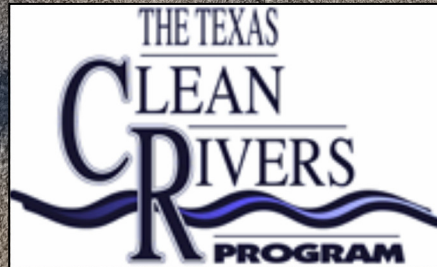




Nueces River Authority

**WATER QUALITY SUMMARIES, CONCLUSIONS, and
RECOMMENDATIONS of the
2018 BASIN SUMMARY REPORT**

**San Antonio-Nueces Coastal Basin
Nueces River Basin
Nueces-Rio Grande Coastal Basin
Bays and Estuaries**



**This document was prepared in cooperation with the Texas Commission on
Environmental Quality under authorization of the Clean Rivers Act.**

INTRODUCTION

This document is a summary of the 2018 Basin Summary Report for the San Antonio – Nueces Coastal Basin, the Nueces River Basin, the Nueces – Rio Grande Coastal Basin, and the adjoining Bays and Estuaries. This summary provides information on each basin, the major water quality issues in the basins, and the conclusion and recommendations based on the in-depth water quality analysis conducted for the 2018 Basin Summary Report. The full report is available at https://www.nueces-ra.org/CP/CRP/pdfs/BSR_2018.pdf.

In 1991, the Texas Legislature passed the Texas Clean Rivers Act (Senate Bill 818) requiring basin-wide water quality assessments to be conducted for each river basin in Texas. Under this act, the Clean Rivers Program (CRP) developed an effective partnership involving the Texas Commission on Environmental Quality (TCEQ), other state agencies, river authorities, local governments, industry, and citizens.

