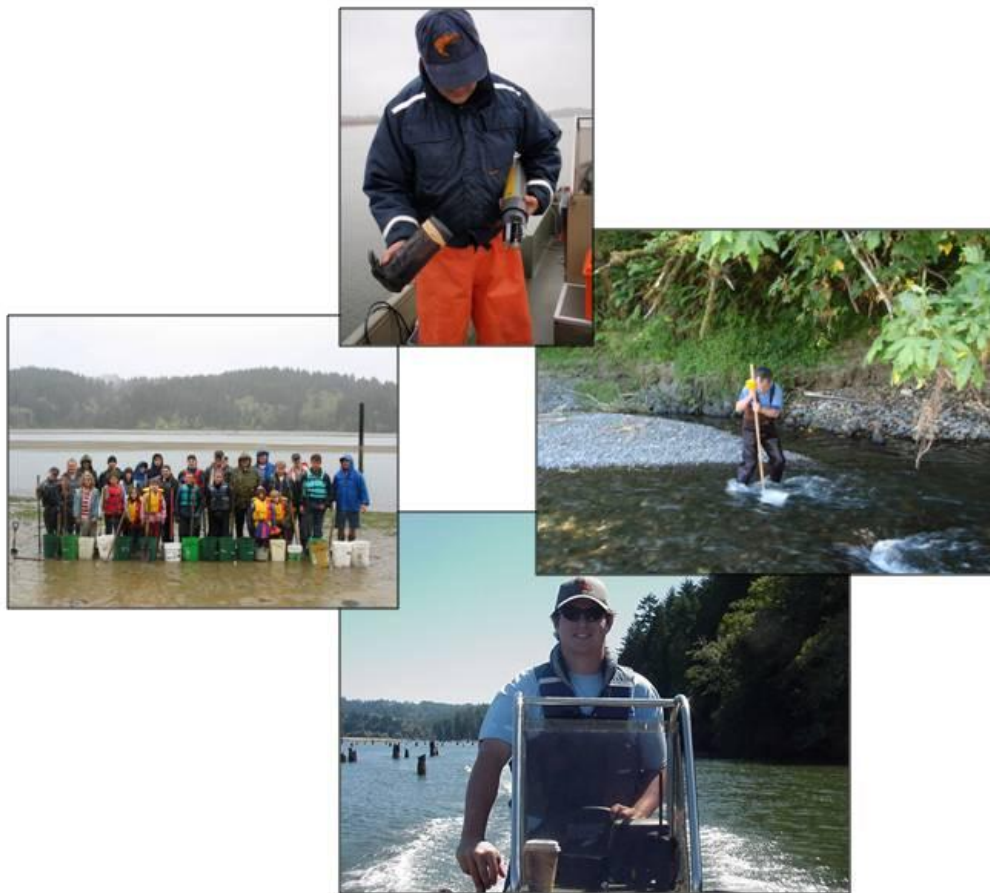


**INTERMEDIATE TRIBAL WATER QUALITY ASSESSMENT REPORT
PREPARED BY
THE CONFEDERATED TRIBES OF
COOS, LOWER UMPQUA AND SIUSLAW INDIANS
DEPARTMENT OF NATURAL RESOURCES**



Date issued: September 30, 2010

Time period this report covers: October 2008 – September 2009

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I. Introduction

This assessment report focuses on data collected by the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians' (CTCLUSI) Department of Natural Resources (DNR) between October 2008 and September 2009.

Environmental issues within the Tribes' Ancestral Watersheds can take many years to develop or may have an immediate impact on our natural and cultural resources. The DNR's overarching goal is to continuously strengthen and modify the Tribes' capacity to develop and sustain environmental programs that address environmental issues pertaining to Tribal lands and watersheds. Below is a broad list of environmental issues occurring within the Tribes' Ancestral Watersheds, in no particular order of importance.

- Downward trend of salmonid returns and habitat.
- Environmental impacts linked directly or indirectly to natural resource extraction activities.
- Water quality degradation due to point and non-point water pollution.
- Urban and industrial discharges.
- Environmental changes attributed to climate change.
- Spreading of existing and new invasive species.
- Toxins within water, sediment, and traditional foods.
- Maritime spill response and impacts to traditional foods.

Atlas of Tribal Water Resources

Waterbody Type	Count	Size	Unit
Stream/Creek/River	1	0.72	Miles
Lake/Reservoir/Pond	1	54.4	Acres
Ocean Coast	1	2.09	Miles
Tidal Wetlands	2	5.03	Acres

Overview of the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians' (CTCLUSI) Reservation and Tribal Lands:

- CTCLUSI Reservation and Tribal lands total approximately 358.74 acres.
- This land base includes approximately 1.69 acres of tidelands and 2.09 miles of shoreline.
- Tribal lands are dispersed among three different 4th field HUC watersheds.
 - Sixes: 300,331 acres
 - Coos: 471,477 acres
 - Siuslaw: 496,417 acres
- Waters located on Tribal property consist of:
 - 0.72 miles of rivers and streams.
 - 54.4 acres of lakes
 - 3.34 acres of wetlands, excluding tidelands.
 - One major potable aquifer system is located on the Tribes' Florence, Oregon Reservation. This system is drawing water from the North Florence Dunal Aquifer, an EPA designated sole source aquifer.

II. Water quality monitoring program and assessment methods

A. Introduction

The purpose of the Tribes' Water Quality Monitoring Program is to determine whether water quality criteria/benchmarks are being met and beneficial uses are being supported for waterbodies of or pertaining to the reservation and other Tribal lands. Establishing a baseline of water quality condition for all Tribal waters and periodically reassessing the baseline water quality to evaluate short-term variability and long term trends is an important component of this program objective.

Monitoring Objectives	
Program Area	Objectives
Overall Water Quality Program	<ol style="list-style-type: none">1. Establish baseline water quality conditions for all pertinent uses.2. Document short term and long-term water quality trends.3. Assess whether water quality standards are being met and beneficial uses are being supported.3. Develop and test ecological indicators and monitoring designs.4. Assess local water quality issues such as; low dissolved oxygen, eutrophication, chemical & biological (e.g. bacteria) contamination, habitat modification, and cumulative impacts.
Non-point Source Program	<ol style="list-style-type: none">1. Identify and employ monitoring techniques to determine and quantify the effectiveness of watershed improvement projects.2. Build partnerships with water quality stakeholders to reduce non-point source water pollution.
Water Quality Standards	<ol style="list-style-type: none">1. Identify reference conditions for the development of numerical and biological criteria.2. Develop and refine tribal water quality standards.3. Determine if water resources are meeting tribal water quality standards.
Wetlands	<ol style="list-style-type: none">1. Develop Wetlands Program.2. Develop indicators and assess beneficial use attainment.

B. Monitoring Program Overview

Water quality monitoring is conducted by DNR staff and is implemented according to the program's EPA-approved Quality Assurance Project Plan ([QAPP](#)).

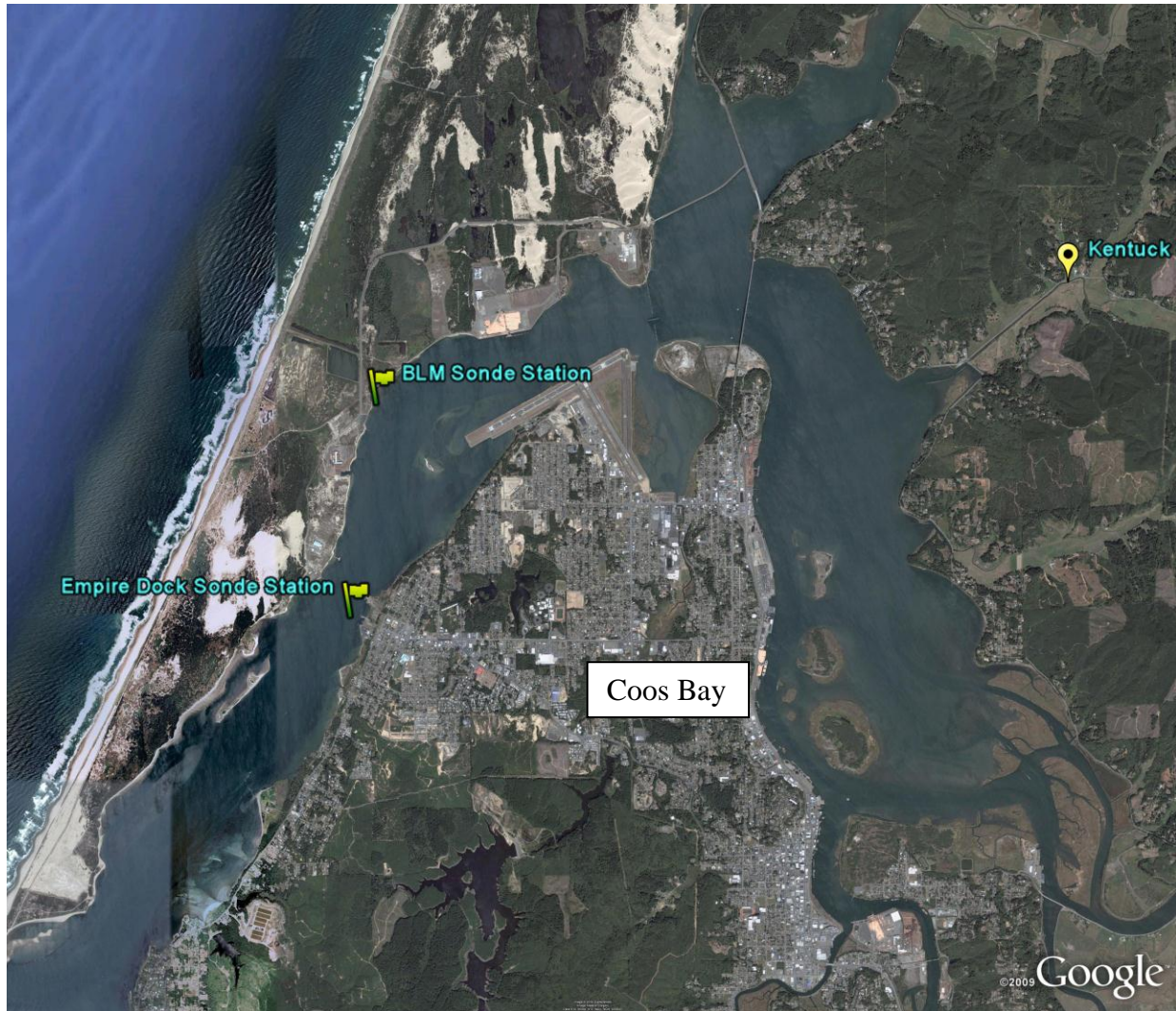
During the 2009 water year, the water quality monitoring program continued to collect baseline estuarine water quality monitoring data at three fixed stations. These data were collected at 15 minute sample intervals year round. The station locations and parameters measured are listed in the table below. The continuous estuarine water quality monitoring program implements a combination of National Estuarine Research Reserve (NERR) System Wide Monitoring Program (SWMP) and USGS recommended equipment and protocols for the collection and management of these data (see [CDMO NERR SWMP Data Management Manual](#) and the USGS manual '[Guidelines and Standard Procedures for Continuous Water-Quality Monitors: Station Operation, Record Computation, and Data Reporting](#)').

The Tribes' water quality monitoring program also collects discrete water quality data on an annual to quarterly basis (as staff and resources allow) at one freshwater site (Sixes River, located within the Sixes River watershed in Curry County) and one upper estuarine site (Kentuck Slough, located within the Coos watershed lowlands). Protocols implemented for the collection of these data are primarily those outlined in the Oregon Department of Environmental Quality (ODEQ) '[Watersheds Assessment Field Sampling SOP's](#)'.

