

Texas Stream Team Volunteer Water Quality Monitoring Program 2009 Plum Creek Data Report

This data summary report includes general basin volunteer monitoring activity, general water quality descriptive statistics, tables and graphs, and comparisons to stream standards as related to “aquatic life use” criteria.

In alignment with Texas Stream Team’s core mission, monitors attempt to collect data that can be used in decision-making processes, to promote a healthier and safer environment for people and aquatic inhabitants. While many assume it is the responsibility of Texas Stream Team to serve as the main advocate for volunteer monitor data use, it has become increasingly important for monitors to be accountable for their monitoring information and how it can be infused into the decision-making process, from “backyard” concerns to state or regional issues. To assist with this effort, Texas Stream Team is coordinating with monitoring groups and government agencies to propagate numerous data use options.

Among these options, volunteer monitors can directly participate by communicating their data to various stakeholders. Some options include: participating in the Clean Rivers Program (CRP) Steering Committee Process (see box insert on this page); providing information during “public comment” periods; attending city council and advisory panel meetings; developing relations with local Texas Commission on Environmental Quality and river authority water specialists; and, if necessary, filing complaints with environmental agencies; contacting elected representatives and media; or starting organizing local efforts to address areas of concern.

The Texas Clean Rivers Act established a way for the citizens of Texas to participate in building the foundation for effective statewide watershed planning activities. Each CRP partner agency has established a steering committee to set priorities within its basin. These committees bring together the diverse interests in each basin and watershed. Steering committee participants include representatives from the public, government, industry, business, agriculture, and environmental groups. The steering committee is designed to allow local concerns to be addressed and regional solutions are recommended. For more information about participating in these steering committee meetings and to contribute your views about water quality, contact the appropriate CRP partner agency for your river basin at:
<http://www.tceq.state.tx.us/compliance/monitoring/crp/partners.html>.

Currently, Texas Stream Team is working with various public and private organizations to facilitate data and information sharing. One component of this process includes interacting with watershed stakeholders at CRP steering committee meetings. A major function of these meetings is to discuss water quality issues and to obtain input from the general public. While participation in this process may not bring about instantaneous results, it is a great place to begin making institutional connections and to learn how to “work” the assessment and protection system that Texas agencies use to keep water resources healthy and sustainable.

In general, Texas Stream Team efforts to use volunteer data may include the following:

1. Assist monitors with data analysis and interpretation
2. Analyze watershed-level or site-by-site data for monitors and partners
3. Screen all data annually for values outside expected ranges
4. Network with monitors and pertinent agencies to communicate data
5. Attend meetings and conferences to communicate data
6. Participate in CRP stakeholder meetings
7. Provide a data viewing forum via the Texas Stream Team Data Viewer
8. Participate in professional coordinated monitoring processes to raise awareness of areas of concern

Information collected by Texas Stream Team volunteers utilizes a TCEQ and EPA approved quality assurance project plan (QAPP) to ensure data are correct and accurately reflects the environmental conditions being monitored. All data are screened for completeness, precision and accuracy where applicable, and scrutinized with data quality objective and data validation techniques. Sample results are intended to be used for education and research, baseline, local decision making, problem identification, and others uses deemed appropriate by the data user. Graphs are compiled and situated to assist the data user in obtaining information from the collected data. Where applicable, “time” is located on the “x” or horizontal axis and is chronologically listed from oldest to most recent sampling. The “y1” or “y2” axes contain the constituent(s) of interest. Note: data collection events may not be evenly distributed over time (through seasons and years); sampling events may occur at different times of the day; sample collection and results documentation may have been completed by different monitors over time at each site; data collected by school groups should undergo additional scrutiny before use; data summary information is subject to change.

