



Citizens' Environmental Monitoring Program



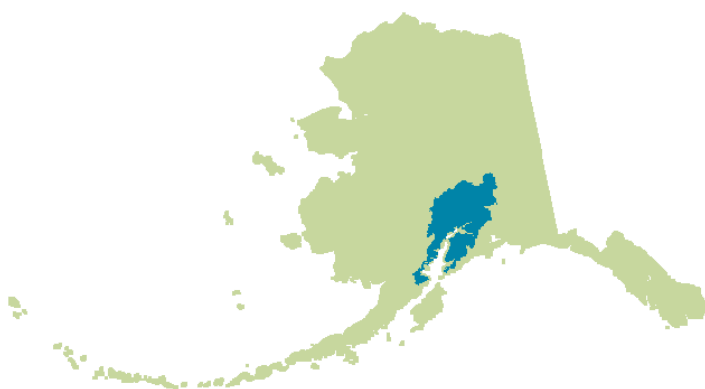
2011 Year In Review



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Cook Inletkeeper is a community-based non-profit organization that combines advocacy, outreach, and science toward its mission to protect Alaska's Cook Inlet watershed and the life it sustains.

Cover Photos:

(l-r) Volunteer Melisse Reichman samples for aquatic insects at Upper Woodard Creek, Lower Fritz Creek is located just below the bridge to Stone Step Lake, Cook Inletkeeper intern Eric Grazia samples at Ruby Creek, which was particularly turbid in August 2011.

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2011 In Review

Thanks to our wonderful volunteers, 2011 was another incredibly successful year of water quality monitoring for the Kachemak Bay Citizens' Environmental Monitoring Program! We had 100% complete datasets collected for our active sites, the second year of bioassessment conducted at five of these sites, and the release of two baseline reports. This is the second year in a row of 100% complete datasets on our streams, and we can't stress enough how important this is for baseline data collection. This obviously could not be done without the ongoing efforts of our volunteers – a continued big thank you to all of them!

In 2011, 15 volunteers donated 285 hours of their time collecting invaluable baseline water quality data at 10 sites, making a total of 148 site visits in the Homer area. All volunteers were re-certified in March at the Cook Inletkeeper laboratory. In October, a split sample was sent to Analytica Laboratory in Anchorage and a side-by-side site visit was conducted at No-Name Creek with volunteer Jim Levine (find out more about our quality assurance measures online at www.inletkeeper.org).

With the help of seven additional volunteers, we conducted the second year of aquatic invertebrate sampling at five CEMP sites in June and again in August. We placed temperature data loggers at five CEMP sites from May through October. We put out the 2010 Year In Review, distributed a fall CEMP Newsletter, and published two CEMP Baseline Water Quality Reports (Beaver Creek and Bidarka Creek). The weather was beautiful yet again for Splash Bash in July. We had good food and excellent music provided by Work In Progress. Congratulations to Lee and Jenny Dewees, our 2011 CEMP Volunteers of the Year. Lee was trained to be a CEMP volunteer water quality monitor in April 2009. Since that time, he and

Jenny have logged 125 hours caring for Diamond Creek and, more recently, Bridge Creek. We also want to give a big thanks to our interns Eric Grazia and Kira Olsen for their help and enthusiasm over the summer! ❁



Our Volunteers

Over 300 volunteers have been trained since 1996 to collect water quality data in the Homer area. Water quality monitors are dedicated to collecting high quality data for the Kachemak Bay and Anchor River Citizens' Environmental Monitoring Program, and through their efforts we are reaching our goal to document baseline water quality at priority streams in these watersheds. These data will help inform our conservation efforts and guide development projects to protect clean water and healthy salmon. ❀



Left Top: Summer interns Kira Olsen and Eric Grazia help make food for the 14th Annual Splash Bash in July 2011.

Left Bottom: Lee and Jenny Dewees were the 2011 CEMP Volunteers of the Year. They have donated 125 hours of their time monitoring water quality on local streams since 2009.

Right: Melisse Reichman and Debbie Oudiz identify aquatic insects during bioassessment at Upper Woodard Creek in June 2011.

Many thanks to our 2011 CEMP volunteers:

Adrian Knowles & Brad Phelps, Betsy Webb, Bob Burns & Judi Nestor, Cynthia Detrow, Debbie Oudiz, Diana Carbonell, Francie Roberts, Frank Vondersaar, Holly Aderhold, Jim Brown, Jim Levine, Jenny Stroyeck, Karen West, Lee & Jenny Dewees, Quinn Vlacich, Marcus York, Melisse Reichman, Natalie Shapiro, Scott Miller and Will Schlein

CEMP Reporting

Over the past decade, Cook Inletkeeper has produced annual reports that detail the water quality monitoring efforts during the past year. This *Year In Review* provides the public and interested stakeholders with an overview of CEMP monitoring efforts during 2011, including monthly water quality sampling and summer bioassessment efforts. Graphs, raw data, and quality assurance records from all of our 2011 monitoring efforts and previous annual reports are available at our website: www.inletkeeper.org. Baseline water quality reports are released as baseline datasets are completed on a site-by-site basis. These comprehensive reports include GIS analysis for each watershed, all CEMP water quality data, a habitat assessment and photos. In 2011, Cook Inletkeeper released the first two baseline reports: Upper Beaver Creek (monitored by Neil & Kyra Wagner from 2002-2010), and Bidarka Creek (monitored by Steve Hackett, Joel Cooper, Marla McPherson, and Frank Vondersaar from 2000-2010).

