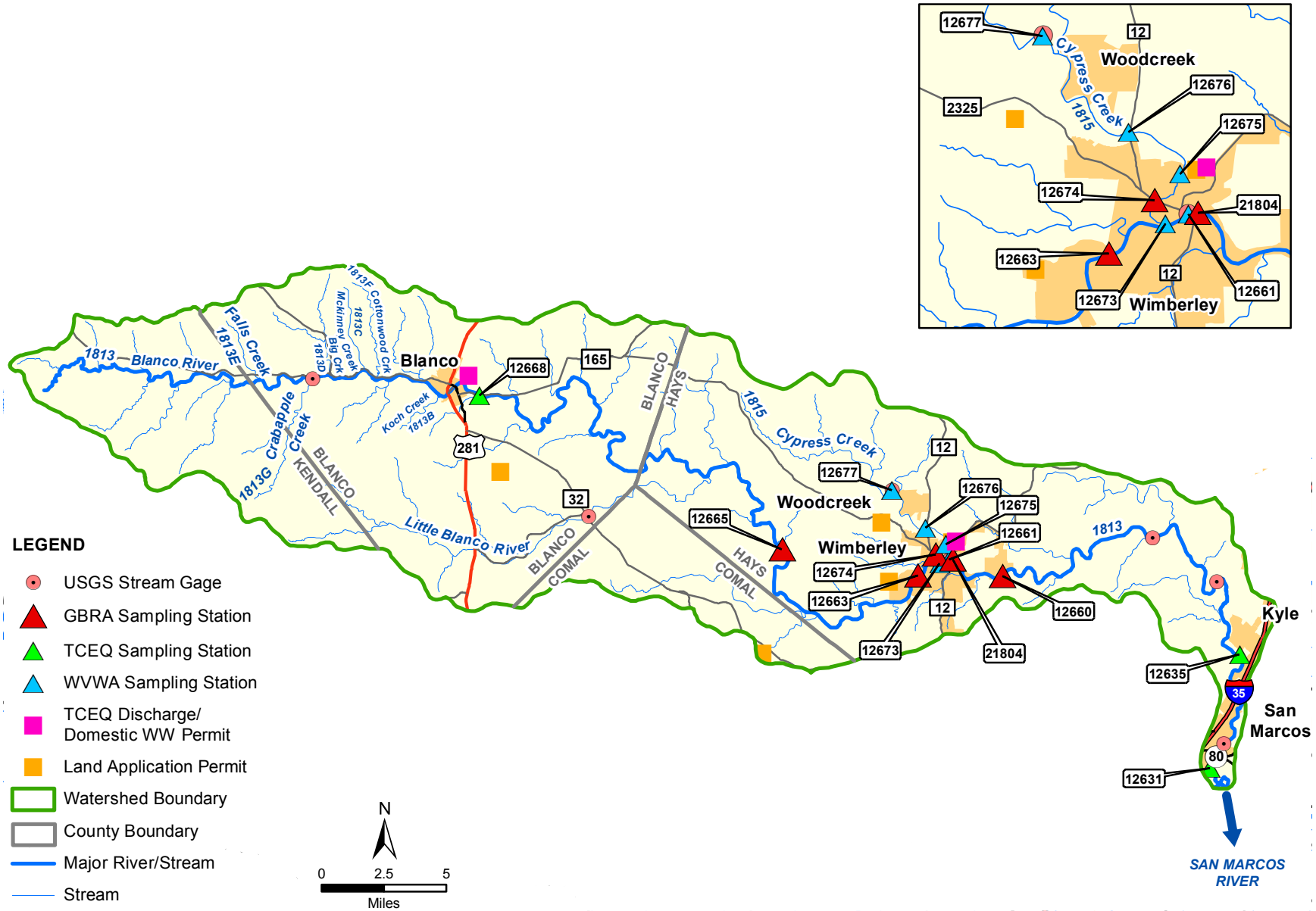
BLANCO RIVER



BLANCO RIVER

Segment 1813 is the 71 mile long Upper Segment of the Blanco River. This spring-fed stream is located entirely on the Edwards Plateau. The majority of the segment exhibits limestone substrate with occasional gravel, silt, or clay strata. The limestone is known to contain gypsum deposits, which can contribute to high sulfate concentrations in groundwater. The stream has historically displayed exceptional water quality and usually exhibits extremely clear water as it travels from Kendall County to Lime Kiln Road in Hays County. In general, most water quality concerns in this segment of the Blanco River are linked to changes in stream flow. The upper portions of the river have been known to go dry during prolonged periods of drought and the banks and substrate of the entire segment exhibit significant scouring during extended wet periods. This stream segment also accepts the discharge from the classified Cypress Creek (1815) tributary in the City of Wimberley.

Segment 1815 represents Cypress Creek, which is a 15.7 mile long spring fed creek that flows through the City of Wimberley and accepts 38.3 square miles of drainage area before merging with the Upper Blanco River (1813). This stream is known for exceptional water quality with frequent contact recreational use in the many swimming holes along its length. The bald cypress that cover much of the riparian zone provide picturesque views and help to maintain a moderate temperature throughout out its length.

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Blanco River Watershed
Drainage Area: 435 square miles
Length: 89 miles
Tributaries: Meier Creek, Blackberry Creek, Delaware Creek, South Fork Blanco River, Falls Creek (1813E), Crabapple Creek (1813G), West Prong Big Creek (1813A), Clear Creek (1813I), East Prong Big Creek (1813H), McKinney Creek (1813C), Cottonwood Creek (1813F), Blasingame Creek, Hinds Branch, Koch Branch (1813B), Durham Branch, Flat Creek, Rogers Branch, Boardhouse Creek, Cove Branch, Rocky Creek, Little Blanco River, Wanslow Creek, Cedar Fork, Carpers Creek, Dutch Branch, Elm Creek, Pinoak Creek, Cypress Creek (1815), Deer Creek, Pierce Creek, Sycamore Creek , Lone Man Creek
Aquifer: Edwards Plateau
River Segments: 1813, 1815, 1809
Cities and Communities: Blanco, Fischer, Wimberley, Kyle, San Marcos
Counties: Kendall, Comal, Blanco, Hays
EcoRegion: Edwards Plateau, Texas Blackland Prairies
Climate: Average annual rainfall 34.83 inches, Average annual temperature 65.35°F
Vegetation Cover: Evergreen Forest 32.04%, Deciduous Forest 11.34%, Shrubland 38.43%; Grassland 14.30%; Woody Wetlands: 0.30% Cultivated Crops 0.57% ; Pasture Hay 0.64%
Land Uses: urban, agricultural crops (wheat, hay, oats, peaches and pecans), sheep, cattle, goat and turkey production; light manufacturing and recreation
Development: Low Intensity 0.57% ; Medium Intensity 0.19%; High Intensity 0.05%; Open Space 1.19%
Water Body Uses: Aquatic life, contact recreation, general use, fish consumption, and public water supply
Soils: Thin limestone to black waxy, chocolate, and grey loam, calcareous, stony, and clay loams
Permitted Wastewater Treatment Facilities: Domestic 3, Land Application 0, Industrial 0
522 square miles
Length: 75 miles
Tributaries: Sink Creek, Sessom Creek, Purgatory Creek, Willow Springs Creek, Blanco River (1809), Morrison Creek, Dickerson Creek, Callihan Creek, York Creek, Brushy Creek, Highsmith Creek, Plum Creek (1810), Mule Creek, Canoe Creek, Smith Creek
Aquifer: Edwards-Balcones Fault Zone, Carrizo-Wilcox
River Segments: 1814, 1808
Cities and Communities: San Marcos, Maxwell, Martindale, Fentress, Prairie Lee, Luling, Ottine, Gonzales
Counties: Hays, Guadalupe, Caldwell, Gonzales,
EcoRegion: Edwards Plateau, Texas Blackland Prairies, Post Oak Savannah

