2020 Lavaca Basin Highlights Clean Rivers Program Report

Brown Pelican Below Palmetto Bend Dam

Prepared by the
Lavaca-Navidad River Authority (LNRA)
PO Box 429, Edna, TX 77957

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Texas Commission on Environmental Quality (TCEQ)

LAVACA BASIN HIGHLIGHTS REPORT 2020

Table of Contents

Acronyms

AU	Assessment Unit
BMP	Best Management Practices
CFS	Cubic feet per second
CRP	Clean Rivers Program
DO	Dissolved Oxygen (in water)
EPA	Environmental Protection Agency
IR	Integrated Report
LNRA	Lavaca Navidad River Authority
Mg/L	Milligrams per Liter
MPN	Most Probable Number
MSL	Mean Sea Level
OSSF	On-Site Sewage Facilities
PPT	Parts Per Thousand
PWS	Public Water System
SDWA	Safe Drinking Water Act
SH	State Highway
SWA	Source Water Assessment
SWAP	Source Water Assessment Program
SWP	Source Water Protection
SWQM	Surface Water Quality Monitoring
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WQS	Water Quality Standards
WUGS	Water User Groups

2019 Basin Highlights:

- The Lavaca Basin received, for a second consecutive year, below average rainfall resulting in lower stream flows and depressed lake elevation. During 2019, the average rainfall recorded over 36 sites equaled 31.65 inches, which is eight inches less than the previous year's total rainfall, and nearly a foot below the historical average annual rainfall for the Basin. Due to below average rainfall some streams within the Lavaca Basin became dry.

- The illegal dumping of trash and animal carcasses has become a concern within the Lavaca Basin Dumping adversely affects the environment in many ways and raises concerns regarding health, safety, and the quality of life within an ecosystem.

- Source water for public water supply is identified as surface water (streams, rivers, and lakes) or ground water (aquifers) which can serve as sources of water for domestic use, including drinking water. Lake Texana is considered a source water for industry and cities alike, which include Inteplast, Formosa Plastics, Port of Point Comfort, City of Point Comfort, and the City of Corpus Christi. The City of Corpus Christi teamed with CDM Smith and expanded the City's Source Water Protection Program (SWPP) to include Lake Texana and surrounding streams in 2019. The SWPP is a voluntary program designed to protect drinking water sources from possible contaminants reaching them.

- The Lavaca-Navidad River Authority responded to several reports of failing on-site sewage facilities (OSSF) in Jackson County, in proximity to Lake Texana. On-Site Sewage Facilities (OSSF) release bacteria, viruses, and chemicals into the environment when they are not functioning properly. Failing OSSF can pose threats to water sources that are used for drinking water purposes. These failing systems were reported, and the issues found were resolved in a timely manner.

Figure 1: Lavaca Basin within the State of Texas

Illegal Dumping:

Illegal dumping is becoming a major problem in many rural and urban communities in Texas. The definition of illegal dumping is the disposal of waste in an unpermitted area and/or unpermitted manner. It is likely that people illegally dumping waste do this in order to avoid disposal fees or do not want to make the effort it takes to properly dispose of unwanted waste.

The presence of illegal dumping is becoming more prevalent in the Lavaca Basin. Common materials that are being dumped are household trash and decaying animal carcasses. This dumping may pose a threat to public health and compromise the water quality of our streams.

Illegal dumping can have a damaging effect on water quality when leachate from a site enters the water table through percolation into groundwater which can enter unconfined aquifers used for human consumption or surface runoff flows into nearby waterways that may be used for public recreation. Bacteria levels in surface water may become elevated when animal carcasses are dumped into waterways. The typical decomposition changes proceed more slowly in water primarily due to cooler temperatures and the anerobic environment. Some common harmful bacteria associated with carcasses and water are dysentery, gastro-enteritis, cholera, and hepatitis. Although bacteria can be removed at water treatment facilities, unsuspecting adults and children are at risk of infection if using the stream for recreational use. The effects of illegal dumping not only impact our environment but also increase the concern for public safety. If illegal dumping is witnessed or discovered, individuals may contact the Lavaca Navidad River Authority at 361-782-5229.