We use the following as guidelines for defining a baseline dataset:

- Five or more years of data with at least 80 site visits
- At least 40 site visits during summer months
- At least five site visits during every month of the year
- Three years of continuous temperature monitoring (at select sites)
- Six bioassessment sampling events over at least three years (at select sites)

For more information about these guidelines, see the CEMP Effectiveness Report (2003) available online at <http://inletkeeper.org/resources/contents/effectiveness-of-cemp-final-report>. ❀



Baseline reports slated for release in 2012 will be from: Top: Rice Creek, KB-533;

Middle: McNeil Creek, KB-545;

Bottom: Diamond Creek, AR-1100-1160

Monitoring Water Quality

CEMP volunteers monitor the following water quality parameters: temperature, dissolved oxygen, pH, specific conductance, coliform bacteria, and turbidity. Volunteers attend a 3-day training to become certified monitors, and attend performance evaluation sessions every year to maintain their certification. Data collected through CEMP are stored in a Microsoft Access database, and Cook Inletkeeper's Outreach & Monitoring Coordinator manages the data. A full description of CEMP methods, our Quali-

ty Assurance Project Plan (QAPP), and our quality assurance documents can all be found on Cook Inletkeeper's website: www.inletkeeper.org. As part of our assessment we compare our data to the Alaska Department of Environmental Conservation's water quality standards (see the table below). Each CEMP site is held to the water quality standards for its designated use. These uses are included in the CEMP site table on the next page. ❁

Department of Environmental Conservation Alaska Statewide Water Quality Standards 18 AAC 70					
Designated Use	Water Temperature	Dissolved Oxygen	pH	Fecal Coliform Bacteria (FC)	Turbidity
Water Supply: drinking, culinary, and food processing	May not exceed 15C	Dissolved Oxygen (DO) must be > or = 4.0 mg/l	May not be < 6.0 or > 8.5	In a 30-day period, the geometric mean may not exceed 20 FC/100ml, and not more than 10% of the samples may exceed 40 FC/100ml	Not to exceed 5 NTU above natural conditions when the turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU
Water Supply: Growth and propagation of fish, shellfish, aquatic life, and wildlife	May not exceed 20C. May not exceed where applicable: Fish migration routes: 15C Fish spawning areas: 13C Fish rearing areas: 15C Egg & fry incubation: 13C	DO must be > or = 7.0 mg/l. For waters not used by anadromous or resident fish, DO must be > or = 5.0 mg/l. The concentration of DO may not exceed 110% of saturation in any samples collected.	May not be < 6.5 or > 8.5. May not vary more than 0.5 pH units from natural conditions.	Not applicable	Not to exceed 25 NTU above natural conditions
Water recreation: contact recreation (freshwater)	May not exceed 30C	DO must be > or = 4.0 mg/l	May not be < 6.5 or > 8.5	In a 30-day period, the geometric mean may not exceed 100 FC/100ml, and not more than one sample, or more than 10% of the samples if there are more than 10 samples, may exceed 200 FC/100ml	Not to exceed 5 NTU above natural conditions when the turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when natural turbidity is more than 50 NTU, not to exceed a maximum increase of 15 NTU

CEMP Monitoring in 2011

CEMP volunteers conducted baseline water quality monitoring at 10 sites in 2011. Four sites were located in the Anchor River watershed and six in the Kachemak Bay watershed (see map on the back of the front cover). The table below shows each site, the year it was first monitored, the total number of site visits to-date, the number of site visits from 2011, and its designated uses.

Cook Inletkeeper volunteers monitor local streams 16 times per year, once a month in the winter (September through April) and twice a month in the summer (May through August). Our annual minimum requirement is 75% completed site visits (at least 12) per site for baseline data collection. In 2011, for the second year in a row, all sites met the

criteria for a full dataset! CEMP volunteers monitor each site for water temperature, air temperature, dissolved oxygen, pH, conductivity, turbidity, and bacteria. Photographs are taken quarterly at all sites.

For the purposes of displaying data from 2011, sites are grouped into geographically similar locations. These groups, used throughout this report, are: Anchor River Sites (Two Moose Creek, Ruby Creek, No-Name Creek, and Bridge Creek), Lower Diamond Creek, Town Sites (Upper and Middle Woodard Creek, Palmer Creek, and Upper Miller Creek), and Lower Fritz Creek. ❁

2011 CEMP Sites					
Creek Sites	Year Began	2011 Monitors	Total Site Visits	2011 Site Visits	Designated Use
Two Moose	2002	Marcus York	72	16	Growth & propagation of fish
Ruby	1997	Jenny Stroyeck	101	15	Growth & propagation of fish
No-Name	2002	Jim Levine	97	16	Growth & propagation of fish
Bridge	1997	Jim Brown, Lee & Jenny Dewees	88	14	Water supply
Lower Diamond	2000	Lee & Jenny Dewees	111	13	Growth & propagation of fish
Upper Woodard	1998	Frank Vondersaar, Diana Carbonell	100	16	Water recreation
Lower Woodard	1998	Will Schlein, Holly Aderhold	134	14	Water recreation
Palmer	2005	Karen West	90	14	Water recreation
Upper Miller	2004	Bob Burns & Judi Nestor, Jim Brown	87	15	Water recreation
Lower Fritz	2009	Scott Miller	43	15	Growth & propagation of fish

2011 Water Quality Summary

Our water quality sampling indicated no persistent effects of pollution in most CEMP streams during 2011. Summer temperatures in Two Moose Creek, an anadromous tributary to the Anchor River, continue to be higher than the state standards for fish migration, spawning, egg incubation and fry rearing. Temperature data from 2011 indicate a more than 400% increase from 2010 in the number of days where these state standards were violated at Two Moose Creek. We will continue to place temperature data loggers in this stream for the next several years to better assess the status and potential needs for restoration or watershed action. Again in 2011, there were preliminary exceedances of *E. coli* bacteria at both Upper and Lower Fritz Creek during spring break-up. This year, however, immediate response sampling indicated that bacteria levels had dropped below exceedance levels at both sites. There were three additional preliminary bacteria exceedances in 2011. In late-April, *E. coli* levels were

elevated at Palmer Creek and Lower Diamond Creek. On June 12, there was an elevated level of *E. coli* at Two Moose Creek. Similar to Fritz Creek, immediate response sampling indicated bacteria levels below exceedance levels at all sites. ❁



(Top) Field training for 2011 bioassessment with Cook Inletkeeper's Sue Mauger at Upper Woodard Creek. (Bottom) We left this picture in from 2010 as a remembrance to Latitude 59. Wendell always provided us with cookies, and we were sad to see Latitude close in 2011. (Left) Winners of the fall trash pick-up were Marcus (Two Moose Creek) and Jenny (Ruby Creek). Marcus sent in this picture of his trash bag from October 30.