BLANCO RIVER

Segment 1809 is the lower portion of the Blanco River that is primarily located on the Edwards Plateau, but enters the Blackland Prairies on the eastern edge of Hays County. This segment consists of limestone substrate with occasional stony and clay loams. The changes in elevation as the river crosses the Balcones fault increase the streamflow, but there are also several slow moving stretches throughout the segment before it merges with the San Marcos River. The water is primarily used for aquatic life, contact recreation and fish consumption. The land in the segment is used for farming, ranching, recreation, light manufacturing and urban development. The urban development of this segment is increasing at a rapid pace due to the river's location in the middle of the IH 35 corridor and its close proximity to the rapidly expanding cities of San Marcos and Kyle. The fast growing population in this area raises concerns about the growing amount of impervious cover and subsequent potential for non-point source pollution.

The Upper Blanco River, Segment 1809, has three permitted domestic wastewater discharges. The City of Blanco WWTF is permitted to discharge up to 0.225 MGD of treated effluent into the Blanco River. This effluent must meet permit limit concentrations of 30 mg/L of carbonaceous biochemical oxygen demand (CBOD), 90 mg/L of total suspended solids (TSS), 3 mg/L of ammonia nitrogen and 126 MPN/100 mL of E.coli. The Blanco water treatment plant is also permitted to discharge up to 0.050 MGD of filter backwash, which has a permitted TSS that does not exceed 20 mg/L and a permitted pH between 6.5 and 9.0 standard units. The Blue Hole wastewater treatment facility (WWTF) is was previously permitted to perform subsurface irrigation in order to dispose of treated effluent. The facility is undergoing construction and has been permitted to discharge up to 0.075 million gallons per day (MGD) into the Deer Creek tributary of the Blanco River downstream of the Ranch Road 12 crossing. This WWTF ensures that effluent concentrations do not exceed 5 mg/L of carbonaceous biochemical oxygen demand (CBOD), 5 mg/L of total suspended solids (TSS), 2 mg/L of ammonia nitrogen, 0.5 mg/L of total phosphorus, 126 MPN/100 mL of E. coli. The Wimberley Valley Watershed Association (WVWA) has added an additional monitoring (station 21804) 150 meters downstream of the Deer Creek confluence in order to record any changes in water quality as a result of this new wastewater influence. The WVWA also began monitoring TKN at station 12661 upstream of Deer Creek and 12660 downstream of Deer Creek, in order to gage any changes in Total Nitrogen of the river.

The Upper Blanco segment 1813 is divided into five assessment units (AUs) by the TCEQ. AU 1813_01 represents the portion of the river from a point 0.2 miles upstream of Lime Kiln Road in Hays County to the confluence with Spoke Pile Creek. The only monitoring station in this AU is station 12660 on the Blanco River at Hays CR 174 (Fulton Ranch Road). Station 12660 has been historically monitored by the TCEQ from 1983 until 2003, at which time the WVWA began monitoring this station. AU 1813_02 is the portion of the segment from the confluence with Spoke Pile Creek up to the confluence with Cypress Creek in Wimberley. This AU has been monitored on a quarterly basis since 2003 by the WVWA at station 12661. Station 12661 is located at the Ranch Road 12 crossing in Wimberley and was previously monitored by the TCEQ since 1968. Located immediately upstream of the Cypress Creek confluence, AU 1813_05 covers the portion of the segment between the confluence with Cypress Creek in Wimberley to the confluence with Rogers Branch in Hays County. AU 1813_05 has one active monitoring station 12663 at Hays CR 1492 at Pioneer Town. Station 12663 has been actively monitored by the WVWA since 2003 and station 12665 at Fischer Store Road has been monitored since 2011. AU1813_03 comprises the portion of the river between Rogers Branch and Hinds Branch in Blanco County. This AU has been monitored at station 12668 on Farm to Market Road 165, 0.5 miles east of the city of Blanco. Station 12668 has been alternatively monitored by the TCEQ and GBRA since 1983 and is currently monitored quarterly by the TCEQ. AU1813_04 is the upper portion of the segment between Hinds Branch in Blanco County and Meier Creek in Kendall County. This AU does not have any active monitoring stations. In the most recently published 2014 Texas Integrated Report of Surface Water Quality, no known water quality impairments or concerns were assessed in this river segment. An analysis of the data by GBRA from all four active monitoring stations in the segment revealed that several significant changes over time were occurring in this segment. The most upstream station 12668 showed significant change in pH over time, as well as a significant increase in chlorides and sulfates over time (Figures 1, 2, & 3). All three parameters showed an inverse relationship with streamflow (Figures 4, 5, & 6). Station 12660 upstream of the Cypress Creek confluence also showed a significant increase in pH over time that was inversely correlated with spring flow (Figures 7 & 8). Station 12661 downstream of the Cypress Creek confluence also showed an increase in pH over time, but temperature over time was also significantly increasing at this station (Figures 9 & 10). Station 12663 is the most downstream in this this segment, and has showed a significant increase in dissolved oxygen concentrations over time (Figure 11). All of the changes in this

segment are most likely traceable due to slower moving water as a result of several years of drought conditions. The slower moving water and higher temperatures were conducive to the growth of green algae in the clear waters of the Blanco River. The increased pH and dissolved oxygen levels are consistent with a stream with increased photosynthetic activity, as carbonic acid is removed from the water column and dissolved oxygen is released.

The lower Blanco River Segment 1809 has been divided into two assessment units (AUs) by the TCEQ. AU 1809_01 covers the lower 7 miles of the segment from the confluence with the San Marcos River to International Highway 35. AU 1809_02 covers the upper 8 miles of the segment from IH 35 to Lime Kiln Road in Hays County. The only active surface water quality monitoring station for this segment is located in this AU. Station 12631 is located at the Hays County Road 295 crossing on the Blanco River. This station has been monitored by the TCEQ on a quarterly basis since 1983. In the most recently published 2014 Texas Integrated Report of Surface Water Quality, no known water quality impairments or concerns were identified in this river segment. The GBRA examined the water quality data from this station and discovered two notable trends over time. The specific conductance and dissolved oxygen at station 12631 were both increasing over time (Figures 12 & 13). These trends were also likely due to reduced influence from rainfall runoff as a result years of drought.