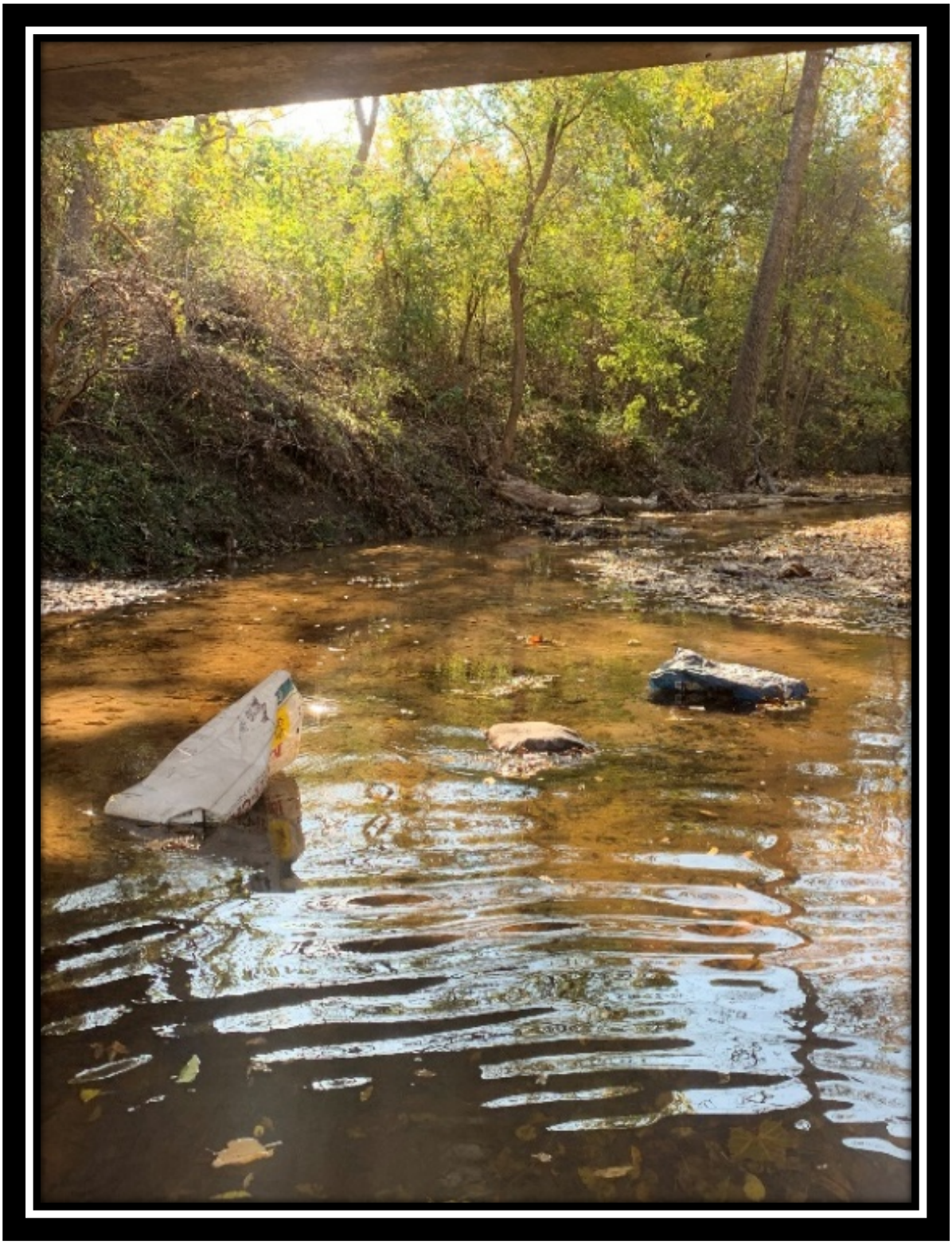

Figure 2: Dumping of trash in Rocky Creek downstream of LNRA sample site.

Figure 3: Dumping of livestock in Rocky Creek downstream of LNRA sample site.

Source Water Protection:

Source water supplies provide water to public water suppliers and private water user groups (WUGS) that may treat and supply water for public use. Examples of source water supplies are rivers, lakes, and aquifers. A Source Water Protection Program (SWPP) is a voluntary effort to help prevent contamination of source water that is supplied to public water systems. Implementation of a SWPP is aimed at reducing water treatment costs, reduce public health risks, and lower exposures to contaminated water.

A Source Water Assessment Program (SWAP) is a mandatory assessment by the federal Safe Drinking Water Act (SDWA) as amended 1996. It is used to determine public water supply systems susceptibility to possible contaminations. A Source Water Assessment (SWA) was performed around Lake Texana in July 2019. The assessment was performed in order to provide information on drinking water sources, potential pollution threats to the water source, land use decisions, develop protection plans, and prepare for emergencies. The City of Corpus Christi contracted with CDM Smith and H2O Partners to conduct the assessment. CDM Smith was responsible for the organization and implementation process of the Source Water Assessment Program (SWAP). H2O Partners conducted the field portion of the assessment to collect an inventory of all possible contaminate sources. Examples of potential contaminate sources are oil and gas storage tanks, OSSF, and wastewater effluent discharges.

The 1996 Amendments of the Safe Drinking Water Act outline the steps to follow when conducting a Source Water Assessment for a public water system (PWS). These steps are as follows:

1. Delineation of the Source Water Protection Area
2. Inventory of potential contamination sources
3. Public Water Systems susceptibility to contaminant sources within the SWPA
4. Inform the public about potential contaminate sources and their impact to PWS
5. Implement Best Management Practices (BMP)
6. Planning strategies to address water contamination or service interruption emergencies.

Drinking water quality relies on the effectiveness of State and Federal regulations in order to help protect our surface water and groundwater.

Source water protection is one approach that can be taken in order to ensure we are providing safe drinking water.

Figure 4: Source Water Protection Signage at Palmetto Bend Dam.

On-Site Sewage Facilities:

The Lavaca-Navidad River Authority was alerted by an employee regarding potential on-site sewage facility failures near Lake Texana. The physical location of the potential failed system was southwest of the City of Ganado along CR 248 approximately one-tenth of a mile from the lake.

LNRA employees visited the locations to investigate the on-site sewage facilities and to collect data on the site locations, assess the severity of seepage, and capture photos. Upon investigation, it was evident that the on-site sewage facilities were inadequately operating. The reported leaks were said to be simple grey water discharges from the systems. This can be caused by hydraulic overloading. Hydraulic overloading is caused when the incoming wastewater exceeds the systems flow rate. As a result of hydraulic overloading, bacteria in the system can be reduced, which reduces the effectiveness of the water treatment process. With reduced numbers of bacteria in the system this means fewer solids are being broken down resulting in excess solids passing into the drain field. Although it is legal to discharge greywater, current regulations state that wastewater that is managed by an on-site sewage facility may not leave the property where it is generated. The wastewater discharge from these on-site sewage facilities had begun to accumulate on LNRA property. Once it was confirmed that these systems were failing, post owner notification, a report was filed with the Jackson County Office of Permitting & Inspection. LNRA performed an inspection visit to the sites to ensure proper measures were taken to resolve the failing systems. Upon the second visit it was noted that appropriate measures had been taken by the County and landowners.

Many rural homes located in Jackson County use OSSF as the preferred method of treating wastewater generated by the homeowner. Selecting the correct system is determined by two major factors, site and soil conditions within the area. Many of the soil types in Jackson County are not suitable for conventional septic systems. Permeable soils are required for the conventional septic system. The bulk soil type of Jackson County is a clay substrate; therefore, an aerobic septic system is required.

Figure 5: “Greywater” released by failing OSSF.

Figure 6: Wastewater effluent stream being illegally diverted across property lines.

Figure 7: Hydraulic overloading of wastewater discharge system.

Water Quality Monitoring:

As part of the Clean Rivers Program, the Lavaca-Navidad River Authority performs water quality monitoring throughout the Lavaca River Basin for a variety of field and conventional parameters including bacteria.

Field data can include***:*** Dissolved oxygen, pH, temperature, specific conductivity, flow, salinity, secchi disk to measure water clarity and depth.

Conventional water analyses include: Total alkalinity, chloride, ammonia, total organic carbon, turbidity, total hardness, sulfate, nitrate-nitrogen, total kjeldahl nitrogen (TKN), total suspended solids, total phosphorus, and chlorophyll-a at the reservoir sites.

Bacterial analysis is conducted for *E. coli* with the IDEXX Colilert system. More details on monitoring parameters follow at the end of this section.

Figure 6, Table 1, and the lists that follow show the water quality sites monitored for FY 2019 along with the parameter sets and frequency. A detailed coordinated monitoring schedule with aerial maps for Lavaca Basin can be accessed from **LNRA Web Site** as follows: from the "Programs" pull-down menu, choose "Water Quality" and click on “FY 2019 Coordinated Monitoring Schedule".

Field parameters:

Secchi disk - Physical measurement of water clarity via visibility.

Water temperature - The degree of heat in a body of water. For CRP purposes water temperature is measured in degrees Celsius.

Dissolved oxygen - Oxygen dissolved in water column readily available to aquatic organisms.

Specific conductance - Measure of electrical current carrying capacity of water. This indicates the amount of dissolved solids and salts in the water. Total Dissolved Solids (TDS) can be derived from specific conductance by multiplying its µS/cm value by 0.65 to obtain mg/L TDS.

pH - Measure of whether water is acidic, basic or neutral.