Waterbody Name	Lat./Long	Parameters monitored	Monitoring frequency	303d List Parameter(s)
Coos River, Lower Bay – Coos Watershed	43° 24' 50" N 124° 16' 44" W	Field Measurements: Water Temperature, Dissolved Oxygen, Salinity/SpCond, pH, Turbidity, and Depth	Year Round: 15 minute intervals	Parameter: Fecal Coliform Season: Year Around Listed: 2004 Beneficial Use(s): Shellfish growing Status: Water quality limited, 303(d) listed, TMDL needed
		Laboratory: Bacteria (<i>e.coli</i> and enterococci)	Monthly	
		Laboratory: Nutrients (TN and TP)	Annually to Quarterly (as staff and resources allow)	
Coos River, Lower Bay – Coos Watershed	43° 23' 39.19" N 124° 16' 49.42" W	Field Measurements: Water Temperature, Dissolved Oxygen, Salinity/SpCond, pH, Turbidity, and Depth	Year Round: 15 minute intervals	Parameter: Fecal Coliform Season: Year Around Listed: 2004 Beneficial Use(s): Shellfish growing Status: Water quality limited, 303(d) listed, TMDL needed
		Laboratory: Bacteria (<i>e.coli</i> and enterococci)	Monthly	
		Laboratory: Nutrients (TN and TP)	Annually to Quarterly (as staff and resources allow)	
North Fork Siuslaw River – Siuslaw Watershed	43° 58' 40" N 124° 04' 48" W	Field Measurements: Water Temperature, Dissolved Oxygen, Salinity/SpCond, pH, Turbidity, and Depth	Year Round: 15 minute intervals	Parameter: Sedimentation Season: Undefined Listed: 1998 Beneficial Use(s): Resident fish and aquatic life , Salmonid fish rearing, Salmonid fish spawning Status: 303(d) Parameter: Temperature Season: Year Around (non-spawning) Listed :2004 Beneficial Use(s): Salmon and trout rearing and migration Status: Water quality limited, 303(d) list, TMDL needed.
		Laboratory: Bacteria (<i>e.coli</i> and enterococci)	Monthly	
		Laboratory: Nutrients (TN and TP)	Annually to Quarterly (as staff and resources allow)	
Sixes River – Sixes Watershed	42° 48' 39.5" N 124° 26' 43.3" W	Laboratory: Nutrients (TN and TP) and Macroinvertebrates	Annually to Quarterly (as staff and resources allow)	Parameter: Dissolved Oxygen Season: Oct. 15 to May15 Listed: 2004 Beneficial Use(s): Salmon and steelhead spawning Status: Water quality limited, 303(d) listed, TMDL needed. Parameter: Temperature Season: Year Around Listed: 2004 Beneficial Use(s): Salmon and trout rearing and migration Status: Water quality limited, 303(d) list, TMDL needed.
Kentuck Slough – Coos Watershed	43° 25' 51" N 124° 10' 24.3" W	Laboratory: Nutrients (TN and TP)	Annually to Quarterly (as staff and resources allow)	Waterbody Name: Coos River 4th Field HUC Record ID: COOS 17100304 20675 LLID River Mile: Coos Bay1243397433543 7.8 to 12.3 Parameter: Fecal Coliform Season: Year Around Listed: 2004 Beneficial Use(s): Shellfish growing Status: Water quality limited, 303(d) listed, TMDL needed

C. Map of Monitoring Sites

Coos Bay Sonde Stations and Kentuck Sample Site



North Fork Siuslaw Sonde Station



Sixes River Sample Site



D. Total Extent of Waters Assessed

During the 2009 water year, our program continuously monitored baseline water quality at 3 locations on two rivers pertaining to Tribal lands (the Coos and North Fork Siuslaw River). Those data collected at the continuous monitoring stations represent approximately 75% of the total stream and 90% of the total tideland miles (approx. 0.72 miles of rivers and streams and 1.69 miles of tideland) of or pertaining to Tribal lands. Additional water quality assessment data such as nutrient, bacteria and benthic macroinvertebrate data were collected less frequently and included sample sites other than the continuous monitoring sites. The reduced sampling frequency and disparity among parameters monitored at different sites is due primarily to funding and staff resource constraints (see table above for parameters measured at each site and monitoring frequency). The program did not monitor any wetlands or lakes and did not collect any habitat assessment data other than macroinvertebrates due to funding and staff resource constraints.

E. Data Analysis and Assessment

The goal for all waters of or pertaining to Tribal lands is to support the following Tribal and/or state designated beneficial uses.

Tribal Goals/Designated Beneficial Uses for the Waters of or Pertaining to Tribal Lands

Designated Use	Coos River/Lower Bay	North Fork/ Mainstem Siuslaw River	Sixes River
Salmon and Trout Rearing and Migration	X	X	X
Aesthetic Quality	X	X	X
Water Contact Recreation	X	X	X

CTCLUSI does not yet have Tribal or EPA approved water quality standards. Therefore, our program primarily refers to ODEQ water quality standards to evaluate water quality data generated by our monitoring program. In addition to ODEQ criteria, our program refers to the Oregon Watershed Enhancement Board (OWEB) recommended indicator criteria to evaluate total nitrogen, total phosphorus and turbidity data generated by the Tribes' monitoring program. In addition to the water quality parameters listed below, the Tribes' water quality monitoring program also collects annual macroinvertebrate samples from the Sixes River sample site. Macroinvertebrate data collected by our program are evaluated per the Benthic Invertebrate Index of Biological Integrity – BIBI (modified Karr 1998).

Designated Uses	Water Quality Parameter			
Aquatic Life	Temp*	D.O.	Turbidity	pH
Salmon and Trout Rearing and Migration	Summer and Early Fall Not greater than 18° C 7-day max daily average	For estuarine water, the dissolved oxygen concentrations may not be less than 6.5 mg/l (for coastal water bodies)	Indicator: 50 NTU maximum above background	6.5 - 8.5
	Citation			
	OAR 340-041-0028: WATER POLLUTION DIVISION 41 WATER QUALITY STANDARDS: BENEFICIAL USES, POLICIES, AND CRITERIA FOR OREGON	OAR 340-041-0016: ibid	OWEB Watershed Assessment Manual	OAR 340-041-0021; 0225 (b);0305 (a): ibid
Water Contact	Enterococci organism levels			
Recreational Uses	No more than 158 colony forming units (158 MPN) per 100 milliliters of marine water			
	Citation			
	Oregon Department of Human Services			
	e.coli organism levels			
	126 E. coli/100 ml (30-day log mean—minimum 5 samples) 406 E. coli/100 ml (no single sample can exceed the criteria)			
	Citation			
	OAR 340-041-0009: WATER POLLUTION DIVISION 41 WATER QUALITY STANDARDS: BENEFICIAL USES, POLICIES, AND CRITERIA FOR OREGON			
Aesthetics	Nutrients		Turbidity	
	Total Phosphorus Evaluation Criteria: greater than 0.05 mg/l Total Nitrate Evaluation Criteria: greater than 0.30 mg/l		Indicator Criteria: Background < 50 NTU + 5 NTU or more Indicator Criteria: Background > 50NTU + 10% or more	
	Citation			
	OWEB Watershed Assessment Manual			

* OAR 340-041-0028, (7): Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.

III. Data Analysis Results

A. Summary of Data Collected

The following data summaries of Tribal water quality monitoring data are for the 2009 water year (unless otherwise indicated) and are presented in tabular format.

Lower Coos Bay Fixed Station Continuous Surface Water Quality Monitoring Data for Water Year 2009 (Oct 2008 to Sept 2009).*

BLM Sonde Station **							
BLM Sonde Wet Season: 10/01/2008 to 05/31/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	10.5	43.23	27.8	98.4	9.2	7.6	3
Median	10.3	44.50	28.6	97.5	9.2	7.6	2
Minimum	5.6	5.13	2.8	40.6	3.8	7.0	0
Maximum	15.20	60.40	40.1	128.2	12.6	8.0	994
Count	15243	15243	15243	15243	15243	15243	15243
BLM Sonde Dry Season: 06/01/2009 to 09/30/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	14.2	52.15	34.3	97.9	8.1	7.6	4
Median	14.4	49.77	32.5	96.9	8.0	7.6	2
Minimum	8.6	43.08	27.8	41.4	3.5	6.9	0
Maximum	19.4	62.73	42.0	137.8	12.0	8.2	907
Count	11707	11707	11707	11707	11707	11707	11703
Empire Dock Sonde Station **							
Empire Dock Wet Season: 10/01/2008 to 05/31/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	10.3	45.60	29.4	96.0	8.9	7.7	4
Median	10.0	47.23	30.5	97.3	9.1	7.6	3
Minimum	14.9	6.69	3.7	42.7	4.0	7.0	0
Maximum	14.9	56.32	37.1	132.7	12.1	8.1	545
Count	15243	15243	15243	15243	15243	15243	15243
Empire Dock Dry Season: 06/01/2009 to 09/30/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	13.3	50.21	32.9	102.1	8.7	7.8	5
Median	13.3	50.47	33.0	100.5	8.5	7.8	2
Minimum	8.6	43.71	28.2	57.4	5.3	7.2	0
Maximum	18.4	53.28	34.9	155.1	13.1	8.3	741
Count	11710	11710	11710	11710	11710	11710	11706

* Values in bold represent exceedences in maximum single values but are generally considered to be possible anomalies attributable to seasonal extremes (temp) or localized conditions (turbidity). ** Estuary habitat tends to have tidal (salinity/ temp) and open water characteristics (high temp/ low DO) that are not comparable to mainstem and side channel water quality parameters.

Continuous Sonde Data (cont.)

**Lower Siuslaw Estuary Fixed Station Continuous Surface Water Quality Monitoring Data for Water Year
2009
(Oct 2008 to Sept 2009).***

North Fork Sonde Station **							
North Fork Sonde Wet Season: 10/01/2008 to 05/21/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	9.8	8.98	5.4	99.5	11.0	7.0	5
Median	9.4	2.47	1.3	100.5	11.2	7.0	4
Minimum	2.3	0.02	0.0	64.6	5.9	5.9	-1
Maximum	16.5	48.36	31.2	131.6	13.7	8.3	868
Count	16203	16203	16203	16203	16203	16203	16201
North Fork Sonde Dry Season: 06/23/2009 to 09/30/2009	Temp (°C)	SpCond (ms/cm)	Salinity (ppt)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/l)	pH	Turbidity (NTU)
Mean	17.9	31.16	19.5	87.19	7.4	7.4	15
Median	18.1	32.31	20.2	85.70	7.2	7.4	3
Minimum	10.1	4.33	2.3	33.50	2.7	6.6	0
Maximum	22.5	50.40	32.9	155.20	13.4	8.2	998
Count	9556	9556	9556	9556	9556	9556	9556

* Values in bold represent exceedences in maximum single values but are generally considered to be possible anomalies attributable to seasonal extremes (temp) or localized conditions (turbidity). ** Estuary habitat tends to have tidal (salinity/ temp) and open water characteristics (high temp/ low DO) that are not comparable to mainstem and side channel water quality parameters.

Bacteria Data – 2009 Water Year

BLM E.coli				Empire Dock E. coli				North Fork Siuslaw E. coli				Sixes River E. coli			
Sample Date	Sample ID	Analyte	MPN	Sample Date	Sample ID	Analyte	MPN	Sample Date	Sample ID	Analyte	MPN	Sample Date	Sample ID	Analyte	MPN
10/22/2008	BLM	E. coli.	10	10/22/2008	ED	E. coli.	< 10.0	10/21/2008	NF	E. coli.	20.2	10/2/2008	Sixes	E. coli.	93.3
11/25/2008	BLM	E. coli.	< 10.0	11/25/2008	ED	E. coli.	10	11/24/2008	NF	E. coli.	10	6/29/2009	Sixes	E. coli.	41.3
12/23/2008	BLM	E. coli.	9.9	12/23/2008	ED	E. coli.	< 10.0	12/22/2008	NF	E. coli.	62.6	7/28/2009	Sixes	E. coli.	< 10.0
2/4/2009	BLM	E. coli.	< 10.0	2/4/2009	ED	E. coli.	< 10.0	2/5/2009	NF	E. coli.	< 10.0	7/28/2009	Sixes	E. coli.	30.6
3/11/2009	BLM	E. coli.	< 10.0	3/11/2009	ED	E. coli.	< 10.0	3/12/2009	NF	E. coli.	< 10.0				
4/8/2009	BLM	E. coli.	< 10.0	4/8/2009	ED	E. coli.	< 10.0	4/9/2009	NF	E. coli.	20.2				
5/20/2009	BLM	E. coli.	< 10.0	5/20/2009	ED	E. coli.	< 10.0	5/21/2009	NF	E. coli.	10				
6/25/2009	BLM	E. coli.	< 10.0	6/25/2009	ED	E. coli.	< 10.0	6/23/2009	NF	E. coli.	30.6				
8/27/2009	BLM	E. coli.	< 10.0	7/23/2009	ED	E. coli.	10	7/22/2009	NF	E. coli.	40.5				
7/23/2009	BLM	E. coli.	< 10.0	8/27/2009	ED	E. coli.	< 10.0	8/26/2009	NF	E. coli.	10				

BLM Enterococci				Empire Dock Enterococci				North Fork Siuslaw Enterococci			
Sample Date	Sample ID	Analyte	MPN	Sample Date	Sample ID	Analyte	MPN	Sample Date	Sample ID	Analyte	MPN
10/22/2008	BLM	Enterococci	< 10.0	10/22/2008	ED	Enterococci	< 10.0	10/21/2008	NF	Enterococci	< 10.0
11/25/2008	BLM	Enterococci	< 10.0	11/25/2008	ED	Enterococci	< 10.0	11/24/2008	NF	Enterococci	< 10.0
12/23/2008	BLM	Enterococci	< 10.0	12/23/2008	ED	Enterococci	10	12/22/2008	NF	Enterococci	< 10.0
2/4/2009	BLM	Enterococci	< 10.0	2/4/2009	ED	Enterococci	< 10.0	2/5/2009	NF	Enterococci	< 10.0
3/11/2009	BLM	Enterococci	< 10.0	3/11/2009	ED	Enterococci	< 10.0	3/12/2009	NF	Enterococci	< 10.0
4/8/2009	BLM	Enterococci	< 10.0	4/8/2009	ED	Enterococci	< 10.0	4/9/2009	NF	Enterococci	10
5/20/2009	BLM	Enterococci	< 10.0	5/20/2009	ED	Enterococci	< 10.0	5/21/2009	NF	Enterococci	< 10.0
6/25/2009	BLM	Enterococci	< 10.0	6/25/2009	ED	Enterococci	< 10.0	6/23/2009	NF	Enterococci	10
7/23/2009	BLM	Enterococci	< 10.0	7/23/2009	ED	Enterococci	10	7/22/2009	NF	Enterococci	< 10.0
8/27/2009	BLM	Enterococci	< 10.0	8/27/2009	ED	Enterococci	< 10.0	8/26/2009	NF	Enterococci	< 10.0

Nutrient Data – Total Nitrogen (TN) and Total Phosphorous (TP)

The following tables are for samples collected during the 2008-2009 water years.