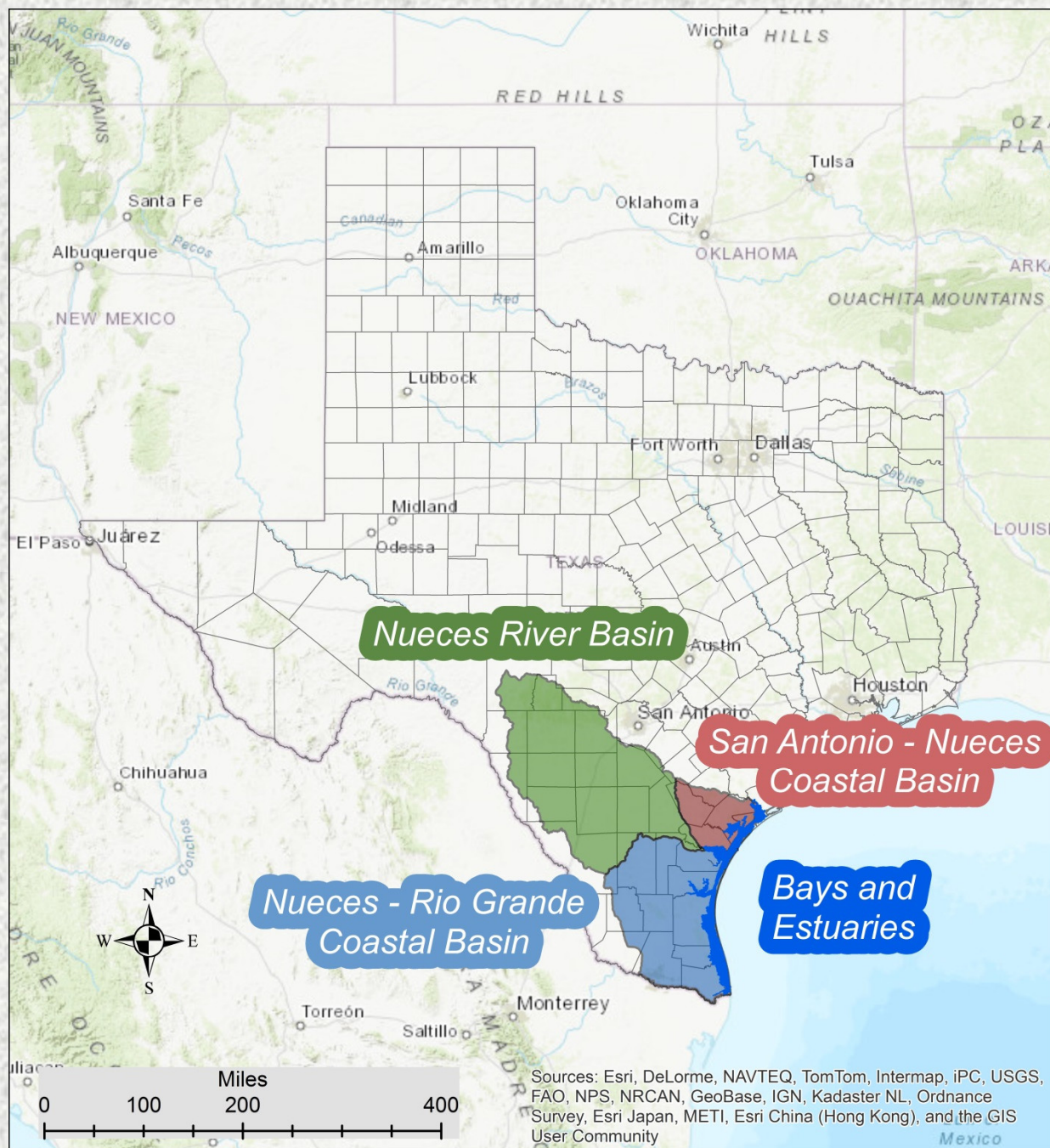
Using a watershed management approach, the Nueces River Authority (NRA) and TCEQ work together to identify and evaluate surface water quality issues and to establish priorities for corrective action. Under CRP, NRA is responsible for the San Antonio – Nueces Coastal Basin, the Nueces River Basin, the Nueces – Rio Grande Coastal Basin, and the adjacent bays and estuaries, an area roughly 30,500 square miles, ranging from the hill country in Edwards County to San Antonio Bay in Refugio County to the Brownsville Ship Channel in Cameron County.

Sixteen CRP partners collect data from over 1,800 water monitoring sites throughout the state. Data are used in the development of Texas Surface Water Quality Standards, for modeling water quality trends, providing baseline data for water quality projects, and to help establish wastewater permit limits. Steering Committees, made up of fee payers, elected officials, and the public, are created to help guide CRP efforts by providing input on local water quality concerns.

The long term goals of the CRP are to:

- Provide quality assured data to TCEQ for use in water quality decision-making
- Identify and evaluate water quality issues
- Promote cooperative watershed planning
- Inform and engage stakeholders
- Maintain efficient use of public funds
- Adapt to emerging water quality issues

To accomplish the goals set forth by the CRP, funding is allocated on a biennial cycle to CRP partners. During this reporting period, CRP partners including NRA, TCEQ Region 13 (San Antonio), Region 14 (Corpus Christi), Region 15 (Harlingen), Region 16 (Laredo) and Bandera County River Authority and Groundwater District (BCRAGD) provided water quality data for this report. Additional water quality data collected under approved Quality Assurance Project Plans and included in the Surface Water Quality Monitoring Information Systems (SWQMIS) database are used for water quality assessments. The *Texas Integrated Report of Surface Water Quality* is prepared and submitted to the U.S. Environmental Protection Agency (EPA) every two years in even numbered years, as required by law.



BASIN SUMMARIES

San Antonio – Nueces

The San Antonio – Nueces Coastal Basin is approximately 3,100 square miles, covering all or part of seven counties.