Salinity - The amount of dissolved salts in a body of water. Salinity is usually low in fresh water and higher in tidally influenced water, bays, and oceans. Usually measured in parts per thousand (ppt). Average ocean water is ~35 ppt.

Depth - Depth of water column where measurement occurs.

Flow - The volume of water flowing through a point in a stream -- measured in cubic feet per second (cfs).

Conventional parameters:

Total Suspended Solids (TSS) - All particles suspended in water which will not pass through a filter, commonly results from erosion of soils, run-off, and sediment**.**

Sulfate - An abundant water-soluble sulfur-containing compound.

Chloride - Can be defined as a chemical compound in which one or more chlorine atoms are covalently bonded in the molecule. Chlorides can be either inorganic or organic compounds. Also, the salts of hydrochloric acid are called chlorides. Chlorides can be high from saltwater intrusion near the coast or from gas and oil drilling operations where brine water is not contained properly.

Ammonia - A compound of nitrogen and hydrogen in the formula NH_3 that occurs naturally in surface waters through decomposition of organic nitrogen, but may be elevated from agricultural runoff, human and/or animal wastes. Ammonia occurs in trace amounts in the atmosphere and in rainwater. The kidneys secrete ammonia to neutralize excess acid; thus it can be found in urine.

Total Hardness - A measurement of the amount of calcium and magnesium in association with carbonates.

Nitrate-Nitrogen - Nitrate is the compound of nitrogen and oxygen in the formula of NO_3. Too much nitrate in water can be harmful to both fish and humans. Elevated levels can be the result of agricultural and/or feedlot runoff or improperly treated wastewaters or septic tanks. Nitrate is highly soluble and can be transported to surface and groundwater during precipitation events.

Total Phosphorous - A measure of all chemical forms of phosphorus in the water. Phosphorus can be the limiting factor to plant growth, and elevated levels can lead to eutrophication of surface waters via increased algal growth resulting in depleted dissolved oxygen when the plant material is decomposed by bacterial activity.

Total Alkalinity - Measure of the buffering capacity (ability to resist changes in pH when acids or bases are added) of water.

Total Organic Carbon - Measured by the amount of carbon dioxide produced when a water sample is atomized in a combustion chamber--gives indication of the amount of carbon covalently bound in organic compounds in the water. Important to drinking water treatment planning. Only sampled at site 15377.

Turbidity - Laboratory measurement of suspended particles in water affecting clarity.

Chlorophyll-a - Photosynthetic pigment found in all green plants, algae and cyanobacteria -- concentration used to estimate phytoplankton biomass in surface water.

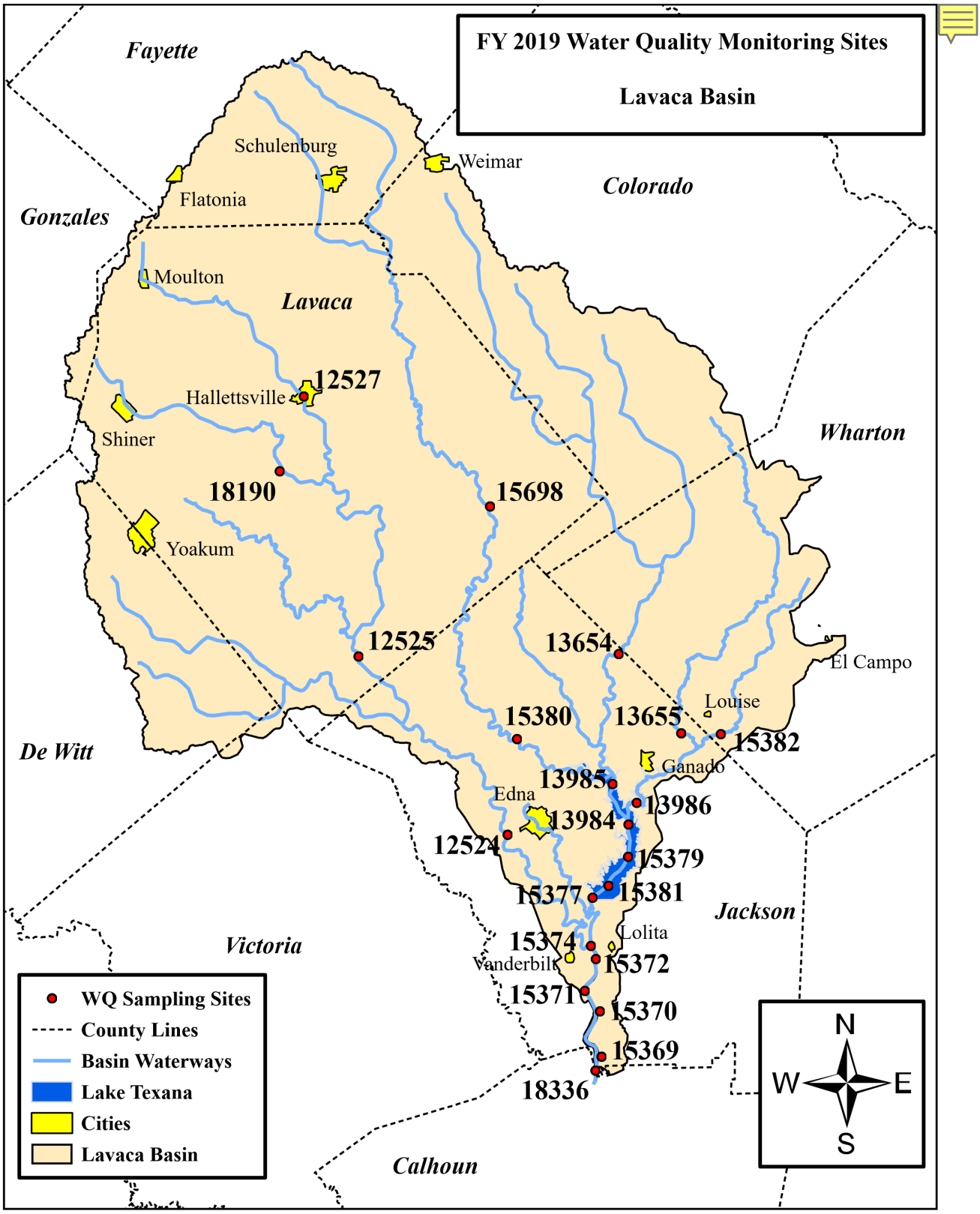

Figure 8: FY 2019 Lavaca Basin Water Quality Monitoring Sites.