BLM				Kentuck Slough				Mainstem Siuslaw			
Date	Station*	TP mg/l	TN mg/l	Date	Station*	TP mg/l	TN mg/l	Date	Station	TP mg/l	TN mg/l
5/8/2007	BLM-HT	0.04	0.27	5/8/2007	KS-HT	0.05	1.37	5/9/2007	MS	0.03	0.44
5/8/2007	BLM-LT	0.03	0.30	5/8/2007	KS-LT	0.05	1.39	6/18/2008	MS	0.05	0.30
6/17/2008	BLM-LT	0.07	0.40	6/17/2008	KS-LT	0.08	1.73	6/10/2009	MS	0.03	0.42
6/9/2009	BLM-HT	0.03	0.28	6/9/2009	KS-HT	0.04	1.29	-	-	-	-
6/9/2009	BLM-LT	0.04	0.27	6/9/2009	KS-LT	0.05	1.27	-	-	-	-

*HT = High Tide Grab Sample; LT = Low Tide Grab Sample **Values in bold represent exceedences in maximum single values**

North Fork Siuslaw				Sixes River			
Date	Station	TP mg/l	TN mg/l	Date	Station	TP mg/l	TN mg/l
5/9/2007	NF	0.03	0.46	5/7/2007	Sixes	0.02	0.36
6/18/2008	NF	0.04	0.26	6/16/2008	Sixes	0.01	0.19
6/10/2009	NF	0.02	0.40	6/8/2009	Sixes	0.01	0.21
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

- Indicates samples were collected and sent to an independent lab for analysis. However, lab was unable to process samples due to technical difficulties

Benthic Macroinvertebrate Data: Sixes River

Benthic Invertebrate Index of Biological Integrity-BIBI (modified Karr 1998)

- Sampling Method: D-frame net, 4 square feet composite, 500 micron mesh.
- Subsampling: Entire sample. Level 3 PNW Standard taxonomic effort.
- Abundances adjusted to a full sample and square meter basis

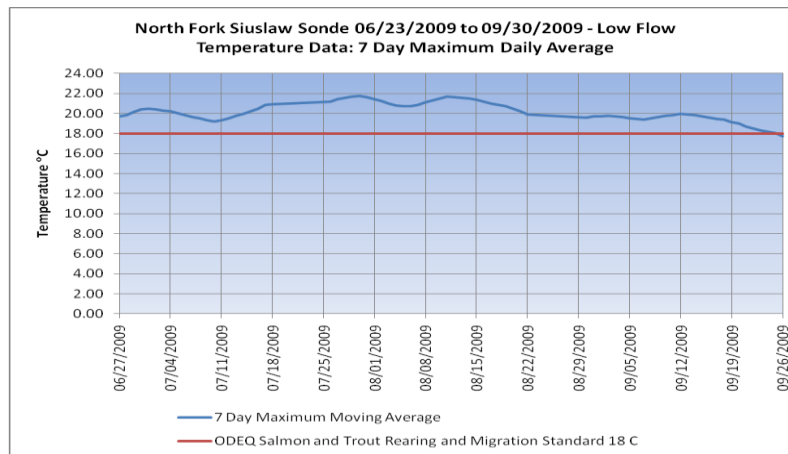
Site	Sixes River		Sixes River		Sixes River		Sixes River	
Date	8/17/2007		6/24/2008		10/2/2008		7/28/2009	
METRIC	Value	Score	Value	Score	Value	Score	Value	Score
Total number of taxa	47	5	37	3	55	5	50	5
Number Ephemeroptera taxa	10	5	10	5	15	5	10	5
Number Plecoptera taxa	4	3	3	1	3	1	4	3
Number Trichoptera taxa	8	3	7	3	6	3	6	3
Number of long-lived taxa	5	5	2	1	4	3	4	3
Number of intolerant taxa	1	1	0	1	0	1	0	1
% Tolerant taxa	27.19	3	53.22	1	30.41	3	30.25	3
% Predator	15.08	3	12.75	3	7.64	1	14.41	3
Number of clinger taxa	30	5	24	5	29	5	32	5
% Dominance (3 taxa)	31.48	5	51.85	3	32.68	5	39.26	5
TOTAL SCORE		38		26		32		36
BIOLOGICAL CONDITION CATEGORY								
Maximum score of 50. Each metric scored: 1=low, 3=moderate, 5=high								
OTHER COMMUNITY COMPOSITION METRICS THAT ARE INDICATIVE OF BIOLOGICAL CONDITION								
Total abundance (m2)	1888		1961		2642		2631	
EPT taxa richness	22		20		24		20	
Predator richness	6		7		6		9	
Scraper richness	18		14		16		16	
Shredder richness	3		1		2		3	
%Intolerant taxa	0.14		0		0		0	
Hilsenhoff Biotic Index	5.72		6.12		5.57		5.54	
% <i>Baetis tricaudatus</i>	10.11		25.65		13.44		4.19	
%Collector	50.09		52.68		52.7		50.86	
%Parasite	7.4		2.33		6.01		4.09	
%Oligochaeta	0.14		0.27		0.2		0.51	
Number tolerant taxa	11		7		22		13	
%Simuliidae	0.43		0.14		1.93		1.43	
%Chironomidae	12.68		4.12		24.24		12.99	
L,M & H comparisons with a Pacific Northwest montane stream with high biological integrity.								
Metric value generally increases with declining biological integrity.								
Metric value generally decreases with declining biological integrity.								
Low biological integrity.			BIBI scores between 0-24.					
Moderate biological integrity.			BIBI scores between 25-39.					
High biological integrity.			BIBI scores >40.					

B. Comparison of Data to Benchmark Criteria of Parameters of Concern

Temperature

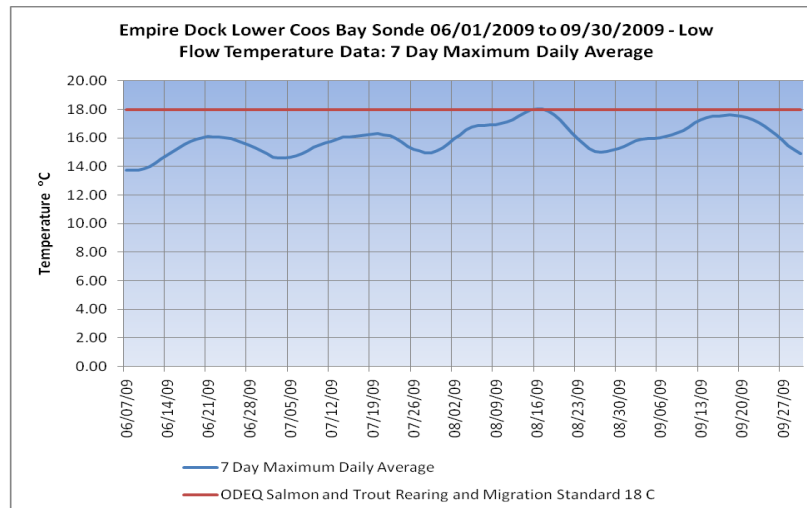
North Fork Siuslaw Sonde Station – Lower Siuslaw Estuary:

The maximum temperature measured at the North Fork Siuslaw Sonde Station was 22.5°C on 08/11/2009 and was recorded that day at fifteen minute intervals from 22:00 to 23:00. Further analysis of these data during the time period when the maximum temperature was recorded at the site indicates that the 2009 summer and early fall 7 day maximum daily average for temperature at this site exceeded the ODEQ water temperature standard for salmon and trout rearing and migration (18°C), the designated fish use for the section of the North Fork Siuslaw River monitored at the Tribes' North Fork Siuslaw Sonde Station.



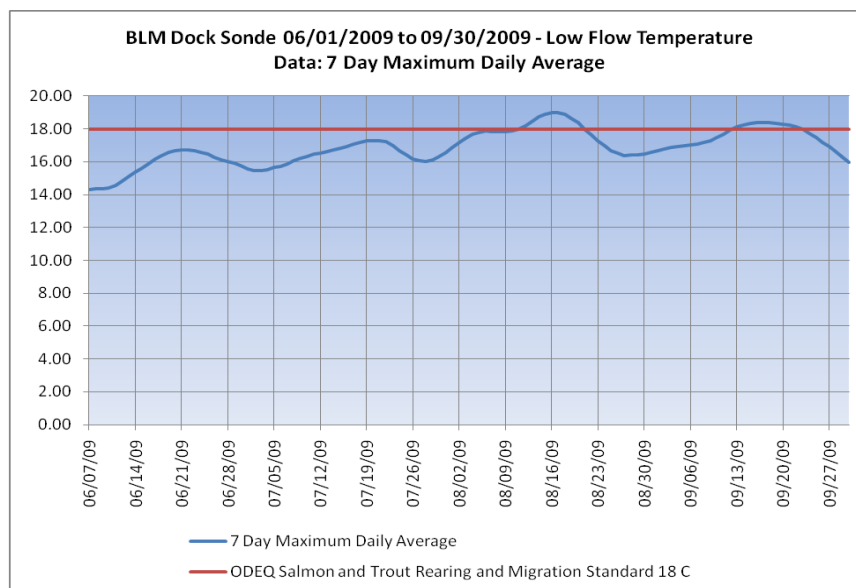
Empire Dock Sonde Station – Lower Coos Bay:

The maximum temperature measured at the Empire Dock Sonde Station was 18.4°C on 08/14/2009 at 01:45. The temperature data recorded at fifteen minute intervals between 01:45 and 02:30 on this day were greater than or equal to 18°C. However, further analysis of these data during the time period when the maximum temperature for this site was recorded indicates that the 2009 summer and early fall 7 day maximum daily average for temperature at this site was only exceeded once throughout the season during the same week the maximum single temperature for the site was recorded.



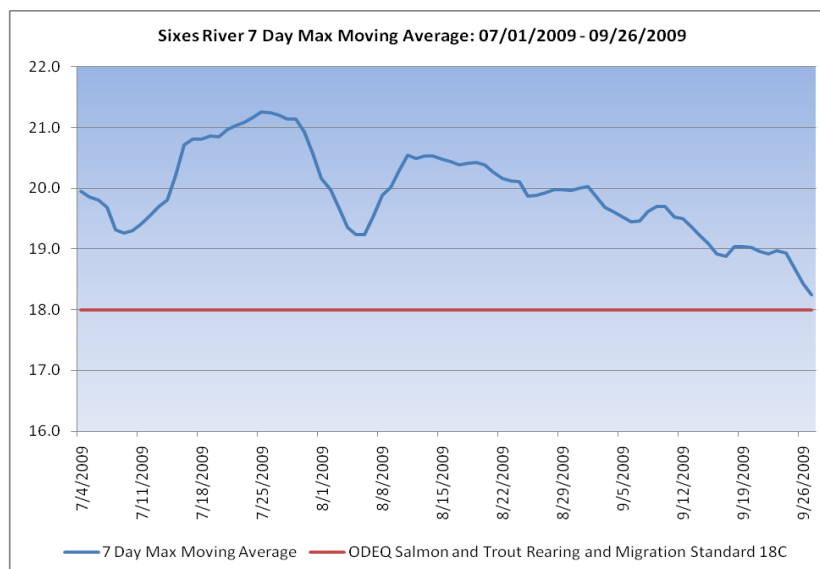
BLM Dock Sonde Station – Lower Coos Bay:

The maximum temperature measured at the BLM Dock Sonde Station was 19.4°C on 08/14/2009 at 01:00. The temperature data recorded at fifteen minute intervals between 22:15 on 8/13/2009 and 03:15 on 8/14/2009 were greater than or equal to 18°C. However, further analysis of these data during the time period when the maximum temperature for this site was recorded indicates that the 2009 summer and early fall 7 day maximum daily average for temperature at this site was only exceeded twice throughout the season. One of the exceedences occurred during the same week the maximum single temperature at the site was recorded.



Sixes River – Freshwater

The 7 day maximum daily average for the entire summer 2009 continuous temperature data logger deployment at the Tribes' Sixes River monitoring site exceeded the ODEQ water temperature standard for salmon and trout rearing and migration (18°C), the designated fish use for the section of the Sixes River monitored at the Tribes' WQMP.