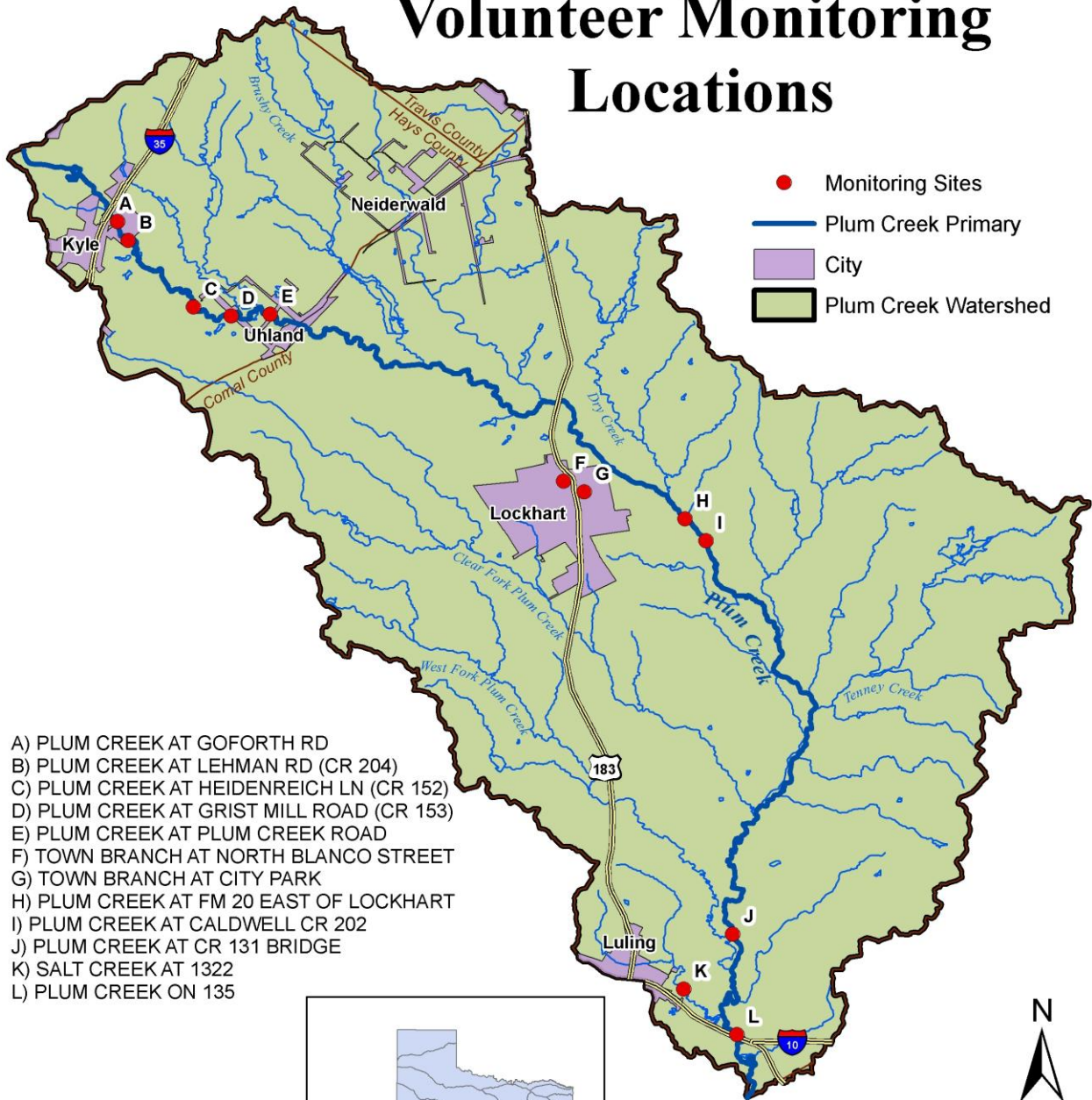
Site Description and Background Summary

Plum Creek rises in Hays County near FM 2770 north of Kyle, runs south through Caldwell County, passes through Lockhart and Luling, and joins the San Marcos River at the Caldwell-Gonzales County line. The Plum Creek watershed has a drainage area of 397 mi² (1,028 km²) within the Guadalupe River Basin, which drains South Central Texas from the Hill Country to the Gulf of Mexico. Plum Creek has been designated by the Texas Commission on Environmental Quality (TCEQ) as suitable for aquatic life, contact recreation, general, aquifer protection, domestic water supply, and fish consumption uses (TCWP 2010). The aquifer protection domestic water supply designation is applied to water bodies which are capable of recharging the Edwards Aquifer in order to protect the quality of water recharging the aquifer (TCEQ 2000).

The southeastern portion of the Plum Creek in Caldwell County contains primarily deep, non calcareous, sandy soils over clays, sandy clay loams. Surface water plays a major role in the watershed and is sufficient for agricultural use in most areas. However, surface water is susceptible to being heavily silted during runoff events and may become severely limited in periods of drought. A significant portion of the water supply in the Plum Creek watershed comes from surface water, including reliance on the San Marcos River being pumped from lower portions of Caldwell County near Luling. The city of Luling also depends on this supply of surface water, as do many other cities in the watershed. For example, the city of Lockhart currently receives 80% of its water from the San Marcos River (PCWP 2010).

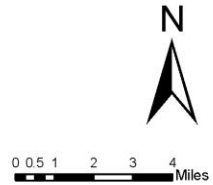
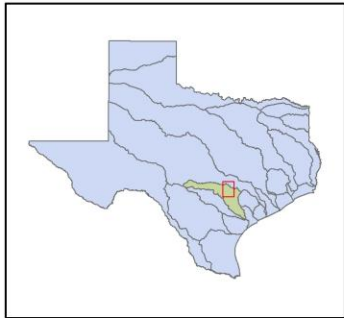
Plum Creek is currently considered impaired by the TCEQ due the high levels of bacteria from the confluence with the San Marcos River to approximately 2.5 miles upstream of the confluence with Clear Fork Plum Creek and from approximately 0.5 miles upstream of SH 21 to the upper end of the creek (TCEQ 2008a). The levels of nutrients in Plum Creek have raised concerns for the potential non-attainment in the future. There are elevated levels of nitrate in the entire segment. There are elevated levels of orthophosphorus or total phosphorus from approximately 2.5 miles upstream of the confluence with Clear Fork Plum Creek to approximately 0.5 miles upstream of SH21, and there is depressed dissolved oxygen and elevated total phosphorus from approximately 0.5 miles upstream of SH 21 to the upper end of Plum Creek (TCEQ 2008b).

Plum Creek Watershed Volunteer Monitoring Locations



- Monitoring Sites
- Plum Creek Primary
- City
- Plum Creek Watershed

- A) PLUM CREEK AT GOFORTH RD
- B) PLUM CREEK AT LEHMAN RD (CR 204)
- C) PLUM CREEK AT HEIDENREICH LN (CR 152)
- D) PLUM CREEK AT GRIST MILL ROAD (CR 153)
- E) PLUM CREEK AT PLUM CREEK ROAD
- F) TOWN BRANCH AT NORTH BLANCO STREET
- G) TOWN BRANCH AT CITY PARK
- H) PLUM CREEK AT FM 20 EAST OF LOCKHART
- I) PLUM CREEK AT CALDWELL CR 202
- J) PLUM CREEK AT CR 131 BRIDGE
- K) SALT CREEK AT 1322
- L) PLUM CREEK ON 135



This map was generated by Texas Stream Team using publicly available GIS layers. No claims are made to the accuracy of completeness of the data or to its suitability for a particular use. 2/01/2010

Data Summary

Parameter	Observed Range	Standard ¹	# Exceedence	% Exceedance
Water Temperature	8-28 °C	32 °C	0/45	0
Dissolved Oxygen	3.7-11 mg/L	3 mg/L	0/45	0
Specific Conductivity	20 ² -1,140 µS/cm	1,672 µS/cm	0/45	0
pH	6.8-8.5	6.5-9	0/45	0

Water Temperature Summary

Fish are cold-blooded and therefore depend on the temperature of water to be able to carry out processes such as metabolism and reproduction. Extreme high or low temperatures can threaten their survival, particularly if the temperature changes abruptly. Sources of warm water include power plants' effluent after it has been used for cooling or hydroelectric dams which release warmer or cooler water (depending on the time of year) near the point of release. Temperature also causes dissolved oxygen to decrease as it gets warmer and vice versa. In this data set, mean water temperature readings ranged from 9.25°C to 19°C. The maximum reading of 28°C was taken at Plum Creek at Goforth Road (CR-157) on August 7, 2009. The minimum of 8°C was taken at Town Branch at N. Blanco St. on January 31, 2009.

Dissolved Oxygen Summary

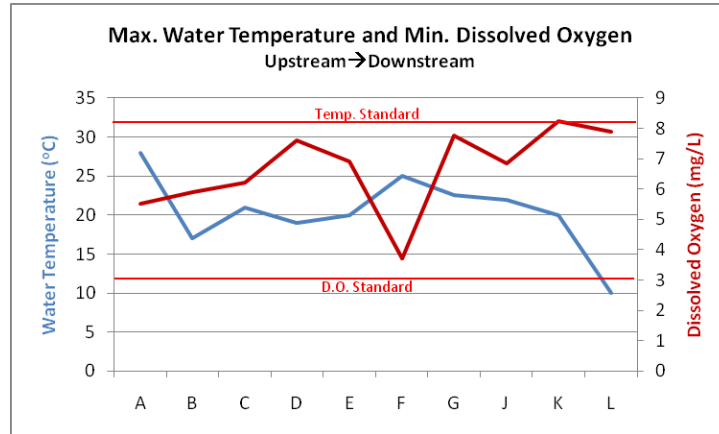
Oxygen is necessary for the survival of most organisms. Too little oxygen will lead to asphyxiation of aquatic organisms. Too much oxygen (supersaturation) can cause bubbles to develop in cardiovascular systems and can be fatal. Dissolved oxygen (DO) levels below 2 mg/L can lead to asphyxiation, and levels above 20 mg/L will lead to supersaturation. The most suitable conditions for aquatic life are above 5 mg/L. Low dissolved oxygen levels typically result from an abundance of nutrients starving subsurface vegetation of sunlight, and therefore limiting the amount of dissolved oxygen due to limited photosynthesis. This process is enhanced when the subsurface vegetation dies and consumes oxygen when decomposing. Low DO levels may also result from high groundwater inflows as groundwater is typically low in dissolved oxygen due to minimal aeration or high temperatures which reduce oxygen solubility. In this data set, mean DO values ranged from 5.9 to 8.9 mg/L. The maximum value of 11.0 mg/L was

¹ Taken from the Texas 2000 Water Quality Standards:

<http://www.epa.gov/waterscience/standards/wqslibrary/tx/tx-wqs.pdf>.