Table 1-Monitoring Sites for FY 2019

Segment	Station ID	LNRA ID	Long Description	Latitude	Longitude	Conventionals	Bacteria	Flow	Field
1601	15372	215	Lavaca River @ Frels Landing	28.8233	-96.5752				12
1601	15371	220	Lavaca River @ Mobil dock	28.7876	-96.5891				12
1601	15370	225	Lavaca River @ mouth of RedfishLk	28.7651	-96.5700				12
1601	15369	230	Lavaca River @ mouth of Swan lake	28.7150	-96.5682				12
1601	18336	232	Lavaca River near Lavaca Bay mouth	28.6994	-96.5758	4			12
1602	12525	111	Lavaca River @ SHwy 111 bridge	29.1566	-96.875	4	4	12	12
1602	12524	110	Lavaca River @ Hwy 59 bridge	28.9602	-96.6863	4	4	12	12
1602	12527		Lavaca River @ Hallettsville 90A	29.4430	-96.9441	4	4	4	4
1602	18190		Rocky Creek @ Lavaca CR 387	29.3609	-96.9743	4	4	4	4
1603	15374	210	Navidad River 30m above Lavaca	28.8411	-96.5766	4			12
1604	15377	9	Lake Texana near spillway	28.8909	-96.5794	4			12
1604	15381	8	Lake Texana near dam	28.9040	-96.5594	4			12
1604	15379	7	Lake Texana south of Hwy 111	28.9361	-96.5346	4	4		12
1604	13984	6	Lake Texana north of Hwy 111	28.9714	-96.5340	4	4		12
1604	13985	5	Lake Texana main body near Hwy 59	29.0162	-96.5540	4	4		12
1604	13986	4	Lake Texana - Mustang Creek arm	28.9957	-96.5238	4	4		12
1604	13654	2	Sandy Creek @ FM 710	29.1595	-96.5462	4		12	12
1604	15382	10	East Mustang @ FM 647	29.0713	-96.4172	4		12	12
1604	13655	1	West Mustang @ Hwy 59	29.0720	-96.4676	4		12	12
1605	15380	3	Navidad River @ Strane Park bridge	29.0657	-96.6745	4		12	12
1605	15698	Speaks	Navidad River @ Speaks bridge	29.3220	-96.709	4			4

Monitoring Frequency by Site:

- **East Mustang Creek** - monthly field data and quarterly conventional.
- **West Mustang Creek -** monthly field data and quarterly conventional.
- **Sandy Creek** - monthly field data and quarterly conventional.
- **Navidad River at Speaks** - quarterly field and conventional.
- **Navidad River at Strane Park -** monthly field data and quarterly conventional.
- **Lake Texana -** 6 sites monitored for field data monthly and quarterly for conventional and chlorophyll a. Four (4) Lake Sites are sampled quarterly for *E.coli* bacteria.

- **Navidad River below spillway and above confluence with Lavaca** - monthly field data and quarterly conventional.

- **Rocky Creek -** quarterly field, conventional, and bacterial.
- **Lavaca River at Hallettsville -** quarterly field, conventional, flow and bacterial.
- **Lavaca River at Hwy 59 and at SH 111 -** monthly field data and quarterly conventional and bacterial.

- **Lavaca River at 5 sites between confluence with Navidad River below spillway and Lavaca Bay -** monthly field data at 5 sites and quarterly conventional data at one site.

- **In addition, Lake Texana and its inflows** - Navidad River, Sandy Creek, and East and West Mustang Creeks are monitored by contract with USGS for pesticides, herbicides, and metals.

Water Quality Conditions:

The Lavaca Basin remains a choice illustration of a basin with minimal water quality issues. Two key contributing factors that result in few water quality impairments are size and lack of development. The Lavaca Basin is the smallest and least industrialized river basin in the State. The Basin has a very rural landscape with a heavy agricultural background. With these key factors in place, water quality within the basin is generally good.

The Surface Water Quality Monitoring (SWQM) Team of TCEQ assesses water quality data using techniques appropriate for each of the various parameters measured. For more information on specific guidelines and methods for assessing water quality please visit **The Surface Water Quality Monitoring (SWQM) Team** website.

Bacteria samples are not collected at every inflow or estuarine site because sample holding times cannot be met. *E. coli* and enterococci samples may be taken to a local non-accredited lab for interested stakeholders.

Waterbodies within the Lavaca Basin are divided into 5 main segments. Waterbodies highlighted in blue represent waterbodies that meet the criteria for their designated uses. Those in red and orange represent waterbodies that are not meeting criteria and are impaired.

Segment 1601 – Lavaca River tidal portion (including Redfish and Swan Bays):
This 23-mile segment runs from the confluence with Lavaca Bay northwest to a point 8.6 km (5.3 miles) downstream of US 59 in Jackson County. Several small tributaries, the Menefee Lakes, Redfish Lake, Swan Lake, Redfish Bayou, and Catfish Bayou are included in this segment. The Redfish and Swan Lakes are important nursery grounds for marine organisms. Wastewater treatment plants include Vanderbilt at a flow not to exceed 45,000 gallons per day.

Assessment:
The aquatic life and general uses are fully supported. The contact recreation and fish consumption uses were not assessed.

