



# Big Bear Lake Lake Management

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## 2013 Lake Operations Summary

February 2014

*"The mission of the Big Bear Municipal Water District is to stabilize the level of the Lake for recreation and wildlife"*

Big Bear Municipal Water District

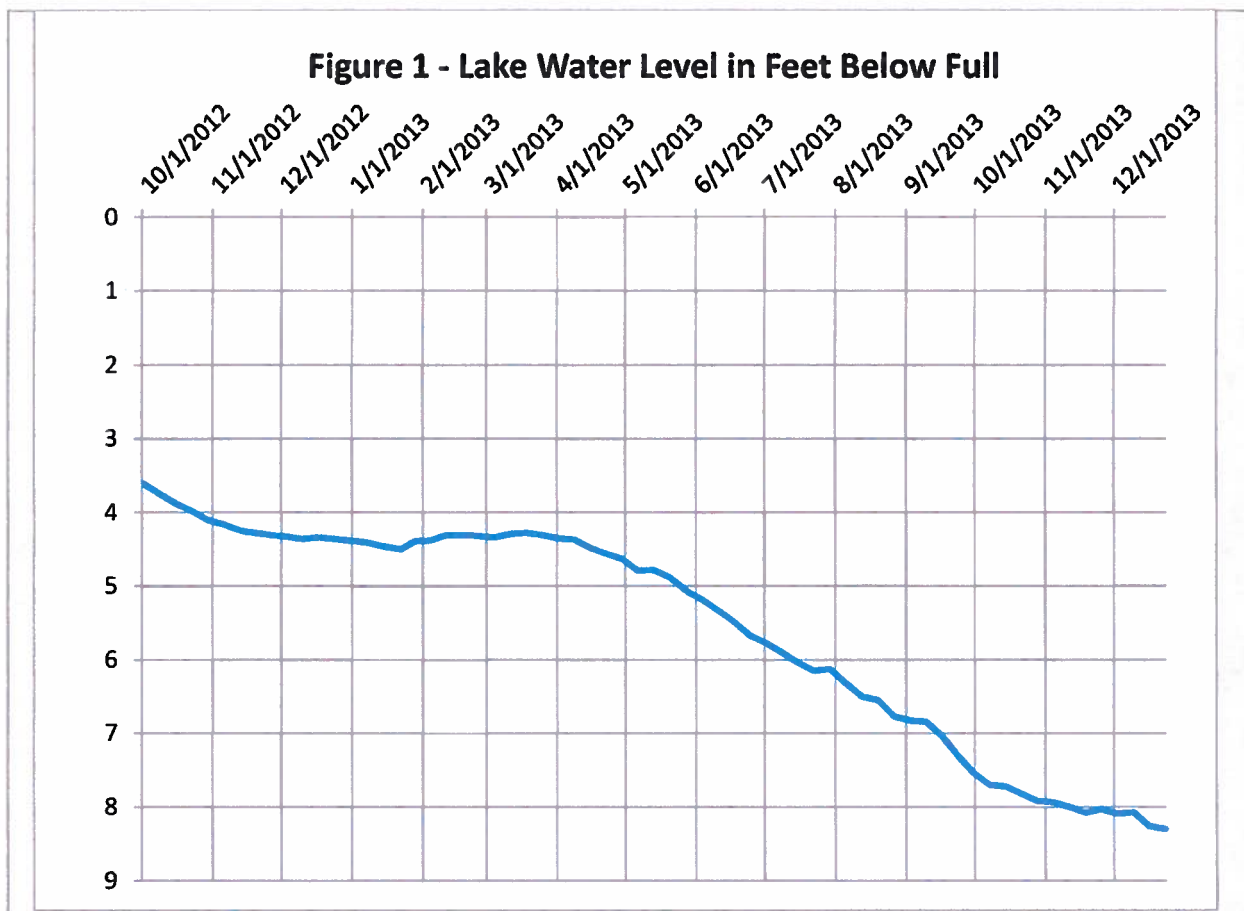
2013 Lake Operations Summary

*“The mission of the Big Bear Municipal Water District is to stabilize the level of the Lake for recreation and wildlife”*

Big Bear Lake, Lake Management operations, in support of the Districts mission, consists of a multitude of management activities. This document serves as a summary of three broad activities; lake level stabilization, limnological monitoring, and invasive species management.

