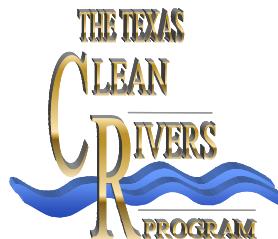


2016 Basin Highlights Report



The Port Arthur-Orange Bridge (commonly known as Rainbow Bridge) is a massive cantilever and continuous steel truss over the Neches River. – *Texas Historical Commission* at <http://www.thc.state.tx.us>

**LOWER NECHES
RIVER BASIN**



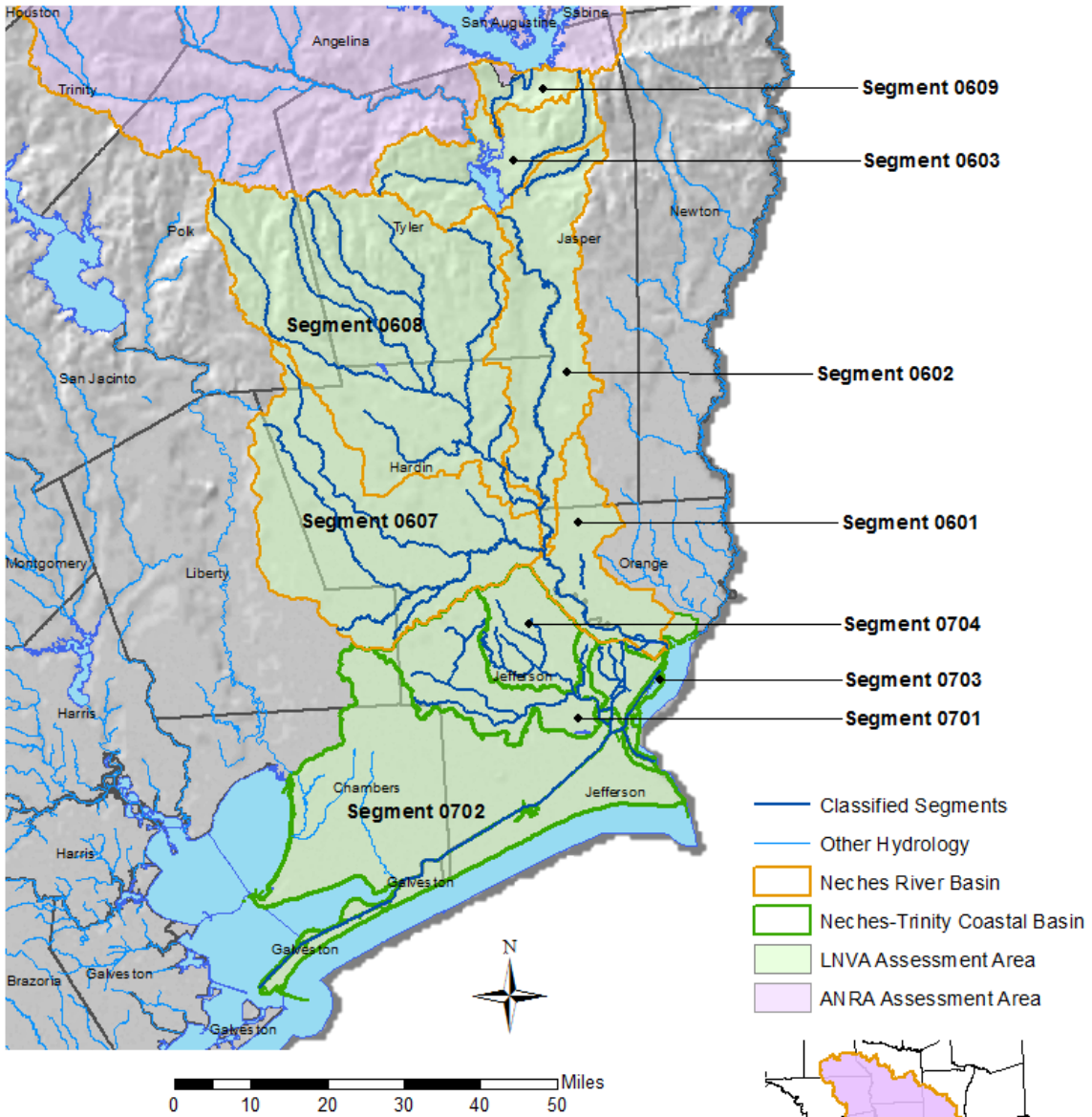
**NECHES-TRINITY
COASTAL BASIN**



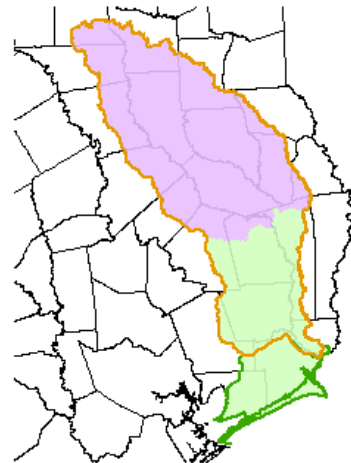
Basin Water Quality Update

Lower Neches River & Neches-Trinity Coastal Basins

Map of LNVA Assessment Area and Classified Segments in the Basins



| Segment Number | Segment Name |
|----------------|--------------------------------------------|
| 0601 | Neches River Tidal |
| 0602 | Neches River below B. A. Steinhagen Lake |
| 0603 | B. A. Steinhagen Lake |
| 0607 | Pine Island Bayou |
| 0608 | Village Creek |
| 0609 | Angelina River below Sam Rayburn Reservoir |
| 0701 | Taylor Bayou above Tidal |
| 0702 | Intracoastal Waterway Tidal |
| 0703 | Sabine/Neches Canal Tidal |
| 0704 | Hillebrandt Bayou |





Basin Water Quality Update

Lower Neches River Basin

Segment 0601: Neches River Tidal (below LNVA Salt-water Barrier)

- ◆ Fully supports the general use criteria
- ◆ Fully supports the public water supply use
- ◆ Not supporting the contact recreation use (*Enterococcus* bacteria)
- ◆ Not supporting the fish consumption use (PCBs in edible tissue)