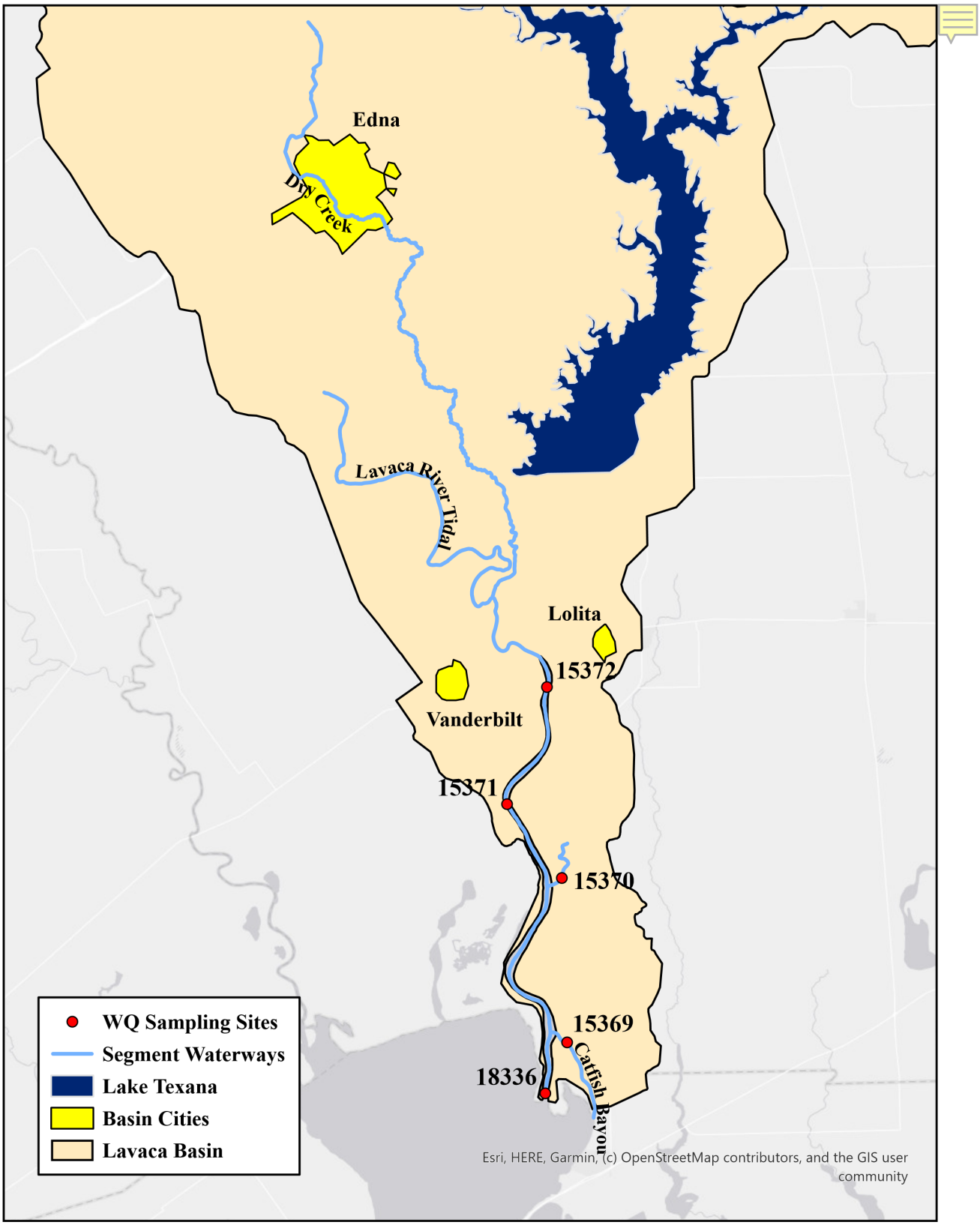

Figure 9: Segment 1601 of the Lavaca Basin.

Segment 1602 – Lavaca River above tidal:

This segment runs from a point 8.6 km (5.3 miles) downstream of US 59 in Jackson County upstream to the confluence with the West Prong of the Lavaca River in Lavaca County. Assessment Unit (AU) 1602_01 is now considered intermittent with pools and runs from the confluence with Campbell Branch just above Hallettsville up to the end of the segment at the West Prong confluence. The small portion of the Lavaca above the West Prong confluence is considered intermittent with a DO criteria of 3.0 mg/L average and 2.0 mg/L minimum. Many tributaries drain into the Lavaca River. Wastewater effluent from Shiner drains into Rocky Creek, while Yoakum effluent flows into Big Brushy and Clarks Creeks. Moulton and Hallettsville dispose of their effluent directly into the Lavaca River.

Assessment:

The public water supply and general uses are fully supported. The fish consumption uses were not assessed. Since the 2004 Texas Water Quality Inventory (TWQI), the upper portion of the Lavaca River (above Hallettsville) has been listed for non-support of the high Aquatic Life Use (ALU) classification's concomitant dissolved oxygen (DO) criteria due to depressed DO at times of low to no flow. It is listed as a Category 5b, meaning that the standards for this upper portion of the river were re-assessed via the Use Attainability Analysis (UAA). The UAA has determined that this long segment should be broken into 2 basic divisions: the lower perennial flow section and the upper intermittent with pools section with the division point being the confluence with Campbell Branch just northwest of Hallettsville.

The freshwater bacterial geometric mean standard for Primary Contact Recreation streams remains at 126 colonies most probable number (mpn) per 100 milliliters of water. Segment 1602_03 has been listed for elevated bacterial levels since 2008 and segment 1602B_01 (Rocky Creek) since 2014. These two segments are subject to long periods of low flow followed by brief periods of high flow which can contribute to elevated bacteria levels. In addition to the affect caused by overland flow, on numerous occasions cattle and feral hogs have been seen soaking in the shallow waters of segment 1602B_01. Both are listed as a category 5c which means more data and information will be collected before a TMDL is scheduled. A WPP has been implemented on the Lavaca River to try and lower bacterial counts below the 126 MPN criteria. This rural tributary receives wastewater from Shiner and meets the Lavaca River below Hallettsville.