2011: Water Temperature

During CEMP site visits, monitors record water and air temperatures using alcohol-filled thermometers. Fish and other aquatic organisms are adapted to living within a certain temperature range. Changes in riparian (or streamside) vegetation, groundwater inputs, weather, and climate patterns can all affect water temperatures.

Average annual air temperature across all sites was 45°F, with a maximum of 66°F at Bridge Creek in July and a minimum of 5°F also at Bridge Creek in December. The average annual water temperature across all sites was 6.7°C, with a maximum temperature of 13°C at Two Moose Creek in May and a measured minimum of 0°C at Ruby Creek, Lower Woodard Creek, and Lower Fritz Creek. Water quality standards for fish spawning (>13°C) were violated twice in our anadromous streams; both exceedences occurred at Two Moose Creek.

After a very cool mid-June, water temperatures peaked in late-June and early-July. Temperatures began to fall by August, and reached lows in December and January.

We placed continuous temperature data loggers in five CEMP streams in 2011: Two Moose Creek, Ruby Creek, Lower Woodard Creek, Lower Fritz Creek, and Beaver Creek. These loggers recorded temperature every 15 minutes from mid-May through mid-October (when they were removed). The figures on the facing page show the maximum daily temperatures at each site for 2009, 2010, and 2011, except for Beaver Creek. The baseline dataset for this site was completed in 2010, and future monitoring recommendations from the Beaver Creek baseline report included resumption of continuous temperature monitoring at this headwater site. Data presented for Beaver Creek are from 2007 and 2011. The data logger at Lower Fritz Creek had a dead battery at the

end of the season, and at the time of writing the data have not been retrieved. We hope to include an addendum to this report later in the spring of 2012 with temperature data from Lower Fritz Creek.

During 2011, peak temperatures exceeded water quality standards for fish spawning (>13°C) on 58 days at Two Moose Creek. Standards for fish migration (>15°C) were violated 20 times at Two Moose

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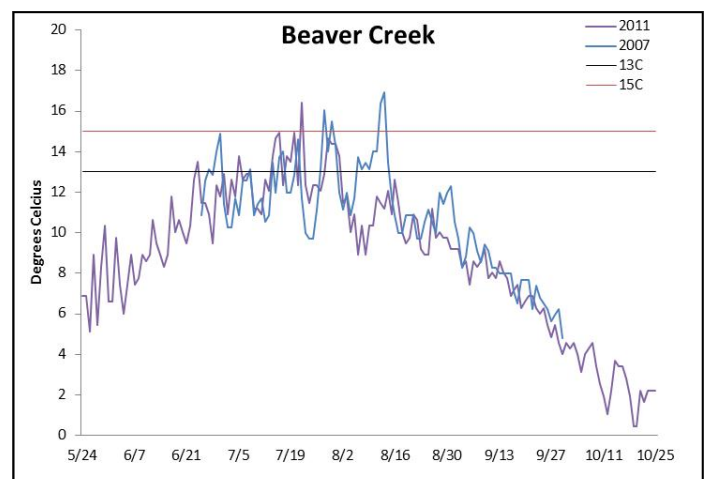
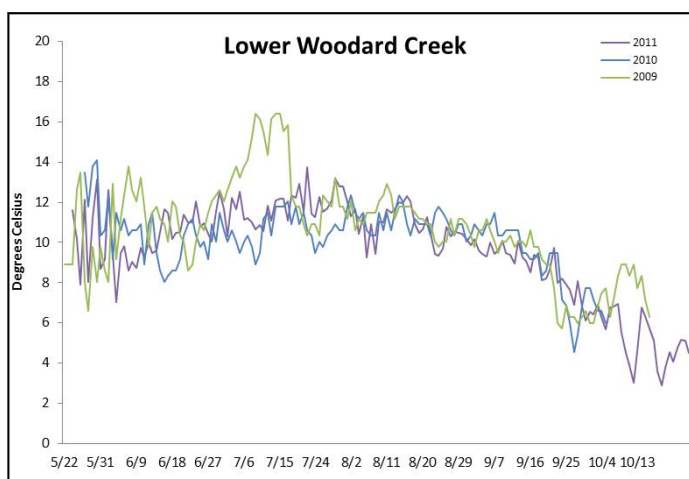
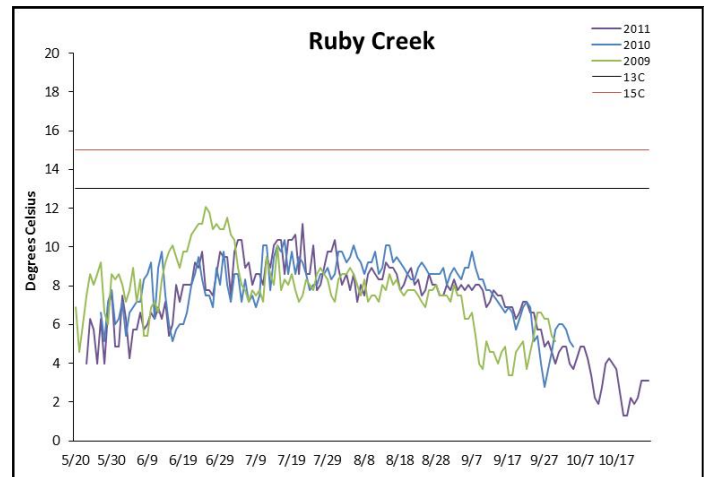
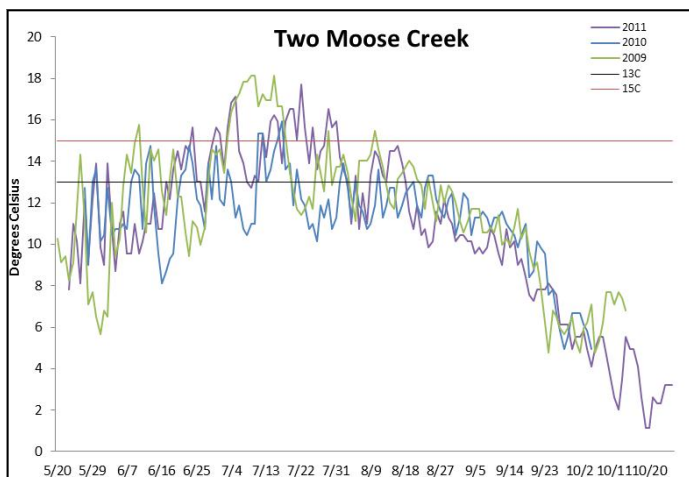


(Top) An in-stream temperature data logger housing at Beaver Creek. (Bottom) Cook Inletkeeper's summer intern Eric Grazia installing a temperature data logger at Lower Fritz Creek.

