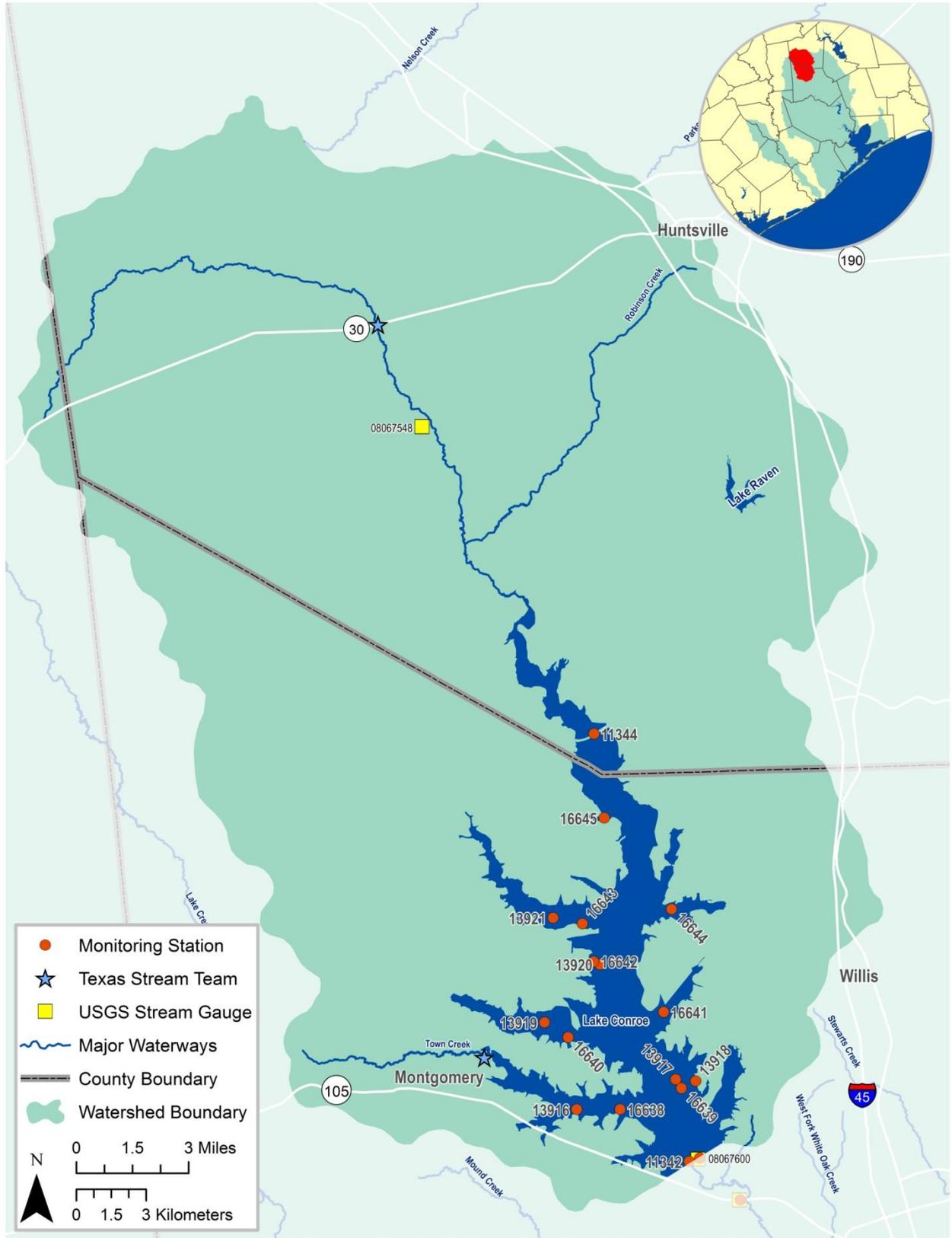