The Cypress Creek Segment 1815 is a spring fed tributary of the Upper Blanco that is assessed as two assessment units by the TCEQ. All of the monitoring stations in this segment are located in AU 1815_01, which is the flowing portion of Cypress Creek downstream of the headwater springs. The remaining AU 1815_02 comprises the upper 7 miles of the segment which is characterized by intermittent stream flows. Cypress Creek has five active monitoring stations in the perennial portion of the stream. The most downstream monitoring station 12673 is located at the confluence with the Blanco River. This station has been monitored by the Wimberley Valley Watershed Association (WVWA) since 2003. The next station upstream is 12674, which is located at the Ranch Road 12 crossing in the middle of the Wimberley town center. This station was monitored by the TCEQ and its predecessor agencies from 1973 to 1998, at which point monitoring was transferred to the GBRA under the Clean Rivers Program. Station 12675 has been monitored by the WVWA since 2005 at the Blue Hole Campground in the city of Wimberley. The WVWA has monitored station 12676 at the Ranch Road 12 crossing 1 mile north of Wimberley since 2002. The WVWA also monitored station 12677 at the Jacob's Well Spring near the headwaters of the creek since 2003. A watershed protection plan has been developed by the Meadows Center for Water and the Environment and local stakeholders to outline methods to maintain water quantity and quality of the Cypress Creek watershed in the face of rapid urbanization and development in Hays County. The plan was accepted by the EPA in 2016 and immediately became eligible for Clean Water Act Section 319 Grants. A three year, 1.34 million dollar implementation project began in 2017 with intent to reduce nonpoint source pollution runoff. The project included additional modeling and data collection efforts to determine future management efforts. The majority of the homes and businesses along the Cypress Creek are served by aging septic tanks and stakeholder concerns have been raised regarding a possible non-point source influence on the creek as these systems begin to fail. The 2014 Texas Integrated Report of Surface Water Quality identified aquatic life use concerns for depressed dissolved oxygen and impaired biological habitat. Both of these concerns may be traced to data collected by the GBRA during an aquatic life monitoring (ALM) event conducted during drought conditions. The ALMs performed in from 2011 to 2013 showed that the Index of Biotic Integrity for Habitat did not meet the exceptional designated aquatic life use for the Creek. The creek was

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experiencing intermittent spring flows during this time period, due to a prolonged period of drought and this event was not representative of normal flow conditions. The GBRA analyzed the water quality data from all five stations and found several trends over time. The most downstream station 12673 showed significant increases in specific conductance and nitrate nitrogen concentrations over time (Figures 14 & 15). Nitrate concentrations were also directly correlated with changes in stream flow (Figure 16). The next upstream station (12674) also had significant increases in conductivity, nitrates and E. coli over time (Figures 17, 18, & 19). The E. coli concentrations showed an inverse relationship with stream flow (Figure 20). This station is located closest to the Wimberley town center and the increasing E. coli numbers at this station may be the result of an urban influence from this immediate area, such as water fowl or septic tanks. The Blue Hole recreational area on the Cypress Creek was purchased by the City of Wimberley in 2005 and converted from private ranch land to a 126 acre master planned park, which finished construction in 2011.The Blue Hole station 12675 in Wimberley also showed an increase in conductivity over time (Figure 21). The conductivity change at this station may be the result sediment being suspended from increased use of the park. The Ranch Road 12 station 12676 (upstream of the influence from the town center) showed a decrease in dissolved oxygen over time (Figure 22), which may be due to reduced spring flows following several years of drought. The station 12677 at the Jacob Well headwater spring had a significant increase in dissolved oxygen over time and temperature over time (Figures 23 & 24). These changes were most likely due to changes in spring flow following several years of drought.

Table 1

Station 12660– Blanco River at CR 174 Fulton Ranch Road 02/2003 – 09/2016					
AU 1813_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	22.2	32.7	9.7	104	33.30
pH	8.2	9.3	7.3	103	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	300	499	222	104	400.00
NH3-N (mg/L)	<0.10	0.30	<0.02	89	0.33
Total Phosphorus (mg/L)	<0.05	0.13	<0.02	88	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.24	0.90	<0.02	93	1.95
TKN (mg/L)	0.23	0.29	<0.20	10	N/A
AU 1813_01 Recreational Use					
E. coli (MPN/100 mL)	39 Geomean	4,800	2	93	126 Geomean
AU 1813_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	9.1	12.8	0.6	101	≥4.0 Minimum & ≥6.0 Average

Table 2

Station 12661 – Blanco River at FM 12 at Wimberley 02/2003 – 09/2016					
AU 1813_02 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	22.5	36.5	10.7	96	33.30
pH	8.0	8.7	7.0	93	6.5 – 9.0
Chloride (mg/L)	12.7	13.0	12.0	3	50.00
Sulfate (mg/L)	24.7	27.0	23.0	3	50.00
Total Dissolved Solids (mg/L)	312	545	233	94	400.00
NH3-N (mg/L)	<0.10	0.28	<0.02	95	0.33
Total Phosphorus (mg/L)	<0.05	0.20	<0.02	100	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.25	1.01	<0.02	99	1.95
TKN (mg/L)	N/A	N/A	N/A	N/A	N/A
AU 1813_02 Recreational Use					
E. coli (MPN/100 mL)	61 Geomean	2,450	3	97	126 Geomean
AU 1813_02 Aquatic Life Use					
Dissolved Oxygen (mg/L)	8.9	13.7	3.5	95	≥4.0 Minimum & ≥6.0 Average

Table 3

Station 12663 – Blanco River at CR 1492 at Pioneer Town 02/2003 – 09/2016					
AU 1813_05 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	21.2	30.9	9.1	104	33.30
pH	8.0	8.8	6.8	103	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	311	489	235	104	400.00
NH3-N (mg/L)	<0.10	0.27	<0.02	90	0.33
Total Phosphorus (mg/L)	<0.05	0.65	<0.02	96	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.28	1.02	0.03	94	1.95
TKN (mg/L)	N/A	N/A	N/A	N/A	N/A
AU 1813_05 Recreational Use					
E. coli (MPN/100 mL)	95 Geomean	2,910	9	94	126 Geomean
AU 1813_05 Aquatic Life Use					
Dissolved Oxygen (mg/L)	8.0	8.8	6.8	103	≥4.0 Minimum & ≥6.0 Average

Table 4

Station 12668 – Blanco River at FM 165 near Blanco 12/2002 – 06/2017					
AU 1813_03 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	21.1	32.0	5.4	136	33.30
pH	8.1	8.7	7.4	135	6.5 – 9.0
Chloride (mg/L)	13.7	81.8	5.4	133	50.00
Sulfate (mg/L)	34.1	133	16.1	133	50.00
Total Dissolved Solids (mg/L)	308	505	202	135	400.00
NH3-N (mg/L)	<0.10	0.33	<0.02	77	0.33
Total Phosphorus (mg/L)	<0.05	0.31	<0.02	131	0.69
Chlorophyll-a (µg/L)	1.8	8.3	<1.0	113	14.10
Nitrate Nitrogen (mg/L)	0.23	1.17	<0.01	132	1.95
TKN (mg/L)	0.44	1.95	<0.10	50	N/A
AU 1813_03 Recreational Use					
E. coli (MPN/100 mL)	24 Geomean	1,700	<1	134	126 Geomean
AU 1813_03 Aquatic Life Use					
Dissolved Oxygen (mg/L)	9.6	15.7	4.6	133	≥4.0 Minimum & ≥6.0 Average