Water Temperature (Continued)

Creek. This represents an increase in violations over 400% from 2010. Water quality standards for fish spawning ($>13^{\circ}\text{C}$) were violated 13 times at Beaver Creek in 2011 (22 times in 2007), and there was one violation of the standard for fish migration ($>15^{\circ}\text{C}$) (4 violations in 2007). No exceedences were seen at Ruby Creek, nor any violations of the recreational water temperature standard ($>30^{\circ}\text{C}$) at Lower Woodard Creek. Hand-held thermometers continue to dramatically underestimate the number of violations of state water quality standards for temperature at CEMP sites. Inletkeeper will continue to

place temperature loggers at priority streams to better understand the impacts of temperature on aquatic communities.*



Maximum daily water temperatures, recorded by continuous data loggers, in four CEMP streams from May through October. 2011 data from Lower Fritz Creek will be added as an addendum to this report in 2012. Streams that have anadromous fish also show the state water quality standards for temperature in black (13°C) and in red (15°C).

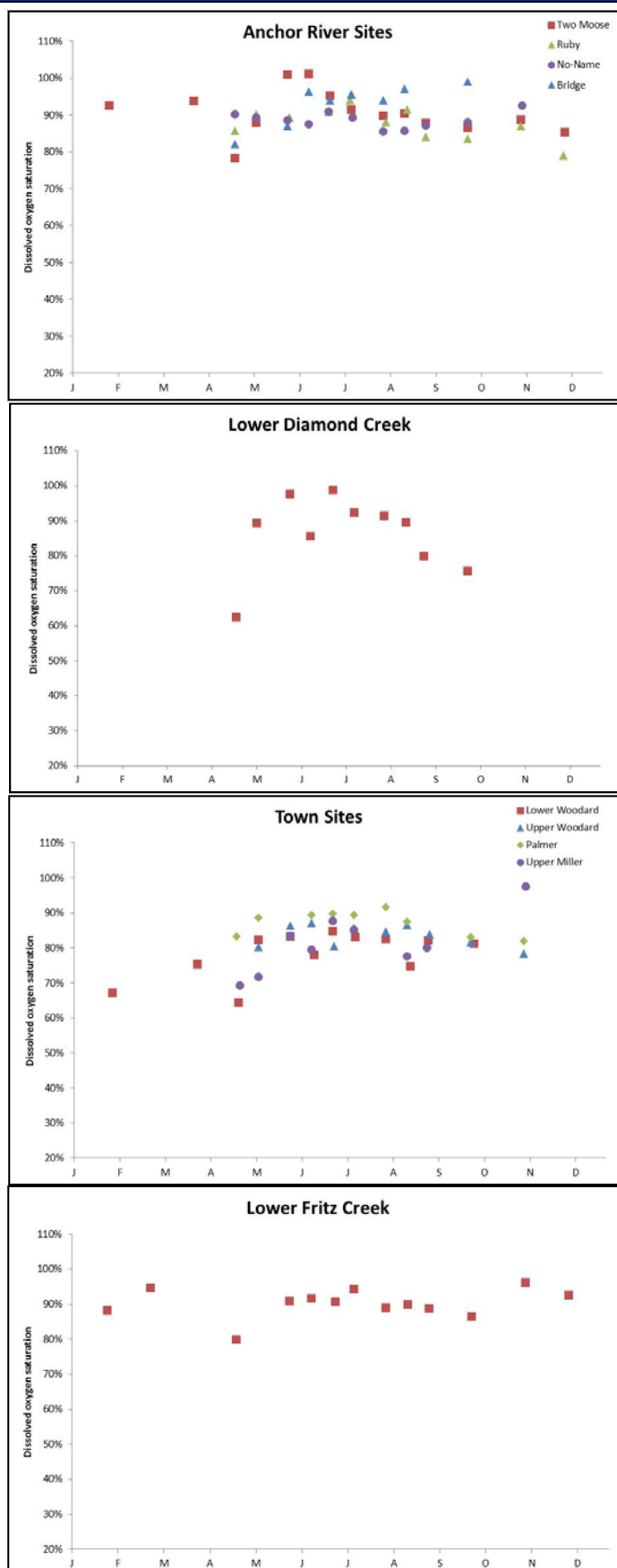
2011: Dissolved Oxygen

CEMP monitors the levels of dissolved oxygen (DO) in our streams. Oxygen is needed by fish and other aquatic organisms to live. We measure DO using a chemical titration, and express it as a concentration of milligrams of oxygen per liter of water. The amount of oxygen that can be dissolved in water is temperature dependent; colder water can hold more oxygen. Therefore we also look at how saturated the water is with oxygen, that is – how much oxygen does it hold compared to what it could hold at that temperature. Saturation is expressed as a percent.