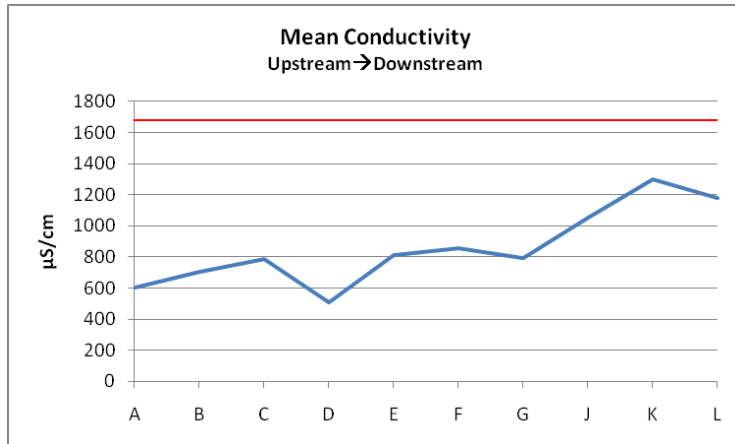
² This value is probably a mistake, but it is assumed to be correct since there is no way to check.

observed at Plum Creek at Lehman Rd (CR-204) on February 10, 2007, and the minimum value of 3.7 mg/L was observed at Town Branch @ N. Blanco St. on August 23, 2008. These values decrease in a downstream direction. In general, DO values fall within a wide range, with some areas unfit for aquatic life.



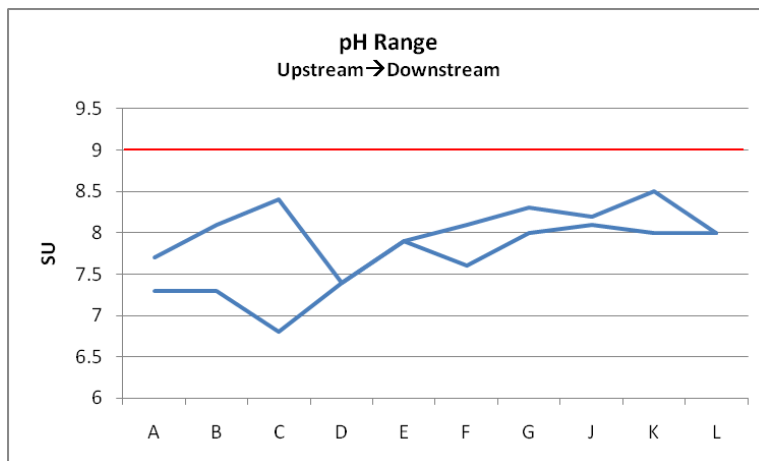
Specific Conductivity Summary

Specific conductivity (SC) is a measure of the ability of a body of water to conduct electricity. A body of water is more conductive if it has more Total Dissolved Solids (TDS) such as nutrients and salts, which indicate poor water quality if they are abundant. High concentrations of nutrients can lead to excessive surface vegetation growth and can starve subsurface vegetation of sunlight, therefore limiting the amount of dissolved oxygen in a water body due to limited photosynthesis. This process is enhanced when the subsurface vegetation dies and consumes oxygen when decomposing. High concentrations of salt can inhibit water absorption and limit root growth for vegetation, lead to an abundance of more drought tolerant plants, and cause dehydration of fish and amphibians. Sources of TDS include agricultural runoff, domestic runoff, or discharges from wastewater treatment plants. It is important to note that the TCEQ Water Quality Standard for Conductivity pertains to an annual average, so data sets with less than a year of sampling dates or with irregular intervals are not representative of a real potential for impairment. In this data set, mean SC values ranged from 510 to 1300 $\mu\text{S}/\text{cm}$. The maximum value of 1,440 $\mu\text{S}/\text{cm}$ was observed at Salt Creek at 1322 on December 2, 2007, and the minimum value of 450 $\mu\text{S}/\text{cm}$ was observed at Plum Creek at Lehman Rd (CR-204) on April 14, 2007.



pH Summary

pH is a measure of acidity and alkalinity. The scale measures the concentration of hydrogen ions on a range of 0 to 14 and is reported in standard units (su). The range is logarithmic. Therefore, every 1 unit change means the acidity increased or decreased 10-fold. Sources of low pH (acidic) can include acid rain and runoff from acid-laden soils. Acid-rain is mostly caused by coal power plants with minimal contributions from the burning of other fossil fuels and other processes such as volcanic emissions. Soil-acidity can be caused by excessive rainfall leaching alkaline materials out of soils, acidic parent material, crop decomposition creating hydrogen ions, or high-yielding fields which have drained the soil of all alkalinity. Sources of high pH include geologic composition as in the case of limestone increasing alkalinity and the dissolving of carbon dioxide in water as well. Carbon dioxide is water soluble, and as it dissolves it forms carbonic acid, an alkaline molecule. In this dataset, mean pH values stay within a range of 6.8 to 8.5 su. The maximum value of 8.5 su was observed at Salt Creek at 1322 on December 2, 2007, and the minimum value of 6.8 su was observed at Plum Creek at Heidenreich Ln (CR-152) on December 17, 2006.