BLANCO RIVER

Table 5

Station 12631– Blanco River at Hays CR 295 02/2003 – 08/2017					
AU 1809_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	21.7	29.3	10.0	55	33.30
pH	7.8	8.6	7.1	55	6.5 – 9.0
Chloride (mg/L)	17.8	50.0	11.0	53	50.00
Sulfate (mg/L)	29.6	44.0	18.0	54	50.00
Total Dissolved Solids (mg/L)	330	418	239	54	400.00
NH3-N (mg/L)	<0.05	0.08	<0.02	52	0.33
Total Phosphorus (mg/L)	<0.05	0.07	<0.02	52	0.69
Chlorophyll-a (µg/L)	6.0	10.0	1.2	32	14.10
Nitrate Nitrogen (mg/L)	0.38	1.75	<0.02	54	1.95
TKN (mg/L)	0.24	0.62	<0.10	50	N/A
AU 1809_01 Recreational Use					
E. coli (MPN/100 mL)	34 Geomean	1,600	2	50	126 Geomean
AU 1809_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	8.5	14.6	4.5	54	≥3.0 Minimum & ≥5.0 Average

Table 6

Station 12673– Cypress Creek at Confluence with Blanco River 02/2003 – 09/2016					
AU 1815_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	20.7	32.4	11.0	94	30.00
pH	7.8	8.3	7.0	91	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	357	595	265	92	400.00
NH3-N (mg/L)	<0.10	0.53	<0.02	92	0.33
Total Phosphorus (mg/L)	<0.05	0.12	<0.02	91	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.20	1.37	<0.02	96	1.95
TKN (mg/L)	N/A	N/A	N/A	N/A	N/A
AU 1815_01 Recreational Use					
E. coli (MPN/100 mL)	156 Geomean	3,800	9	96	126 Geomean
AU 1815_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	7.9	11.4	1.7	93	≥4.0 Minimum & ≥6.0 Average

Table 7

Station 12674– Cypress Creek at FM 12 at Wimberley 01/2003 – 10/2016					
AU 1815_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	19.9	26.4	8.4	64	30.00
pH	7.7	8.1	7.1	64	6.5 – 9.0
Chloride (mg/L)	19.8	34.4	12.0	56	50.00
Sulfate (mg/L)	22.2	36.6	16.0	54	50.00
Total Dissolved Solids (mg/L)	370	463	244	64	400.00
NH3-N (mg/L)	<0.10	0.27	<0.02	34	0.33
Total Phosphorus (mg/L)	<0.05	0.22	<0.02	56	0.69
Chlorophyll-a (µg/L)	1.4	5.0	<1.0	53	14.10
Nitrate Nitrogen (mg/L)	0.23	1.37	<0.02	55	1.95
TKN (mg/L)	0.23	0.51	<0.20	34	N/A
AU 1815_01 Recreational Use					
E. coli (MPN/100 mL)	216 Geomean	2,000	19	56	126 Geomean
AU 1815_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	8.4	11.7	1.4	63	≥4.0 Minimum & ≥6.0 Average

Table 8

Station 12675 – Cypress Creek at Blue Hole Campground 12/2005 – 09/2016					
AU 1815_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	20.7	26.6	11.7	64	30.00
pH	7.6	8.2	6.8	61	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	375	515	285	62	400.00
NH3-N (mg/L)	<0.10	0.34	<0.02	64	0.33
Total Phosphorus (mg/L)	<0.05	0.10	<0.02	68	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.27	1.42	<0.02	68	1.95
TKN (mg/L)	N/A	N/A	N/A	N/A	N/A
AU 1815_01 Recreational Use					
E. coli (MPN/100 mL)	59 Geomean	2,400	<1	67	126 Geomean
AU 1815_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	5.5	9.4	1.5	63	≥4.0 Minimum & ≥6.0 Average

Table 9

Station 12676 – Cypress Creek at RR12 1 Mile North of Wimberley 02/2003 – 12/2015					
AU 1815_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	20.6	27.3	11.9	95	30.00
pH	7.5	8.2	6.7	92	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	355	583	240	93	400.00
NH3-N (mg/L)	<0.10	0.30	<0.02	92	0.33
Total Phosphorus (mg/L)	<0.05	0.12	<0.02	92	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.22	1.56	<0.02	97	1.95
TKN (mg/L)	0.11	0.11	0.11	1	N/A
AU 1815_01 Recreational Use					
E. coli (MPN/100 mL)	84 Geomean	2,400	10	96	126 Geomean
AU 1815_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	6.1	9.3	0.7	94	≥4.0 Minimum & ≥6.0 Average

Table 10

Station 12677 – Cypress Creek at Jacob's Well Spring 02/2003 – 09/2016					
AU 1815_01 General Use					
Parameter	Mean	Maximum	Minimum	# of Measurements	Screening Criteria
Temperature (°C)	20.6	23.1	16.5	96	30.00
pH	7.0	7.8	6.3	92	6.5 – 9.0
Chloride (mg/L)	N/A	N/A	N/A	N/A	50.00
Sulfate (mg/L)	N/A	N/A	N/A	N/A	50.00
Total Dissolved Solids (mg/L)	373	566	303	93	400.00
NH3-N (mg/L)	<0.10	0.27	<0.02	93	0.33
Total Phosphorus (mg/L)	<0.05	0.11	<0.02	92	0.69
Chlorophyll-a (µg/L)	N/A	N/A	N/A	N/A	14.10
Nitrate Nitrogen (mg/L)	0.53	1.73	0.03	97	1.95
TKN (mg/L)	N/A	N/A	N/A	N/A	N/A
AU 1815_01 Recreational Use					
E. coli (MPN/100 mL)	8.4 Geomean	2,400	<1	97	126 Geomean
AU 1815_01 Aquatic Life Use					
Dissolved Oxygen (mg/L)	6.0	9.8	3.8	94	≥4.0 Minimum & ≥6.0 Average