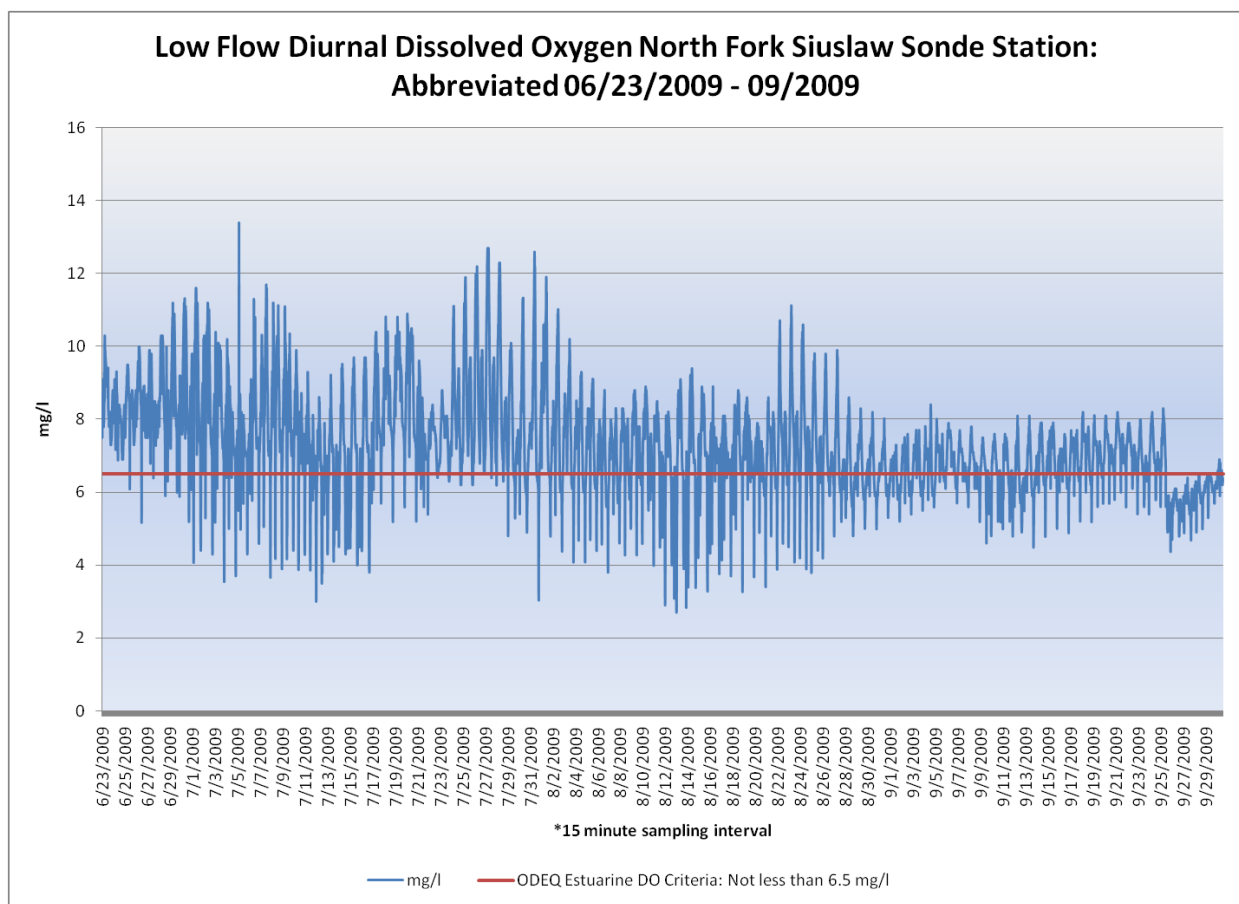
Dissolved Oxygen

BLM and Empire Dock Sonde Stations – Lower Coos Bay:

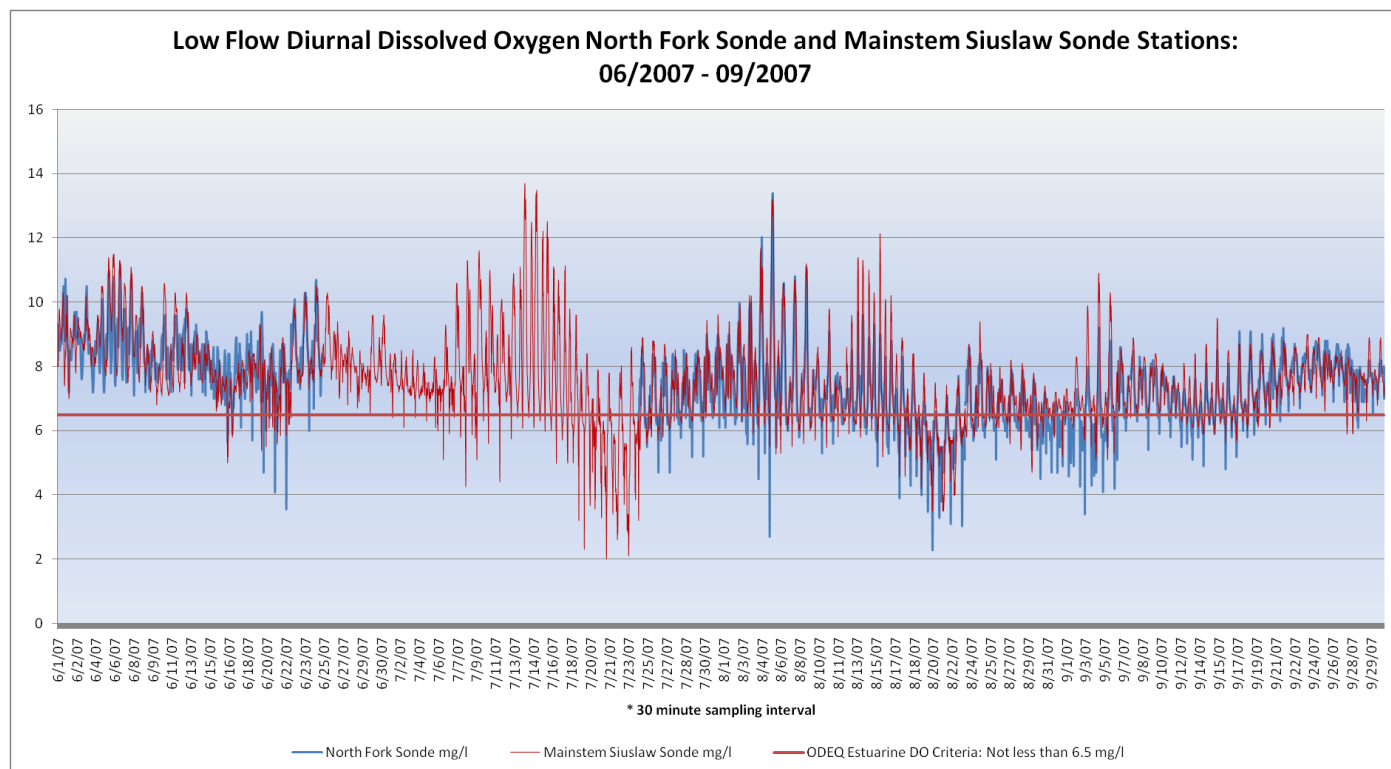
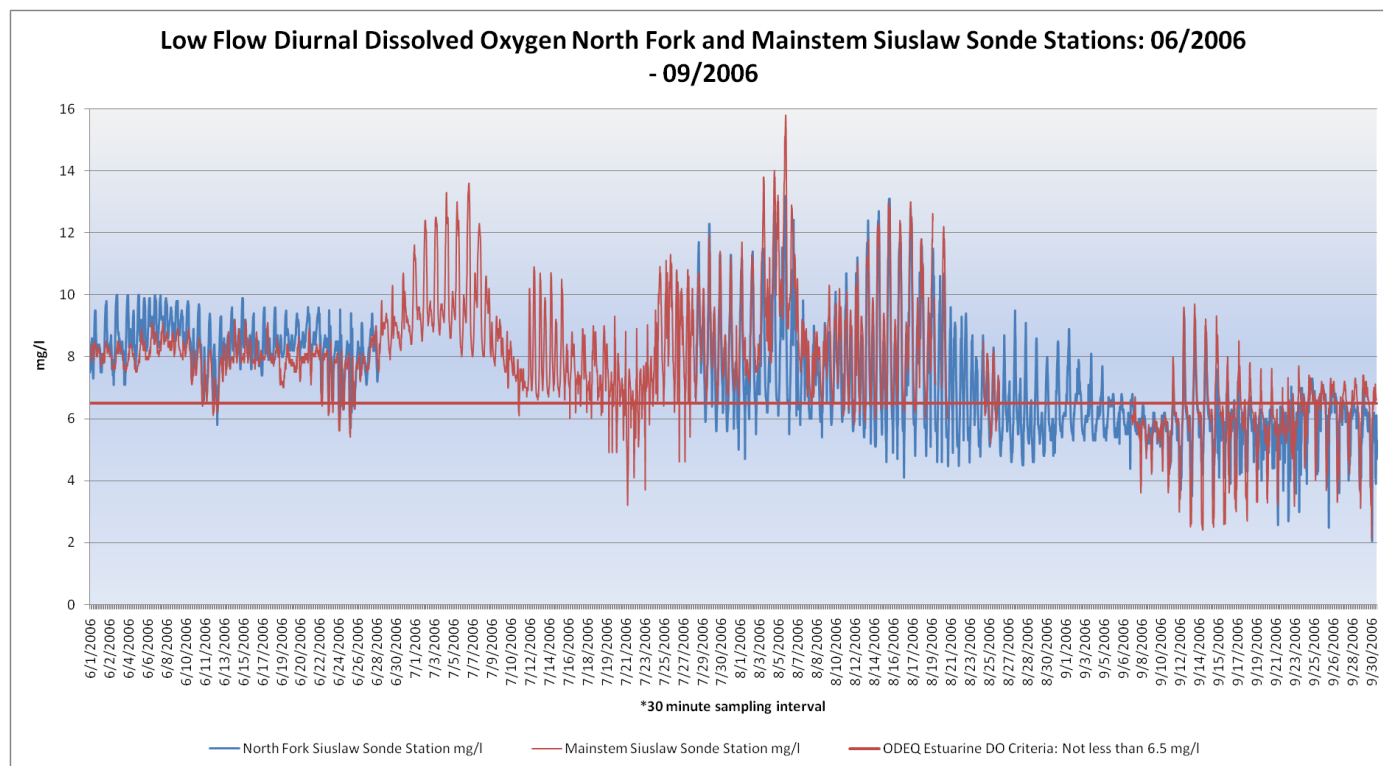
Although minimum dissolved oxygen recorded at the Coos Bay BLM and Empire Dock Sonde Stations exceeded the ODEQ estuarine dissolved oxygen criteria of not less than 6.5 mg/l, continuous data collected at these sites do not indicate consistent exceedences of the ODEQ criteria and are likely anomalies attributable to seasonal variability and/or localized site conditions.

North Fork Siuslaw Sonde Station – Lower Siuslaw Estuary:

The minimum dissolved oxygen measured at the North Fork Siuslaw Sonde Station was 2.7 mg/l on 08/13/09 at 11:00. The dissolved oxygen measured at 15 minute intervals between 08:45 and 12:30 on 08/13/09 was below the ODEQ estuarine dissolved oxygen criteria of not less than 6.5 mg/l. Further analysis of the North Fork Siuslaw dissolved oxygen sonde data indicates that the continuous 2009 summer and early fall dissolved oxygen recorded at this site consistently exceeded ODEQ estuarine dissolved oxygen criteria.

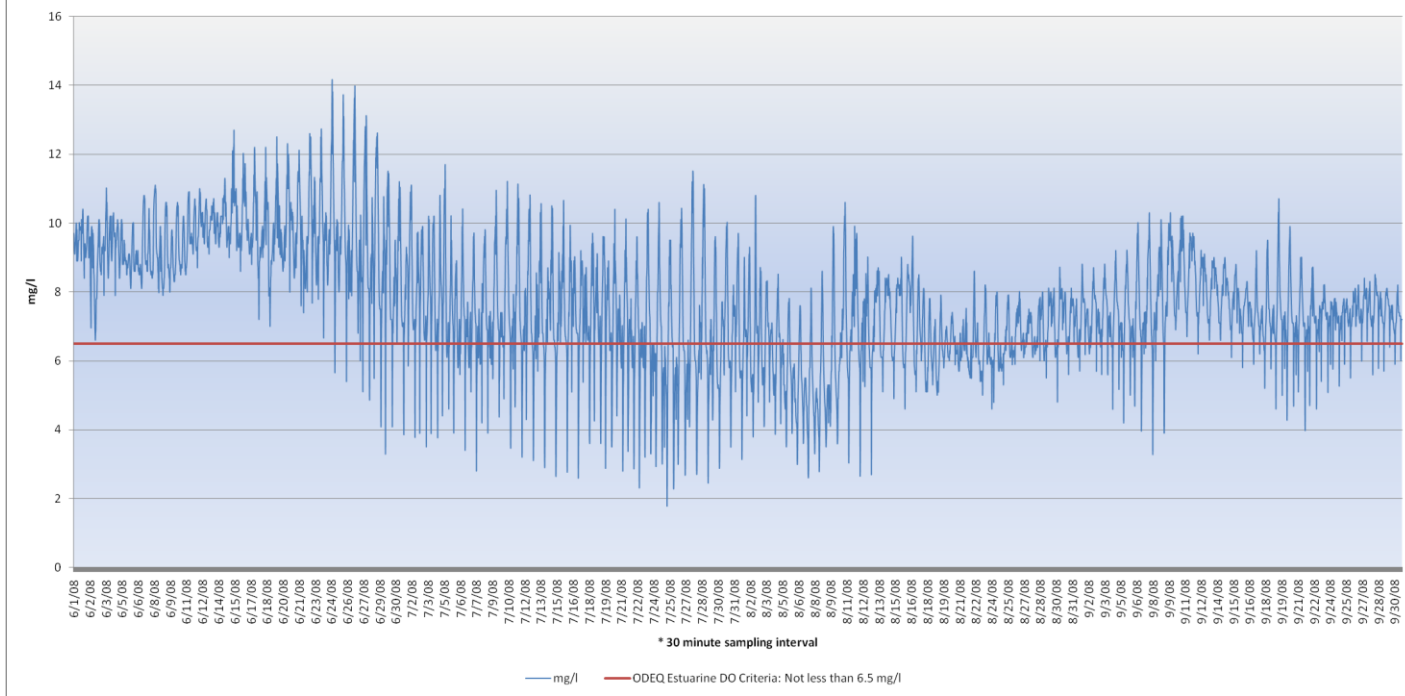


Analysis of historic continuous dissolved oxygen collected by the Tribes at both the Tribes' North Fork Siuslaw Sonde and the 2008 decommissioned lower Mainstem Siuslaw Sonde Site indicates that summer and early fall dissolved oxygen levels at these lower Siuslaw River estuary sites have consistently exceeded the ODEQ estuarine dissolved oxygen criteria since the Tribes began continuously monitoring water quality at these sites in 2006.