- ◆ Aquatic life use concern for Malathion (lower segment)
- ◆ No concern for nutrients in the segment
- ◆ Not supporting the contact recreation use (0601A: Star Lake Canal)

Segment 0602: Neches River below B.A. Steinhagen Lake

- ◆ Fully supports the general use criteria
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the public water supply use
- ◆ Not supporting the fish consumption use (mercury, dioxin)
- ◆ Aquatic life use concern for depressed dissolved oxygen (screening level)
- ◆ No concerns for nutrients in the segment

Segment 0603: B.A. Steinhagen Lake

- ◆ Fully supports the aquatic life use
- ◆ Fully support the general use criteria
- ◆ Fully supports the public water supply use
- ◆ No concerns for nutrients in the segment
- ◆ Not supporting the fish consumption use (mercury, dioxin)
- ◆ Not supporting the contact recreation use (0603A: Sandy Creek, 0603B: Wolf Creek)

Segment 0607: Pine Island Bayou

- ◆ Fully supports the general use criteria
- ◆ Fully supports the public water supply use

- ◆ Fully supports the fish consumption use
- ◆ No concerns for nutrients in the segment
- ◆ Not supporting the aquatic life use due to depressed dissolved oxygen (0607: Pine Island Bayou, 0607A: Boggy Creek, 0607B: Little Pine Island Bayou, 0607C: Willow Creek)
- ◆ Not supporting the contact recreation use
- ◆ Aquatic life use concern for impaired habitat (0607A: Boggy Creek)