There are two minor rivers in the watershed, the Mission River and the Aransas River, but no watercourses that maintain significant stream flow. Runoff from the basin drains into Nueces Bay, Port Bay, Mission Bay, Copano Bay, St. Charles Bay, Aransas Bay, and Hynes Bay.

Water quality in Aransas River typically has elevated levels of bacteria and nutrients (nitrogen and phosphorus) and low dissolved oxygen (DO). Water in the Mission River meets the standards set for water quality much of the time. In the tidally influenced reaches of the basin, water in the Aransas Tidal and Mission River Tidal both have elevated bacteria concentrations that do not meet water quality standards.

Nueces River

The Nueces River Basin originates in Edwards County and extends approximately 315 miles to Nueces Bay near Corpus Christi. The total basin drainage area covers approximately 17,000 square miles, encompassing all or part of 23 counties in South-Central Texas.

Rivers within the basin include the Atascosa River, the Frio River and its tributaries (San Miguel Creek, Hondo Creek, Sabinal River, and Leona River), and the Nueces River.

The headwaters of the Nueces River Basin have very few water quality concerns or impairments. Bacteria impairments and nutrient concerns are common mid-basin. Water quality in the reservoirs is subject to the effects of evaporation in between rain events. Dissolved minerals concentrations tend to increase as water levels decrease. A watershed protection plan (WPP) has been developed for the lower basin to address a total dissolved solids (TDS) impairment and an increasing trend in bacteria levels

Nueces – Rio Grande

The Nueces – Rio Grande Coastal Basin covers approximately 10,400 square miles, encompassing all or part of 12 counties in South Texas.

Petronila Creek, San Fernando Creek, and Los Olmos Creek are the only significant water bodies in the northern area of the basin. The Arroyo Colorado is the only significant water body in the southern area. There are virtually no streams in the mid-basin area.