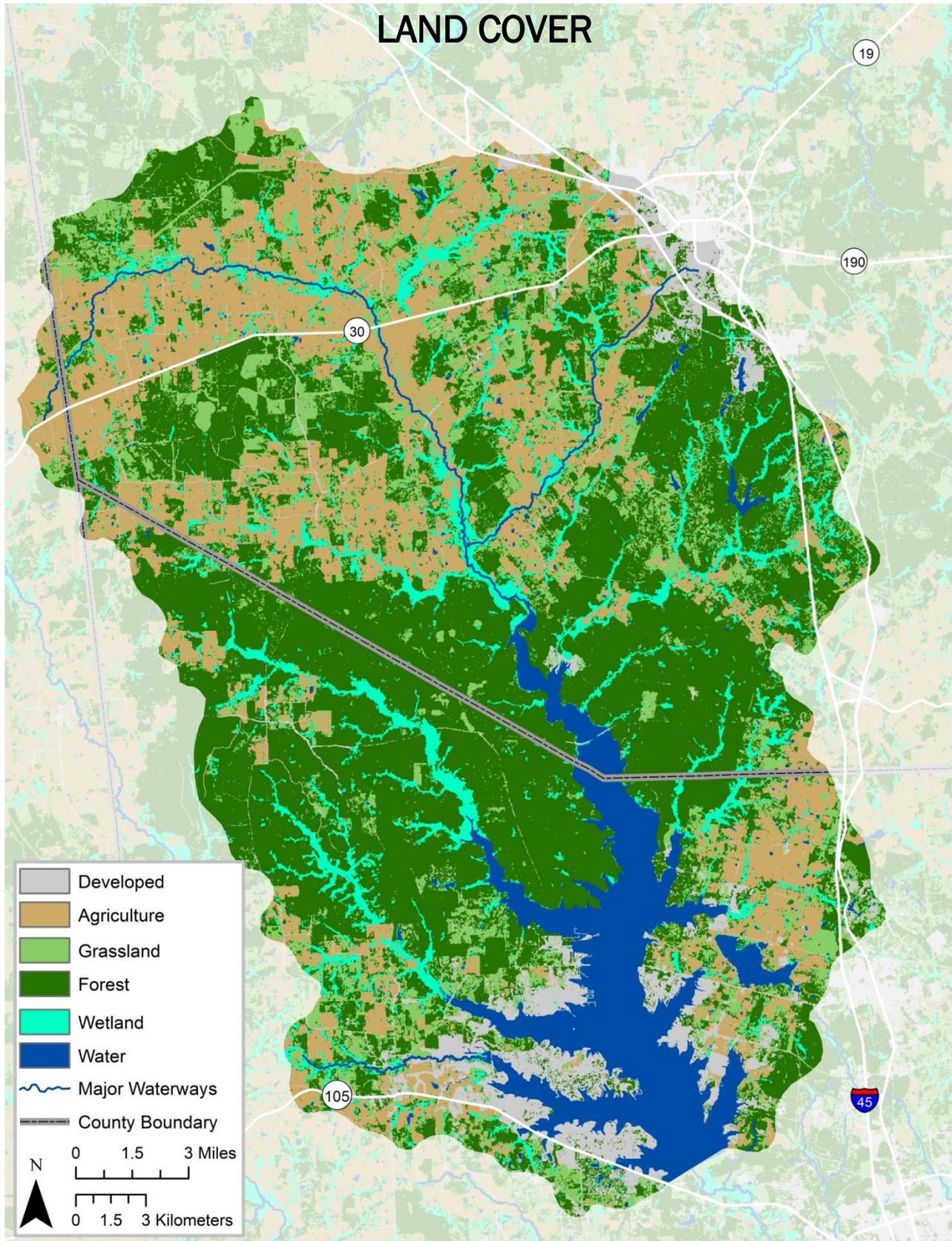