Segment 0608: Village Creek

- ◆ General use concern for low pH (criteria not based on current *TSWQS*)
- ◆ Fully supports the public water supply use
- ◆ Not supporting the aquatic life use, depressed DO (0608C: Cypress Creek, 0608E: Mill Creek)
- ◆ Not supporting the aquatic life use, copper in water (0608A: Beech Creek)
- ◆ Not supporting the contact recreation use (0608B: Big Sandy Creek, 0608F: Turkey Creek)
- ◆ Not supporting the fish consumption use, mercury in tissue (0608: Village Creek, 0608G: Lake Kimball)
- ◆ Aquatic life use concern for impaired habitat (0608A: Beech Creek, 0608C: Cypress Creek)
- ◆ No concerns for nutrients in the segment

Segment 0609: Angelina River below Sam Rayburn Reservoir

- ◆ Fully supports the aquatic life use
- ◆ Fully supports the contact recreation use
- ◆ Not supporting the fish consumption use (mercury, dioxin)
- ◆ Fully supports the general use criteria
- ◆ Fully supports the public water supply use
- ◆ No concerns for nutrients in this segment

Neches-Trinity Coastal Basin

Segment 0701: Taylor Bayou above Tidal

- ◆ Fully supports the contact recreation use



Basin Water Quality Update

- ◆ Fully supports the general use criteria
- ◆ Not supporting the aquatic life use, depressed DO
- ◆ Aquatic life use concern for depressed DO (screening level)
- ◆ General use concern for chlorophyll *a* (nutrient screening level)
- ◆ Fish consumption use concern for arsenic in edible tissue (0701D: Shallow Prong Lake)

Segment 0702: Intracoastal Waterway Tidal

- ◆ Not supporting the contact recreation use (*Enterococcus*)
- ◆ Not supporting the fish consumption use (PCBs, dioxin)
- ◆ General use concern for chlorophyll *a*, nutrient screening level (0702: Intracoastal Waterway, 0702A: Alligator Bayou)
- ◆ Not supporting the aquatic life use, acute toxicity in water, toxicity in sediment (0702A: Alligator Bayou)
- ◆ Aquatic life use concern for lead in sediment (0702A: Alligator Bayou)

Segment 0703: Sabine-Neches Canal Tidal

- ◆ Fully supports the aquatic life use
- ◆ Not supporting the contact recreation use (*Enterococcus*)
- ◆ Fully supports the general use criteria
- ◆ Fully supports the fish consumption use
- ◆ No concerns for nutrients in the segment

Segment 0704: Hillebrandt Bayou

- ◆ Fully supports the fish consumption use
- ◆ Not supporting the aquatic life use, depressed DO
- ◆ Aquatic life use concern for depressed DO (screening level, minimum)
- ◆ General use concern for chlorophyll *a*, ammonia (nutrient screening levels)
- ◆ Not supporting the contact recreation use

The above water quality conditions, listed by segment, are based on the 2014 Texas Integrated Report and 303(d) List issued and adopted by the TCEQ on June 3, 2015. The EPA approved the 2014 Texas 303 (d) List on November 19, 2015.

FY 2016 Monitoring Program Update

Station 10674: Taylor Bayou North Fork at I-10 was removed from the FY 2016 Coordinated Monitoring Schedule (CMS) by TCEQ Region 10. No other changes were made in FY 2016 to the CMS in the Lower Neches River and Neches-Trinity Coastal Basins. The current CMS is available online at the following site: <http://cms.lcra.org/>.

The Continuous Real-Time Water Quality Monitoring Station (CAMS 749) on Pine Island Bayou that is operated by LNVA is available online at the following site:

http://www.tceq.state.tx.us/cgi-bin/compliance/monops/water_site_photo.pl?cams=749

Proposed Water Quality Standards

In 2014, the TCEQ proposed changes to the Texas Surface Water Quality Standards. The revised 2014 Standards were adopted by this state agency and became effective as a state rule on March 6, 2014. The 2014 Standards were submitted to EPA for review and approval on April 23, 2014. The EPA must approve the 2014 Standards in order for them to be used for federal permitting programs and other Clean Water Act purposes.