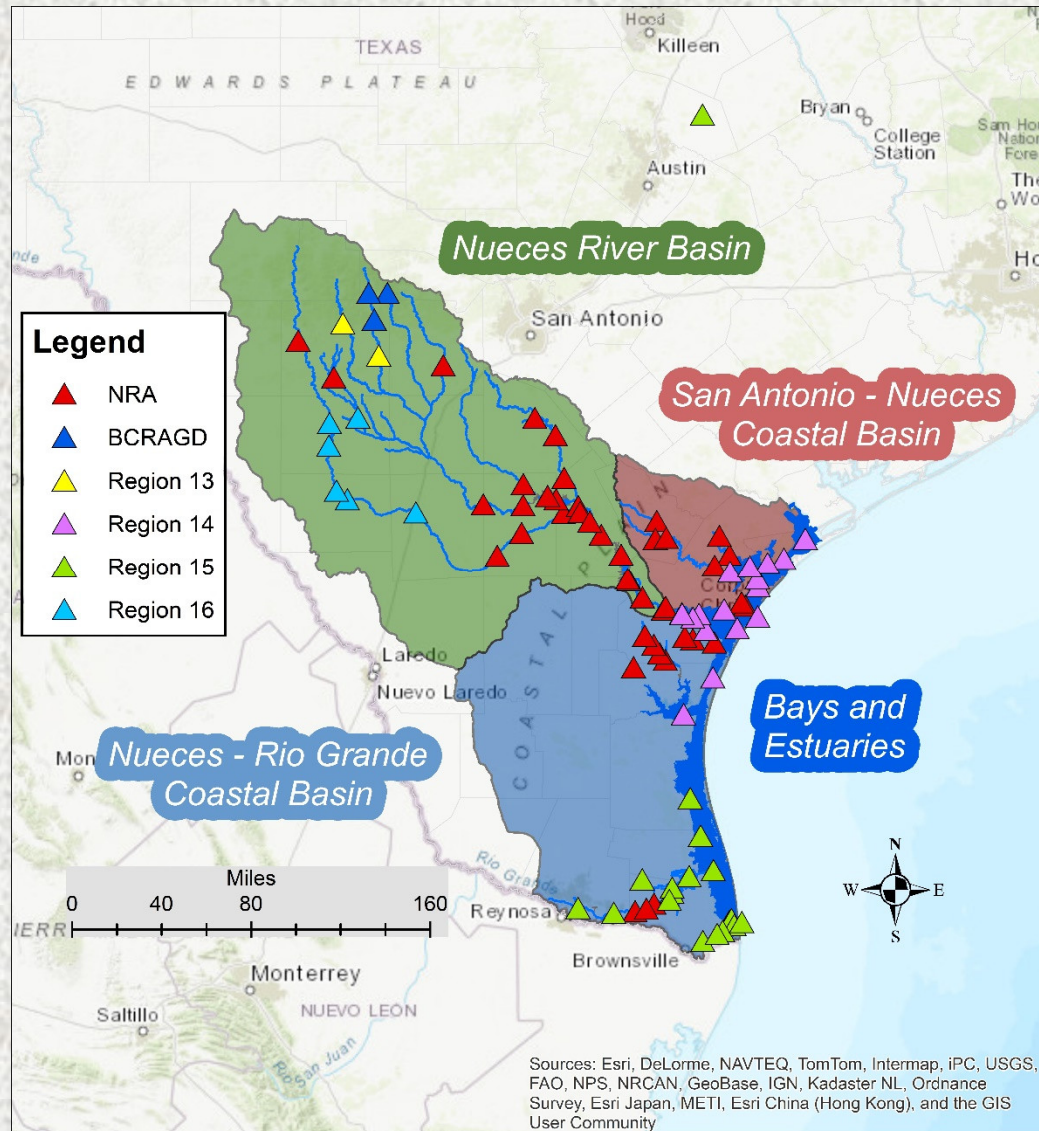
Petronila Creek is impaired for chloride, sulfate, and TDS related to historic oil and gas well drilling practices of discharging production water to the area creeks, ditches, and unlined evaporation pits. Petronila Creek is also impaired for bacteria, as well as San Fernando Creek. The Arroyo Colorado has numerous concerns and impairments that are being addressed by a WPP.

Bays and Estuaries

The characteristics of the bays and estuaries along the south Texas coast vary greatly. The systems in the north receive more freshwater inflows than those in the south. The Laguna Madre extends from Corpus Christi Bay south to Port Isabel, and is one of the few hypersaline systems in the world.

Low DO, nitrate, and chlorophyll-a are the most common concerns in the bays, and low dissolved oxygen and bacteria are the most common impairments. Four of the bays, Mesquite Bay, Aransas Bay, Redfish Bay, and South Bay, do not have any concerns or impairments.

WATER QUALITY MONITORING



In FY 2018, routine water quality monitoring was conducted at:

43 sites by the NRA,
3 sites by the BCRAGD,
2 sites by the TCEQ Region 13 (San Antonio),
17 sites by the TCEQ Region 14 (Corpus Christi),
18 sites by the TCEQ Region 15 (Harlingen), and
6 sites by the TCEQ Region 16 (Laredo).

WATER QUALITY SUMMARIES BY BASIN



Poesta Creek at SH 202

San Antonio – Nueces Coastal Basin

The primary issue in the basin is bacteria with respect to contact recreation. There are also some concerns for low DO and nutrients. These issues are being addressed by the Copano Bay Total Maximum Daily Load (TMDL) and Implementation Plan which was developed to address the bacteria impairment in Copano Bay, the tidal portions of the Mission River and both segments of the Aransas River. Best Management Practices (BMPs) to address the issue include improvements and upgrades to wastewater treatment plants and the development and implementation of conservation plans in priority areas of the watershed. From 2011 through 2017, 126 water quality management plans have been written for 69,142 acres in the Mission River watershed.

