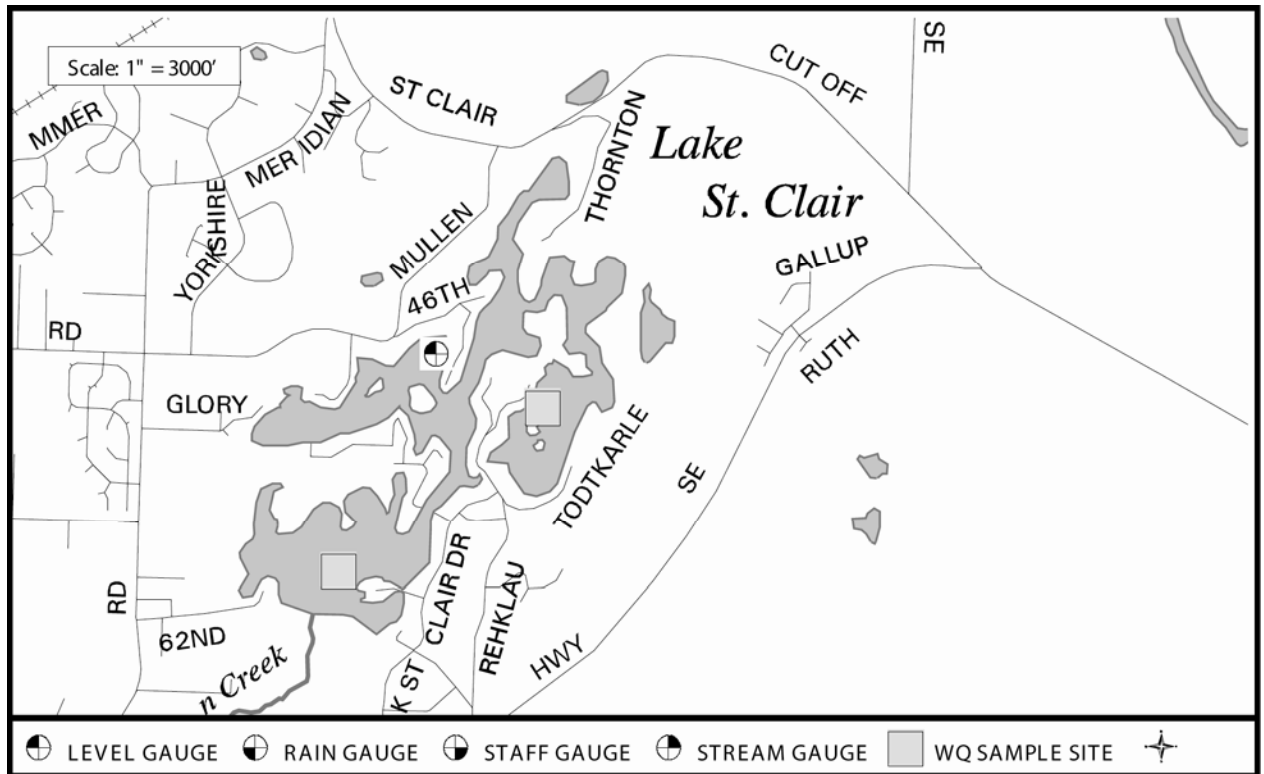


Nisqually Watershed

WRIA 13

Chapter Includes:

**Lake St. Clair
McAllister Creek**



PART OF Nisqually Inlet WATERSHED
SHORELINE LENGTH: 10.4 miles

LAKE SIZE: 268 acres

BASIN SIZE: 20.9 square miles

MEAN DEPTH: 34 feet

MAXIMUM DEPTH: 110 feet

VOLUME: 8,700 acre-feet

PRIMARY LAND USES:

Forestry and agriculture upland, with dense residential development along the shoreline. Some homeowners still use the lake as their domestic water source.

PRIMARY LAKE USES:

Fishing, boating, swimming, and domestic water supply.

PUBLIC ACCESS:

Two Department of Fish and Wildlife public boat launches.

GENERAL TOPOGRAPHY:

The approximate altitude of the lake is 73 feet. It is an irregularly shaped lake formed by ice blocks left during the glacial age. It has steep sides, numerous narrow arms, and four islands. Eaton Creek flows into the lake from the south, and water seeps out of the lake to the north and discharges to McAllister Springs, the City of Olympia water supply.

GENERAL WATER QUALITY:
 (Excellent, Good, Fair, and Poor)

Good - This lake is considered mesotrophic, or moderately productive. Algae growth and water clarity are somewhat limited by the natural dark brown “tea-color” of the water.

OTHER DATA:

Washington Department of Ecology,
Environmental Assessment Program, (360)
407-6700 (water quality data).

Water Quality Data - Thurston County
Environmental Health Division,
www.co.thurston.wa.us/health/ehswat/swater.htm (360) 754-4111.

City of Olympia, Public Works Department,
(360) 753-8314, (lake level data)

GENERAL DISCUSSION:

Due to the very irregular shape of the lake with somewhat isolated basins, steep slopes, and depths of over 100 feet the water quality conditions vary between basins. Eaton Creek is the only surface water input, which discharges to the lake in the largest and deepest, southwest basin. Groundwater seeps out of the lake to the north to McAllister Springs, a City of Olympia water supply. The lake is a natural dark brown "tea-color" which restricts light penetration, limiting aquatic plant and algae growth. Many of the land owners along this lake have maintained the shoreline in its natural condition, providing valuable wildlife and fish habitat. However, increased shoreline development could threaten to alter that condition.

Sampling is done at two locations, the large southwest basin and the eastern basin. Both the southwest and the east basins were strongly thermally stratified throughout the entire sampling period. This means that the lake developed a warm surface layer and a cooler bottom layer, as the solar radiation warmed the upper water. The surface water temperature in the east basin reached nearly 23 degrees Celsius in July. Typically, the warm surface water layer (or epilimnion) is only approximately two meters deep before the water temperature begins to cool. The water temperature from approximately 8 meters to the bottom in both basins was about 5 degrees Celsius from May through October.

The cold bottom layer of water, called the hypolimnion, is nearly devoid of oxygen (or anoxic) May through October in the big basin. The southwest basin had an anoxic zone at the bottom 8 meters of the lake in May increasing to 24 meters by October. The east basin had a much smaller anoxic zone of about 2 to 3 meters at the bottom throughout the sampling season. The east basin is similar to the large southwest basin in that there is a notable drop in dissolved oxygen at a depth between 4 and 6 meters followed by a slight increase, and then a decrease to anoxic conditions to the bottom. This "oxygen sag" may be due to the decomposition of algae cells, which settle to the bottom of the warm surface layer where the density difference in the two water layers prevents them from sinking further into the colder lower water. This is an annual phenomenon in Lake St. Clair which is not observed in any other Thurston County lakes. (See the temperature, dissolved oxygen, pH, and conductivity profile graphs on the following pages)

The 2007 season average secchi disk measurement in the "big" southwest basin was 2.3 meters (7.4 feet). Water clarity in the east basin is usually better than in the big basin. In the east basin, the average secchi disk measurement for 2007 was 2.5 meters (8.1 feet). The secchi disk reading graphs for the thirteen years of record are included on the pages following the field measurement profiles. The graph show no particular trend in water clarity in either basin, and the clarity remains relatively stable from year to year. The east basin is consistently clearer than the big southwest basin by about one-half to one meter.