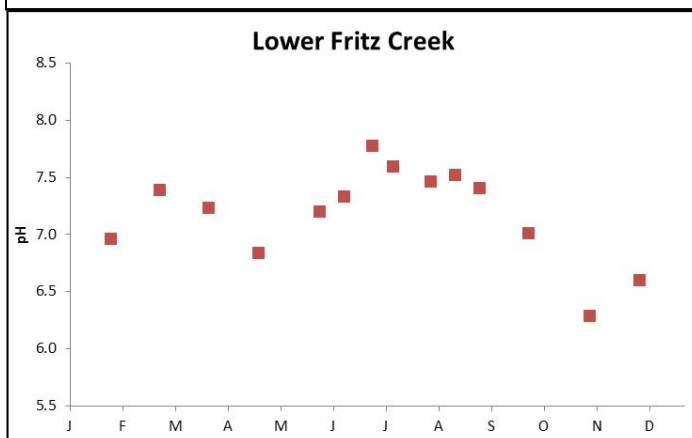
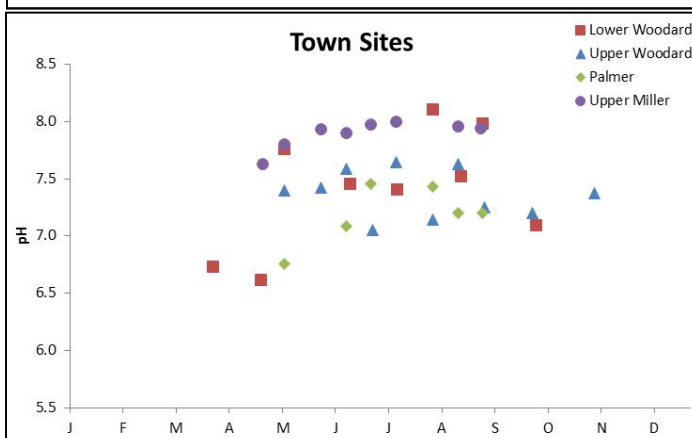
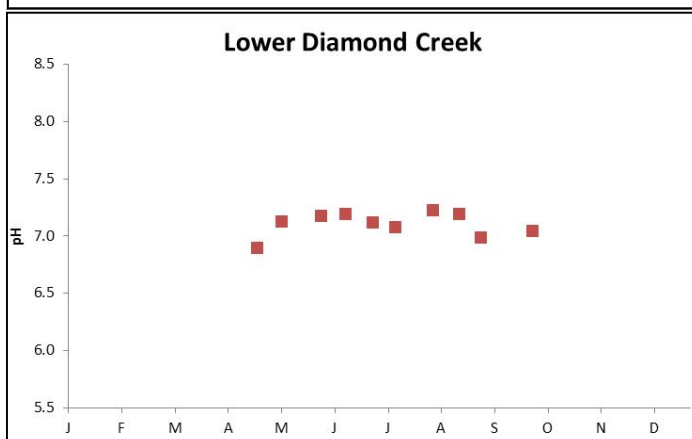
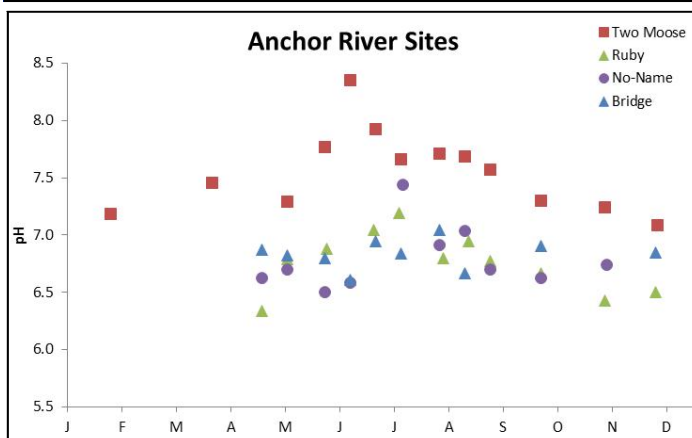
Changes in dissolved oxygen can be caused by turbulence and interactions with the air (like in a waterfall), decaying plant matter, sewage, and effluent wastewater inputs. High levels of photosynthesis and increased mixing with the air through riffles and small waterfalls could increase saturation levels above 100%, creating a condition of supersaturation. Supersaturation was recorded twice at Two Moose Creek, once on May 29 and again on June 12 (both times the dissolved oxygen saturation was 101%).

There were no exceedances of the dissolved oxygen water quality standard at any CEMP site during 2011. Lower saturation levels tend to occur in the spring and winter when water samples are often taken through holes in ice. The lowest recorded DO saturation values (between 62% and 69%) all occurred in either January or April at Lower Diamond Creek (April, 62%), Lower Woodard Creek (January, 67% and April, 64%), and at Upper Miller Creek (April, 69%). ❄️

Dissolved oxygen saturation levels at all CEMP sites during each month of 2011.



2011: pH



pH is a measure of the level of activity of hydrogen ions in the water. It is on a logarithmic scale and ranges from 0 (acidic) to 14 (basic). Most streams naturally range between 6.5 to 8.0 pH units. Monitoring pH provides CEMP with a background level of acidity in streams in the Kachemak Bay and Anchor River watersheds. Differences in pH can result from rain and groundwater inputs, decaying plant material, and inputs from runoff. Rain water tends to have a lower pH, ranging from 5.6-5.8.

We saw seasonal variation in pH at CEMP sites in 2011; this variation is typical of what we have seen in previous years. pH increased as the year progressed, and began to drop back down by early-winter. This seasonal pattern was most pronounced at Lower Fritz Creek, Two Moose, Ruby, and No-Name Creeks. Upper Miller Creek had the highest average pH throughout 2011, which was markedly higher than the pH values in 2010. During 2010 we saw a gradual increase in pH at this site; this seems to have stabilized at an average value of 7.89 in 2011. Despite this higher average, we saw no exceedences of the state pH water quality standard at Upper Miller Creek or at any other CEMP sites in 2011. ❁