BLANCO RIVER

Figure 1

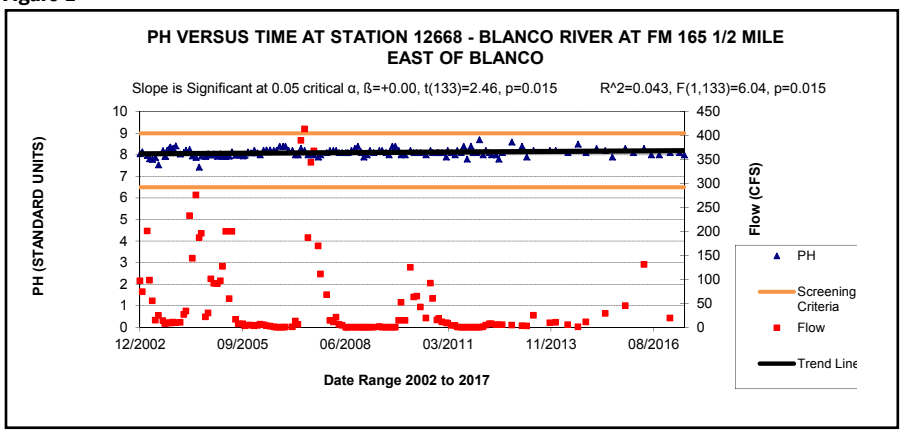


Figure 2

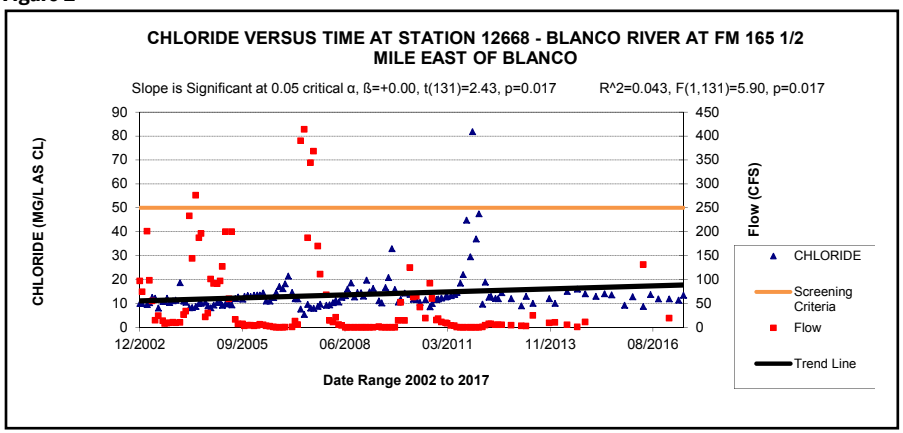


Figure 3

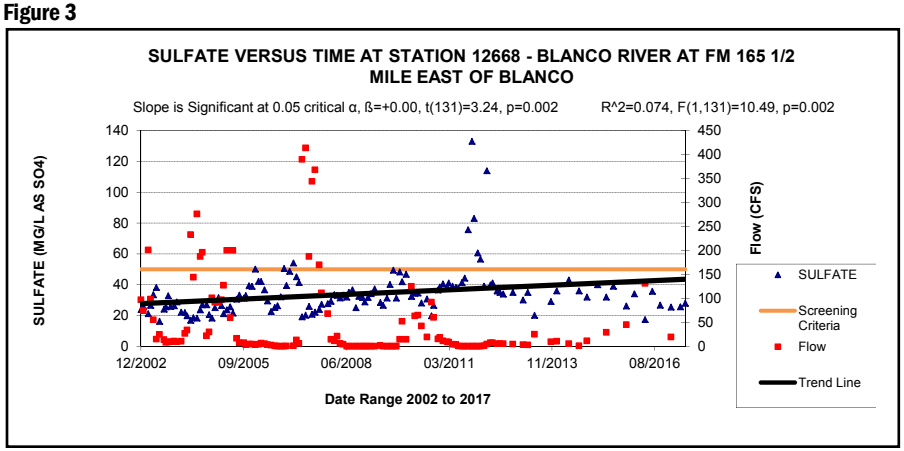
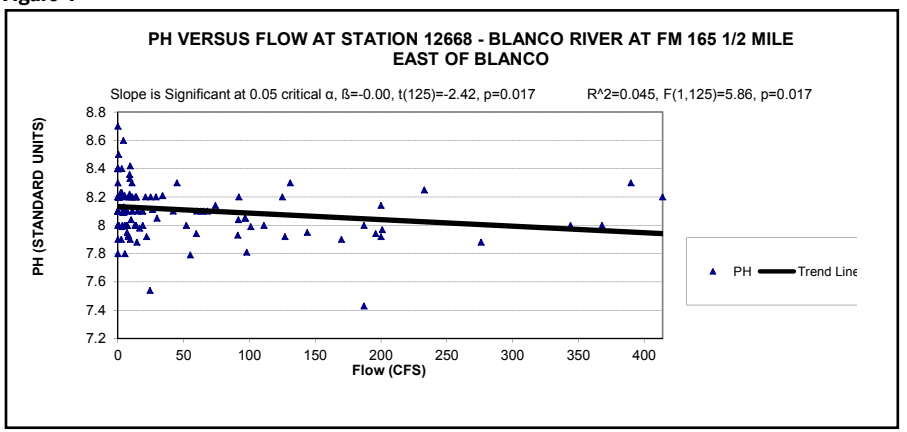


Figure 4



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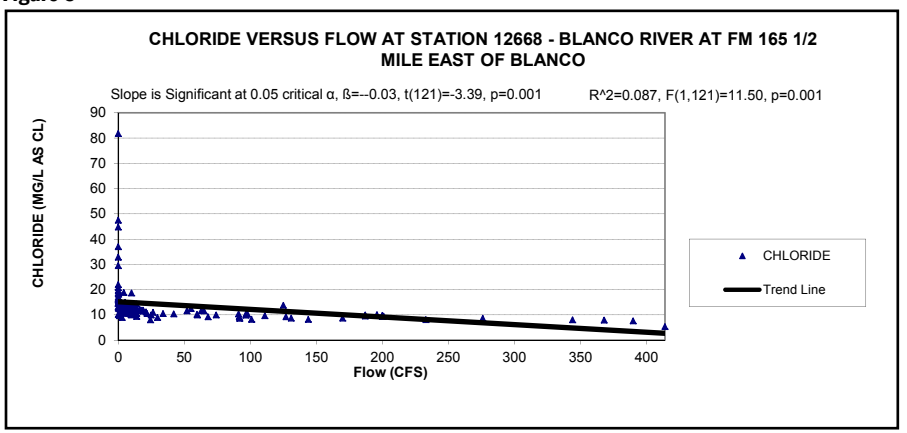

Figure 6

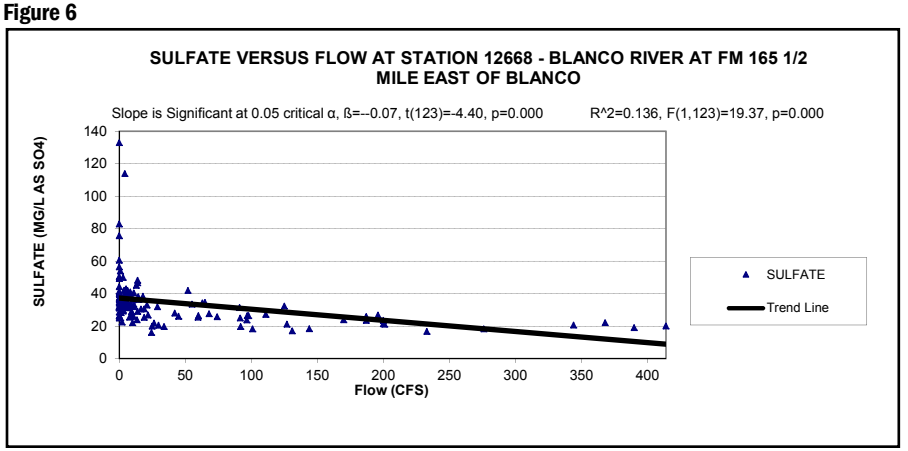

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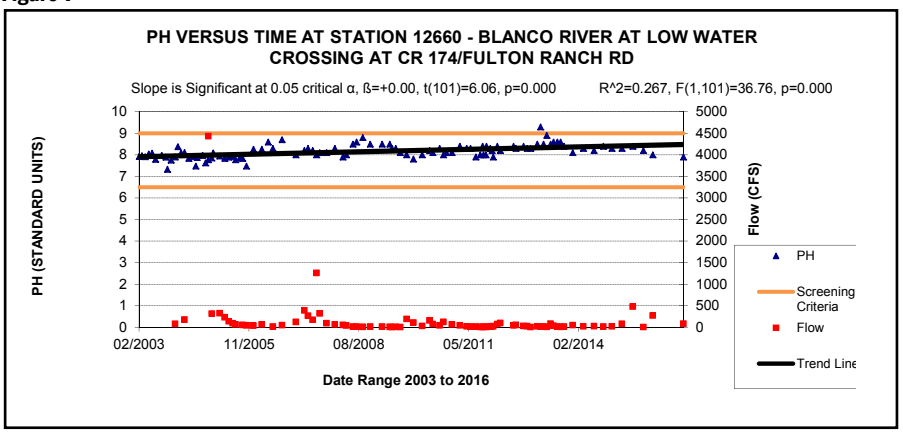
Figure 7