* The Mainstem Siuslaw Sonde Station was decommissioned in February 2008

Low Flow Diurnal Dissolved Oxygen North Fork Sonde Station: 06/2008 - 09/2008



C. Summary of the Extent to Waters Meet Designated Uses or Tribal Goals

Designated Use	North Fork Siuslaw	Lower Coos Bay	Sixes River
Salmon and Trout Rearing and Migration	Not Fully Supported	Not Enough Data to Determine	Not Fully Supported
Water Contact: Recreational Activity	Not Enough Data to Determine	Not Enough Data to Determine	Not Enough Data to Determine
Aesthetics	Not Enough Data to Determine	Not Enough Data to Determine	Not Enough Data to Determine

D. Description of Why Waters are Potentially Not Meeting Designated Uses or Goals

North Fork Siuslaw

Temperature and Dissolved Oxygen – Salmon and Trout Rearing and Migration

The North Fork Siuslaw has high summer and early fall temperatures accompanied by consistently low dissolved oxygen readings. The riparian habitat upstream of the site is highly disturbed and lacking in shade producing canopy. The lack of shade provided in the upstream riparian corridor likely contributes to the high summer and early fall temperatures recorded at the North Fork Siuslaw Sonde site. In addition, salinity at the site increases in the summer (likely the result of the reduction of freshwater high flow events) and the combination of increased salinity and elevated temperatures likely contributes to the low dissolved oxygen levels recorded at the site.

Coos Bay, Kentuck Slough - Aesthetics

Nutrients

Annual 2007, 2008, and 2009 total nitrogen (TN) samples collected from this site 2007, 2008 and 2009 exceeded the OWEB Total Nitrate Evaluation Criteria: greater than 0.30 mg/l. The elevated levels of TN measured at this site are likely associated with agricultural activities located upstream of the Tribes' monitoring site and a golf course located immediately adjacent to the riparian zone of the Tribes' sampling location.

Sixes River

Temperature – Salmon and Trout Rearing and Migration

The Sixes River has high summer and early fall temperatures. Although located in a completely different watershed, riparian conditions at this site are similar to those found upstream of the North Fork Siuslaw Sonde site discussed above. Lack of shade provided in the upstream riparian corridor likely contributes to the high summer and early fall temperatures recorded at the Tribes' Sixes River monitoring site.

IV. Discussion of Issues of Tribal Concern

Data Gaps

Bacteria

Although the Tribes' 2009 bacteria data do not appear to indicate that bacteria levels at the Coos Bay sonde stations exceed the recreational use criteria for either e.coli or enterococcus, the Oregon Department of Environmental Quality (ODEQ) has collected storm related bacteria samples in upper Coos Bay, and the tributaries associated with the bay, that indicate bacteria levels in the Coos sub basin during significant storm events exceed both the fecal coliform shellfish harvest standard (14 CFU) and the e.coli single grab recreational criteria (406 MPN). Due to staff and funding constraints, the Tribes' water quality monitoring program is currently only able to collect monthly bacteria samples from the Coos Bay sonde sites.

Dissolved Oxygen

2009 summertime dissolved oxygen levels at the Tribes' North Fork Siuslaw sonde station consistently exceeded the ODEQ estuarine dissolved oxygen criteria of not less than 6.5 mg/l. The cause of the low dissolved oxygen levels is unknown. Potential causes of low dissolved oxygen at this site include, elevated sediment oxygen demand, increases in water temperature, and potentially elevated levels of algae during summertime low flow.

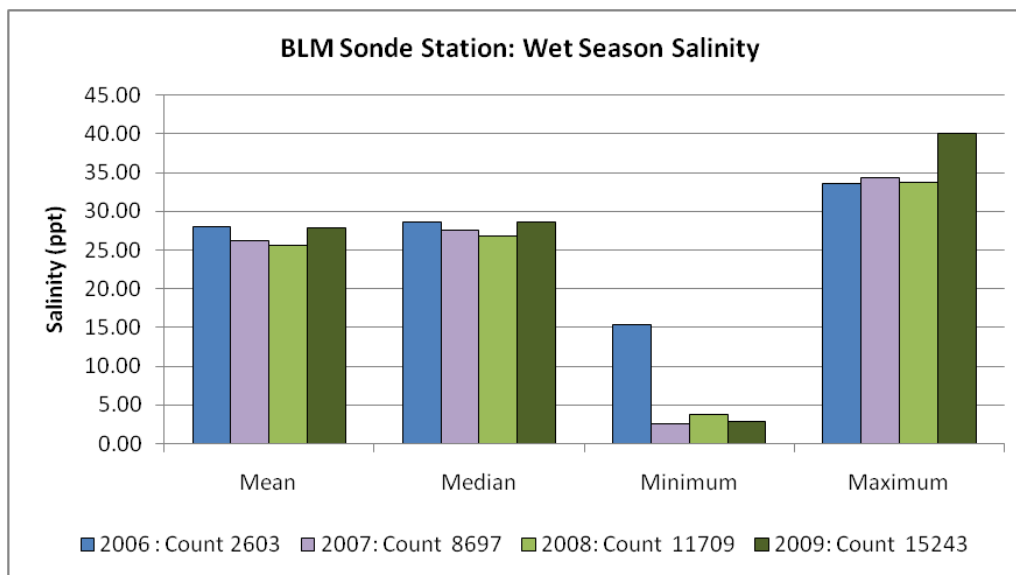
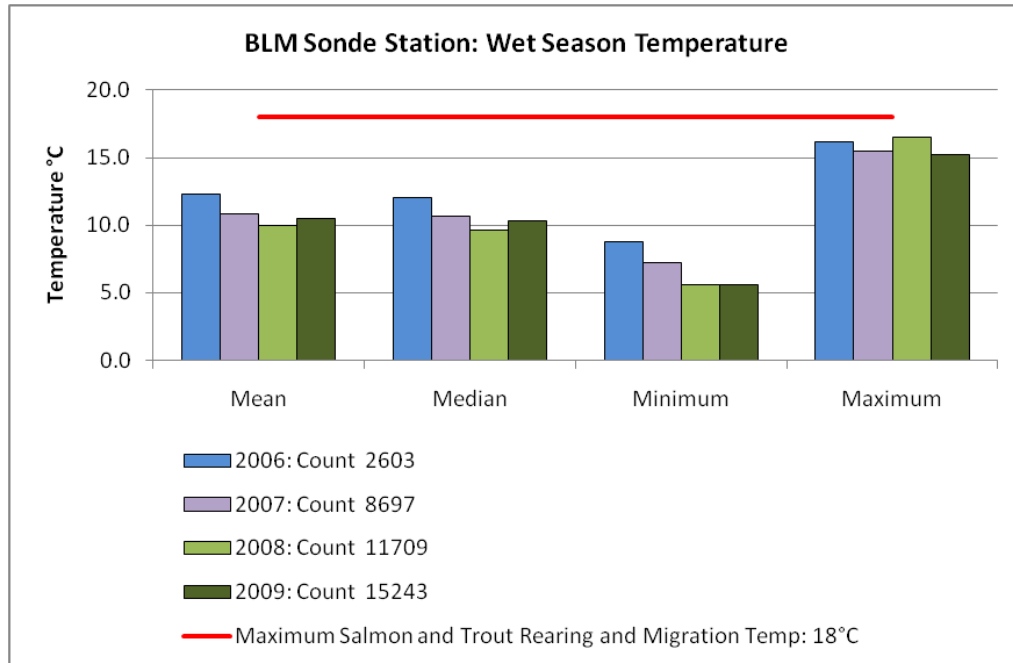
Conclusion

Data collected by our program appears to indicate that seasonal impairments to water quality are occurring at the Tribes' North Fork Siuslaw continuous sonde station and the Sixes River grab sample location. The Tribes have additional concerns regarding potential impacts to water quality at our Coos Bay sonde sites associated with bacteria loading potentially occurring during and following significant storm events. Due to staff and resource limitations, the Tribes' water quality monitoring program is only able to only support the collection of monthly bacteria samples at sonde sites currently maintained by the program. However, the Tribes' hope to collaborate with organizations like ODEQ and local watershed councils on special bacteria study projects to better understand how storm events impact water quality in Coos Bay.

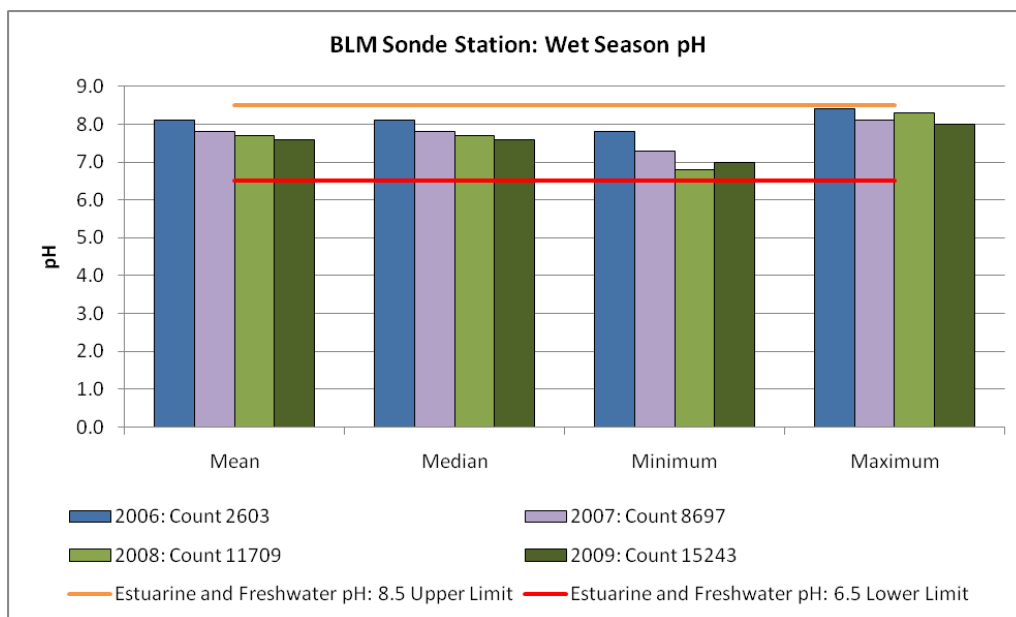
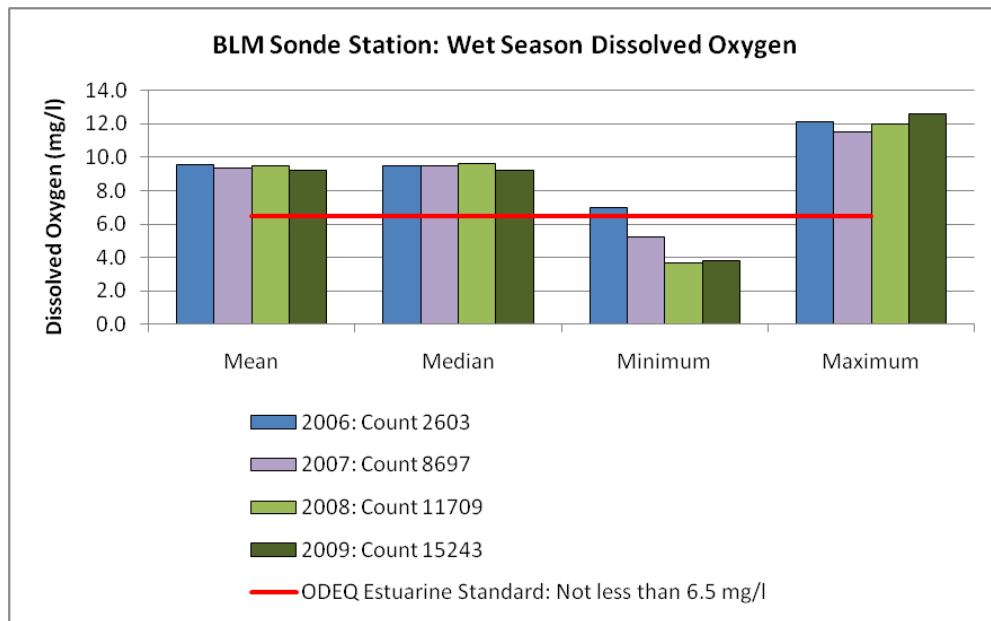
In order to better understand the cause of low summer dissolved oxygen levels recorded at the North Fork Siuslaw sonde station, the Tribes are planning to collect discrete nutrient and chlorophyll samples at the North Fork Siuslaw sonde station and three additional locations upstream of the sonde station. Samples will be collected from these samples at least twice during the summer of 2010. The results of these samples will help the Tribes better understand whether the cause of summertime low dissolved oxygen levels recorded at the North Fork Siuslaw sonde station are potentially associated with algae blooms caused by the presence of excess nutrients in the water.