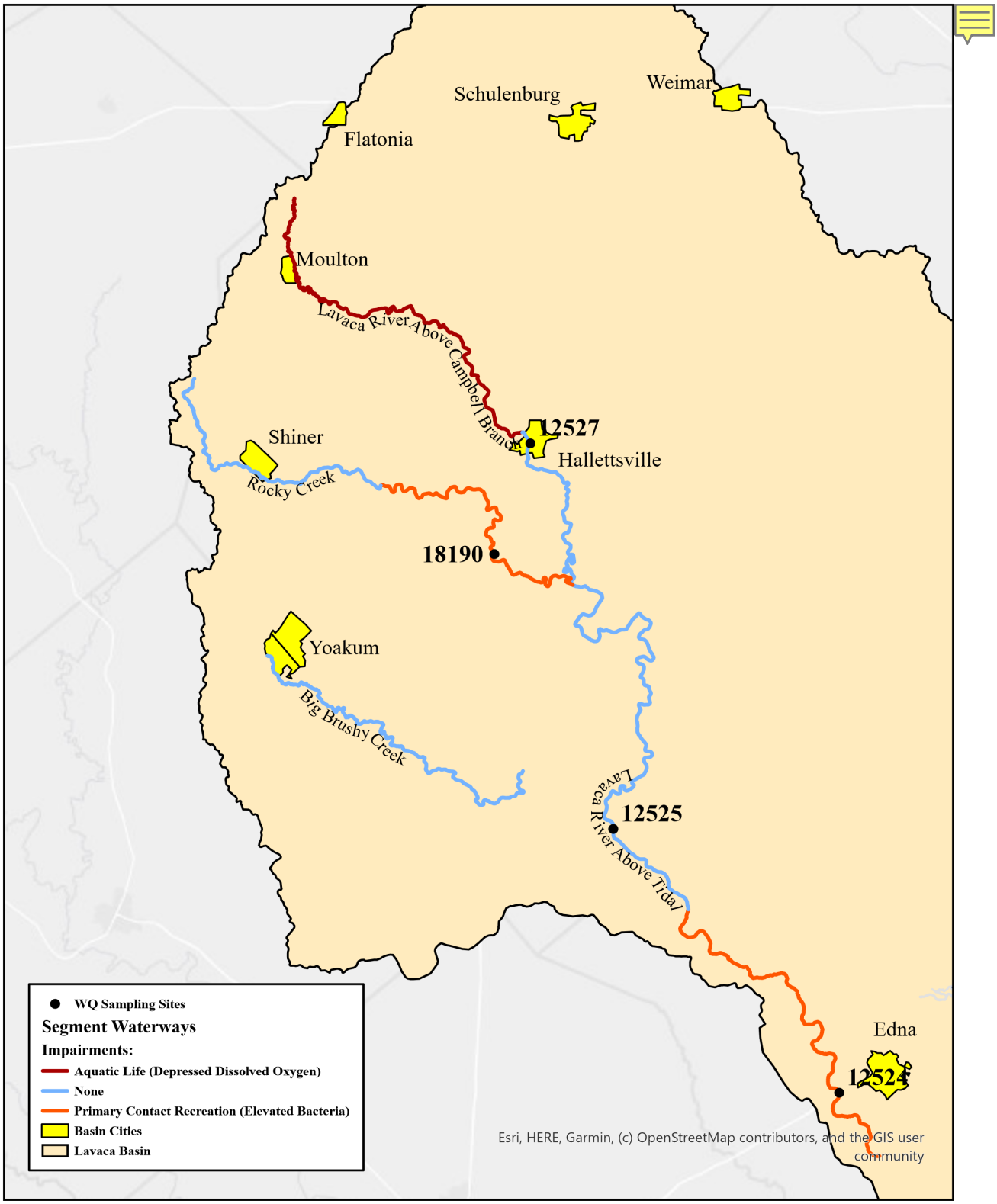

Figure 10: Segment 1602 of the Lavaca Basin.

Segment 1603 – Navidad River (tidally influenced portion):

This 9-mile segment runs from the confluence with the Lavaca River in Jackson County north to Palmetto Bend Dam in Jackson County. Dry creek drains wastewater effluent from Edna into this segment. The east and west drains along the east and west dikes of Lake Texana also drain water into this segment.

Assessment:

The aquatic life and general uses are fully supported. The contact recreation and fish consumption uses were not assessed.

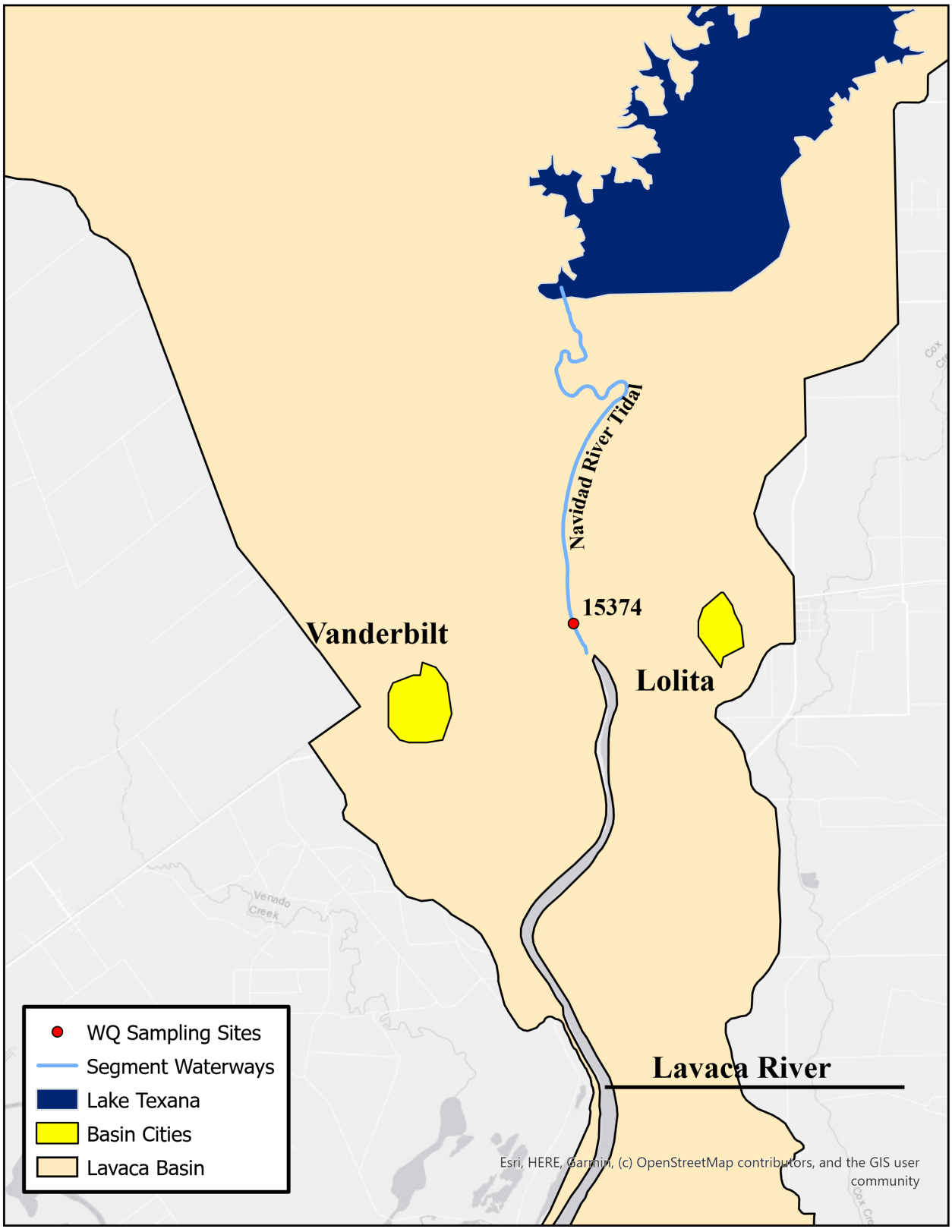

Figure 11: Segment 1603 of the Lavaca Basin.

Segment 1604 – Lake Texana and its proximate inflows:

From Palmetto Bend Dam in Jackson County to a point 100 meters (~110 yards) downstream of FM 530 in Jackson County, up to normal pool elevation of 44 feet. Lake Texana is a 161,085-acre foot reservoir with 9,727 surface acres impounding waters from the Navidad River, East and West Mustang Creek, and Sandy Creek. Wastewater effluent from Ganado drains into Lake Texana, the city of Louise wastewater drains into East Mustang Creek, Brackenridge and Texana parks discharge treated effluent directly into Lake Texana.

Assessment:

The aquatic life, contact recreation, general uses and public water supply uses are fully supported. The fish consumption use was not assessed.