In the big basin, the average total phosphorus concentration at the surface was 0.020 milligrams per liter in 2007. The state water quality action level for Puget Sound lowland lakes is 0.020 milligrams per liter. The most productive algae growth period in Lake St. Clair is spring. In the big basin, the chlorophyll *a* concentration in June 2007 was 24 micrograms per liter. It dropped to 5.3 in July and remained at 8 or less for through the October sampling. In the east basin, the chlorophyll level was 22 micrograms per liter in May then dropped to less than 6 through September.

Carlson trophic state indices (TSI) are used to express the degree of productivity of a lake. Average summer total phosphorus concentrations, chlorophyll *a* concentrations, and secchi disk transparency are each used to calculate a TSI for the lake. A TSI of 0 to 40 indicates an oligotrophic, or low productivity lake. A TSI of 41 to 50 indicates a mesotrophic, or moderately productive lake. A TSI of greater than 50 indicates a eutrophic, or highly productive lake.

The 2007 TSIs for the southwest (big) basin of Lake St. Clair for total phosphorus, chlorophyll *a*, and secchi disk are 47, 54, and 48, respectively. The east basin 2007 TSIs for total phosphorus, chlorophyll, and secchi disk transparency are 43, 51, and 47, respectively. These TSIs indicate that both basins are in a moderately productive, or mesotrophic, condition. The east basin TSIs are slightly lower than in the southwest basin, indicating better water quality. Graphs of TSIs for the past thirteen years for both basins are included on the pages following the field measurement profiles.

Major Issues:

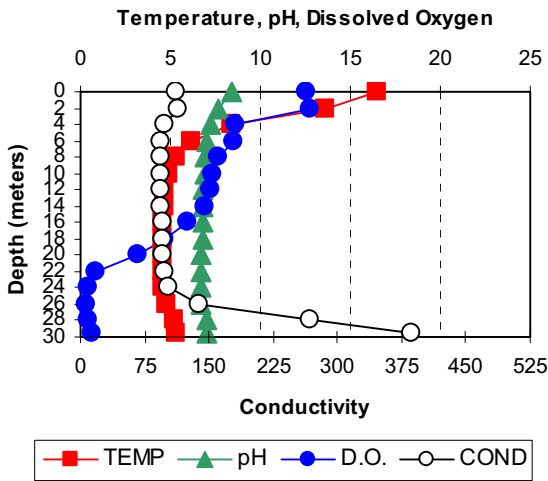
- Lake St. Clair is a major source of water to McAllister Springs, a City of Olympia water supply.
- The City of Olympia is developing a well field for the municipal water supply near the lake, the pumping of which may influence the lake level. The lake level is being monitored by the City. If the water withdrawal at the well field significantly affects the lake level, mitigation may be necessary.
- High lake levels in past wet years caused shoreline residents to voice concerns about erosion and property damage caused by boat and jet ski wakes in the big southwest basin.

Funding Sources:

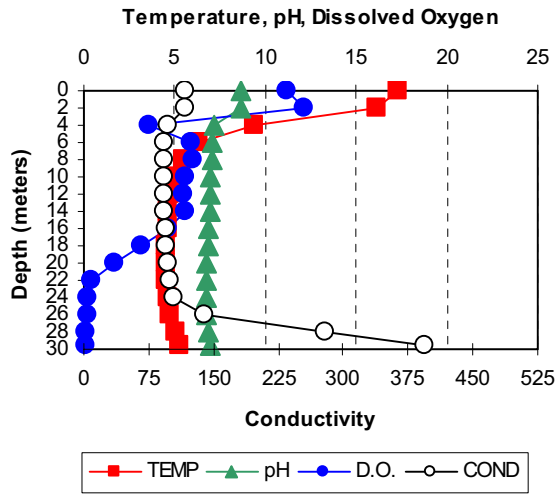
Monitoring was funded by Thurston County and will be continued in 2008.