Appendix A: Four Year Comparison of BLM Sonde Station and North Fork Siuslaw Sonde Station Continuous Monitoring Data

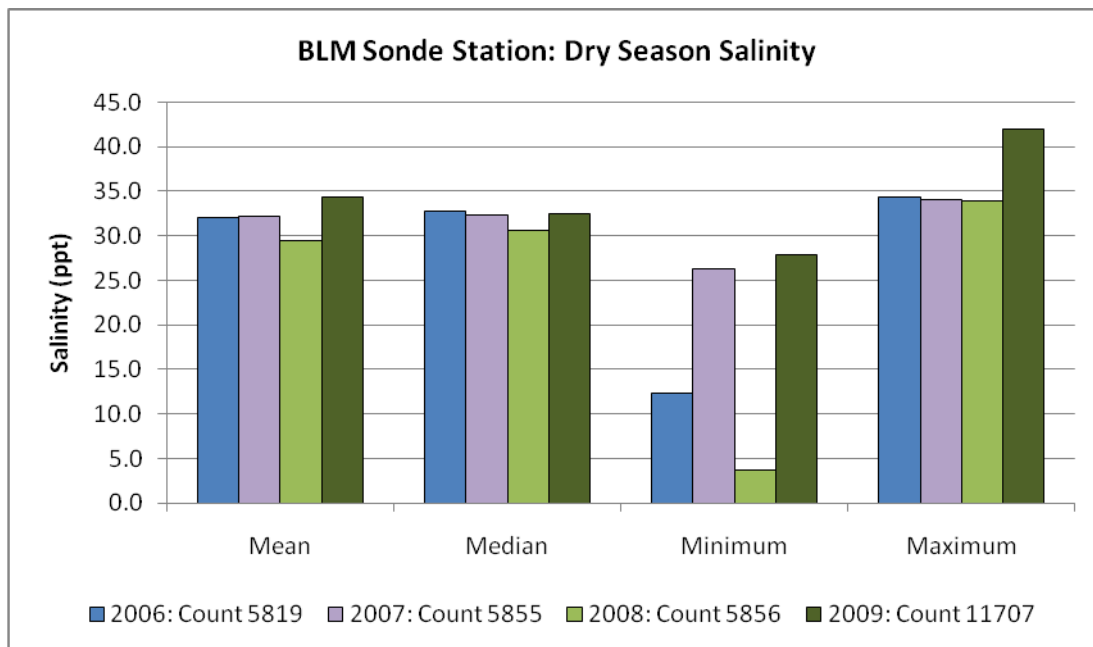
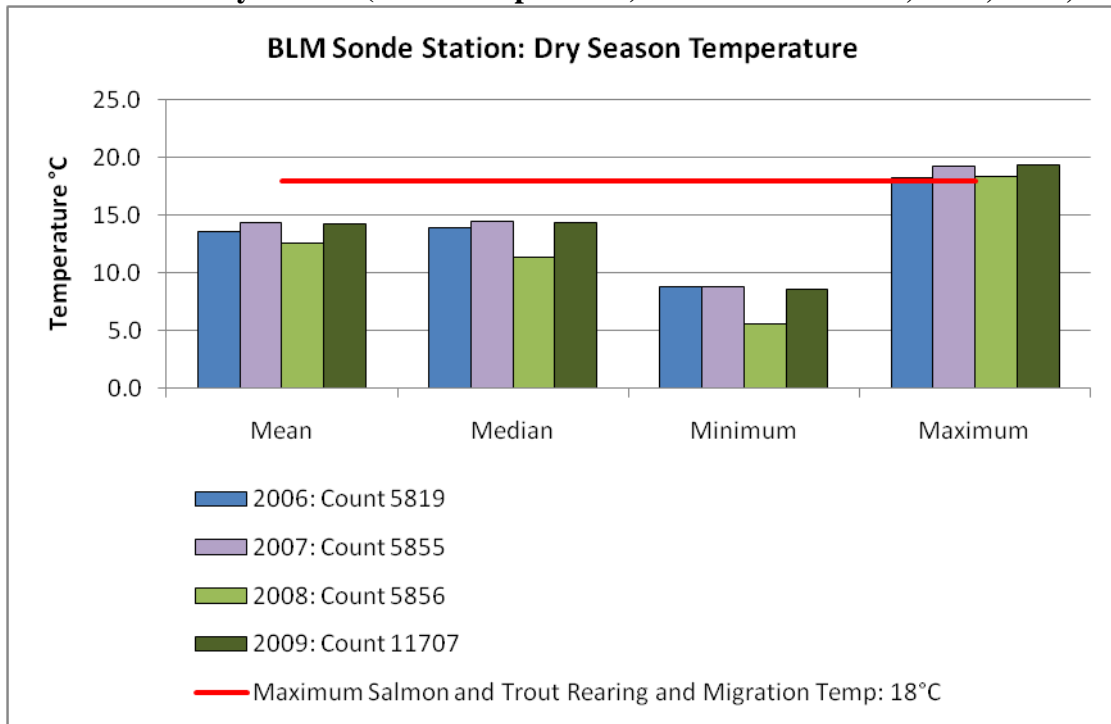
BLM Sonde Station Wet Season (October to May): Water Years 2006 (Abbreviated: 04/2006 to 05/2006), 2007, 2008, and 2009



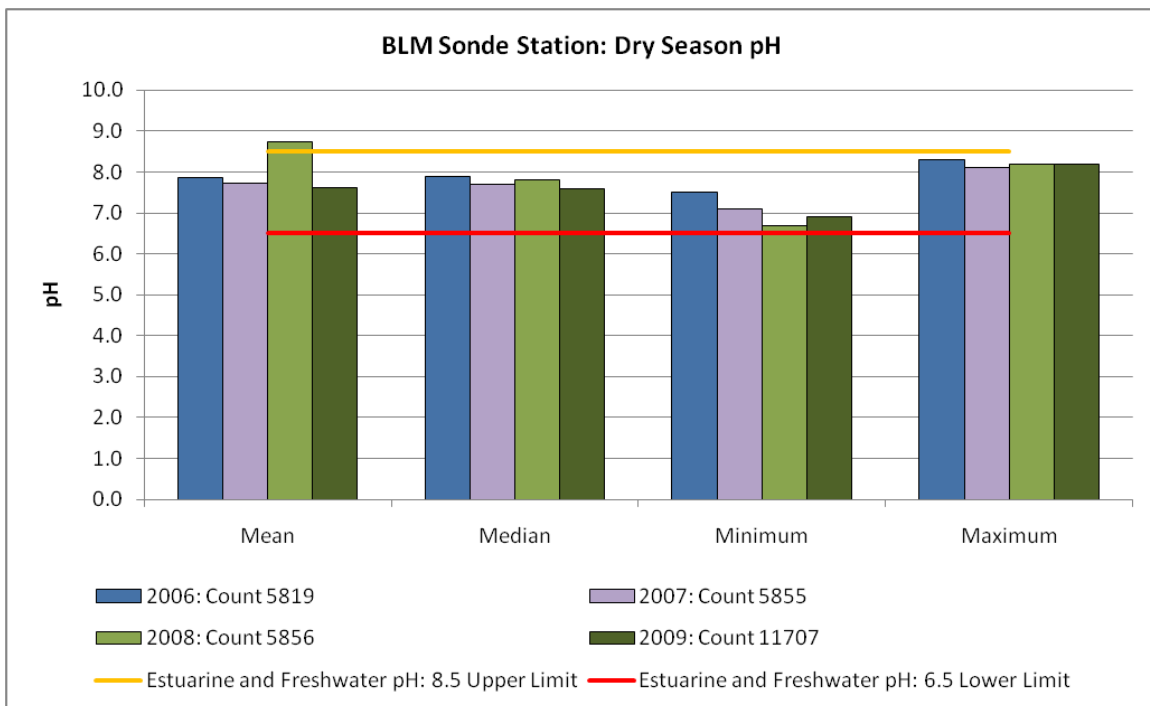
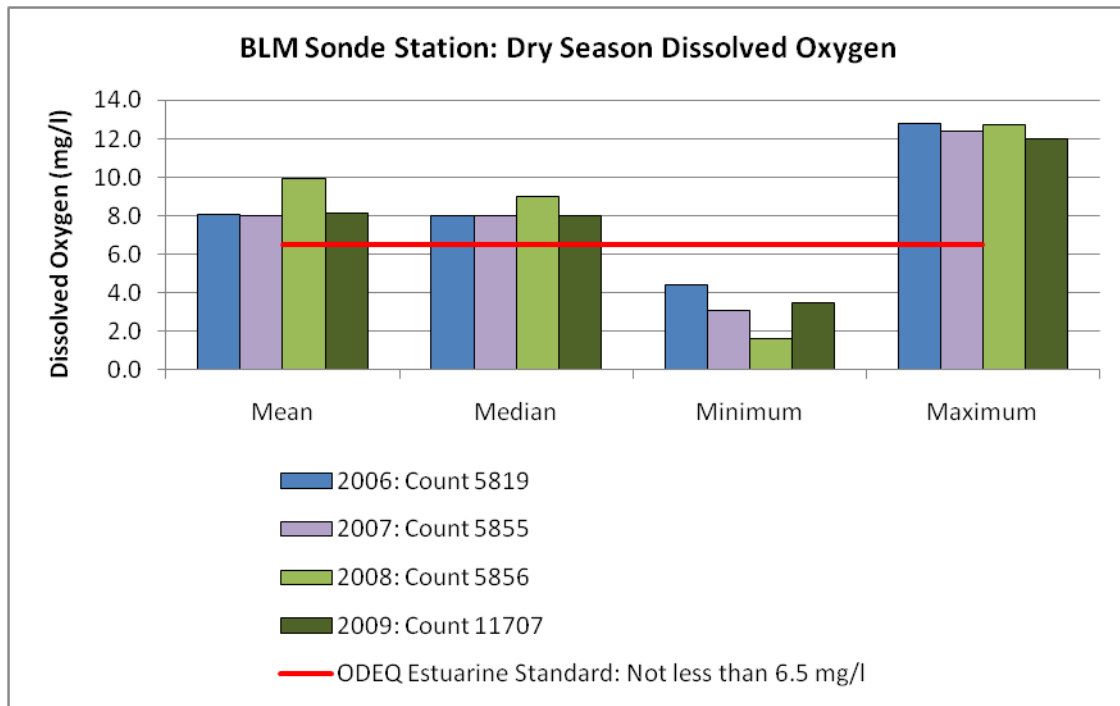
BLM Sonde Station Wet Season (October to May): Water Years 2006 (Abbreviated: 04/2006 to 05/2006), 2007, 2008, and 2009



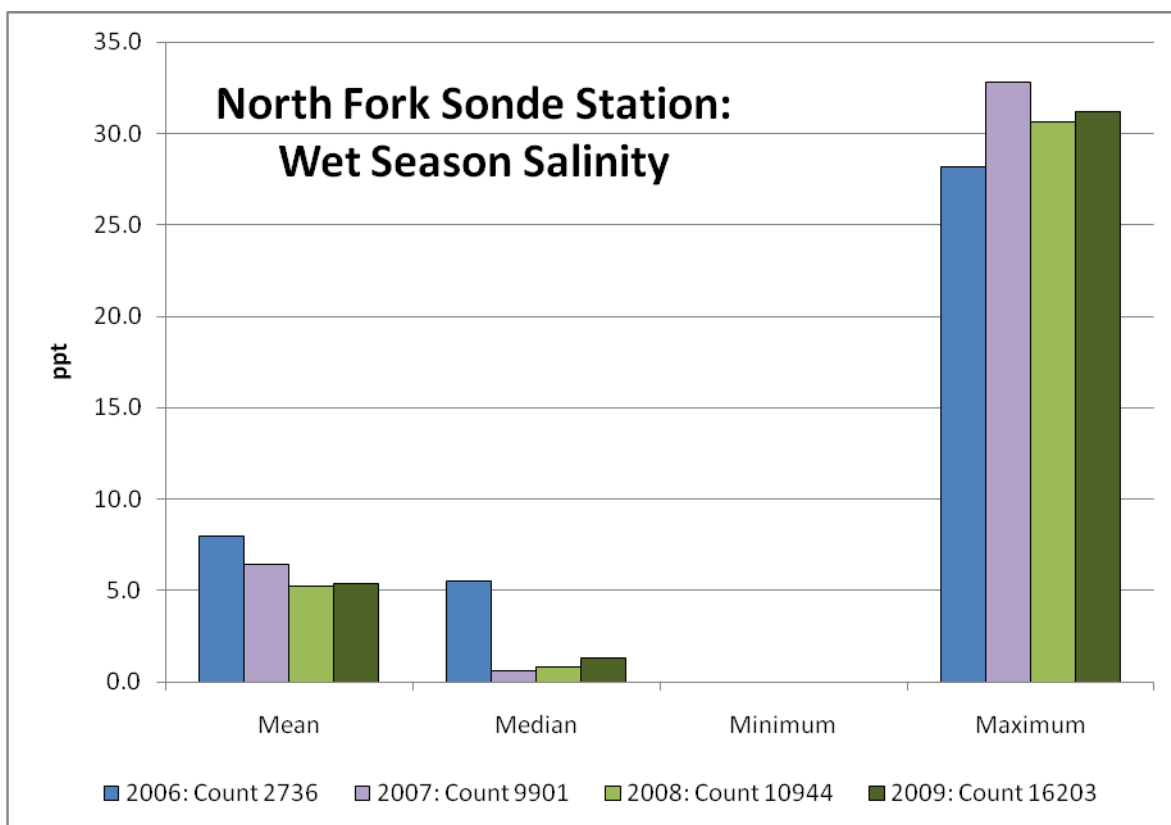
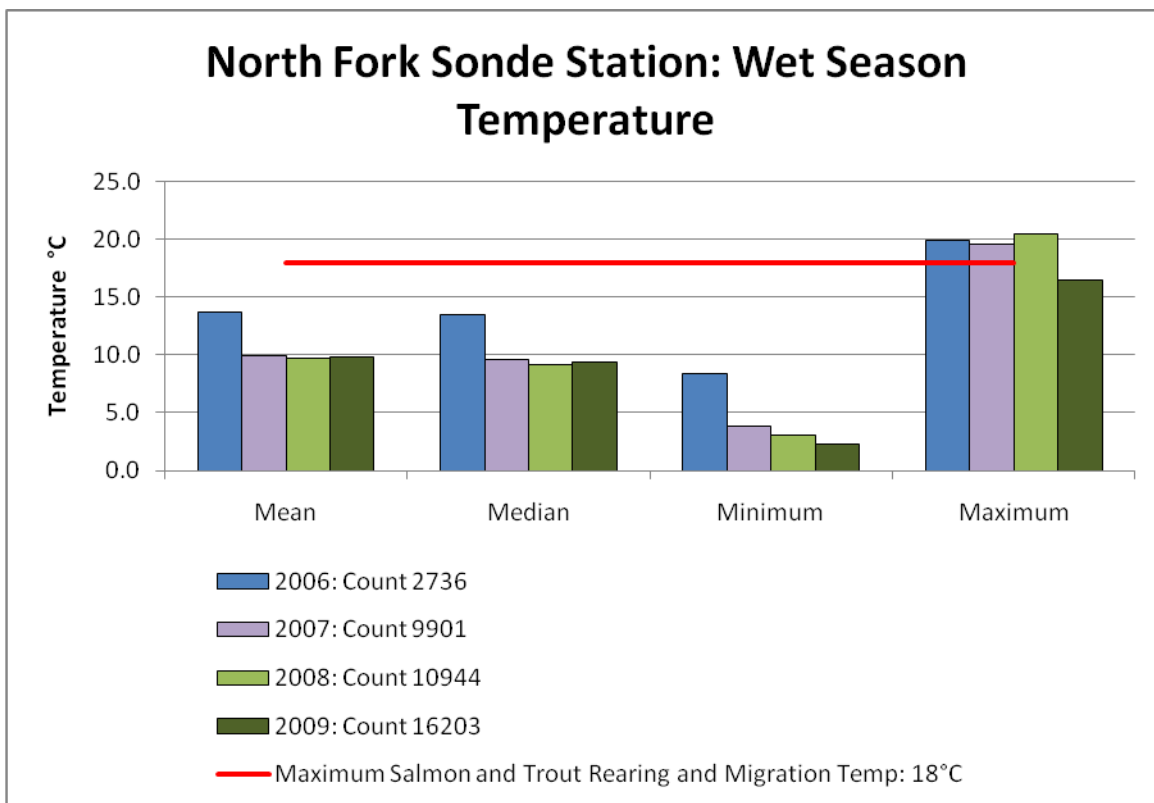
BLM Sonde Station Dry Season (June to September): Water Years 2006, 2007, 2008, and 2009