LAKE CONROE - SEGMENT 1012

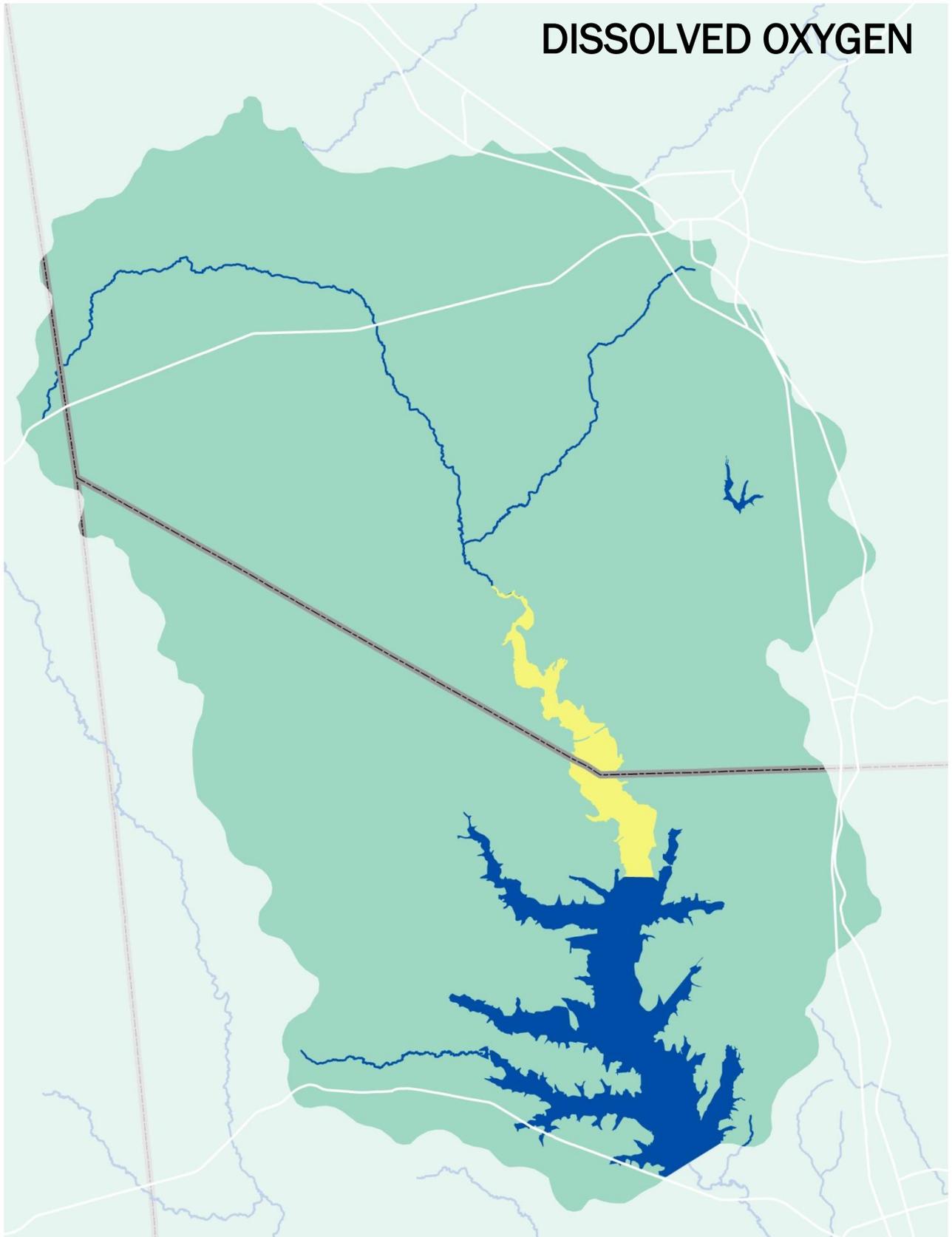


LAKE CONROE - SEGMENT 1012

LAND COVER



DISSOLVED OXYGEN



 Impairment  Concern  No Impairments or Concerns

Segment Number: 1012		Name: Lake Conroe			
Length: 45 miles	Watershed Area: 456 square miles	Designated Uses: Primary Contact Recreation 1; High Aquatic Life Use; Public Water Supply			
Number of Active Monitoring Stations: 17		Texas Stream Team Monitors: 2	Permitted Outfalls: 48		
Description:	Segment 1012 (Reservoir w/ high ALU): From Conroe Dam in Montgomery County up to the normal pool elevation of 201 feet (impounds West Fork San Jacinto River)				
	Segment 1012A (Perennial Stream w/ high ALU): Perennial stream from the confluence with Atkins Creek upstream to the confluence with Carwile Creek				
	Segment 1012B (Perennial Stream w/ high ALU): Perennial stream from the confluence with the West Fork San Jacinto River upstream to the confluence with an unnamed second order tributary approximately 0.1 km upstream of Bethel Road				
	Segment 1012C (Reservoir w/ high ALU): Adjacent to Park Road 40 within the boundaries of Huntsville State Park in Walker County				

Percent of Stream Impaired or of Concern						
Segment ID	PCBs/Dioxin	Bacteria	Dissolved Oxygen	Nutrients	Chlorophyll a	Other
1012	-	-	16.7	-	-	-

Segment 1012					
Standards	Reservoir		Perennial Stream		Screening Levels
	Reservoir	Perennial Stream	Reservoir	Perennial Stream	
Temperature (°C/°F):	32 / 90	32 / 90	Ammonia (mg/L):	0.11	0.33
Dissolved Oxygen (24-Hr Average) (mg/L):	5.0	5.0	Nitrate-N (mg/L):	0.37	1.95
Dissolved Oxygen (Absolute Minima) (mg/L):	3.0	3.0	Orthophosphate Phosphorus (mg/L):	0.05	0.37
pH (standard units):	6.5-9.0	6.5-9.0	Total Phosphorus (mg/L):	0.20	0.69