LAKE ST. CLAIR – BIG BASIN

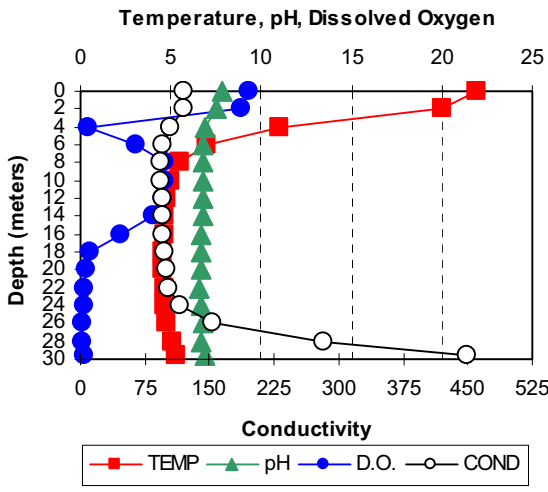
May 22 2007



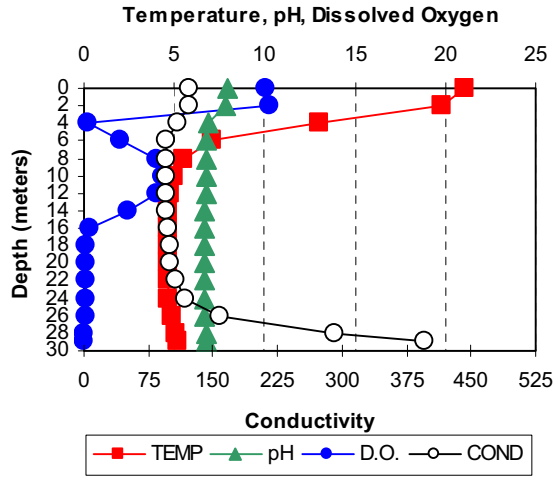
June 19 2007



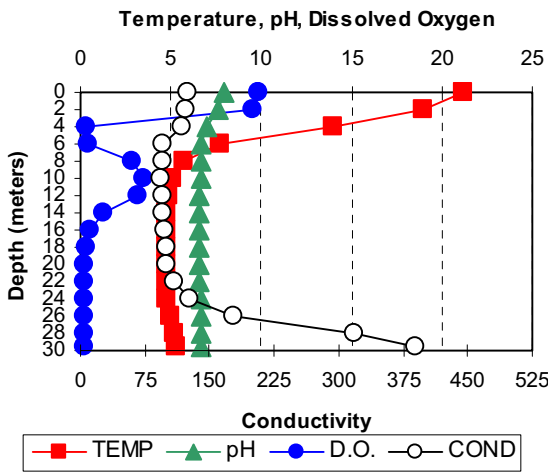
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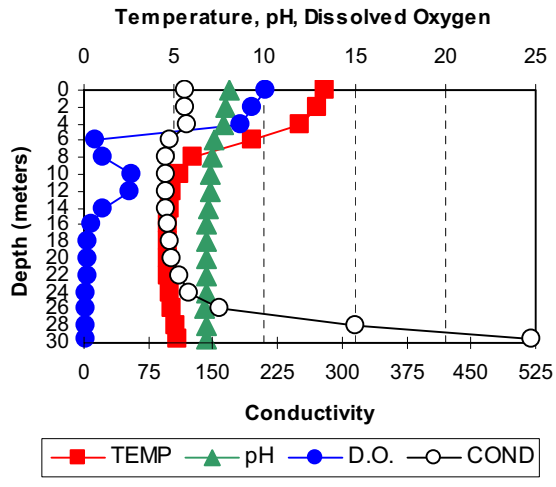
August 13, 2007



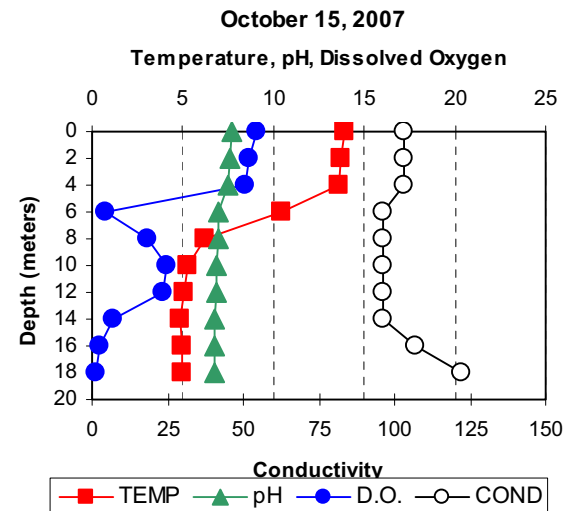
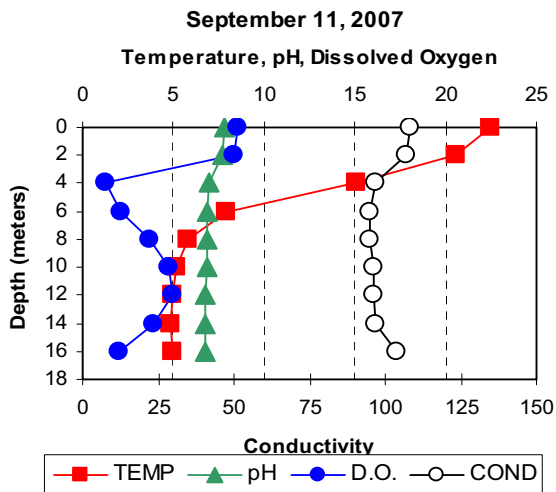
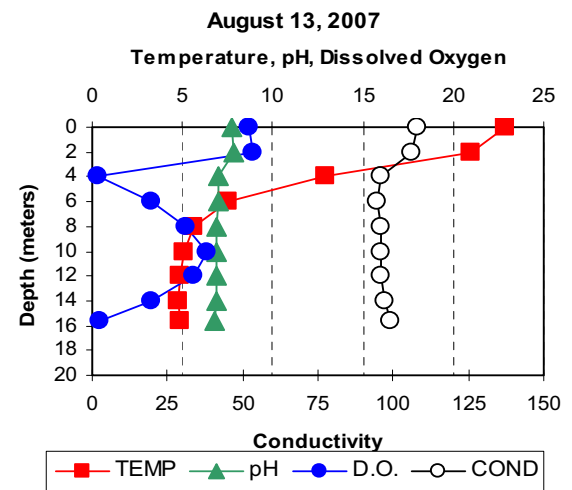
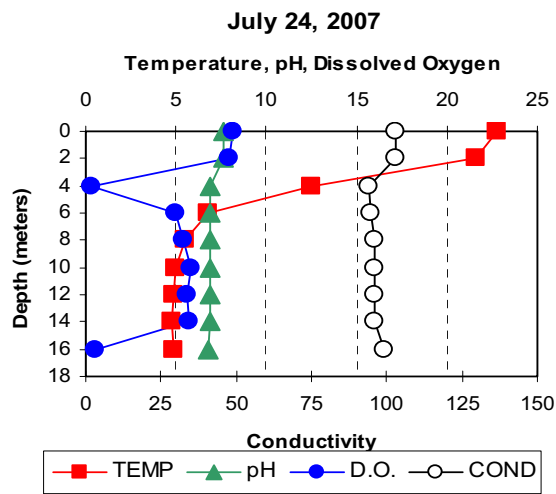
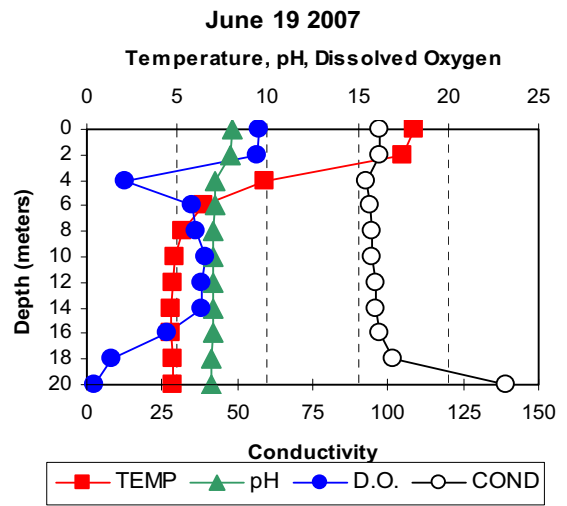
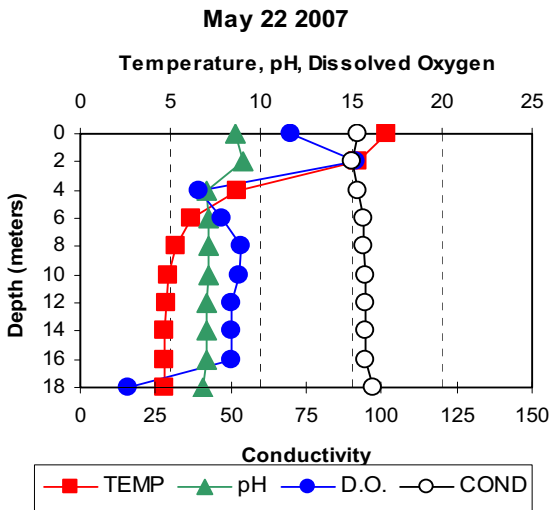
September 11, 2007