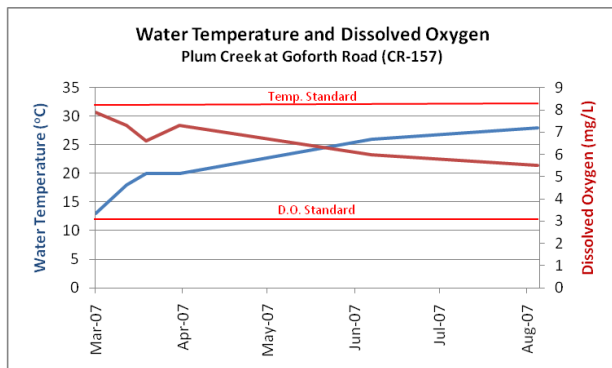
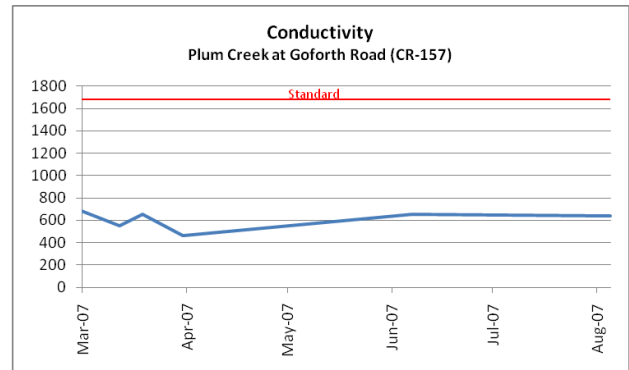
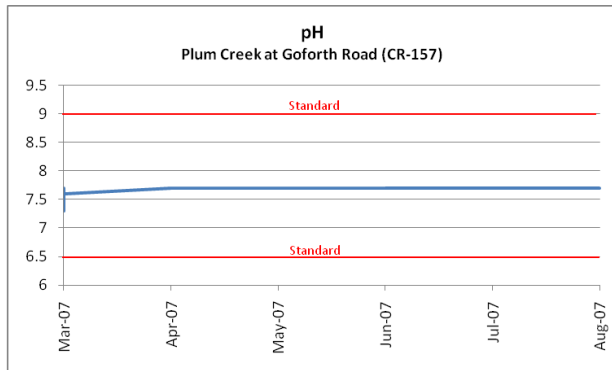
The following site-by-site analysis is listed upstream to downstream. The sites shown on the map which are not presented here have been omitted due to lack of data.

Site-by-Site Analysis

Plum Creek at Goforth Rd (CR-157)

There were 6 samples taken from this site on March 5, 2007 and August 9, 2007. Sampling times ranged from 9:00 am to 12:30 pm with an average sampling time of 10:23 am. All sampling at this site was conducted by Tara Noah and Monica Gomez. Total depth measurements ranged between .07 m and 0.3 m with an average of .205 m. Secchi depth measurements ranged from 0.07 m to 0.25 m. Water temperature readings ranged from 13°C to 28°C with an average of 20.8°C. SC values ranged from 460 to 680 $\mu\text{S}/\text{cm}$ with an average value of 605 $\mu\text{S}/\text{cm}$. DO values averaged at 6.8 mg/L. pH values averaged at 7.6 su.

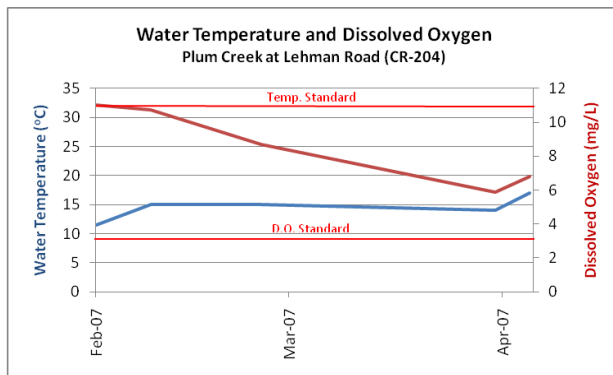
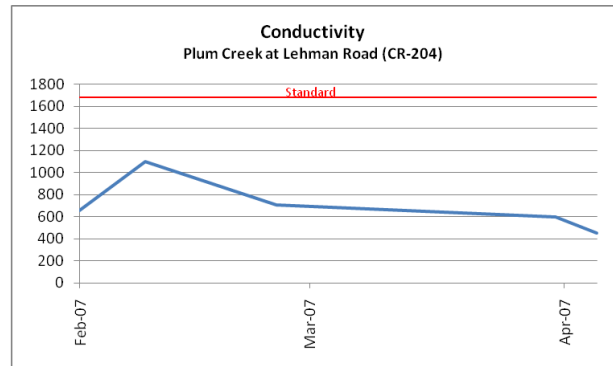
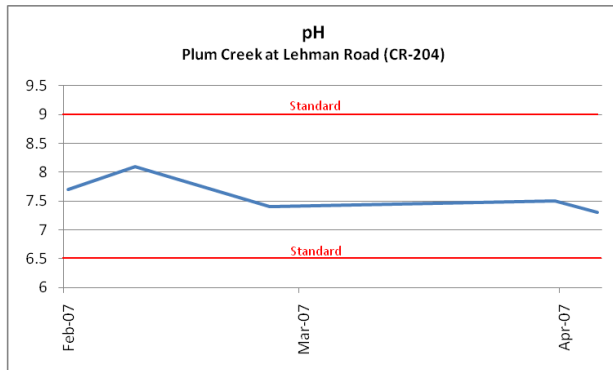
Plum Creek at Goforth Road (CR-157)						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	6	100	9:00	10:23	12:30	0.1
Total Depth (m)	6	100	0.07	0.21	0.3	0.08
Specific Conductivity ($\mu\text{S}/\text{cm}$)	6	100	460	605	680	83.6
DO (mg/L)	6	100	5.5	6.8	7.9	0.9
pH (su)	6	100	7.3	7.62	7.7	0.2
Air Temperature ($^{\circ}\text{C}$)	6	100	13	21	27	5.2
Water Temperature ($^{\circ}\text{C}$)	6	100	13	20.83	28	5.5
Secchi Depth (m)	6	100	0.07	0.21	0.3	0.1



Plum Creek at Lehman RD (CR-204)

There were 5 samples taken from this site from February 10, 2007 to April 14, 2007. Sampling times ranged from 9:15 am to 4:30 pm with an average sampling time of 1:21 pm. All sampling at this site was conducted by Melissa Ponce, Carolyn Renfro, Elizabeth Stockhorst and Karinda Cowan. Total depth measurements ranged from .25 to 1.1 m with an average of 0.56 m. Secchi depth measurements ranged from .25 m to 1.1 m with an average of 0.56 m. Water temperature readings ranged from 11.5°C to 17°C with an average of 14.5°C. SC values ranged from 450 to 1,100 $\mu\text{S/cm}$ with an average value of 704 $\mu\text{S/cm}$. DO values averaged at 8.6 mg/L. pH values averaged at 7.6 su.