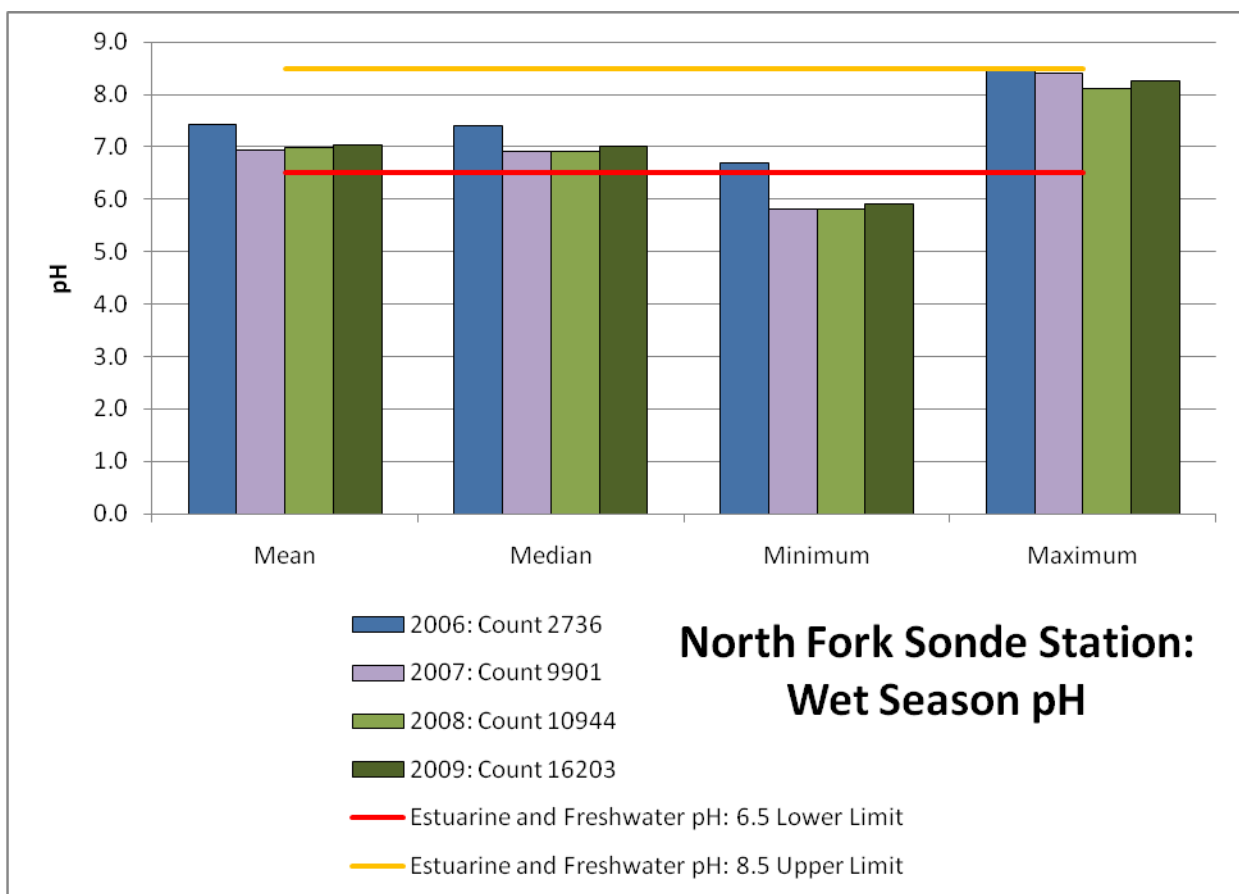
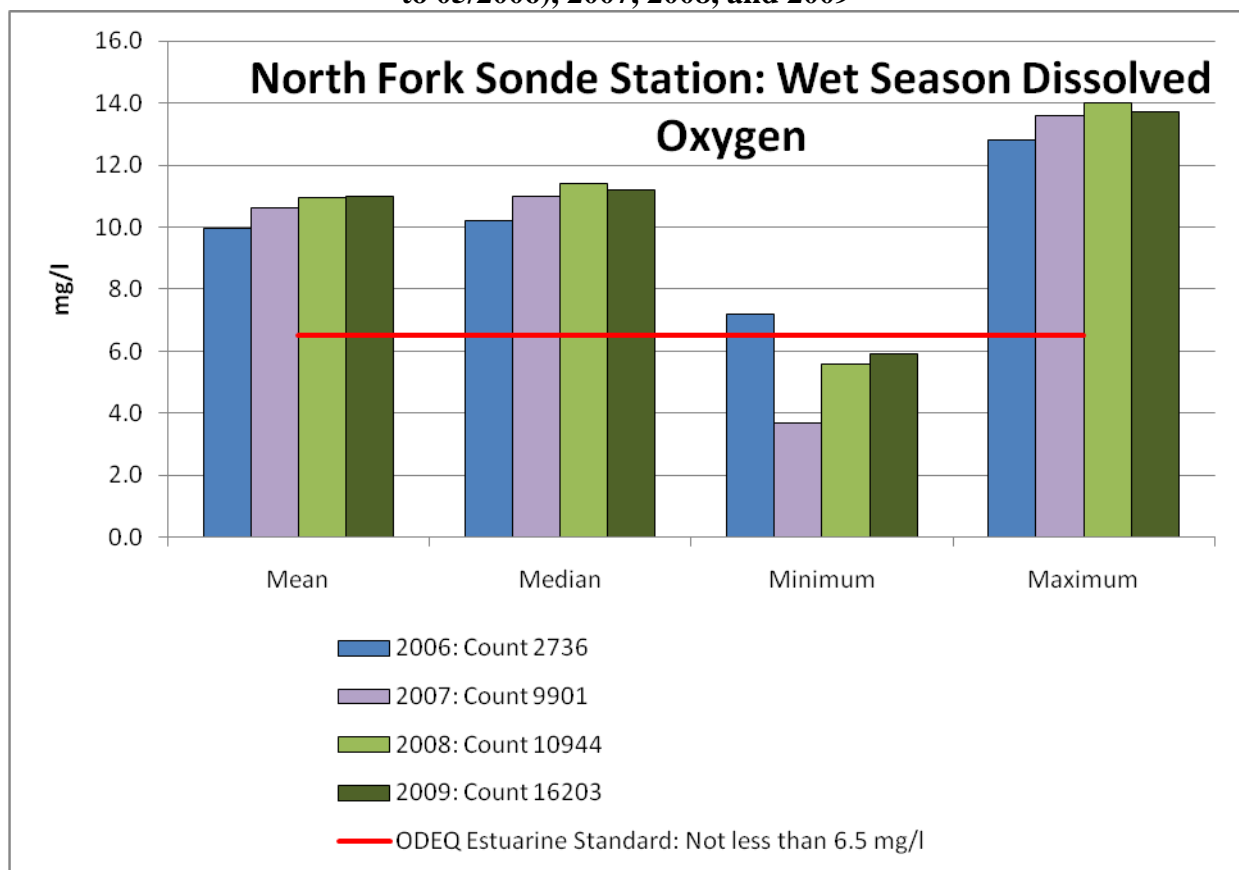
BLM Sonde Station Dry Season (June to September): Water Years 2006, 2007, 2008, and 2009



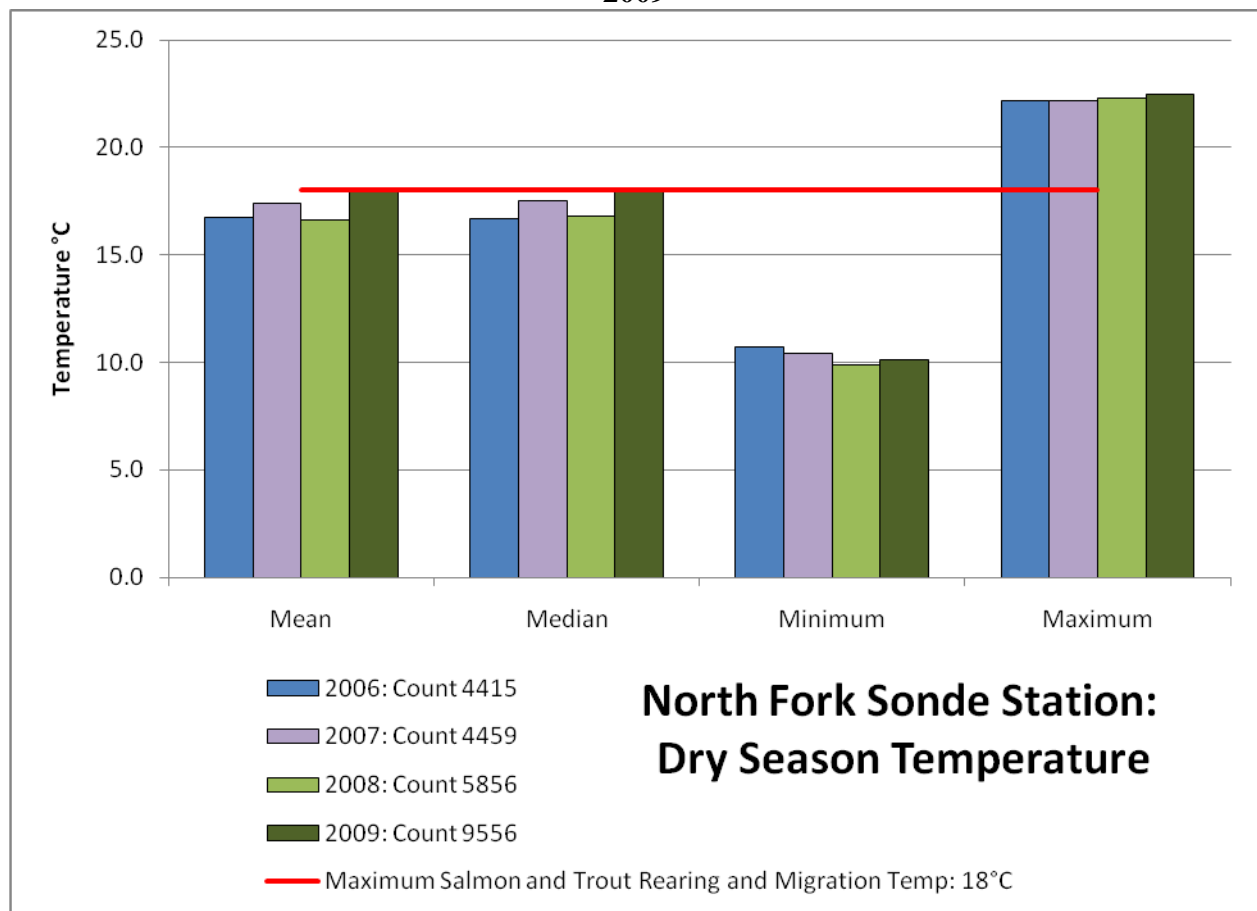
North Fork Sonde Station Wet Season (October to May): Water Years 2006 (Abbreviated: 04/2006 to 05/2006), 2007, 2008, and 2009