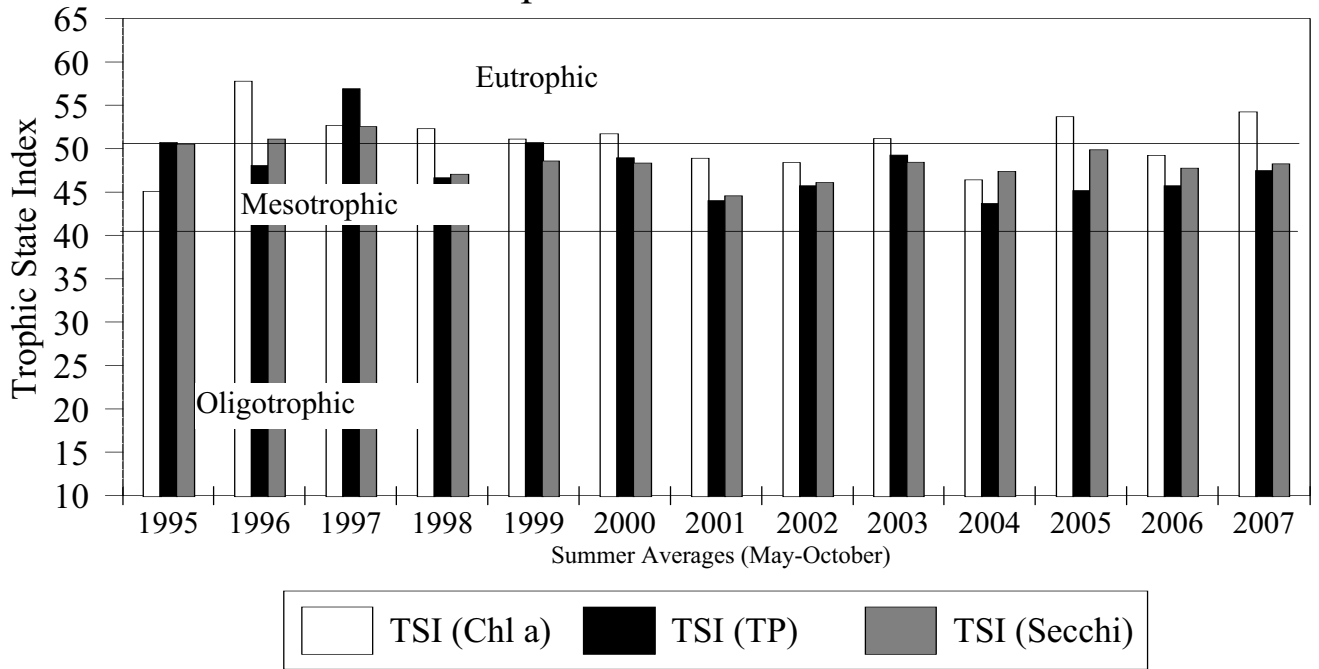
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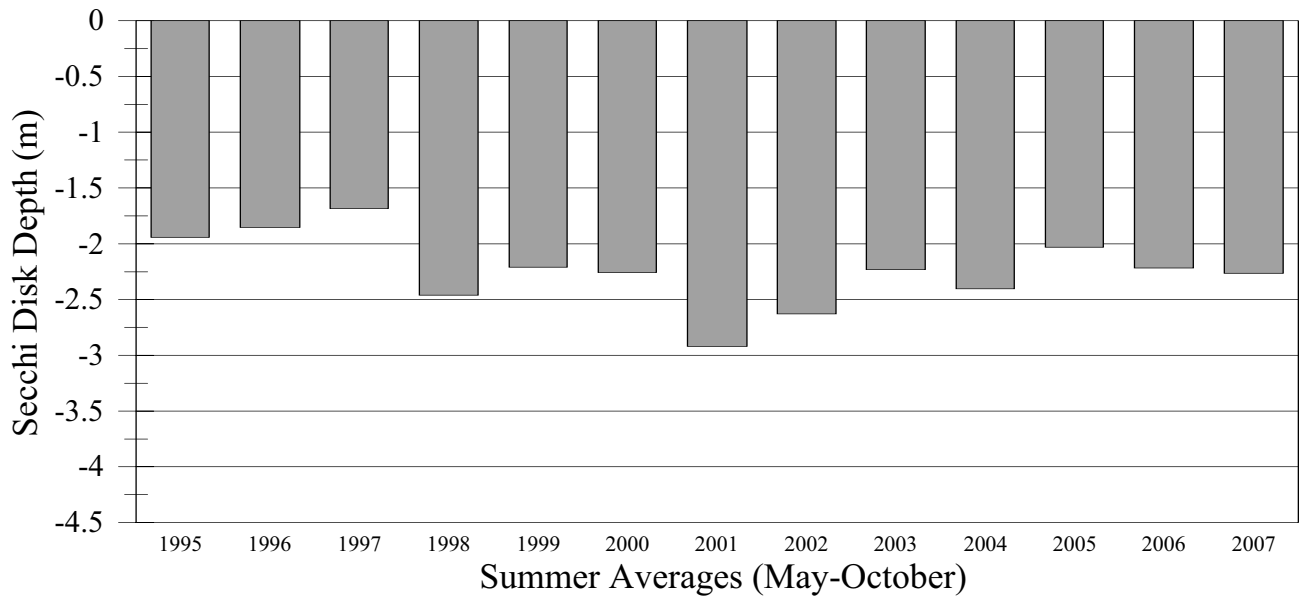
LAKE ST. CLAIR – EAST BASIN