NRA will continue to conduct routine CRP monitoring in the basin, and any special studies that may be developed, to assist in the evaluation of the effectiveness of the BMPs that are implemented. NRA will continue to attend the stakeholder meetings and to provide input into the implementation of the Plan.

Nueces River Basin

The upper reaches of this basin, in general, have fewer water quality issues than the middle and lower reaches. Three of the upper reach segments, Upper Sabinal River, Upper Nueces River, and Seco Creek, meet all water quality standards. Low DO, bacteria, and nutrients are the primary concerns and impairments in the lower reaches. The continuing drought throughout the basin, and state, is a contributing factor to these issues. There are fewer rainfall events for continuous, diluting flow. When it does rain, the events are often large events, resulting in more non-point source loadings. The Lower Nueces WPP addresses the protection of the major water supply in the Coastal Bend area. The invasive giant cane (*Arundo donax*) in the headwaters of the Nueces River, Frio River, and Sabinal River out-compete native vegetation and consumes copious amount of water.

NRA will continue to serve as the Lower Nueces River watershed coordinator, seeking funding opportunities to implement the management measures identified in the WPP. NRA will pursue opportunities to conduct additional Recreational Use Attainability Analyses (RUAAs) on water bodies that are not currently meeting the primary contact recreation standard, which may not be the appropriate standard based on local knowledge. NRA will continue to spearhead the effort of *Arundo* removal and seek funding to maintain the program.



Upper Nueces River at SH 55

WATER QUALITY SUMMARIES BY BASIN

Nueces – Rio Grande Coastal Basin

The issues within this basin differ greatly between the northern and southern areas. The primary issues in the northern area are being addressed by the Petronila Creek TMDL for chloride, sulfate, and TDS. NRA has been monitoring on the tributaries to the creek to try and pinpoint the source areas. The chloride, sulfate, and TDS concentrations are inversely correlated with the three-week antecedent rainfall amounts. The concentrations rise quickly from groundwater seepage during low flow periods. The creek is now also listed as being impaired for bacteria as of the Draft 2016 Integrated Report. NRA will continue to conduct routine CRP monitoring in the Petronila watershed, including the tributary monitoring, to monitor chloride, sulfate, and TDS concentrations and provide yearly analysis reports. An RUAA is recommended to provide data for evaluating the appropriate contact recreation standard.

The southern area is dominated by the Arroyo Colorado. Water quality issues in the Arroyo Colorado include the following: elevated nutrients (nitrogen and phosphorus) and bacteria loads, instances of low DO, high levels of chlorophyll-a, and legacy pollutants resulting in fish consumption advisories (the above tidal portion). These water quality issues are being addressed by the Arroyo Colorado WPP. NRA will continue to conduct routine CRP monitoring on the Arroyo Colorado and its tributaries, and any special studies that may be developed, to assist in the evaluation of the effectiveness of the BMPs that are implemented. NRA will continue to attend the Arroyo Colorado Partnership stakeholder meetings and to provide input into the implementation of the Plan. While the impairments and concerns continue on both the tidal and above tidal segments, there does seem to be some improvement in the above tidal segment



Arroyo Colorado at Dilworth Road

WATER QUALITY SUMMARIES BY BASIN

Bays and Estuaries

Bacteria in oyster waters, chlorophyll-*a*, and bacteria at recreational beaches are the primary issues within the coastal bays. Other issues include low DO and nutrients. The Oso Bay and Oso Creek TMDL is addressing the bacteria issues in those segments. The Oso Bay and Laguna Madre TMDL is addressing the DO issues in those segments. Four of the 13 bays, Mesquite Bay, Aransas Bay, Redfish Bay, and South Bay, meet all water quality standards.