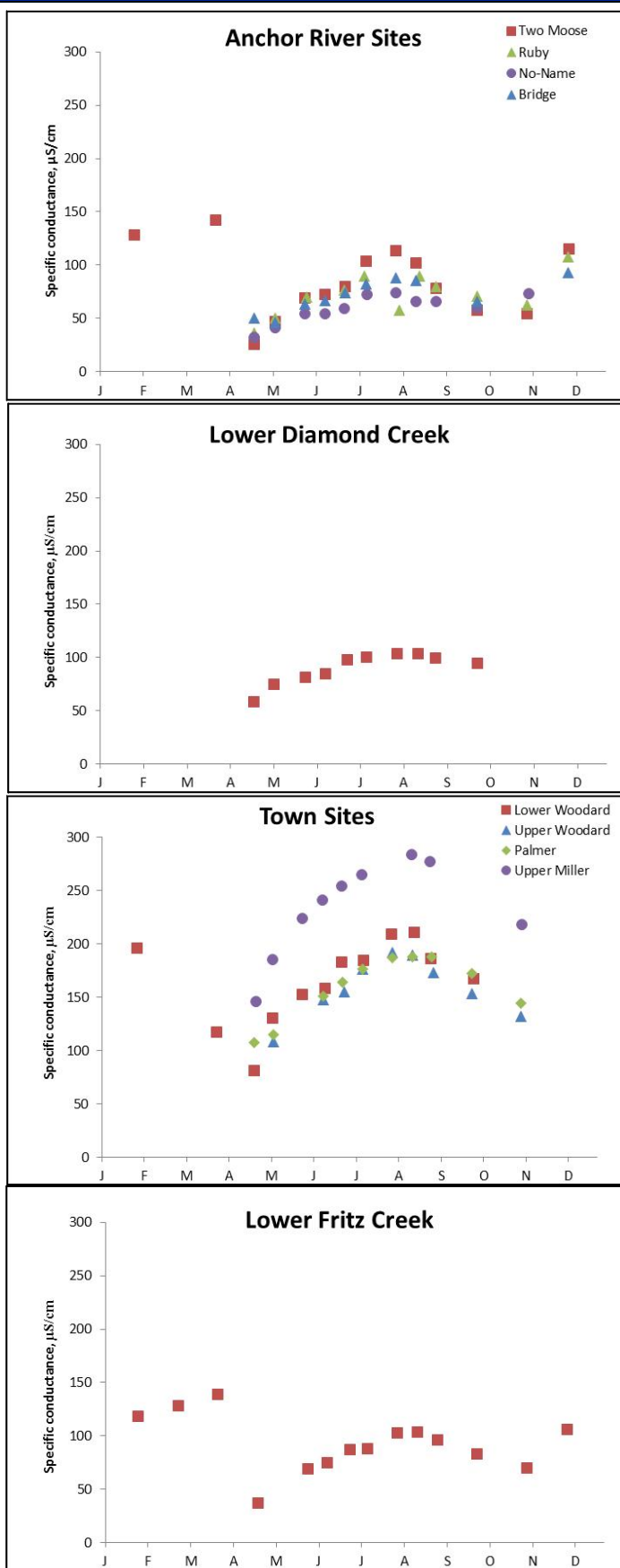
pH at all CEMP sites during each month of 2011.

2011: Specific Conductance

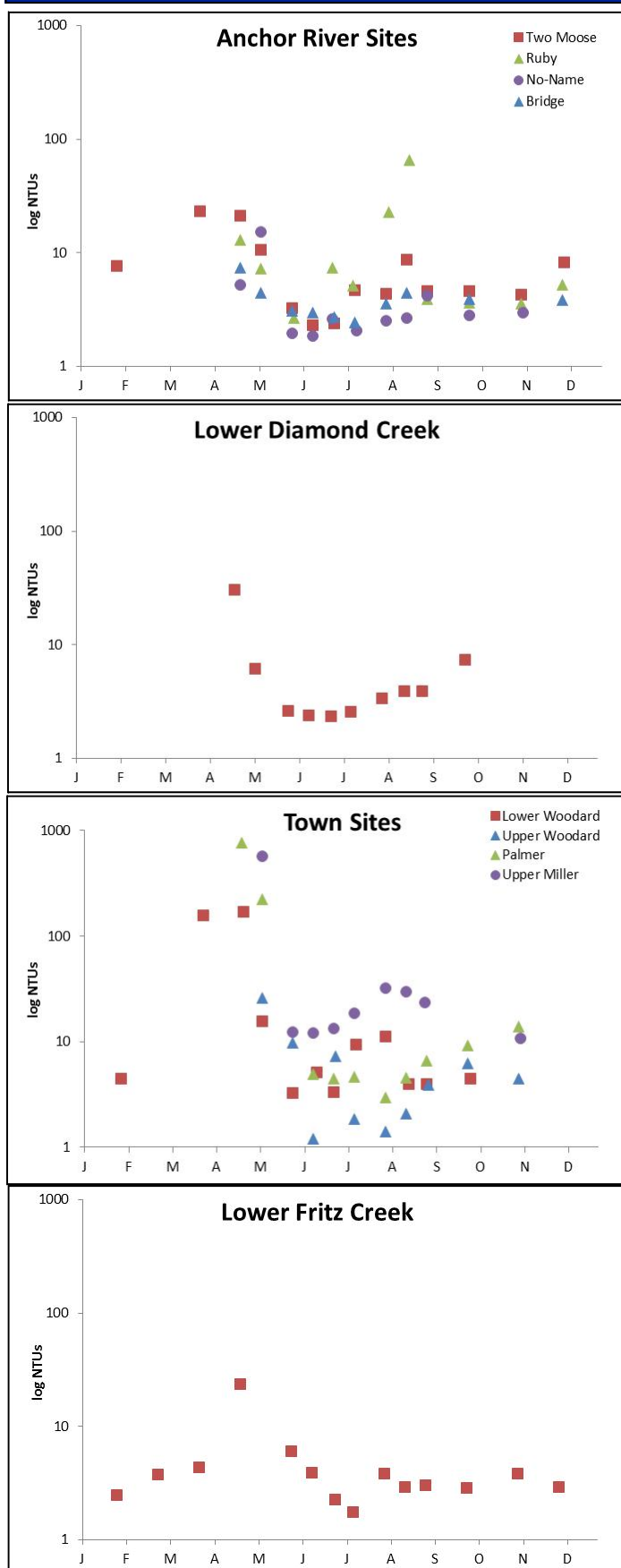
Specific conductance measures the ability of water to conduct an electrical current at a given temperature. It is recorded as micro Siemens per centimeter. The presence of ions, or salts, in water increases the ability to conduct electricity; thus, conductivity is a measure of the dissolved solids in a stream. Conductance is influenced by groundwater and rainwater inputs as well as road and other urban runoff.