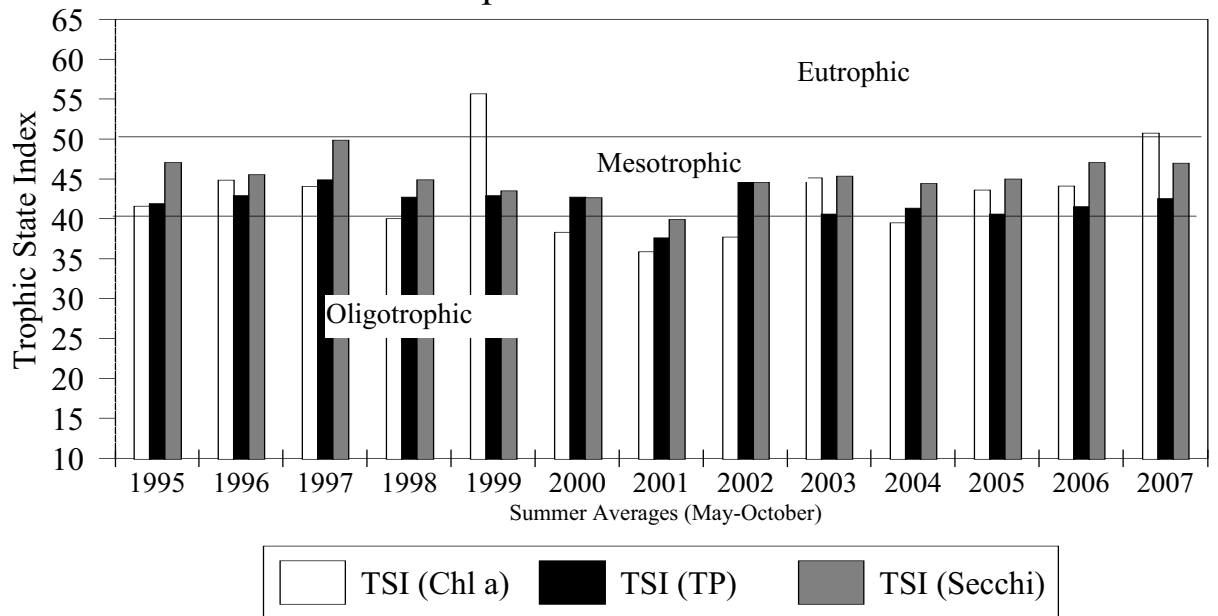
Lake St Clair - Big Basin Trophic State Indices



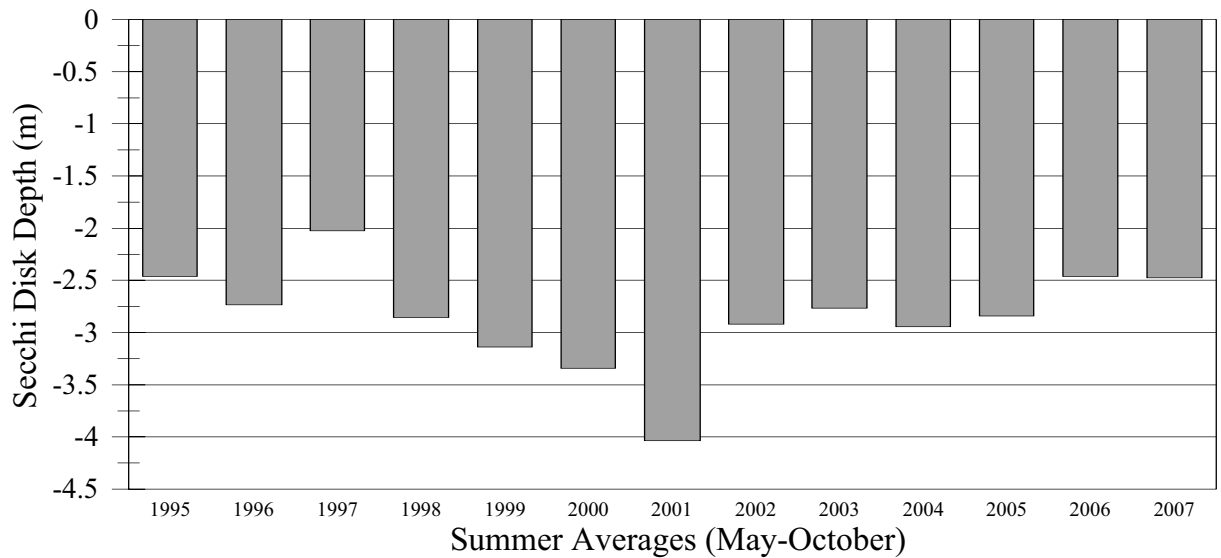
Secchi Disk Readings



Lake St Clair - East Basin Trophic State Indices



Secchi Disk Readings



Thurston County Water Resources Annual Report - 2007

St. Clair Lake @ SW Basin

Site ID# NISSTL010

Date	Time	Bottom Depth m	Bottom Sample Depth m	Sur TP mg/L	Bott TP mg/L	Sur TN mg/L	Bott TN mg/L	Secchi m	Chl a ug/L	Phae a ug/L	Water Color	Lake Notes
05/22/2007	12:00:00 PM	29.5	28.0	0.027	0.736	0.793	4.300	1.44	18	2.8	#9 dk orange	Chl a & algae composite @ 1, 2, & 3M. Gage- 68.30.
06/19/2007	10:00:00 AM	29.5	28.0	0.017	0.989	0.398	1.580	2.16	24	0.6	#7 orange	Chl a & algae composite @ 1, 2, & 3M. Staff gage - 68.00
07/24/2007	2:00:00 PM	29.6	28.0	0.017	0.958	0.462	5.650	2.42	5.3	1	#7 yellow-orange	Chl a & algae composite @ 1 & 2M. Staff gage - 67.86.
08/13/2007	1:30:00 PM	29	28.0	0.013	0.810	0.476	4.180	2.47	5.3	2.1	#7 yellow-orange	Chl a & algae composite @ 1 & 2M. Staff gage - 67.58.
09/11/2007	2:40:00 PM	29.5	28.0	0.012	0.958	0.414	3.390	2.93	6.4	1.4	#7 yellow	Chl a & algae composite @ 1 & 2M. Staff gage - 67.48.
10/15/2007	11:00:00 AM	29.6	28.0	0.035	0.904	0.468	4.930	2.13	8	6.9	#8 orange	Chl a & algae composite @ 1, 2, & 3M. Staff gage - 67.78.

Summary for 'Site Description' = St. Clair Lake @ SW Basin (6 detail records)

Averages: Sur TP 0.020
 Secchi 2.26
 Chl a 11.2

Thurston County Water Resources Annual Report - 2007

St. Clair Lake @ East Basin

Site ID# NISSTL020

Date	Time	Bottom Depth m	Bottom Sample Depth m	Sur TP mg/L	Bott TP mg/L	Sur TN mg/L	Bott TN mg/L	Secchi m	Chl a ug/L	Phae a ug/L	Water Color	Lake Notes
05/22/2007	12:45:00 PM	18	17.0	0.020	0.031	0.666	0.861	1.72	22	2.2	#9 dk orange	Chl a & algae composite @ 1, 2, & 3M.
06/19/2007	10:45:00 AM	20	18.0	0.016	0.067	0.482	0.535	2.58	2.1	3.8	#7 orange	Chl a & algae composite @ 1, 2, & 3M.
07/24/2007	2:45:00 PM	16	15.0	0.014	0.038	0.405	0.566	2.53	5.3	2.1	#7 yellow-orange	Chl a & algae composite @ 1 & 2M.
08/13/2007	2:30:00 PM	15.6	15.0	0.013	0.040	0.386	0.552	2.56	4.3	1.3	#9 dk orange	Chl a & algae composite @ 1 & 2M.
09/11/2007	3:00:00 PM	16.8	16.0	0.009	0.049	0.384	0.543	2.87	2.1	2.2	#7 yellow	Chl a & algae composite @ 1 & 2M.
10/15/2007	11:50:00 AM	18.2	17.0	0.014	0.187	0.473	0.717	2.55	11	2.6	#8 orange	Chl a & algae composite @ 1, 2, & 3M.