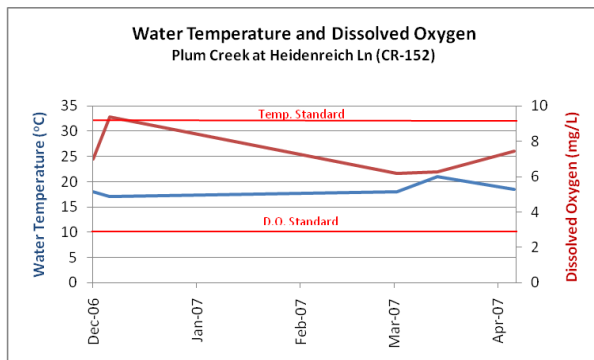
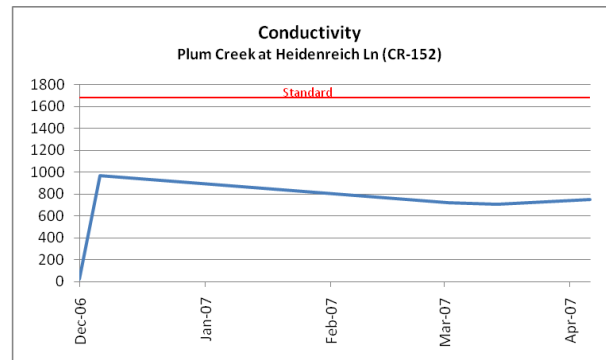
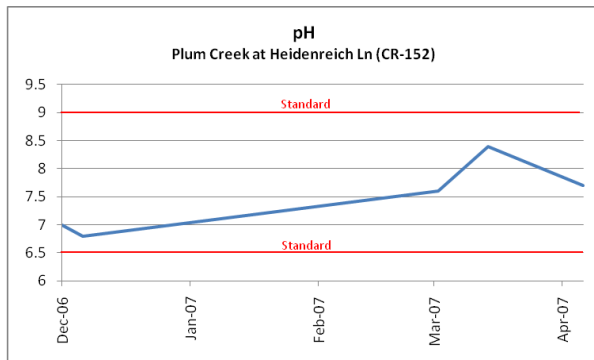
Plum Creek at Lehman Rd (CR-204)						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	5	100	9:15	13:21	17:30	0.14
Total Depth (m)	5	100	0.25	0.56	1.1	0.33
Specific Conductivity ($\mu\text{S/cm}$)	5	100	450	704	1100	241.93
DO (mg/L)	5	100	5.9	8.6	11	2.29
pH (su)	5	100	7.3	7.6	8.1	0.32
Air Temperature ($^{\circ}\text{C}$)	5	100	9	14.3	21	4.32
Water Temperature ($^{\circ}\text{C}$)	5	100	11.5	14.5	17	2.00
Secchi Depth (m)	5	100	0.25	0.56	1.1	0.33



Plum Creek at Heidenreich Ln (CR-152)

There were 5 samples taken from this site on December 12, 2006 and April 17, 2007. Sampling times ranged from 8:00 am to 3:15 pm with an average sampling time of 9:47 am. All sampling at this site was conducted by Rikki Spear, Angela Gallardo, Danell Lunz and Mary Magana. Total depth measurements ranged between 0.07 m and 1 m with an average of 0.61 m. Secchi depth measurements ranged between 0.1 m and 0.44 m with an average of 0.30 m. Water temperature readings ranged from 17°C to 21°C with an average of 18.5°C. SC values ranged from 710 to 970 $\mu\text{S}/\text{cm}$ with an average value of 787.5 $\mu\text{S}/\text{cm}$. DO values averaged at 7.3 mg/L. pH values averaged at 7.5 su.

Plum Creek at Heidenreich Ln (CR-152)						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	5	100	8:00	9:47	15:15	0.1
Total Depth (m)	5	100	0.07	0.608	1	0.28
Specific Conductivity ($\mu\text{S}/\text{cm}$)	5	100	20	787.5	970	122.8
DO (mg/L)	5	100	6.2	7.3	9.4	1.3
pH (su)	5	100	6.8	7.5	8.4	0.6
Air Temperature ($^{\circ}\text{C}$)	5	100	18	36.62	65	23.7
Water Temperature ($^{\circ}\text{C}$)	5	100	17	18.5	21	1.5
Secchi Depth (m)	5	100	0.1	0.298	0.44	0.1



Plum Creek at Grist Mill Road

There were 2 samples taken from Wildwood Pier from April 26, 2007 to April 28, 2007. Sampling times ranged from 8:00 am to 10:25 am with the average sampling time occurring at 9:30 am. All sampling at Grist Mill Road was conducted by Kelly Kyle, and Jacob Barret. Total depth measurements ranged from 0.126 m to 0.127 m with an average of 0.126 m. Secchi depth aligned with total depth. Water temperature readings were at 19°C for both sampling events. SC values were 510 μ S/cm for both sampling events. DO values were 7.6 mg/L for both sampling events.³

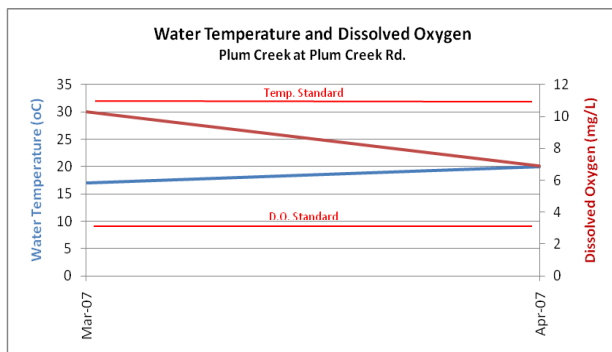
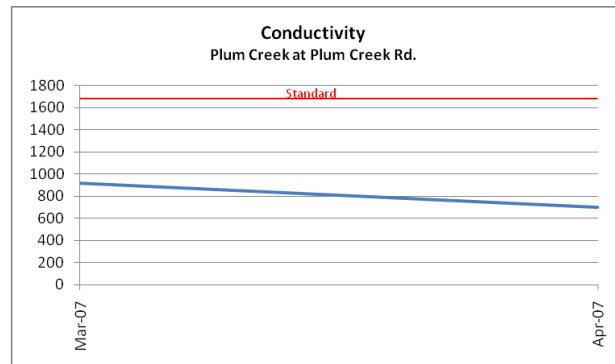
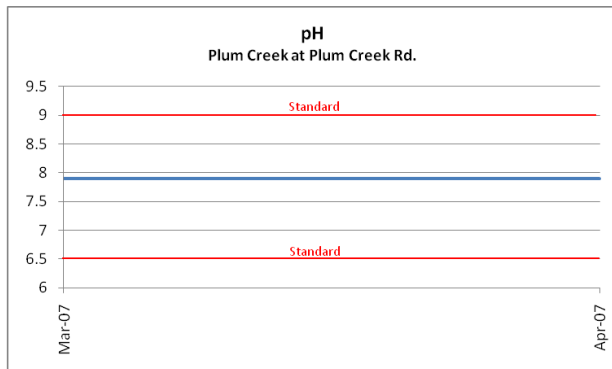
Plum Creek at Grist Mill Road						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	2	100	8:00	9:12	10:25	0.07
Total Depth (m)	2	100	0.13	0.127	0.13	0.00
Specific Conductivity (μ S/cm)	2	100	510	510	510	0.00
DO (mg/L)	2	100	7.6	7.6	7.6	0.00
pH (su)	2	100	7.4	7.4	7.4	0.00
Air Temperature (°C)	2	100	17	17.5	18	0.71
Water Temperature (°C)	2	100	19	19	19	0.00
Secchi Depth (m)	2	100	0.13	0.13	0.13	0.00

³ Graphs were omitted for this site because there are only two sampling dates, and they are two days apart.

