

Watershed Watch Data Summary

April 16, 2011

Watershed Watch is a one-day water quality monitoring educational event that aims to raise the awareness of citizens about the health of the Boise River watershed. During this fourth annual event, more than 114 volunteers participated at thirteen sites along the Boise River and Lake Lowell.

Flow

Flows in the Boise River during the sampling event were recorded at United States Geological Survey (USGS) gages. Data posted on the USGS website for 4/16/11, for the gage located at the Glenwood Bridge (Sampling Site 16) reported a mean daily discharge of 6,640 cfs (cubic feet per second). A discharge of 6,500 cfs is considered bank full, and a discharge of 7,000 cfs is considered flood stage. Due to the high flows, safety precautions were followed during this event. Participants were asked to remain 15 feet from the water. Only the trainer at each site was allowed to wade in to collect the water sample. Macroinvertebrates were not sampled at the river sites, and aquatic invasive species were therefore not able to be surveyed.

Temperature

The studied segment of the Boise River is designated for cold water aquatic life, with some segments additionally designated for salmonid spawning. Lake Lowell is designated as a special resource water, and for warm water aquatic life. Waters designated as cold water aquatic life are to have water temperatures of twenty-two (22) degrees Celsius (C) or less with a maximum daily average of no greater than nineteen (19) degrees C (IDAPA 58.01.250.02[b]). Waters designated for salmonid spawning are to have water temperatures of thirteen (13) degrees C or less with a maximum daily average of no greater than nine (9) degrees C (IDAPA 58.01.250.02[f]). Waters designated for warm water aquatic life are to have temperatures of thirty-three (33) degrees C or less with a maximum daily average of no greater than twenty-nine (29) degrees C (IDAPA 58.01.250.03[f]). Water temperature of the Boise River measured during the sampling event ranged from 4 to 10 degrees C. The highest temperature was measured at the Barber Park raft put-in site on the Boise River. The site located approximately 20 meters downstream of the West Boise Wastewater outfall recorded 8.7 degrees C with a YSI sonde, while the site directly above the outfall pipe measured 6.14 degrees C. The temperature difference may be a direct result of the warmer wastewater effluent entering the river. Lake Lowell water temperature was 12 degrees C, well within the warm water aquatic life water temperature criteria.

pH

Reported pH values for the sample locations averaged between 6.8 or 7 at numerous locations, and the highest pH of 9 was recorded at the site of the side channel of the river behind MK Nature Center. Reported pH values are generally acceptable for the types of aquatic life and beneficial uses associated with each sampled water body. However, the value of 9 is on the high end of what can be tolerated by some forms of aquatic life and is the maximum value allowed by state water quality standards (IDAPA 58.01.250.01[a]).

Dissolved Oxygen

The range of dissolved oxygen values measured during the sampling event ranged from 8 mg/L (milligrams per liter) to 13.5 mg/L. Waters designated for cold water aquatic life are to have dissolved oxygen concentrations above 6.0 mg/L (IDAPA 58.01.278.01), while waters designated for warm water aquatic life are to have dissolved oxygen concentrations exceeding 5.0 mg/L at all times (IDAPA 58.01.250.04 [a]). Lake Lowell had the lowest dissolved oxygen value of 8.0, but was still well within the acceptable range.

Turbidity

Turbidity values largely ranged from 0 to greater than 60 JTU at the 9th Street Bridge site. Higher JTU values indicate poorer water clarity. State water quality standards prescribe that turbidity in water bodies designated for cold water aquatic life in Idaho should not be greater than 50 NTU above background instantaneously or 25 NTU above background for more than 10 consecutive days. (IDAPA 58.01.02.250.02[e]).

Bacteria

E. coli bacteria concentrations ranged from less than 2 colony forming units (cfu) to 28 cfu per 100 milliliters (mL). All sampled sites were well within the state water quality standards for instantaneous samples (406 CFU/100 mL) for primary contact recreation (IDAPA 58.01.02.251).

Macroinvertebrates

Macroinvertebrates were not sampled this year at the Boise River sites due to unsafe conditions created by high water flow. However, the Lake Lowell site identified several pollution tolerant and somewhat pollution tolerant species such as caddisfly larvae, snails, midge larvae and isopods.

Invasive Species

No invasive species observations were reported, however, many of the sites did not record data for this category due to high flows.

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Site Location	Site #	# of vol's	Water Temp	DO	pH
<i>Upstream to Downstream</i>			<i>(C)</i>	<i>(mg/L)</i>	<i>(SU)</i>
Barber Park Put-in	3	7	10	9.0 to 10.5	7 to 7.5
Warm Springs - Orange Bridge	5	19	6	12.5	7.4
Behind MK Nature Center	27	12	6	13.5	9
BSU Friendship Footbridge	31	7	6	12.5	7.5 to 8
Boise Public Library footbridge, upstream	32	9	7	9.5	7.5
Ann Morrison Park Raft takeout	7	4	8	12	7
Esther Simplot Park	11	9	8	11.5	6.8
Glenwood Bridge - USGS	16	7	6.5	10.75	7.5
Glenwood Bridge - 100 yards upstream of USGS station	16B	6	8	8.5 to 9.5	7
Boise WaterShed, above outfall	26B	6	6.14 (YSI) to 8	11.04 (YSI) to 12	7.5 to 8.06 (YSI)
Boise WaterShed, below outfall	26	9	8 to 10 (8.7 YSI)	10 to 11.2 (YSI)	7 to 7.5 (7.4 YSI)
Linder St. Bridge	29	6	4	10	7.5
Lake Lowell Boat Ramp area	24	13	12	8 to 9	7.5 to 8
TOTAL VOLUNTEERS		114			

All bacteria samples analyzed by the USBR Lab except the following:

* Bacteria sample analyzed at Idaho Bureau of Laboratories

** Bacteria analyzed at Boise State University for total coliforms

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Turbidity	E. Coli	Macro invertebrate	Invasive Species	Other Notes
<i>(JTU)</i>	<i>ct / 100 mL</i>	<i>Stream Quality Assessment</i>	<i>Present / Absent</i>	
0 to 20	< 2	N/A	N/A	
3.8	13.5*	N/A	N/A	used LaMotte WQ testing kit
40	2	N/A	N/A	noted Sample color was Amber
40	N/A	N/A	N/a	
> 60	8	N/A	Absent	noted Sample color Yellowish
40	18	N/A	N/A	
25	2200**	N/A	Absent	Noted Sample Color Yellow, Rush Skeletonweed found
0	< 2	N/A	N/A	Noted woody debris present in water
40	N/A	N/A	Absent	Noted murky, brown water and fresh algae present
5 (YSI)	22	N/A	N/A	Noted Sample color Amber
40 (5.6 YSI)	10	N/A	Absent	
40	28	N/A	Absent	Noted Sample Color Green
40	N/A	Poor ***	Absent	Noted Sample Color Yellow and foam/suds present

*** Found on rocky bottom: caddisfly larvae, snail, midge larvae, daphnia, clam/shrimp or isopod