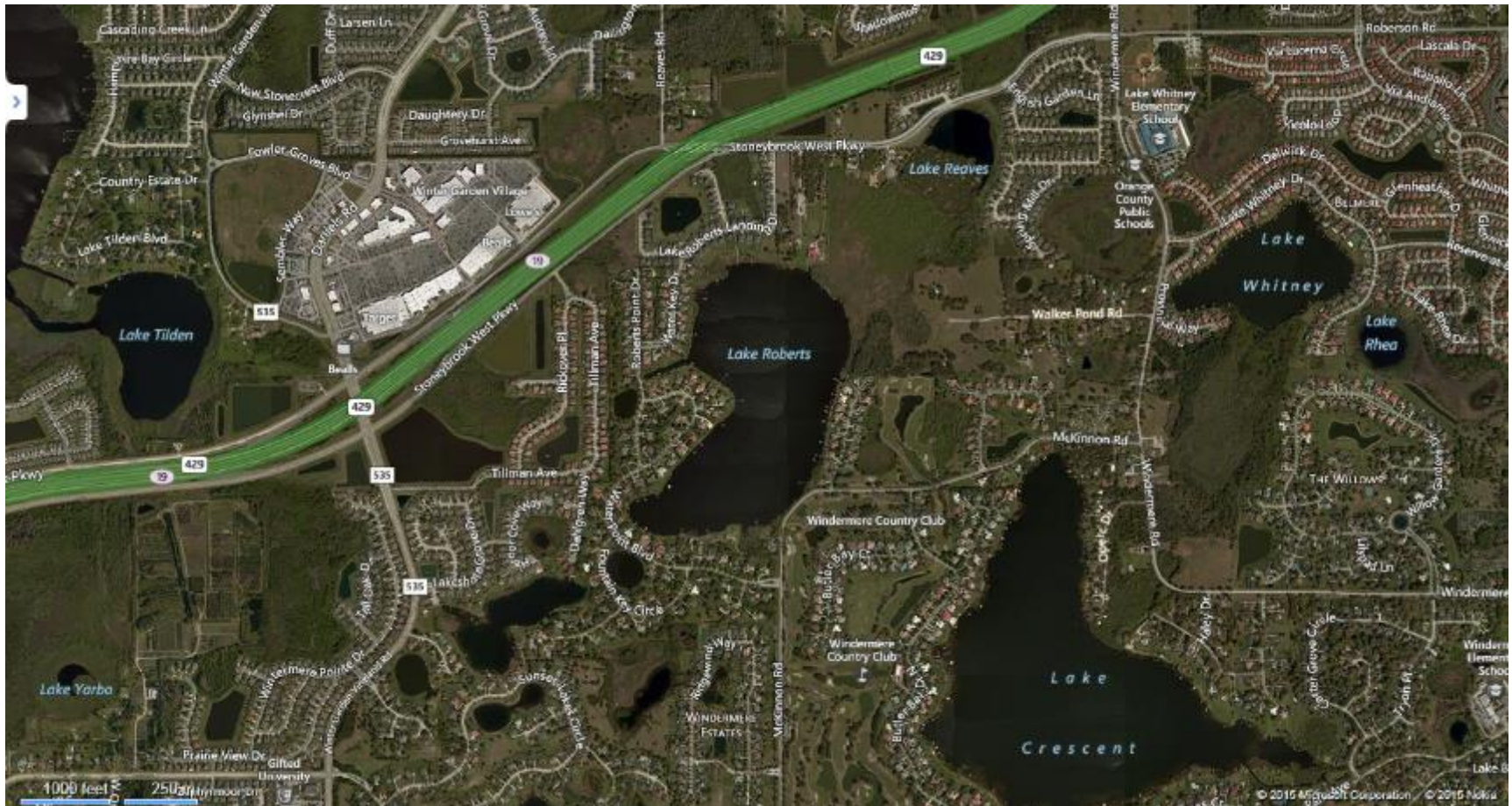




Marshall Lake Land Use

Land Use	Percent of Area 2009	Percent of Area 2004
Urban	57.2%	48.6%
Medium Density Residential	12.9%	17.2%
High Density Commercial	21.1%	18.7%
High Density Residential	14.3%	4.2%
Agriculture	18.7%	18.3%
Forest/Rangeland	14.4%	26.7%
Wetlands	4.8%	4.5%
Open Land/Recreational	3.3%	0.0%
Water	1.7%	1.9%

Lake Roberts





Lake Roberts Land Use

Land Use	Percent of Area 2009	Percent of Area 2004
Urban	51.9%	44.3%
Medium Density Residential	43.3%	22.1%
Low Density Residential	21.9%	8.1%
Agriculture	7.3%	7.3%
Forest/Rangeland	2.5%	2.3%
Wetlands	22.0%	24.7%
Open Land/Recreational	8.0%	15.2%
Water	8.6%	6.0%



Thoughts on nutrient sources?



Addressing New TMDLs

- Marshall, Roberts, and Denham in current BMAP boundary.
- Include these lakes in the current BMAP.
 - Positive: Marshall, Roberts, and Denham are tributaries of existing impaired waterbodies; addressing them may improve water quality downstream. Two birds with one stone philosophy.
 - Positive: Less effort needed to document actions; new BMAP process is not created.
 - Negative: May not be sufficient time to completely address water quality problems. May have to stagger solutions over time.



New TMDLs continued

- Consider these lakes outside current BMAP.
 - Positive: Allows more time to address water quality.
 - Negative: Additional effort needed to create new BMAP process.
 - Negative: Disconnects these impaired water from larger BMAP.



Lake Weir

- Where does Lake Weir fit into picture?
 - Outside current BMAP boundary. North and west of boundary.
 - Located only in Marion County.
 - Same options:
 - Include in current BMAP.
 - Create separate BMAP process.



Discussion

- Does one strategy fit all of the new TMDLs?
- Suggestions?