Plum Creek at Plum Creek Road

There were 2 samples taken from this site on March 8, 2007 and April 13, 2007. Sampling times ranged from 2:00 pm to 3:32 pm with an average sampling time of 2:46 pm. All sampling at this site was conducted by Steve Goodman. Total depth measurements ranged from 0.3 to 0.5 m with an average of 0.4 m. Secchi depth measurements ranged from .25 m. to .3 m. with an average of .275 m. Water temperature readings ranged from 17°C to 20°C with an average of 18.5°C. SC values ranged from 700 to 920 $\mu\text{S}/\text{cm}$ with an average value of 810 $\mu\text{S}/\text{cm}$. DO values averaged at 8.6 mg/L. pH values were consistent at 7.9 su.

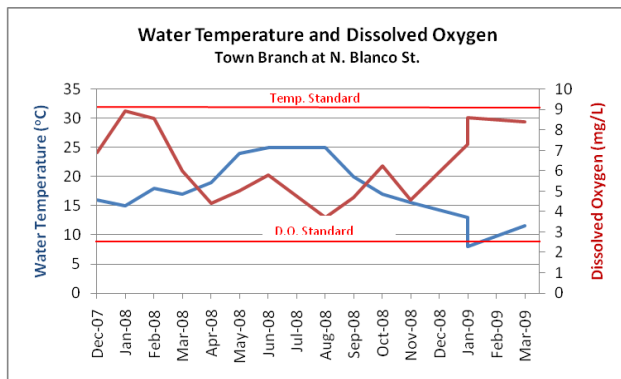
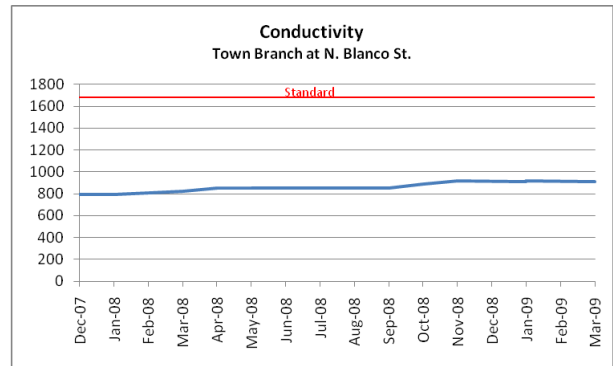
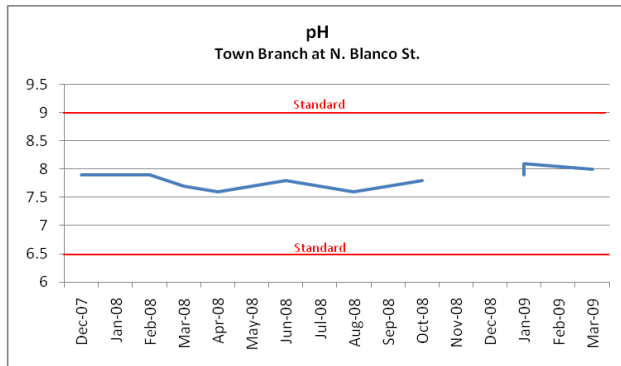
Plum Creek at Plum Creek Road						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	2	100	14:00	14:46	15:32	0.05
Total Depth (m)	2	100	0.3	0.4	0.5	0.14
Specific Conductivity ($\mu\text{S}/\text{cm}$)	2	100	700	810	920	155.56
DO (mg/L)	2	100	6.9	8.6	10.3	2.40
pH (su)	2	100	7.9	7.9	7.9	0.00
Air Temperature ($^{\circ}\text{C}$)	2	100	22	25.25	28.5	4.60
Water Temperature ($^{\circ}\text{C}$)	2	100	17	18.5	20	2.12
Secchi Depth (m)	2	100	0.25	0.275	0.3	0.04



Town Branch at N. Blanco St.

There were 10 samples taken from Town Branch at N. Blanco St. from Dec. 30, 2007 to March 1, 2009. Sampling times ranged from 8:30 am to 10:15 am with the average sampling time occurring at 9:19 am. All sampling at N. Blanco St. was conducted by Mary Magana. Total depth measurements ranged from 0.15 to 0.205 m with an average of 0.16 m. Secchi depth measurements aligned with the total depth. Water temperature readings ranged from 8°C to 25°C during the testing. SC values ranged from 790 to 920 µS/cm during testing. DO values averaged at 6.36 Mg/ L. pH values averaged at 7.82.

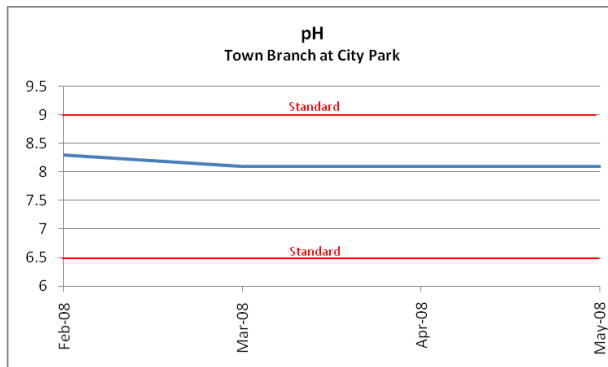
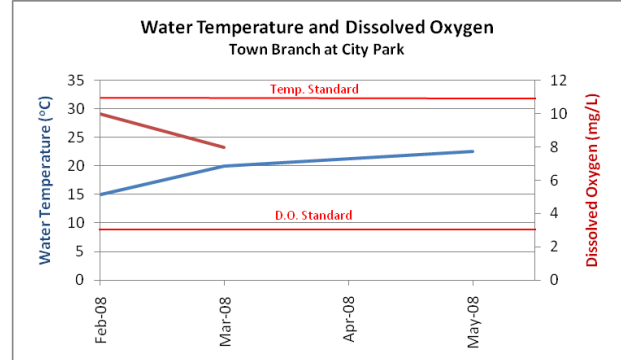
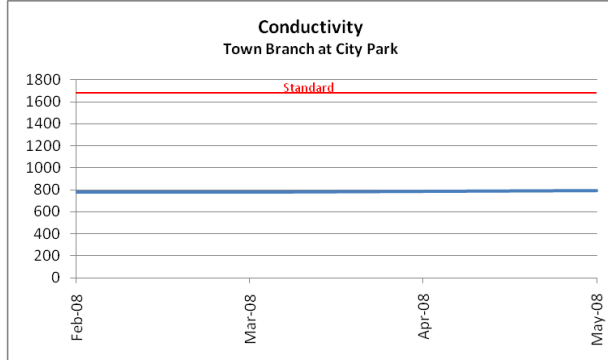
Town Branch @ N. Blanco St.						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	14	100	8:30	9:19	10:15	0.03
Total Depth (m)	14	100	0.15	0.16	0.205	0.02
Specific Conductivity (µS/cm)	14	100	790	857.86	920	45.94
DO (mg/L)	14	100	3.7	6.36	8.95	1.78
pH (su)	13	93	7.6	7.82	8.1	0.15
Air Temperature (°C)	14	100	5	18.64	32	7.82
Water Temperature (°C)	14	100	8	17.43	25	4.98
Secchi Depth (m)	8	57	0.15	0.16	0.205	0.02