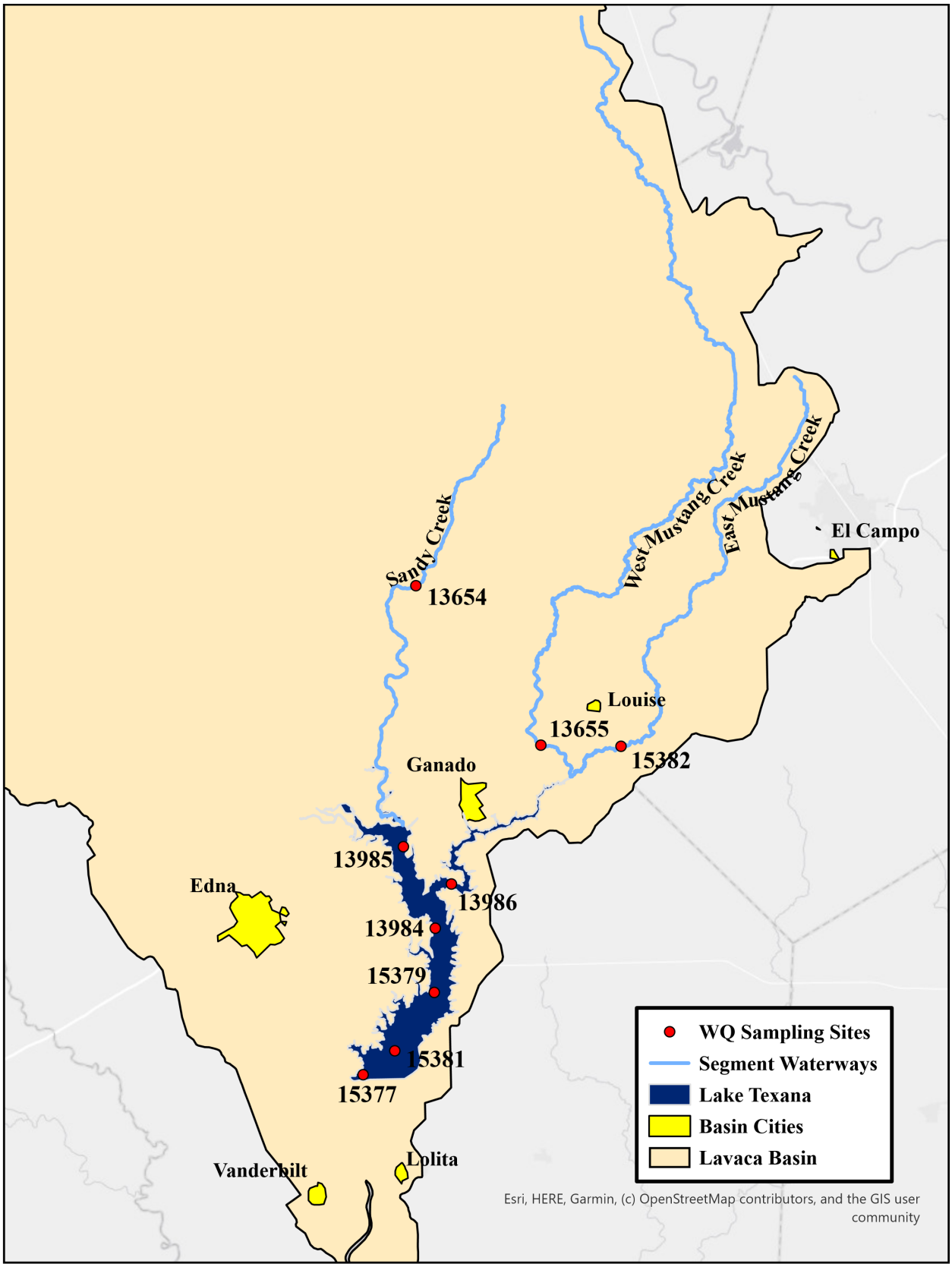

Figure 12: Segment 1604 of the Lavaca Basin.

Segment 1605 – Navidad River above Lake Texana:

This 62-mile segment runs from above Lake Texana north to the confluence of the East Navidad River and the West Navidad River just southeast of the City of Schulenburg. Wastewater treatment plants discharging into unnamed tributaries in this segment include the communities of Schulenburg and Sheridan.

Assessment:

The aquatic life, public water supply and general uses are fully supported. Contact recreation and fish consumption were not assessed.

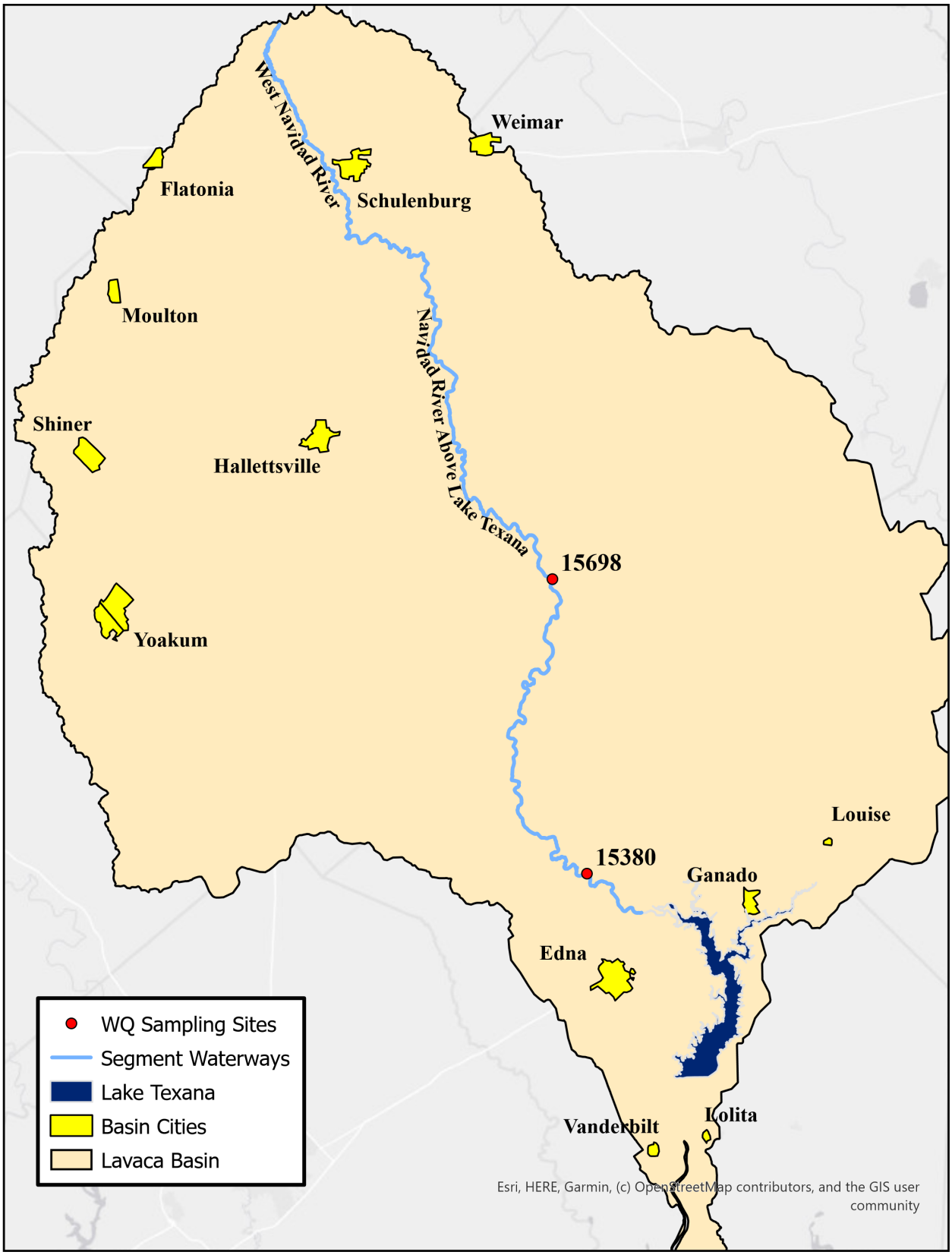

Figure 13: Segment 1605 of the Lavaca Basin.