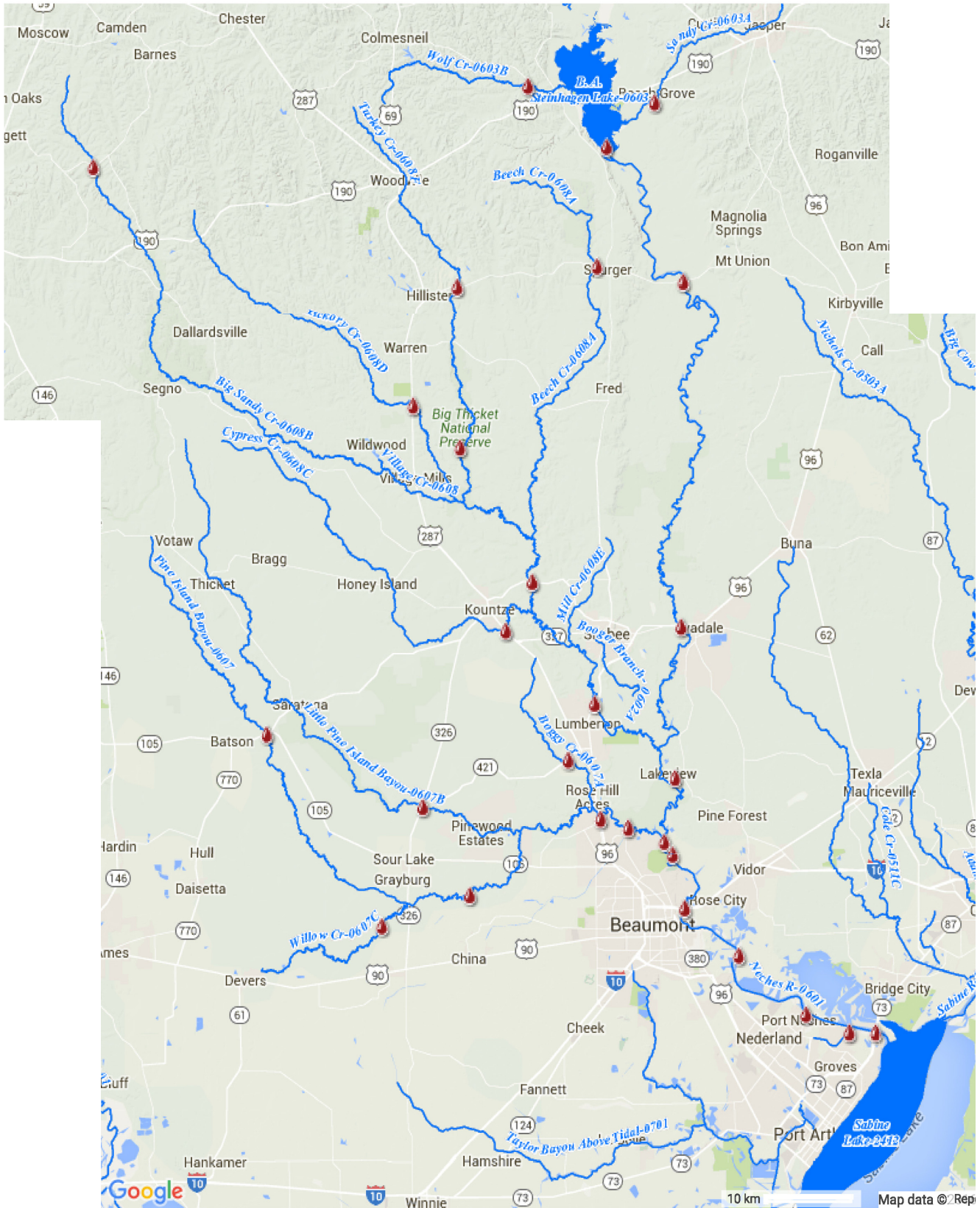
In Sept. 2014, most of the 2014 Standards were approved; however, site specific uses and criteria for primary contact recreation use and dissolved oxygen criteria in Pine Island Bayou, Willow Creek and Cypress Creek are still under EPA review. The 2014 Standards are available online at the following site:

<https://www.tceq.texas.gov/waterquality/standards/2014standards.html>



Basin Water Quality Monitoring Stations

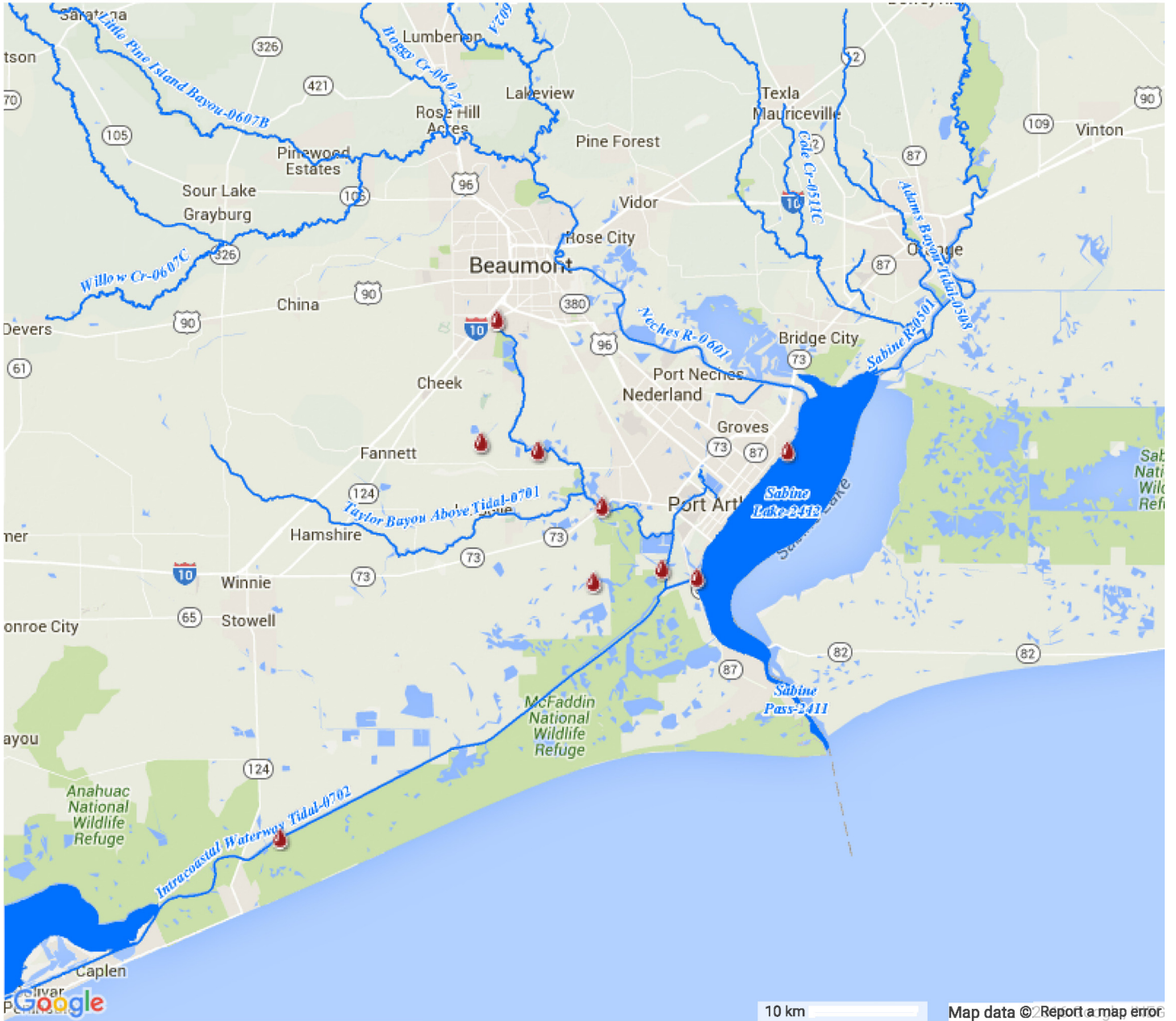
Currently monitored sites in the Neches River Basin