Town Branch at City Park

There were 4 samples taken from this site between November 15, 2007 and May 30, 2008. Sampling times ranged from 10:07 am to 10:25 am with an average sampling time of 10:15 pm. All sampling at this site was conducted by Jennifer Lickert. Total depth measurements ranged from 0.23 to 0.5 m with an average of 0.36 m. Secchi depth measurements ranged from .23 m. to 1 m. with an average of .808 m. Water temperature readings ranged from 15°C to 22.5°C with an average of 18.25°C. SC values ranged from 780 to 810 $\mu\text{S}/\text{cm}$ with an average value of 790 $\mu\text{S}/\text{cm}$. DO values averaged at 8.6 mg/L. pH values averaged at 8.1 su.

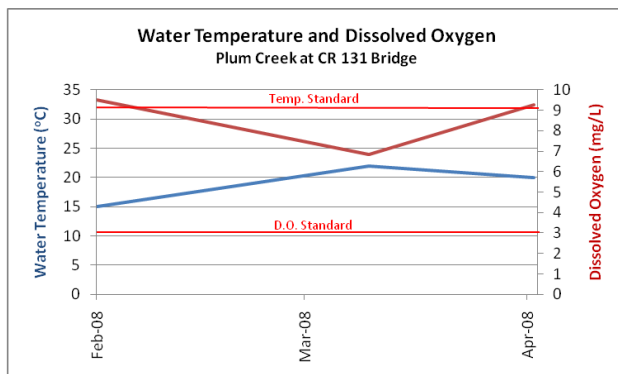
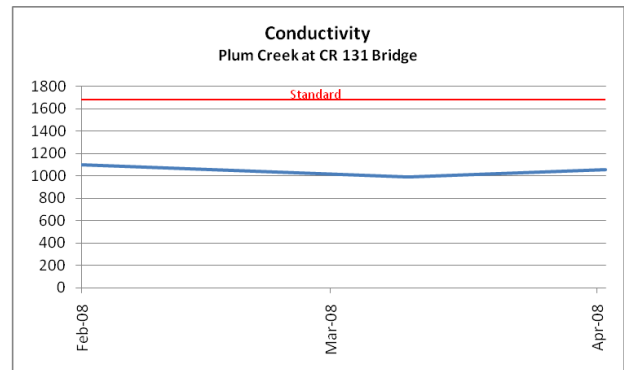
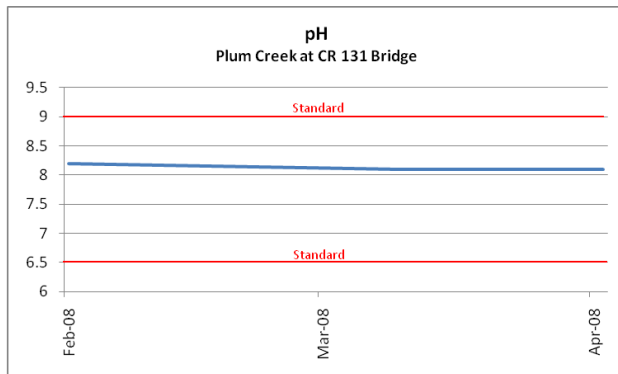
Town Branch at City Park						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	4	100	10:07	10:15	10:25	0.01
Total Depth (m)	4	100	0.23	0.355	0.5	0.11
Specific Conductivity ($\mu\text{S}/\text{cm}$)	4	100	780	790	810	14.14
DO (mg/L)	3	75	7.75	8.6	10	1.23
pH (su)	4	100	8	8.125	8.3	0.13
Air Temperature ($^{\circ}\text{C}$)	4	100	11	19	25	6.49
Water Temperature ($^{\circ}\text{C}$)	4	100	15	18.25	22.5	3.62
Secchi Depth (m)	4	100	0.23	0.808	1	0.39



Plum Creek at CR 131 Bridge

There were 3 samples taken at Plum Creek at CR 131 Bridge from Feb 18, 2008 to April 19, 2008, 2009. Sampling times ranged from 8:30 am to 10:15 am with the average sampling time occurring at 9:30 am. All sampling at Plum Creek at CR 131 Bridge was conducted by Heather Ann Brown. Total depth measurements were all 0.5 m. Secchi depth measurements aligned with the total depth. Water temperature readings ranged from 15°C to 22°C during the testing. SC values ranged from 990 to 1060 $\mu\text{S}/\text{cm}$ during testing. DO values averaged at 7.6 mg/L. pH values averaged at 8.133.

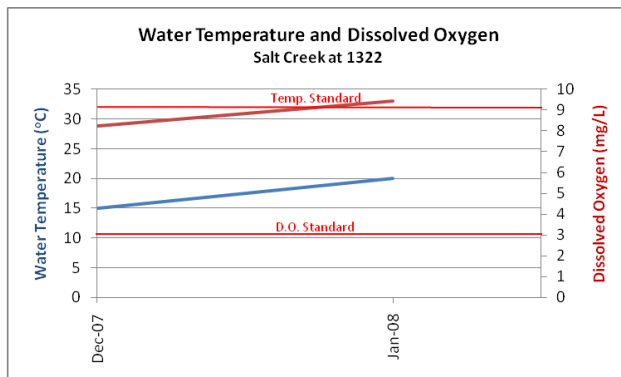
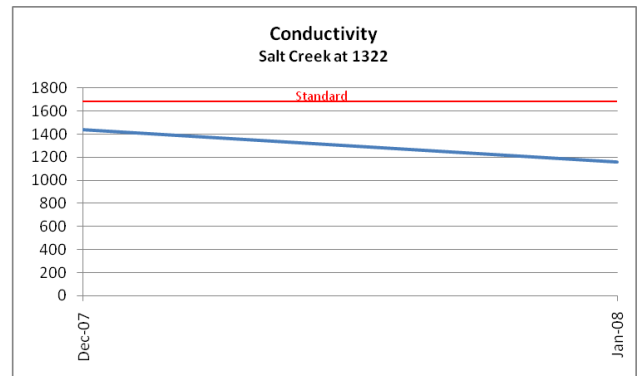
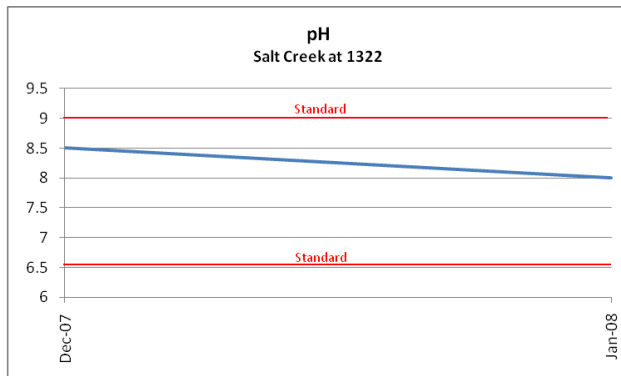
Plum Creek at CR 131 Bridge						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	3	100	14:00	14:56	16:15	0.05
Total Depth (m)	3	100	0.5	0.5	0.5	0.00
Specific Conductivity ($\mu\text{S}/\text{cm}$)	3	100	990	1050	1100	55.68
DO (mg/L)	3	100	6.85	8.5	9.5	1.46
pH (su)	3	100	8.1	8.133	8.2	0.06
Air Temperature ($^{\circ}\text{C}$)	3	100	20	27	31	6.08
Water Temperature ($^{\circ}\text{C}$)	3	100	15	19	22	3.61
Secchi Depth (m)	3	100	0.5	0.5	0.5	0.00