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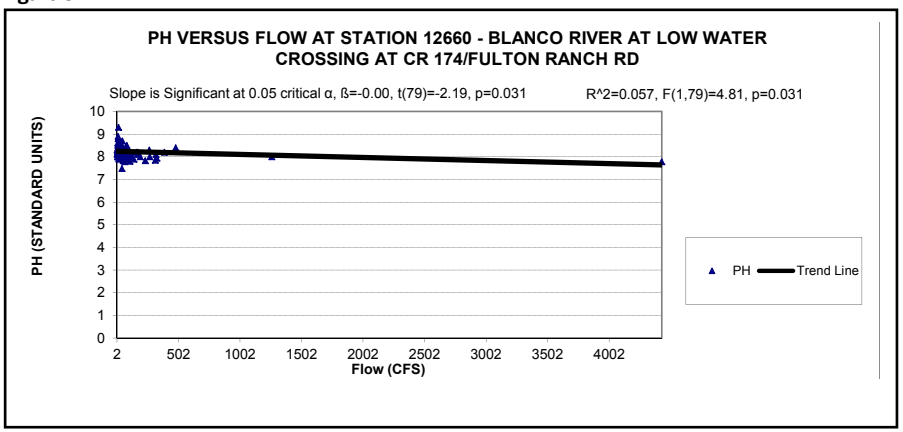

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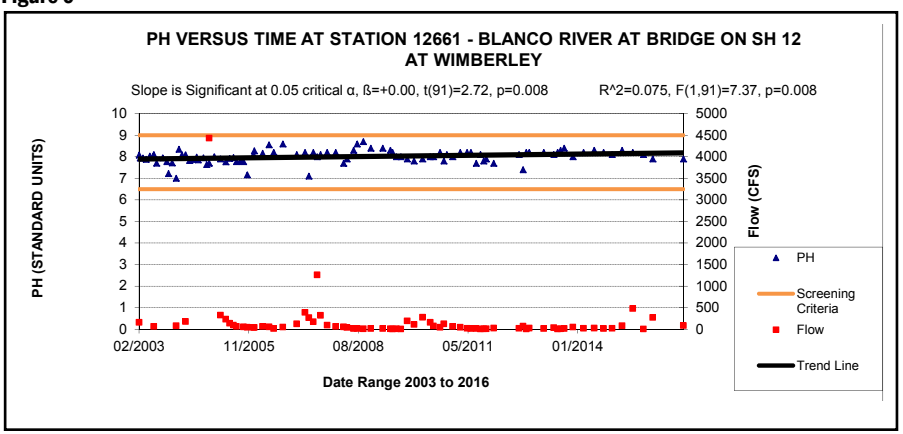
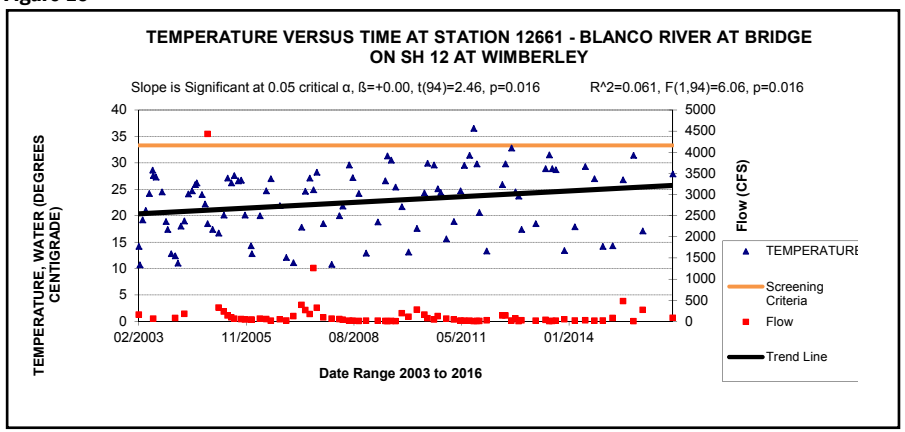


Figure 10



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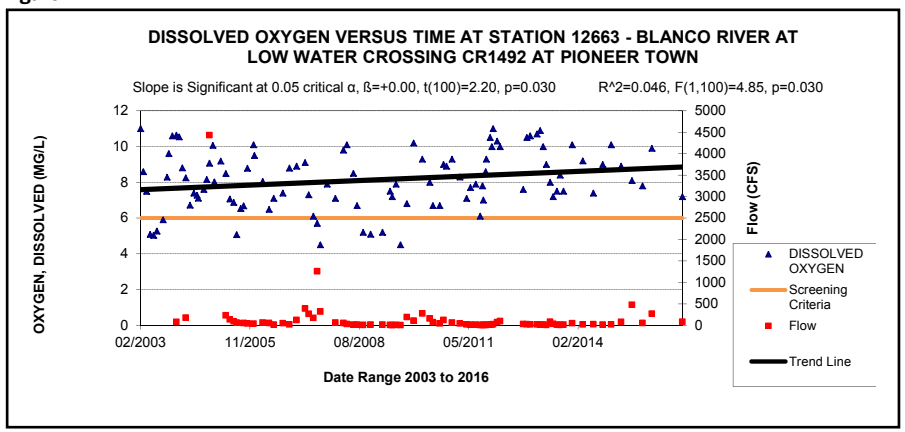

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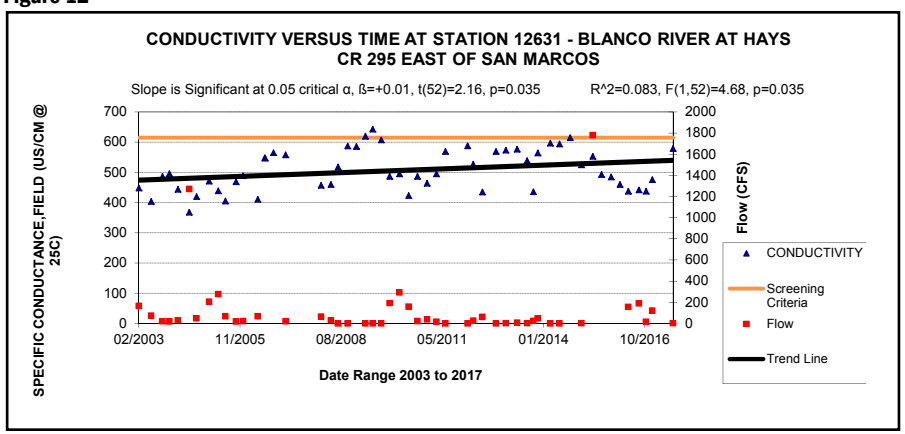