Basin Water Quality Monitoring Stations

Currently monitored sites in the Neches-Trinity Coastal Basin





Basin Water Quality Impairments/Concerns Table

Table 4.1-1: Recommendations for Water Quality Impairments and Concerns

| Watershed/ Segment | Use Impair- ment/Concern | Identified Parameters | Explanation of Impairment/ Concern | Actions Taken | Recommended Actions |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Segment 0601: Neches River Tidal | Aquatic Life Use Contact Recrea- tion Use Fish Consumption Use | Malathion AU_01 <i>Enterococcus</i> PCBs in Edible Tissue | Aerial pesticide applications Non-Point Source Pollution Unknown Industrial Sources | TCEQ organics in water monitoring LNVA & TCEQ rou- tine monitoring Advisory issued by DSHS (Dec. 29, 2011) | Routine monitoring for organics in water Routine monitoring to include bacteria Fish Tissue Sampling in Segment 0601 |
| Segment 0601A: Star Lake Canal | Contact Recrea- tion Use | <i>Enterococcus</i> | Non-Point Source Pollution | TCEQ Region 10 routine monitoring | Re-evaluate Primary Contact Recreation Use for Star Lake Canal |
| Segment 0602: Lower Neches River above Tidal | Fish Consumption Use Aquatic Life Use | Mercury/Dioxin in fish tissue DO grab screen- ing level | Atmospheric Depo- sition/Unknown Natural due to sea- sonal fluctuations | Advisory issued by DSHS (Jan. 24, 2014) LNVA & TCEQ rou- tine monitoring | Routine Fish Tissue Sampling per DSHS Continue routine mon- itoring in the segment |
| Segment 0603: B.A. Steinhagen Reservoir | Fish Consumption Use | Mercury/Dioxin in fish tissue | Atmospheric Depo- sition/Unknown | Advisory issued by DSHS (Jan. 24, 2014) | Routine Fish Tissue Sampling per DSHS |
| Segment 0603A: Sandy Creek Segment 0603B: Wolf Creek | Contact Recrea- tion Use | <i>E. coli</i> | Non-point Source Pollution | Planned East Texas Recreational Use Attainability Analysis (RUAA) Projects | Re-evaluate Primary Contact Recreation Use for these unclassi- fied segments |
| Segment 0607: Pine Island Bayou | Aquatic Life Use Contact Recrea- tion Use | Depressed DO <i>E. coli</i> | Natural, seasonal fluctuations and low flow conditions Non-point Source Pollution | TCEQ Proposed Inter- mediate ALU in 2014 TSWQS (AU_04) CWQMN Real-Time Monitoring Station LNVA routine moni- toring in the segment | Implement lower DO standard (3.0 mg/L) pending EPA approval of 2014 TSWQS Conduct RUAA in AU_03; Continue routine monitoring |
| Segment 0607A: Boggy Creek Segment 0607B: Little Pine Island Bayou Segment 0607C: Willow Creek | Aquatic Life Use | Depressed DO Impaired Habitat 0607A | Natural, seasonal fluctuations and low flow conditions Unknown | TCEQ Proposed Low- er DO Standards in the 2014 TSWQS TCEQ Biological Assessment | Implement revised DO standards based on intermittent streams with perennial pools Lower DO standards pending EPA approval of 2014 TSWQS |
| Segment 0608: Village Creek Segment 0608A: Beech Creek Segment 0608B: Big Sandy Creek Segment 0608C: Cypress Creek Segment 0608E: Mill Creek Segment 0608F: Turkey Creek Segment 0608G: Lake Kimble | General Use 0608 Contact Recrea- tion Use 0608B, 0608F Aquatic Life Use 0608C, 0608E Aquatic Life Use 0608A Fish Consumption Use 0608, 0608G | Low pH <i>E. coli</i> Depressed DO Impaired Habitat Copper Mercury in fish tissue | Natural Conditions Non-Point Source Pollution Natural, low flow conditions Unknown Criteria Changed Atmospheric Depo- sition | Revised pH range in 2010 TSWQS LNVA Routine Moni- toring TCEQ Proposed Inter- mediate ALU for Cypress Creek in 2014 TSWQS Acute Criteria is 1.89 vs. 2.46 in 2012 IR Advisories issued by the DSHS on Sept. 21, 2009; April 23, 1999 | Implement TSWQS pH Range (5.5-8.0) Conduct RUAA on Big Sandy Creek Implement revised DO standard based on intermittent streams with perennial pools Aquatic Life Assess- ment on Beech Creek Update advisory using current fish tissue sampling results |