Specific conductance in CEMP streams during 2011 ranged from 25 $\mu\text{S}/\text{cm}$ at Two Moose Creek to 284 $\mu\text{S}/\text{cm}$ at Upper Miller Creek. Upper Miller Creek also had the maximum recorded conductance value in 2009 and in 2010. Generally we see higher conductance in streams located around the town of Homer and surrounded by increased amounts of impervious cover such as roads and parking lots. Runoff from these surfaces during rain events generally increases the amounts of dissolved solids in the water and thereby increases conductivity levels. Similar to pH, we see seasonal variation in specific conductance at most CEMP sites. Drier weather in the summer and ice-cover in the winter often leads to increased relative input from groundwater, which has a higher specific conductance than rain water and results in higher values in the summer and winter than we see in the spring and fall. Conductance at No-Name Creek, Ruby Creek, and Bridge Creek, which are generally located in areas with undeveloped upstream landscapes, stayed below 100 $\mu\text{S}/\text{cm}$ throughout the year. Town streams that are likely influenced by groundwater springs on the bench and some increased development, including Upper and Lower Woodard, Palmer, and Upper Miller Creeks, had average conductance levels from 159 $\mu\text{S}/\text{cm}$ to 233 $\mu\text{S}/\text{cm}$ over the course of the year. The minimum conductance value recorded at Upper Miller Creek during 2011 was 145 $\mu\text{S}/\text{cm}$. ❁

Specific conductance at all CEMP sites during each month of 2011.



2011: Turbidity



Turbidity is a measure of water clarity and describes the amount of light scattered or absorbed by water. Silt, clay, organic material, and colored organic compounds can all influence turbidity. Natural and human caused erosion, as well as storm water runoff can increase turbidity. Negative impacts from increased turbidity may include increased water temperatures, decreased habitat for fish and other aquatic organisms, and more opportunities for the growth of potentially harmful bacteria.

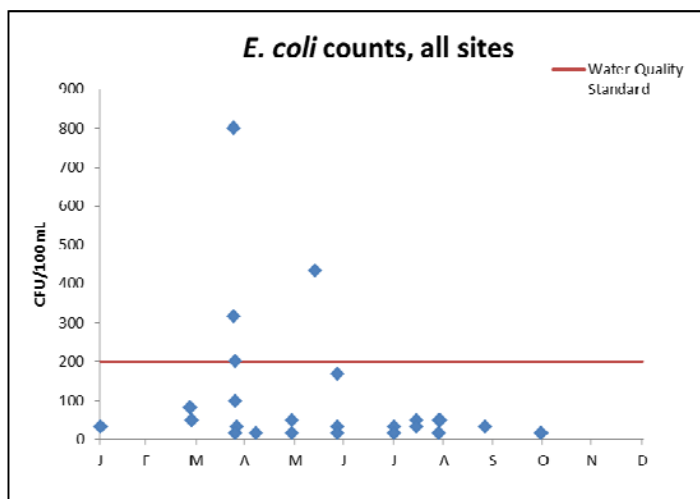
Turbidity (expressed on a logarithmic scale in the graphs on the left) was higher in most CEMP streams during the spring months of April and May. These months typically see increased precipitation and stream flows, and are influenced by the effects of spring breakup. This is a typical pattern that we have seen during previous years through CEMP data. Anchor River sites all had similar patterns, with the exception of a spike in turbidity at Ruby Creek during August sampling. Slightly elevated turbidity levels were seen at other CEMP sites around this time; however, the increase at Ruby Creek was notable for its magnitude and duration. Within days of the second sampling that revealed turbidity levels at 65 NTUs at Ruby Creek, we went into the field to perform follow-up testing. By this time, the turbidity levels had dropped to more typical levels and no source of the elevated turbidity could be found. In 2012 we will watch the summer turbidity at Ruby Creek carefully. Throughout the season, Upper Miller Creek had turbidity values consistently above 10 NTUs. With the exception of the spring runoff period and the incidences at Ruby Creek mentioned above, all other CEMP sites had turbidity levels below 10 NTUs throughout the year. ❁

Turbidity, shown here on a log scale, at all CEMP sites during each month of 2011.

2011: Coliform Bacteria

CEMP volunteers monitor for total and fecal coliforms at all sites throughout the year. Many types of coliform bacteria are normally found in soil and water. *E. coli* is an indicator of fecal bacteria that is found in the intestines of human and other warm blooded animals. State water quality standards are for fecal coliforms. CEMP tests reveal the number of colony forming units (CFUs) of *E. coli*, which we utilize as a preliminary indicator of fecal coliforms. In the event of a persistent exceedance through both high and low stream flows, Cook Inletkeeper would send samples to a state-certified lab for official fecal coliform testing. Finding *E. coli* levels that are above state water quality standards may be indicative of contamination by runoff from animal waste, decaying animals, or human waste from sewage or septic tanks.

As a result of elevated bacteria levels in 2010, Upper Fritz Creek was monitored in April 2011 for bacteria (baseline data collection ended at this site in 2010). Sampling on April 23 at Upper Fritz Creek showed an average of 800 CFU/100 mL *E. coli*; at Lower Fritz Creek on the same day sampling results showed 100



E. coli levels at all CEMP sites during 2011 (expressed on a log scale of Colony Forming Units per 100 mL). Only sites with detected colonies are shown. The red line indicates the state water quality standard for a single sample in a waterbody that is protected for contact recreation (200 CFU/100 mL).

CFU/100 mL *E. coli*. Follow-up sampling on April 27 showed levels at 17 CFU/100 mL and 50 CFU/100 mL respectively. Continued sampling throughout the year at Lower Fritz Creek did not reveal any further elevated levels of bacteria. Spring sampling will be done again at Upper Fritz Creek in 2012.