Summary for 'Site Description' = St. Clair Lake @ East Basin (6 detail records)

Averages: Sur TP 0.014
 Secchi 2.47
 Chl a 7.8

Algae data: St. Clair Lake @ SW Basin

	<i>Type</i>	<i>Description</i>	<i>Dominant in Sample</i>
<i>05/22/2007</i>			
	BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
	CP	Chroomonas species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	DF	Ceratium species	<input type="checkbox"/>
	DT	Asterionella species	<input type="checkbox"/>
	GR	Sphaerocystis schroeteri	<input type="checkbox"/>
<i>06/19/2007</i>			
	BG	Aphanizomenon flos-aquae	<input checked="" type="checkbox"/>
	CP	Chroomonas species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	GR	Sphaerocystis schroeteri	<input type="checkbox"/>
<i>07/24/2007</i>			
	BG	Anabaena species	<input type="checkbox"/>
	BG	Aphanizomenon flos-aquae	<input checked="" type="checkbox"/>
	CP	Chroomonas species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	DT	Cyclotella species	<input type="checkbox"/>
	DT	Fragilaria species	<input type="checkbox"/>
	GR	Ankistrodesmus species	<input type="checkbox"/>
	GR	Botryococcus species	<input type="checkbox"/>
	GR	Sphaerocystis schroeteri	<input type="checkbox"/>
	YL	Dinobryon species	<input type="checkbox"/>

<i>Type</i>	<i>Description</i>	<i>Dominant in Sample</i>
<i>08/13/2007</i>		
BG	Anabaena species	<input type="checkbox"/>
BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
BG	Chroococcus species	<input type="checkbox"/>
CP	Chroomonas species	<input type="checkbox"/>
CP	Cryptomonas species	<input type="checkbox"/>
DF	Ceratium species	<input type="checkbox"/>
DT	Asterionella species	<input type="checkbox"/>
DT	Cyclotella species	<input type="checkbox"/>
GR	Ankyra judayi	<input type="checkbox"/>
GR	Botryococcus species	<input type="checkbox"/>
GR	Eutetramorus globosus	<input type="checkbox"/>
GR	Oocystis species	<input type="checkbox"/>
GR	Sphaerocystis schroeteri	<input type="checkbox"/>
YL	Dinobryon species	<input type="checkbox"/>

09/11/2007

BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
BG	Chroococcus species	<input type="checkbox"/>
CP	Chroomonas species	<input type="checkbox"/>
CP	Cryptomonas species	<input type="checkbox"/>
DF	Ceratium species	<input type="checkbox"/>
DT	Asterionella species	<input type="checkbox"/>
DT	Cyclotella species	<input type="checkbox"/>
GR	Radiococcus nimbatus	<input type="checkbox"/>
YL	Dinobryon species	<input type="checkbox"/>

<i>Type</i>	<i>Description</i>	<i>Dominant in Sample</i>
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10/15/2007

BG	Anabaena species	<input type="checkbox"/>
BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
BG	Chroococcus species	<input type="checkbox"/>
CP	Chroomonas species	<input type="checkbox"/>
CP	Cryptomonas species	<input type="checkbox"/>
DF	Ceratium species	<input type="checkbox"/>
DT	Fragilaria species	<input type="checkbox"/>
EU	Euglena species	<input type="checkbox"/>
EU	Trachelomonas species	<input type="checkbox"/>
GR	Ankyra judayi	<input type="checkbox"/>
GR	Sphaerocystis schroeteri	<input type="checkbox"/>
YL	Dinobryon species	<input type="checkbox"/>
YL	Synura species	<input type="checkbox"/>

Key: BG = Blue green EU = Euglenophyte
 CP = Cryptophyte GR = Green
 DF = Dinoflagellate YL = Yellow
 DT = Diatom

Algae data: St. Clair Lake @ East Basin

	<i>Type</i>	<i>Description</i>	<i>Dominant in Sample</i>
<i>05/22/2007</i>			
	BG	Anabaena species	<input type="checkbox"/>
	BG	Aphanizomenon flos-aquae	<input checked="" type="checkbox"/>
	CP	Chroomonas species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	DT	Asterionella species	<input type="checkbox"/>
	DT	Cyclotella species	<input type="checkbox"/>
<i>06/19/2007</i>			
	BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
	BG	Chroococcus species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	DF	Ceratium species	<input type="checkbox"/>
	DT	Asterionella species	<input type="checkbox"/>
	DT	Cyclotella species	<input type="checkbox"/>
	GR	Oocystis species	<input type="checkbox"/>
	GR	Sphaerocystis schroeteri	<input type="checkbox"/>
	GR	Staurastrum species	<input type="checkbox"/>
<i>07/24/2007</i>			
	BG	Anabaena species	<input type="checkbox"/>
	BG	Aphanizomenon flos-aquae	<input type="checkbox"/>
	BG	Chroococcus species	<input type="checkbox"/>
	CP	Cryptomonas species	<input type="checkbox"/>
	DF	Ceratium species	<input type="checkbox"/>
	DT	Cyclotella species	<input type="checkbox"/>
	DT	Fragilaria species	<input type="checkbox"/>
	GR	Ankistrodesmus species	<input type="checkbox"/>
	GR	Ankyra judayi	<input type="checkbox"/>
	GR	Sphaerocystis schroeteri	<input type="checkbox"/>
	GR	Staurastrum species	<input type="checkbox"/>
	YL	Dinobryon species	<input type="checkbox"/>

<i>Type</i>	<i>Description</i>	<i>Dominant in Sample</i>
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08/13/2007