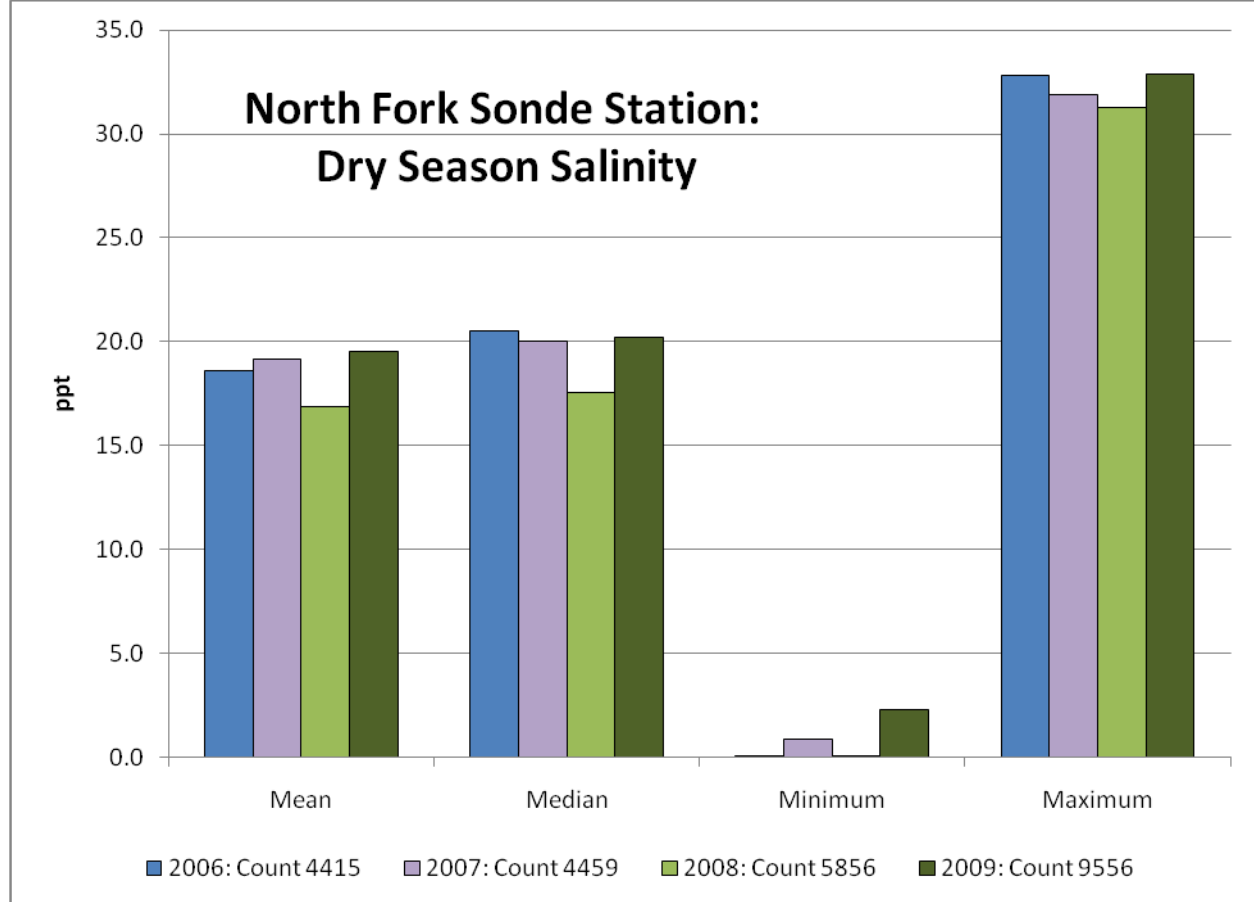


North Fork Sonde Station Wet Season (October to May): Water Years 2006 (Abbreviated: 04/2006 to 05/2006), 2007, 2008, and 2009

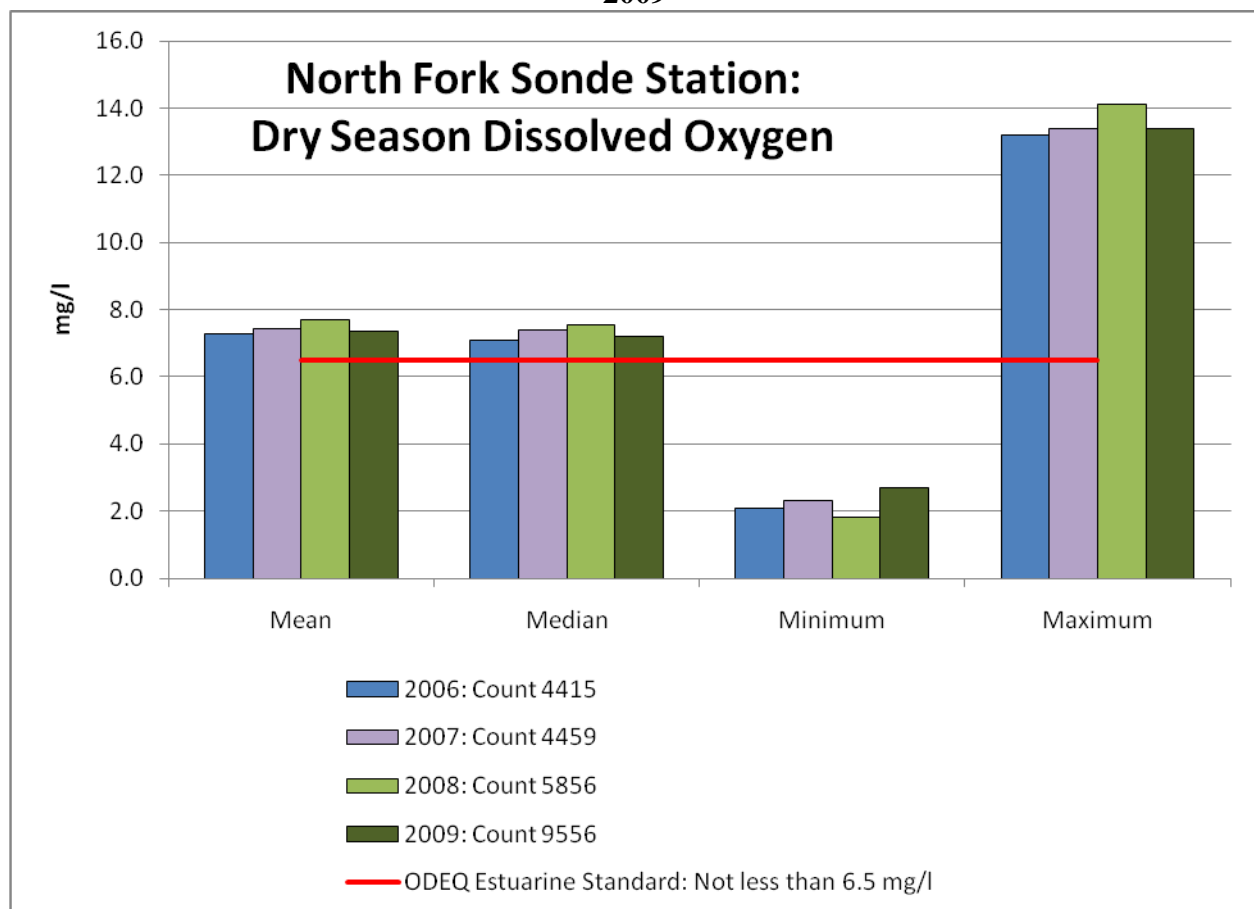


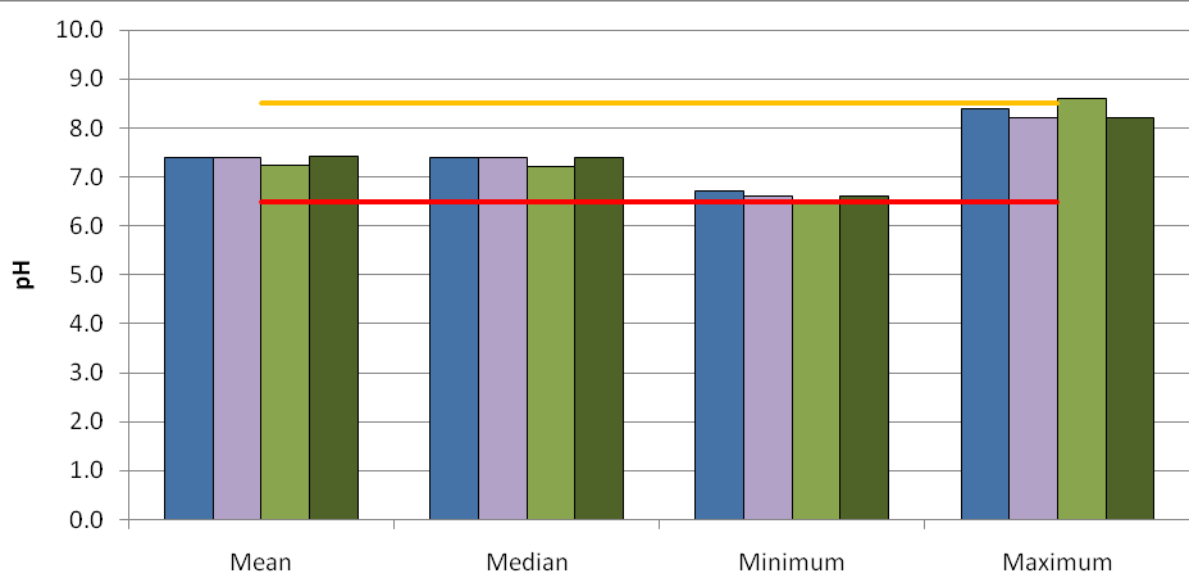
North Fork Sonde Station Dry Season (June to September): Water Years 2006, 2007, 2008, and 2009





North Fork Sonde Station Dry Season (June to September): Water Years 2006, 2007, 2008, and 2009





2006: Count 4297

2007: Count 4459

2008: Count 5856

2009: Count 9556

Estuarine and Freshwater pH: 6.5 Lower Limit

Estuarine and Freshwater pH: 8.5 Upper Limit

North Fork Sonde Station: Dry Season pH

Appendix B: QA/QC

Quality Control for Meters and Probes:

All meters and probes will be calibrated in accordance to the equipments operations manual prior to field deployment.

Quality Control for Microbiological Water Sampling:

A 1:10 dilution will be used when running analytical E-Coli and *enterococcus* procedures. Field samples will be allowed to reach room temperature (per IDEXX recommended protocols) before they are diluted. 10ml of each water sample will be pipetted into a sterile, freshly opened, 120ml IDEXX sample bottle and quickly capped. After preparing all the samples taken for that day in the same way, distilled water will be decanted into the lab sample bottle so that the bottle is filled to the 100ml line.

Blanks

For every sampling event, blanks of the distilled water used for the 1:10 sample dilutions will be run.

Replicate Samples

One sample site will be chosen as a replicate site for each sampling event.

Split Samples

For every 10 samples taken a split sample will be randomly chosen. A split sample consists of taking an additional 10 ml from the original sample bottle and testing it for E-Coli or enterococcus.

The IDEXX Lab will be quality controlled as specified in the IDEXX User Manual.

Nutrient Sampling Protocol:

Field Grab Samples:

At all sites, field calibration data including water temperature, salinity, specific conductance, and dissolved oxygen will be recorded with a hand-held YSI 556, Hach 2100 turbidity meter, and Beckman 450 pH meter. All grab samples will be taken on the same day between 3 hours before slack low water and slack low water. Efforts will be made to sample during spring tides at low-low tide, although this will not always be feasible due to the timing of tides and schedules of staff. Efforts will also be made to sample following a 72-hour dry period unless it substantially impacts the interval between semi-annual runs.

At each site, three consecutive samples (duplicates) will be collected using 1L amber, wide-mouth, Nalgene bottles.

Sample bottles and equipment will be rinsed in tap water three times, acid washed (10% HCL), then in deionized water three times, then ambient water in the field three times. After a sample is collected, sample bottles will be immediately capped, placed on ice in the dark, and returned to the CTCLUSI laboratory. In the laboratory, samples will be stored at 4°C until filtration. Water samples will be filtered and within 24 hours of collection.

Entry Verification

Analysis results will be sent from the University of Washington Marine Chemistry Laboratory or other outside laboratory in Excel format. Files will consist of sampling station ID, date, replicate number, and parameter values expressed in unit concentrations.

Instrument/Equipment Testing, Inspection, and Maintenance Requirements

All equipment (meters, probes, lab, and data loggers) will be tested and calibrated prior to deployment as stated in the equipments operations manuals. Equipment that fails to calibrate or is malfunctioning in any other way will not be used to collect water quality data until the equipment is repaired. Equipment log sheets will be placed in a folder to document all calibrations and testing. The Environmental Specialist will ensure that all equipment is in proper working order for the project.

Incubator temperatures will be recorded twice daily during microbiological analysis, with each reading separated by at least 4 hours.