*We continue to see high levels of *E. coli* bacteria at Upper Fritz Creek (KB-535) during the spring.*

From a total of 146 regular site visits with bacteria tests successfully performed, 79% (or 116 visits) had no *E. coli* colonies present; in 2010 only 60% of site visits had no *E. coli* colonies present. Of the 90 regular site visits with *E. coli* present (not including the exceedance sampling efforts), there were four preliminary exceedances of the state water quality standard in CEMP streams. This is a decrease from six exceedances in 2010. In addition to Upper and Lower Fritz Creeks, exceedances in 2011 were: Lower Diamond Creek, 317 CFU/100mL on April 23, Palmer Creek, 200 CFU/100mL on April 24, and Two Moose Creek, 433 CFU/100mL on June 12. ❀

2011: Biological Monitoring

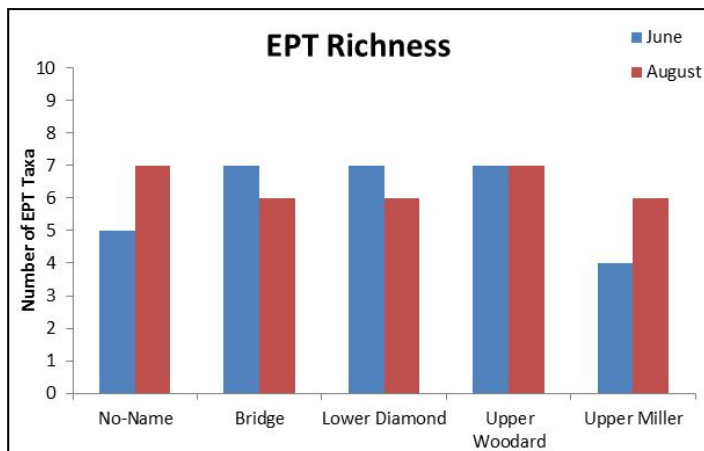
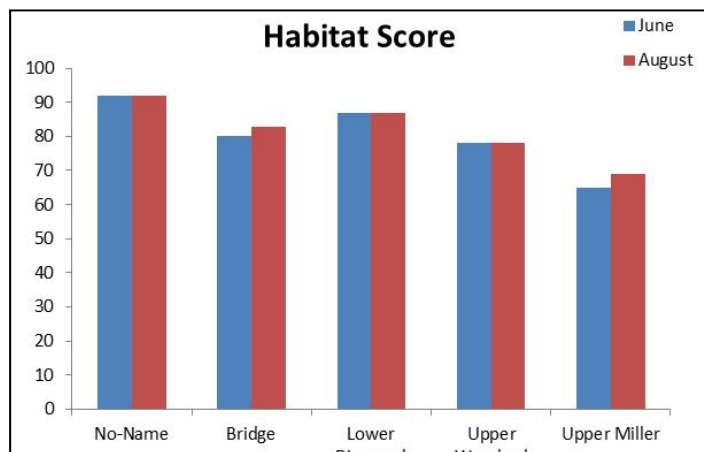
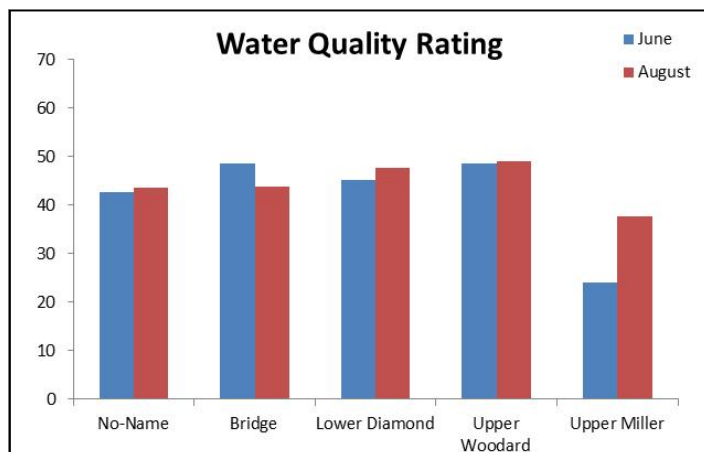
Our summer Stream Team of specially-trained CEMP volunteers conducted biological monitoring, also known as bug sampling or bioassessment, at five CEMP sites in 2011: No-Name Creek, Lower Diamond Creek, Upper Woodard Creek, Bridge Creek, and Upper Miller Creek. 2010 was the first year of biological monitoring at these sites, with the exception of one monitoring event at Lower Diamond Creek in 2004. Biological monitoring is done once in June and again in August to capture seasonal variability in bug communities. We will continue monitoring these sites in 2012, to capture three years of variability before moving our bioassessment efforts to new CEMP sites in 2013.

Water quality ratings (WQRs) are calculated for each site based on the types of macroinvertebrate communities present. This rating takes into account the different types of aquatic insects that are found and how those types typically respond to pollution or disturbance. Higher WQRs indicate there were more sensitive taxa present in the stream than tolerant bugs. The highest WQRs in 2011 were Bridge Creek in June (48.7) and Upper Woodard Creek in August (49.0). Similar to 2010, Upper Miller Creek had the lowest WQRs in both June (24.0) and August (37.7).

Habitat scores were fairly high, ranging from 65 to 92 out of a possible 100, at all five sites in 2011, with the lowest at Upper Miller Creek and highest at No-Name Creek. Habitat scores take into account 10 different aspects of macroinvertebrate habitat, including how full the stream channel is and the amount and diversity of habitat types within the reach.

EPT richness is a count of the number of insect taxa that are sensitive to the pollution in each stream. 'EPT' stands for Ephemeroptera, Plecoptera, and Tricoptera—three sensitive groups of aquatic insects. EPT

richness varied from four at Upper Miller Creek in June, to a high of seven. Seven taxa were found at No-Name Creek in August, Bridge Creek and Lower Diamond Creek in June and in both June and August at Lower Diamond Creek. ❁



Water quality rating, habitat scores, and EPT richness counts for all CEMP sites with biological assessment done in 2011.

Thanks for a great 2011!



Clockwise, from top left: Looking up-stream from the Beaver Creek temperature logger site, Frank and Bob during spring recertification, Upper Miller Creek frozen above East End Road, Looking for macroinvertebrates at Upper Woodard Creek in June, Jim Levine during a snowy October side-by-side visit at No-Name Creek, Fresh Sourdough Express donated another beautiful cake for the 2011 Splash Bash, Lee and Jenny brought their granddaughter Quinn for bioassessment at Lower Diamond Creek. Center: Cook Inletkeeper celebrates our volunteers during the 14th Annual Splash Bash, held at the Bishop's Beach Pavilion in July.