BG	Chroococcus species	<input type="checkbox"/>
CP	Chroomonas species	<input type="checkbox"/>
CP	Cryptomonas species	<input type="checkbox"/>
DF	Ceratium species	<input type="checkbox"/>
DT	Cyclotella species	<input type="checkbox"/>
DT	Fragilaria species	<input type="checkbox"/>
EU	Trachelomonas species	<input type="checkbox"/>
GR	Ankyra judayi	<input type="checkbox"/>
GR	Cosmarium species	<input type="checkbox"/>
GR	Dictyosphaerium pulchellum	<input type="checkbox"/>
GR	Elakatothrix species	<input type="checkbox"/>
GR	Sphaerocystis schroeteri	<input type="checkbox"/>
GR	Staurastrum species	<input type="checkbox"/>
YL	Dinobryon species	<input type="checkbox"/>
YL	Mallomonas species	<input type="checkbox"/>
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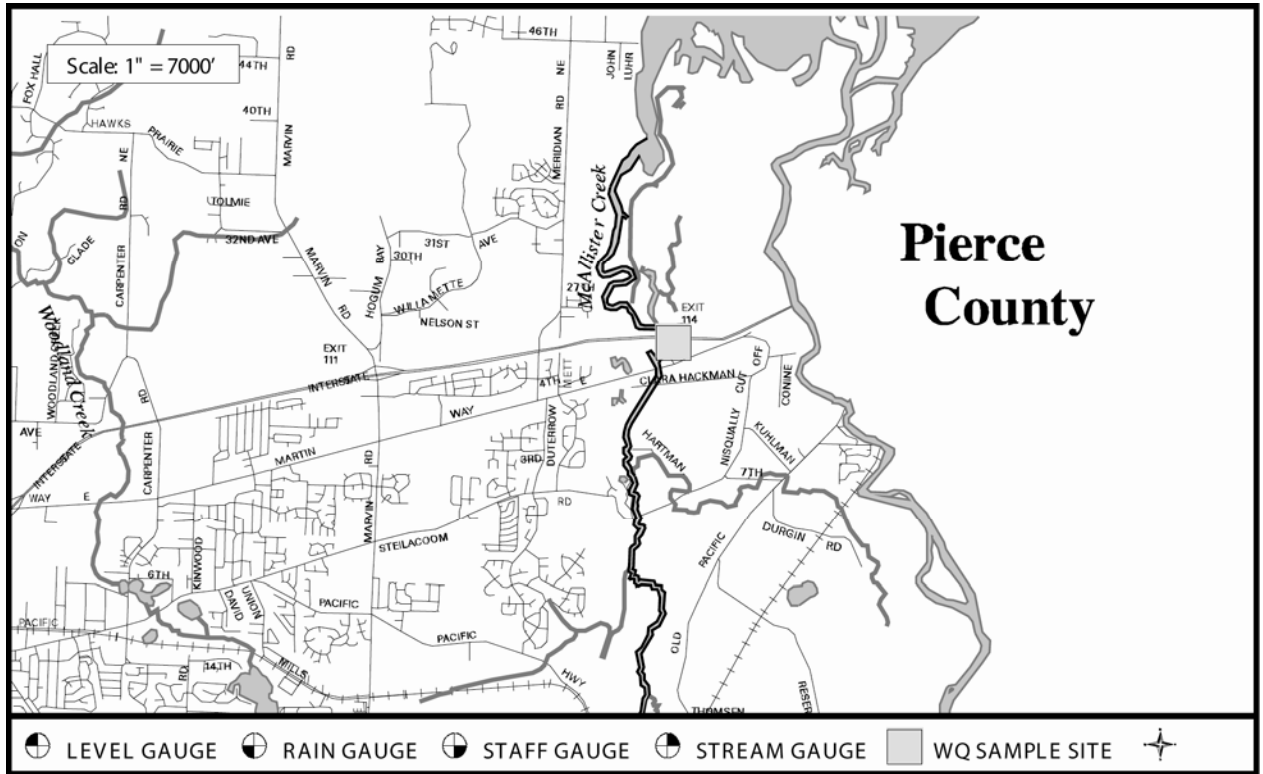
09/11/2007

CP	Chroomonas species	<input type="checkbox"/>
DT	Fragilaria species	<input type="checkbox"/>
EU	Trachelomonas species	<input type="checkbox"/>
GR	Oocystis species	<input type="checkbox"/>
GR	Radiococcus nimbatus	<input type="checkbox"/>

10/15/2007

CP	Cryptomonas species	<input type="checkbox"/>
DT	Fragilaria species	<input type="checkbox"/>
EU	Euglena species	<input type="checkbox"/>
GR	Ankistrodesmus species	<input type="checkbox"/>
YL	Synura species	<input type="checkbox"/>

Key: BG = Blue green EU = Euglenophyte
 CP = Cryptophyte GR = Green
 DF = Dinoflagellate YL = Yellow
 DT = Diatom



PART OF NISQUALLY REACH WATERSHED

LENGTH OF CREEK: 6 miles

BASIN SIZE: 7,078 Acres

STREAM ORDER: 2

Significantly influenced by public water withdrawal for City of Olympia.

PRIMARY LAND USES:

- Rural residential
- Commercial and non-commercial agriculture
- Timber
- Commercial development near I-5 interchange
- Wildlife refuge

FISHERIES RESOURCES: (From A Catalog of Washington Streams and Salmon Utilization, WDOF)

Coho, chum

GENERAL TOPOGRAPHY:

Watershed varies from 200 foot bluffs to sea level, but the entire creek is below 20 feet. The creek is tidally influenced throughout its length. Its sources are springs, which are used by the City of Olympia for public water supply.

GENERAL WATER QUALITY: (Excellent, Good, Fair, Poor)

Fair - Failed both parts of the fecal coliform standard for both water years. The dissolved oxygen standard was violated 10 of 11 times 2005/06 and 6 of 9 times 2006/07. The turbidity standard was violated 4 of 11 times 2006/07.

OTHER DATA:

- Nisqually Tribe, 438-8687 (Water Quality Data)
- Washington Dept. of Health, Office of Food Safety and Shellfish, (360) 236-3330

Thurston County Environmental Health Division, (360)754-4111 or www.co.thurston.wa.us/health/ehswat/swater.htm

McAllister Creek is sampled as part of the long-term ambient monitoring program. McAllister Creek is part of the Nisqually Reach Shellfish Protection District formed in 2001 after a downgrade of commercial shellfish growing areas. The creek was also sampled as part of a total maximum daily load study conducted by the Washington Department of Ecology. Using the technical study as a guide, development of a water clean-up plan is currently underway.

The creek is tidally influenced throughout most its length and has a very low gradient, both of which influence the water quality. The water quality standard for fecal coliform bacteria has two parts: the geometric mean shall not exceed 50 mg/100mL *and* no more than 10% of the samples shall exceed 100 colonies/100 mL. In 2005/06 the geometric mean was 94 colonies / 100 mL with 50% of the samples exceeding 100. In 2006/07 the geometric mean was 60 with 33% of the samples greater than 100. For dissolved oxygen, the water quality standard is a lowest one-day minimum of 9.5 mg/L. In 2005/06 this standard was exceeded ten of the twelve times it was measured. In 2006/07 the standard was not met six of the nine times.