Basin Water Quality Impairments/Concerns Table

Table 4.1-1: Recommendations for Water Quality Impairments and Concerns (continued)

| Watershed/Segment | Use Impairment/Concern | Identified Parameters | Explanation of Impairment/Concern | Actions Taken | Recommended Actions |
|---------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Segment 0609: Angelina River below Sam Rayburn Reservoir | Fish Consumption Use | Mercury & Dioxin in Fish Tissue | Atmospheric Deposition/Unknown | Advisory issued by DSHS on Jan. 24, 2014 | Routine Fish Tissue Sampling per DSHS |
| Segment 0701: Taylor Bayou above Tidal | Aquatic Life Use | Depressed DO | Natural, low flow conditions | Completed UAA on Taylor Bayou | Collect new 24-hour DO measurements |
| | General Use/Nutrients | Chlorophyll <i>a</i> | Excessive Nutrients | LNVA & TCEQ routine monitoring for nutrients | Continue routine monitoring; develop nutrient standards for segment |
| Segment 0701D: Shallow Prong Lake | Fish Consumption Use | Arsenic in fish tissue | Unknown | TCEQ Fish Tissue Sampling | DSHS issue a fish consumption advisory to warn public |
| Segment 0702: Intracoastal Waterway Tidal | Contact Recreation Use | <i>Enterococcus</i> | Non-Point Source Pollution | TCEQ Routine Monitoring | Consider Secondary Contact Recreation Use Standards |
| | General Use/Nutrients | Chlorophyll <i>a</i> | Excessive Nutrients | TCEQ routine monitoring for nutrients | Continue routine monitoring; develop nutrient standards |
| | Fish Consumption Use from East Bay to Port Bolivar | Dioxin & PCBs in fish tissue | Unknown Industrial Sources | Advisory issued by DSHS on June 26, 2013; TMDL Galveston Bay System Dioxin & PCBs Survey | Routine Fish Tissue Sampling per DSHS |
| Segment 0702A: Alligator Bayou and Main Canals A, B, C, and D | Aquatic Life Use | Lead in Sediment; Sediment Toxicity Water Acute Toxicity | Industrial Legacy Pollutants Unknown Industrial Sources | Ambient Toxicity TMDL in Alligator Bayou, 0702A Intermediate ALU for Main Canal D, Canal A, B, C in TSWQS | Complete TMDL Implementation; Continue monitoring for metals in sediment, ambient toxicity to determine source(s) of toxicity |
| Segment 0703: Sabine-Neches Canal Tidal | Contact Recreation Use | <i>Enterococcus</i> | Non-Point Source Pollution | TCEQ routine monitoring for bacteria in the segment | Consider Secondary or Noncontact Recreation Use Standards |
| Segment 0704: Hillebrandt Bayou | Aquatic Life Use | Depressed DO | Natural, seasonal fluctuations and low flow conditions | Completed UAA on Hillebrandt Bayou; Revised 24-hr. minimum DO criterion | Collect new 24-hour DO measurements; Apply 2014 TSWQS pending EPA approval |
| | General Use/Nutrients | Ammonia-N & Chlorophyll <i>a</i> | Excessive nutrients due to urban runoff, stormwater | TCEQ routine monitoring for nutrients in the segment | Continue routine monitoring; develop nutrient standards for segment |
| | Contact Recreation Use | <i>E. coli</i> | Non-Point Source Pollution | TCEQ routine monitoring for bacteria | Consider Secondary Contact Recreation Use Standards |