<i>E. coli</i> (MPN/100 mL) (grab):	399	399	Chlorophyll-a (µg/L):	26.7	14.1
<i>E. coli</i> (MPN/100 mL) (geometric mean):	126	126			
Chloride (mg/L as Cl):	50	50			
Sulfate (mg/L as SO ₄):	50	50			
Fluoride (mg/L as F):	4				
Total Dissolved Solids (mg/L):	300	300			

FY 2016 Active Monitoring Stations

Site ID	Site Description	Frequency	Monitoring Entity	Parameter Groups
11342	Lake Conroe at Dam	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
11344	Lake Conroe at FM 1375	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
13915	Lake Conroe USGS Site AL	Three Times/ Year	USGS	Field
13916	Lake Conroe USGS Site BC	Three Times/ Year	USGS	Field
13917	Lake Conroe USGS Site CC	Three Time/ Year	USGS	Field
13918	Lake Conroe USGS Site CL	Three Times/ Year	USGS	Field
13919	Lake Conroe USGS Site DC	Three Times/ Year	USGS	Field
13920	Lake Conroe USGS Site EC	Three Times/ Year	USGS	Field, Conventional
13921	Lake Conroe USGS Site FC	Three Times/ Year	USGS	Field, Conventional
16638	Lake Conroe at April Point	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16639	Lake Conroe South End East Side	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16640	Lake Conroe at Bentwater	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16641	Lake Conroe at Aquarius Point	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16642	Lake Conroe at Lake Midpoint	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16643	Lake Conroe at Hunters Point	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16644	Lake Conroe at Paradise Point	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)
16645	Lake Conroe at Sandy Branch	Monthly	SJRA	Field, Conventional, Bacteria, Chlorophyll a (Qrtrly)