Major Issues:

- Improvement and protection of McAllister Creek water quality is critical to maintain the commercial shellfish harvest businesses in Nisqually Reach near the mouth of the creek.
- Non-point pollution problems from agriculture and on-site sewage disposal systems influence the water quality. There are on-going efforts by local, state, and tribal agencies to protect and improve water quality.
- The McAllister Geologically Sensitive Area and City of Olympia wellhead protection program are intended to protect groundwater and McAllister Springs, which is the headwater of McAllister Creek.
- In 2001, the Nisqually Reach Shellfish Protection District was formed as a results of a commercial shellfish harvest area downgrade.

Funding Sources:

- Local Stormwater Utility Rate

Water Quality Summary
Conventional Parameters
McAllister Creek

Parameter	Units	WQ Standard WAC 173-201A	Water Year Data: 2005/06 and 2006/07				Cumulative Data: 1992-2005	
			Water Year	Mean	Range	# samples violating standard	Mean	Range
Temperature	°C	Highest 7-DAD Max of 16 °C	05-06		7.46 – 15.7	0 of 12		6.50 – 16.37
			06-07		8.78 – 13.85	0 of 12		
Dissolved Oxygen	mg/L	Lowest one-day minimum of 9.5	05-06		6.56 – 13.1	10 of 11		3.42 – 10.90
			06-07		6.02 – 10.2	6 of 9		
Conductivity	µmhos/cm		05-06	3697	11 – 19700			187 – 33960
			06-07	3498	278 – 26130		4162	
pH		6.5 – 8.5	05-06	7.1*	6.9 – 7.4	0 of 12		6.6 – 7.8
			06-07	7.2*	6.8 – 7.5	0 of 12		
Turbidity	NTU	not to exceed 5 NTU over background	05-06	4.08	1.9 – 7.5	0 of 9		1.3 – 22
			06-07	10.53	1.2 – 38	4 of 11	4.1	
Fecal Coliform	colonies/100 ml	GMV: ≤50 and ≤10% not to exceed 100	05-06	94**	20 – 375	% exceeding 100		5 – 7500
			06-07	60**	10 – 260		50% 33%	
Total Phosphorus	mg/L		05-06	0.163	0.123 – 0.226			0.112 – 0.197
			06-07	0.172	0.115 – 0.229		0.153	
Nitrate+Nitrite-nitrogen	mg/L		05-06	1.24	1.00 – 1.59			0.517 – 1.93
			06-07	1.18	0.704 – 1.53		1.15	

* Median

** Geometric mean value (GMV)

Thurston County Water Resources Monitoring Report 2005 - 2006 *McAllister Creek @ I-5*

<i>Date</i>	<i>Time</i>	<i>Temp C</i>	<i>pH</i>	<i>DO mg/L</i>	<i>Cond @25c umhos/cm</i>	<i>FC cfu/100mL</i>	<i>Turb NTU</i>	<i>Flow cfs</i>	<i>TP mg/L</i>	<i>NOx mg/L</i>	<i>COMMENTS</i>
10/11/2005	9:25:00 AM	10.89	7.2	6.56	583	115			0.172	1.130	Salinity 0.28. No turbidity measurement recorded.
11/8/2005	8:00:00 AM	8.02	7.1	8.51	454	65	3.7		0.226	1.180	Salinity = 0.22
12/5/2005	2:15:00 AM	7.46	7.0	9.43	12871	20	7.5		0.162	1.110	Salinity = 7.36
1/3/2006	2:00:00 PM	7.69	6.9	8.54	19700	20	6.0		0.123	1.000	Salinity = 11.7
2/6/2006	2:45:00 PM	8.11	6.9	8.90	2100	30	4.0		0.138	1.520	Salinity = 1.1
3/14/2006	1:25:00 PM	9.63	7.1	8.60	675	65	5.1		0.189	1.590	Salinity = .33
4/24/2006	9:45:00 AM	11.98	7.1	8.75	2297	175			0.143	1.290	Salinity = 1.2. No turbidity measurement.
5/16/2006	10:30:00 AM	14.48	7.0	8.84	3240	70	4.0		0.143	1.300	Salinity = 1.7
6/12/2006	11:30:00 AM	14.51	7.1	9.10	1021	210			0.155	1.250	salinity = .5. No turbidity measurement.
7/11/2006	12:20:00 PM	14.64	7.4		11	355	2.1		0.152	1.270	salinity = .54 no DO measurement
8/8/2006	1:00:00 PM	15.70	7.4	13.13	820	375	2.4		0.166	1.060	Samples not stored at proper temperature for 3-5 days, NO2+NO3 may be high
9/13/2006	8:45:00 AM	12.93	7.1	7.12	593	195	1.9		0.184	1.140	Salinity=0.29

Thurston County Water Resources Monitoring Report 2006 - 2007 *McAllister Creek @ I-5*

<i>Date</i>	<i>Time</i>	<i>Temp C</i>	<i>pH</i>	<i>DO mg/L</i>	<i>Cond @25c umhos/cm</i>	<i>FC cfu/100mL</i>	<i>Turb NTU</i>	<i>Flow cfs</i>	<i>TP mg/L</i>	<i>NOx mg/L</i>	<i>COMMENTS</i>
10/9/2006	12:15:00 PM	11.64	6.9	8.02	4163	260	4.3		0.161	1.200	Salinity =2.2
11/15/2006	8:45:00 AM	9.02	6.8	6.59	364	20	4.0		0.229	1.200	Salinity = 0.18
12/8/2006	1:15:00 PM	8.78	7.2	9.00	26130	10	38.0		0.142	0.735	Very turbid, outgoing flow. Salinity = 15.9, Sampled I-5 outfall to McAllister 1:25 (no rain, just trickling) Fc = <5
2/20/2007	1:00:00 PM	8.93	7.1	9.67	1818	125	30.8		0.197	1.180	Salinity = 0.93
3/20/2007	1:00:00 PM	10.21	7.2		1354	30	9.4		0.182	1.340	DO not working Salinity = 0.7
4/25/2007	2:00:00 PM	11.45	7.2	9.91	278	40	1.2		0.135	1.350	
5/16/2007	8:00:00 AM	13.85	7.4			55	12.5		0.115	0.704	Salinity=1.87, DO not working. No conductivity recorded, too much fluctuation.
6/13/2007	11:45:00 AM	13.50	7.3	8.38	758	90	1.6		0.148	1.340	Salinity = 0.37
7/18/2007	2:30:00 PM	13.67	7.0	6.02	799	60	3.0		0.206	1.020	
8/22/2007	7:50:00 AM	12.79	7.3	6.78	694	110	2.9		0.195	1.250	Salinity = 0.34
9/19/2007	9:00:00 AM	11.75	7.5		575	120			0.183	1.300	DO not working, No turbidity reading recorded. Water low but coming back in.