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Figure 13

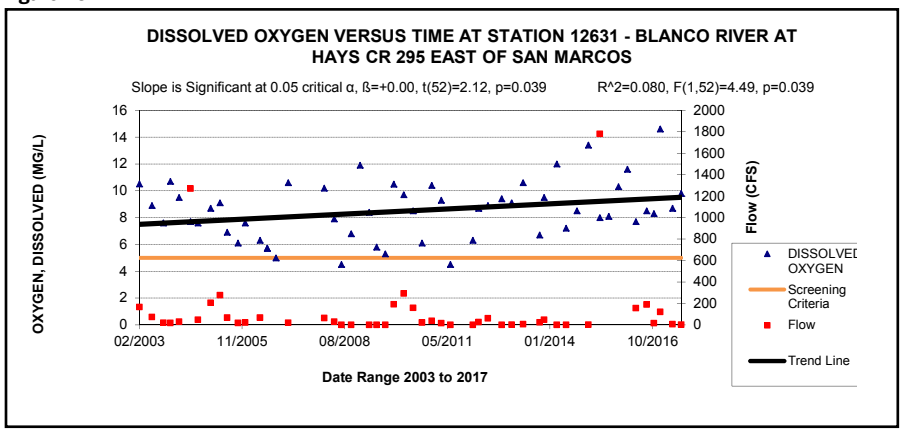
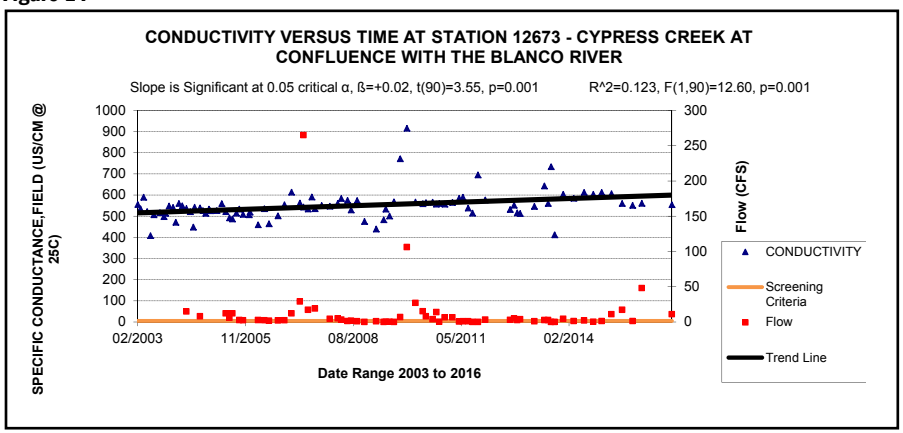


Figure 14



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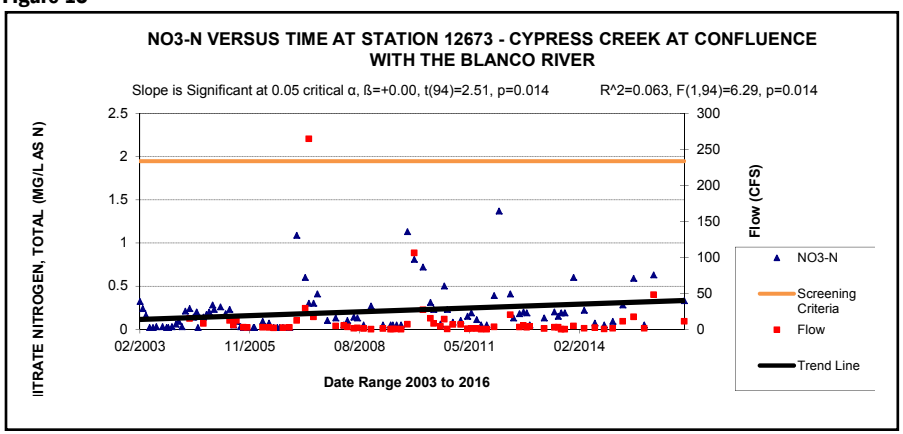

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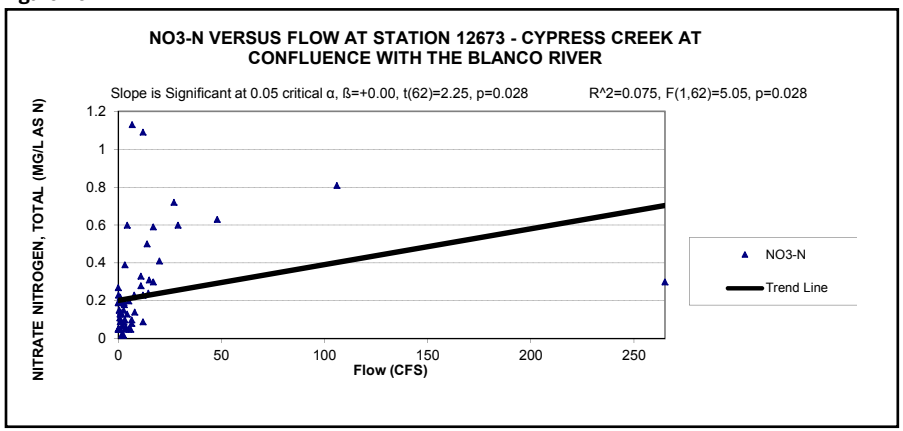

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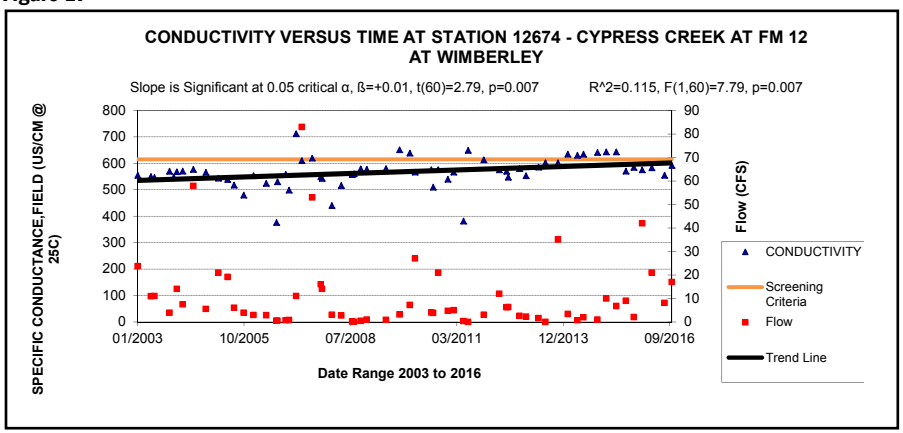

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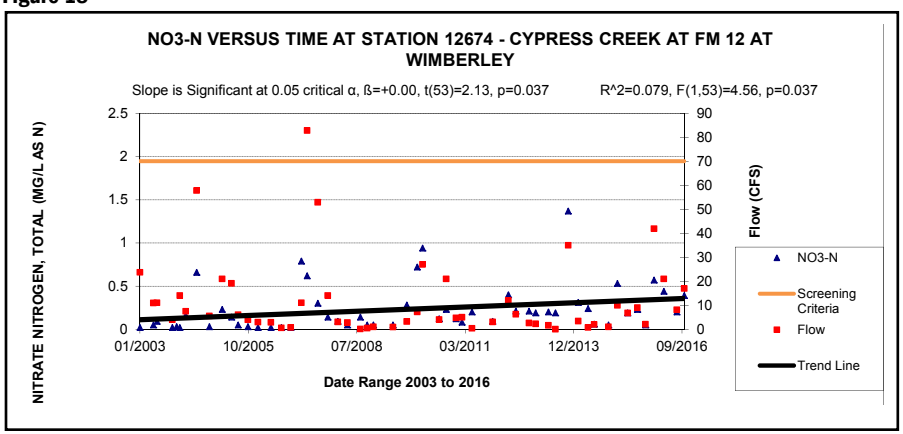