The low DO, based on current standards, in Oso Bay and the Laguna Madre, are naturally occurring and do not appear to negatively affect aquatic life. Many studies have been conducted and proposed changes to the standards are being evaluated. A TMDL and Implementation Plan to address the bacteria impairment in Oso Creek is under development. Management measures include creating habitat away from the creek for birds and wildlife, addressing failing OSSFs, and how the maintenance of the drainage ditches from the City of Corpus Christi to the creek can be improved to reduce loadings from rainfall runoff events. NRA will continue to conduct routine CRP monitoring in the basin, and any special studies that may be developed, to assist in the evaluation of the effectiveness of the BMPs that are implemented. NRA will continue to attend the stakeholder meetings and to provide input into the implementation of the Plan.

Each ship channel and harbor has different issues: metals in Conn Brown Harbor; ammonia and nitrates in the Corpus Christi Ship Channel, and bacteria in the Brownsville Ship Channel and Port Isabel Fishing Harbor.

Although not an assessed concern, local fishermen and women are concerned about nitrate and the health of Baffin Bay fisheries. Local scientists have conducted studies that concluded that the nitrogen levels are from organic nitrogen. A Baffin Bay work group has been formed and is working towards the development of a WPP for the bay. The tributaries to the bay, Petronila Creek, San Fernando Creek, and Los Olmos Creek will be included in the WPP. Additional monitoring is being planned on these creeks to better understand their contributions to pollutant loadings to the bay.

San Fernando Creek is also listed as being impaired for bacteria for contact recreation. An RUAA is recommended to provide data for evaluating the appropriate contact recreation standard.



Copano Bay at SH 35

RECOMMENDATIONS

TCEQ depends on the CRP partner agencies to provide the majority of the data used for the bi-annual water quality assessments. Therefore, dedicated funds for CRP should be reinstated in order to enhance the current level of monitoring and to provide additional monitoring to support the TCEQ, WPPs, RUAAAs, TMDLs, and Implementation Plans.

Collaborating and coordinating with all entities conducting water quality monitoring should be continued through the annual coordinated monitoring meetings. This reduces duplication of effort and increases the amount of information that can be collected and shared.

CRP should remain flexible to support proactive projects to protect water quality before a segment is listed on the 303 (d) List.

Annual CRP Partner meetings should be held to strengthen the program by promoting cooperative projects between the partner agencies and to provide opportunities to share knowledge and ideas.

To enhance the data available to TCEQ for assessments, CRP partners should continue to provide as much support to all water quality monitoring and protection efforts as possible as resources allow. Specifically related to NRA's CRP area of responsibility, NRA plans to:

- Continue to conduct routine CRP monitoring.
- Continue to implement the management measures identified in the Lower Nueces WPP.
- Submit a proposal to TCEQ to continue the on-site sewage facility repair and replacement program.
- Submit a proposal to the Texas General Land Office (TGLO) Coastal Management Program (CMP) to conduct event-based monitoring on tributaries to Baffin Bay using automated samplers.
- Submit a proposal to the TGLO CMP to conduct additional sampling on tributaries to Oso Creek to support the efforts of the Oso TMDL and Implementation Plan.
- Pursue opportunities to conduct RUAAAs on Petronila Creek and San Fernando Creek.
- Be a partner in a Texas A&M AgriLife Extension proposal to the TCEQ to conduct event-based monitoring on tributaries to Baffin Bay using automated samplers.
- Continue the widespread education and outreach activities.
- Continue to battle the *Arundo donax* invasion in the upper Nueces Basin.
- Continue to serve as stakeholders on all water quality related projects within our areas of jurisdiction and responsibility.

CONTACT INFORMATION

Nueces River Authority

www.nueces-ra.org

361-653-2110 (Corpus Christi)
830-278-6810 (Uvalde)

Rocky Freund, Deputy Executive Director

rfreund@nueces-ra.org

Sam Sugarek, Director of Water Quality Programs

ssugarek@nueces-ra.org

Shellie McCumber, Aquatic Resource Specialist

smccumber@nueces-ra.org

Sky Lewey, Resource Protection and Education Director

slewey@nueces-ra.org