Stakeholder Participation and Public Outreach:

Public outreach efforts by LNRA include seeking input from the Lavaca Basin Steering Committee about water quality issues and activities, education outreach, and assistance in water conservation and drought contingency planning, news releases, public meetings, attendance at water quality issues meetings, providing water education materials (Major Rivers) to elementary schools throughout and near the Basin, presentations to groups, and support of the Texas Stream Team volunteer water quality monitoring program. LNRA staff members are available to answer questions or give assistance with water quality information to Basin students, stakeholders, members of the public, and to respond to calls from concerned citizens. LNRA staff investigate information provided by citizens and contact the appropriate regulatory agency to address the issue. This cooperation between citizens, LNRA, and regulatory agencies has resulted in effective response to potential water quality problems in the Basin. Michael Price is LNRA's public outreach coordinator. Mr. Price teaches nature crafts and programs at Texana Park and is also available to travel to schools and libraries to present various environmental education programs. LNRA provides the cost of these programs. You may contact Michael Price by phone, 361-308-0153 or via e-mail at **mprice@lnra.org**.

Figure 14: LNRA Michael Price teaching students at nature camp.

Major Rivers:

The *Major Rivers* water education program for Texas fourth-grade classrooms provides activities and learning opportunities. LNRA provides these materials (which include student workbooks, water conservation take-home information brochures, pre- and post-tests, teacher workbooks with color overhead transparencies, and an introductory video) to schools in the Lavaca Basin.

CRP Steering Committee:

LNRA coordinates with the Clean Rivers Program (CRP) Steering Committee to seek public input, disseminate water quality information, and set priorities for water quality monitoring in the Lavaca Basin. Membership in the Committee is open to staff from state and local governments, private landowners, representatives of industry and agriculture, and interested citizens.

The Lavaca Basin Steering Committee provides guidance on the use of resources from the Clean Rivers Program. The Steering Committee allows LNRA to gain insight from local stakeholders and expertise from such members as Texas Parks and Wildlife (TPWD), Texas Commission on Environmental Quality (TCEQ), United States Geological Survey (USGS), Natural Resources Conservation Service (NRCS), Texas Stream Team, Texas Department of Agriculture, Texas State Soil and Water Conservation Board, and the County Agricultural Extension Service. Input from the Committee allows LNRA to prioritize water quality issues and to determine the most effective water quality monitoring program.

CRP Steering Committee Meetings are held annually in the summer. Meeting notices are mailed out three weeks in advance to Committee members, and notices of the meetings are posted on the **LNRA Home Page Calendar**. Contact information and a map to the meeting site are found under the "Programs" tab then choose "Clean Rivers". Agendas and minutes of the meetings are also posted on-line. In addition, LNRA places notices of the meetings in all the Basin newspapers (Edna, Hallettsville, Moulton, Schulenburg, Shiner, Yoakum) inviting the public to attend.

Anyone interested in participating as a member of the Steering Committee may contact the offices of LNRA and speak to General Manager Patrick Brzozowski or Director of Environmental Services Chad Kinsfather.

Contact information:

Lavaca-Navidad River Authority	Telephone: 361-782-5229
PO Box 429 Edna, Texas 77957	Fax: 361-782-5310
General Manager: Patrick Brzozowski, P.E.	**pbrzozowski@lnra.org**
Environmental Department: Chad Kinsfather	**ckinsfather@lnra.org**
Environmental Technician: Brandon Byler	**bbyler@lnra.org**

Texas Stream Team (formerly Texas Watch):

LNRA provides support to the Texas Stream Team volunteer water quality monitoring program by providing equipment, monitoring supplies and reagents, quality assurance, and environmental data to the volunteers. The Texas Stream Team Program is a statewide network of concerned volunteers, partners, and institutions collaborating to promote a healthy and safe environment through environmental education, data collection, and community action.

LNRA is actively searching for a volunteer to lead a Texas Stream Team class in the Lavaca Basin. Anyone wishing to become involved with Texas Stream Team monitoring may contact Brandon Byler at LNRA or contact Texas Stream Team directly by calling toll-free 1-877-506-1401, or by visiting the **LNRA Web Site** and clicking on the Stream Team link, or by visiting the **Texas Stream Team Web Site**

LNRA Website:

Extensive water quality information for the Lavaca Basin is available via the **Lavaca-Navidad River Authority Web Site** . The LNRA home page provides links to TCEQ, to information about the Clean Rivers Program, to Stream Flow information and much more. Under the "Programs" pull-down menu at the top of the LNRA home page are links to the "Clean Rivers", "Major Rivers", and the "Water Quality" pages. Here is how the links on the "Water Quality" page will appear:

LNRA Water Quality Database

SWQMIS Data Viewer

Annual Water Quality Reports:

2019 Lavaca Basin Highlights Report

2018 Lavaca Basin Highlights Report

2017 Lavaca Basin Summary Report

2016 Lavaca Basin Highlights Report

Water Quality Links:

FY 2020 Coordinated Monitoring Schedule

FY 2020 Water Quality Monitoring Site Map

FY 2019-2020 CRP QAPP

Texas Water Quality Inventory and 303(d) List

The **"LNRA Water Quality Database"** link connects to a dedicated server storing all state-approved water quality data for the Lavaca Basin, both historical and recent. The data may be accessed by entering a Station ID or site number (shown on map). These Station ID numbers are assigned by TCEQ and are called Surface Water Quality Monitoring (SWQM) site numbers. The sites are described under the "County" and "Segment" listings.

Water quality data can be displayed as an HTML page or as an ASCII delimited text file that can be imported into a spreadsheet or database. Once a sampling site is chosen, data can be retrieved

either by sampling date or by parameter—both of which are displayed in pull-down menus. Water quality parameters, e.g. dissolved oxygen, pH, salinity, etc. are posted with a storet code, but since the names of the parameters are listed one does not need to know the storet code to access the data. Also available in the pull-down parameter menu are the metals, herbicides and pesticides analyzed by contract with the United States Geological Survey (USGS). Once a parameter is chosen, a date range can be entered, as instructed. If no date range is entered the query will produce all available data for that site and parameter. This is an excellent tool for accessing historical or current water quality information for the Lavaca Basin.