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Figure 19

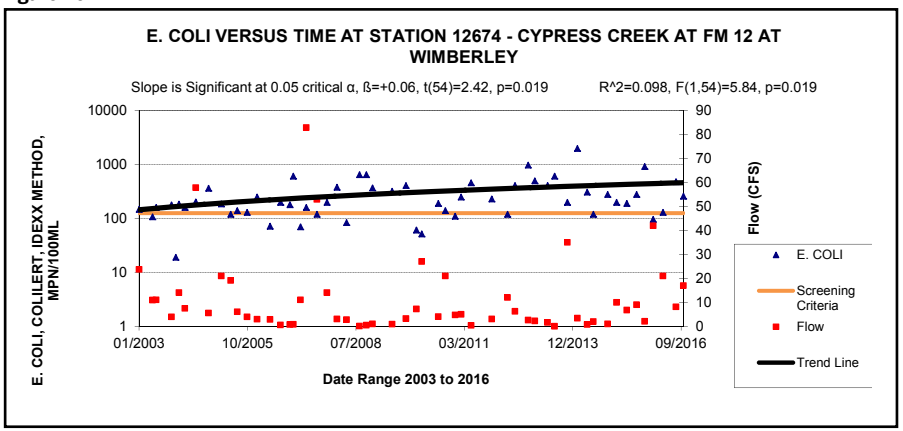

Figure 20

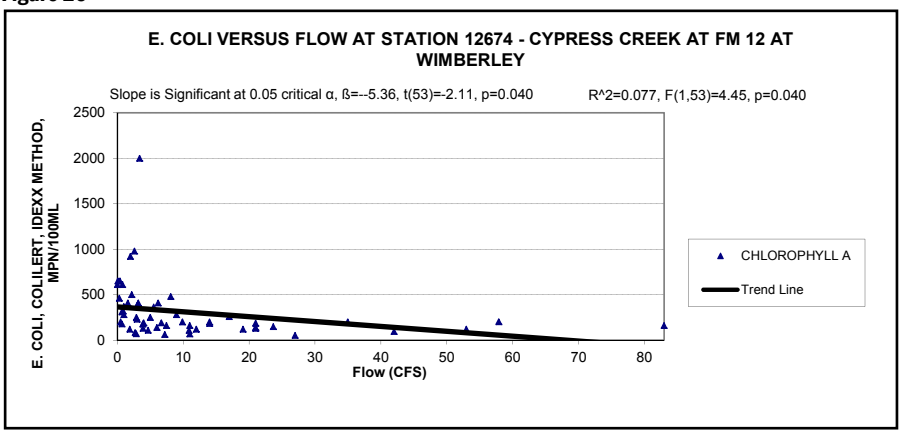

Figure 21

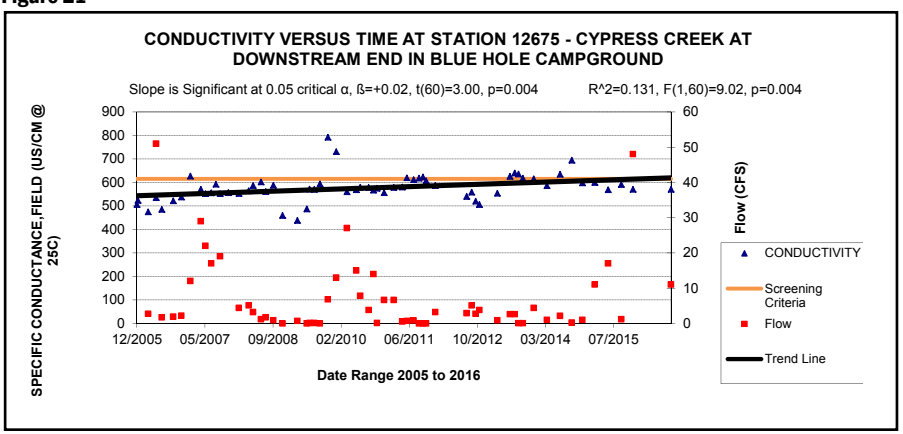

Figure 22

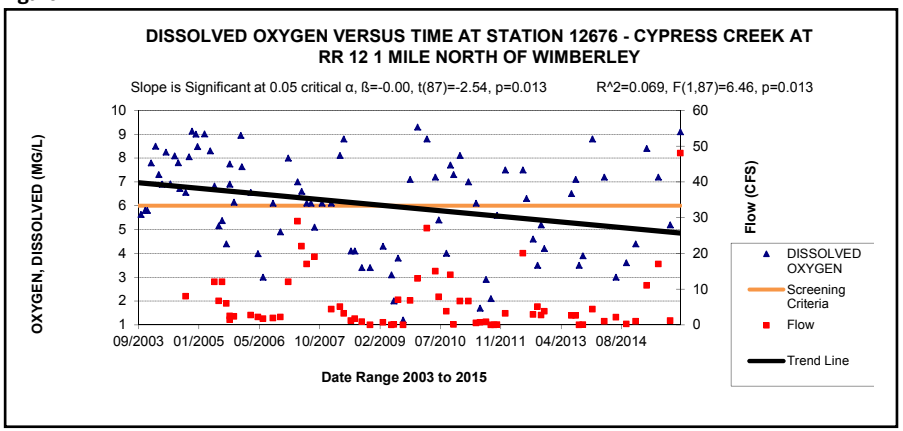

Figure 23

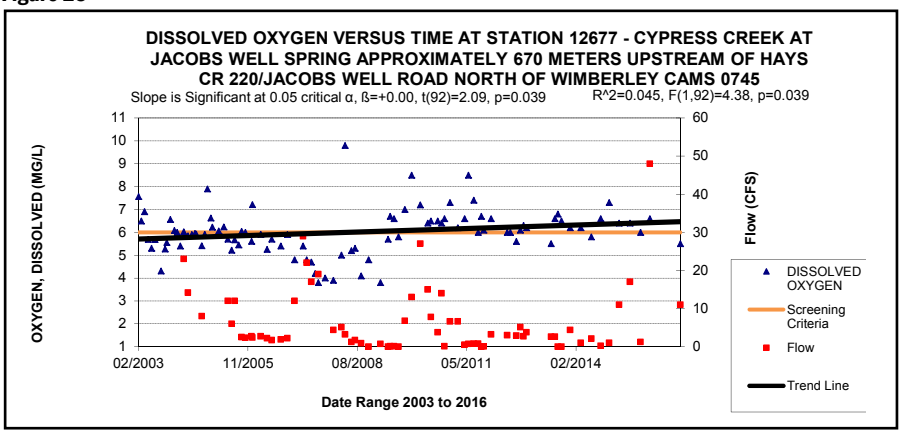

Figure 24