Water Quality Issues Summary

Issue	2014 Assessment <i>I - Impaired C - Of Concern</i>	Possible Causes / Influences / Concerns Voiced by Stakeholders	Possible Solutions / Actions To Be Taken
Dissolved Oxygen Concentrations (Grab)	1012 C	<ul style="list-style-type: none"> ▪ Excessive nutrients from fertilizer runoff ▪ Excessive nutrients and organic matter from SSOs and malfunctioning OSSFs ▪ Improper disposal of biodegradable solid waste like grass clippings and pet waste 	<ul style="list-style-type: none"> ▪ Reduce fertilizer runoff from agricultural areas ▪ Improve stormwater controls in new developments ▪ Support/continue/initiate public education regarding nutrients ▪ Improve operation and maintenance of existing WWTF collection systems and OSSFs ▪ More public education regarding disposal of biodegradable solid waste like pet waste or grass clippings

Segment Discussion

Watershed Characteristics: This segment consists of the area draining to Lake Conroe and spans northern Montgomery County and Southern Walker County. Lake Conroe is an impoundment of the West Fork of the San Jacinto River and occupies the most southerly portion of its watershed. The northern portion of the watershed contains large plots of the Sam Houston National Forest, as well as portions of the City of Huntsville, and Huntsville State Park. The majority of the watershed is undeveloped forest lands and grasslands with limited, but dense, urban and suburban development surround Lake Conroe and the City of Huntsville. The upper third of the watershed contains large tracts of cultivated land. In September of 2015, the San Jacinto River Authority (SJRA) began treating water from Lake Conroe to produce drinking water. The SJRA water treatment plant treats surface waters from Lake Conroe and transmits the treated drinking water to five utility districts in Montgomery County. Drinking water from the SJRA plant is blended with groundwater from each utility's existing water wells and is then distributed to area residents.

Water Quality Issues: Water quality monitoring in the watershed is focused on Lake Conroe itself with few monitoring stations in the upper portion of the watershed. The 2014 IR identifies concerns for aquatic life use due to depressed dissolved oxygen (DO) in assessment units 1012_01 and 1010_02 (13.3 and 12.2% below the screening level). H-GAC analysis found that in seven-year period ending May 31, 2015, 6.9% of samples in 1012_01 and 4.1% of samples in 1012_02 fell below 5.0 mg/L. Additionally, there is a statistically significant trend of increasing DOO in 1012_02 (stable in 1012_01). The evidence suggests this concern will be removed in the 2016 IR.

TCEQ also identified a concern for general use due to elevated pH in 1012_03, as 12.9 percent of samples exceeded a pH of 9.0 during the assessment period. H-GAC found that 8 of 72, or 10.7%, of samples collected in the seven-year period ending 5/31/2016 exceeded 9.0. H-GAC trend analyses found a statistically significant trend of increasing pH in the only station in that AU on the current CMS (see below). Trend analysis also suggested found increasing alkalinity in the lake as whole (see below).

Special Studies/Projects: No special studies were conducted on this segment during the past five years.

Trends: Regression analysis of watershed data revealed nine statistically significant parameter trends for this segment including increasing alkalinity, chloride, DO, pH, Secchi transparency, specific conductance (SPCond), sulfate, and total suspended solids (TSS) while chlorophyll a concentrations are decreasing over time. Trends of note include a gradual improvement in DO levels at monitoring station [16645](#) which is currently listed as having a DO concern in the 2014 Integrated Report. Monitoring station 11344 is also listed as having a concern for DO, but no significant change was detected during the period of record. Other interesting trends within this segment include a gradual increase in pH and SPCond over time. Regression analysis shows [Lake Conroe](#) has become more alkaline in recent years with pH levels reaching as high as 10.5 during the period of record. Additionally, an almost linear increase in [SPCond](#) is evident for this segment since around 2002. Reasons for increasing pH and SPCond are unknown at this time.

Recommendations

Address concerns found in this segment summary through stakeholder participation.

Continue collecting water quality data to support actions associated with any future watershed protection plan development and possible modeling.