Salt Creek at 1322

There were 2 samples taken from this site on December 2, 2007 and January 1, 2008. Sampling times ranged from 11:30 am to 12:20 pm with an average sampling time of 11:55 pm. All sampling at this site was conducted by Nicole Welch. Total depth measurements were both 0.35 m. Secchi depth measurements aligned with total depth. Water temperature readings ranged from 9°C to 20°C with an average of 14.5°C. SC values ranged from 1,160 to 1,440 $\mu\text{S}/\text{cm}$ with an average value of 1,300 $\mu\text{S}/\text{cm}$. DO values averaged at 8.9 mg/L. pH values averaged at 8.25 su.

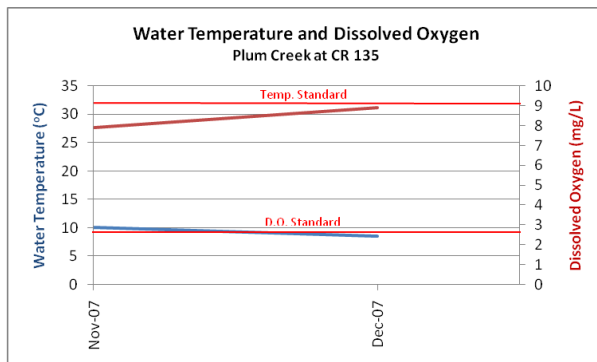
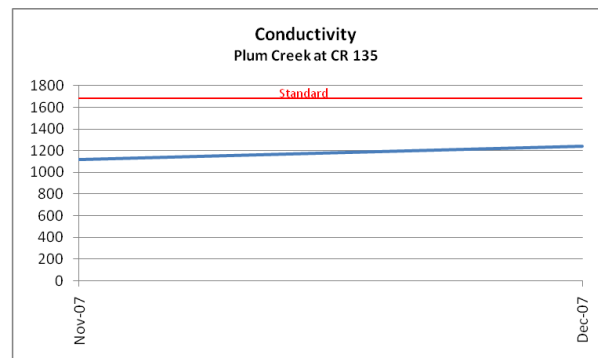
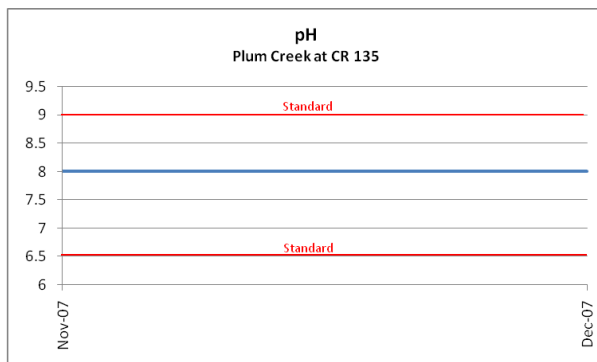
Salt Creek at 1322						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	2	100	11:30	11:55	12:20	0.02
Total Depth (m)	2	100	0.35	0.35	0.35	0.00
Specific Conductivity ($\mu\text{S}/\text{cm}$)	2	100	1160	1300	1440	197.99
DO (mg/L)	2	100	8.25	8.9	9.45	0.85
pH (su)	2	100	8	8.25	8.5	0.35
Air Temperature ($^{\circ}\text{C}$)	2	100	17	20	23	4.24
Water Temperature ($^{\circ}\text{C}$)	2	100	9	14.5	20	7.78
Secchi Depth (m)	2	100	0.35	0.35	0.35	0.00



Plum Creek on CR 135

There were 2 samples taken from this site on November 25, 2007 and December 27, 2007. Sampling times ranged from 8:37 am to 9:05 am with an average sampling time of 8:51 pm. All sampling at this site was conducted by Cristina Chonka. Total depth measurements were both 0.5 m. Secchi depth measurements aligned with total depth. Water temperature readings ranged from 8.5°C to 10°C with an average of 9.25°C. SC values ranged from 1,120 to 1,240 $\mu\text{S}/\text{cm}$ with an average value of 1,180 $\mu\text{S}/\text{cm}$. DO values averaged at 8.4 mg/L. pH values averaged at 8 su.

Plum Creek at CR 135						
Parameter	N	% Complete	Min	Mean	Max	Std Deviation
Sample Time	2	100	8:37	8:51	9:05	0.01
Total Depth (m)	2	100	0.5	0.5	0.5	0.00
Specific Conductivity ($\mu\text{S}/\text{cm}$)	2	100	1120	1180	1240	84.85
DO (mg/L)	2	100	7.9	8.4	8.9	0.71
pH (su)	2	100	8	8	8	0.00
Air Temperature ($^{\circ}\text{C}$)	2	100	9	11	13	2.83
Water Temperature ($^{\circ}\text{C}$)	2	100	8.5	9.25	10	1.06
Secchi Depth (m)	2	100	0.5	0.5	0.5	0.00



References

- PCWP. 2010. *Plum Creek Watershed Partnership*. Online. Available from <http://pcwp.tamu.edu/>
- TCEQ. 2000. *Revisions to §307 - Texas Surface Water Quality Standards*. Online. Available from <http://www.epa.gov/waterscience/standards/wqslibrary/tx/tx-wqs.pdf>
- TCEQ. 2008a. *2008 Texas 303(d) List*. Online. Available from http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/2008_303d.pdf
- TCEQ. 2008b. *2008 Texas Water Quality Inventory: Water Bodies with Concerns for Use Attainment and Screening Levels*. Online. Available from http://www.tceq.state.tx.us/assets/public/compliance/monops/water/08twqi/2008_concerns.pdf