**Lake Level Stabilization**

The Lake began calendar year 2013 at 4.39 feet below full (Figure 1). Spring snow melt only raised the lake level to 4.28 feet below full by April after which it began to decline again. The Lake level ended the year at 8.3 feet below full. This is roughly one foot higher than it otherwise would have been as a result of a temporary agreement (2012 MOU) between the Big Bear MWD and its in-lieu water provider San Bernardino Valley Municipal Water District (Valley District). The MOU allows Valley District temporary Lake storage as insurance for an ongoing construction project that might interrupt operation of their water delivery system at the bottom of the hill. The District paid Valley District \$1,187,658 this fiscal year in accordance with the 1996 in-lieu agreement to help stabilize the level of Big Bear Lake. Historical lake levels can be viewed on the District web page.



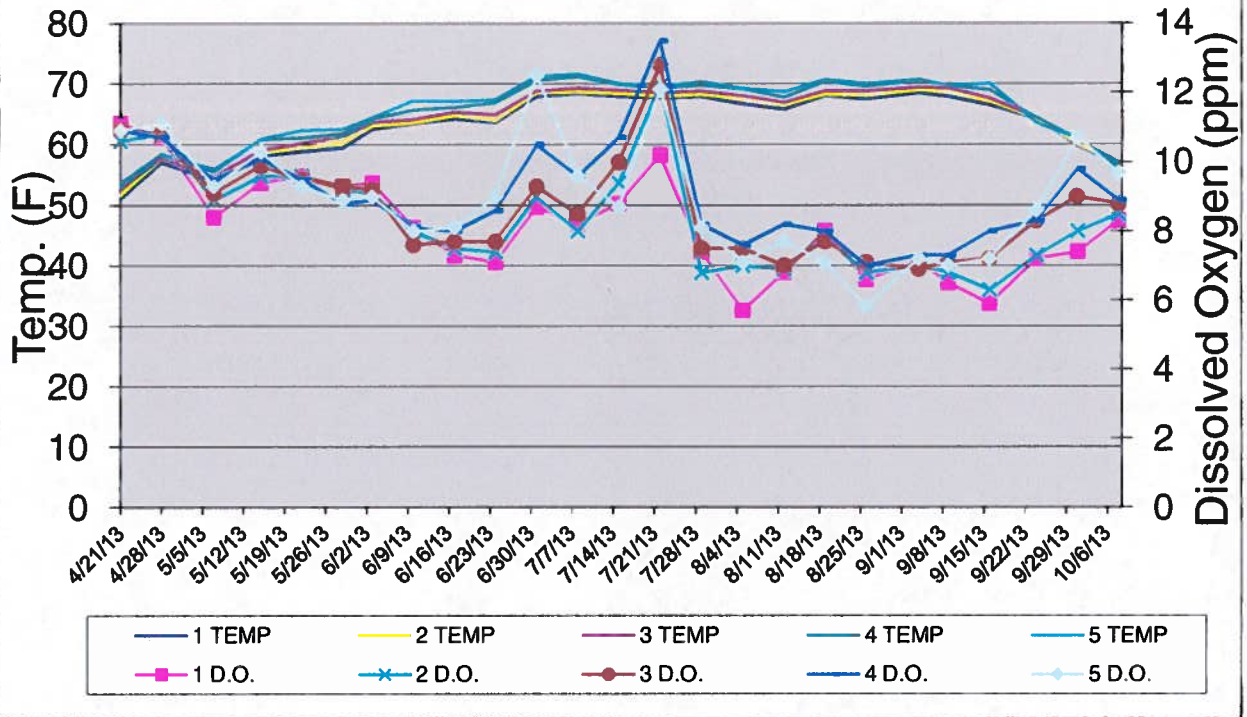
### **Limnological Monitoring**

District Staff measure the limnological properties of the Lake weekly during the boating season at 5 monitoring stations. Measurements of Lake temperature, dissolved oxygen content and water clarity using a Secchi Disk are collected. The charts below (Figures 2, 3, and 4) show surface, mid depth and bottom water temperature and dissolved oxygen content for each of the five Lake monitoring stations (1=Boom Line, 2=Papoose Bay, 3=West Ramp, 4=Observatory and 5=Juniper Point). Weekly limnology monitoring results are attached at the back of this report.

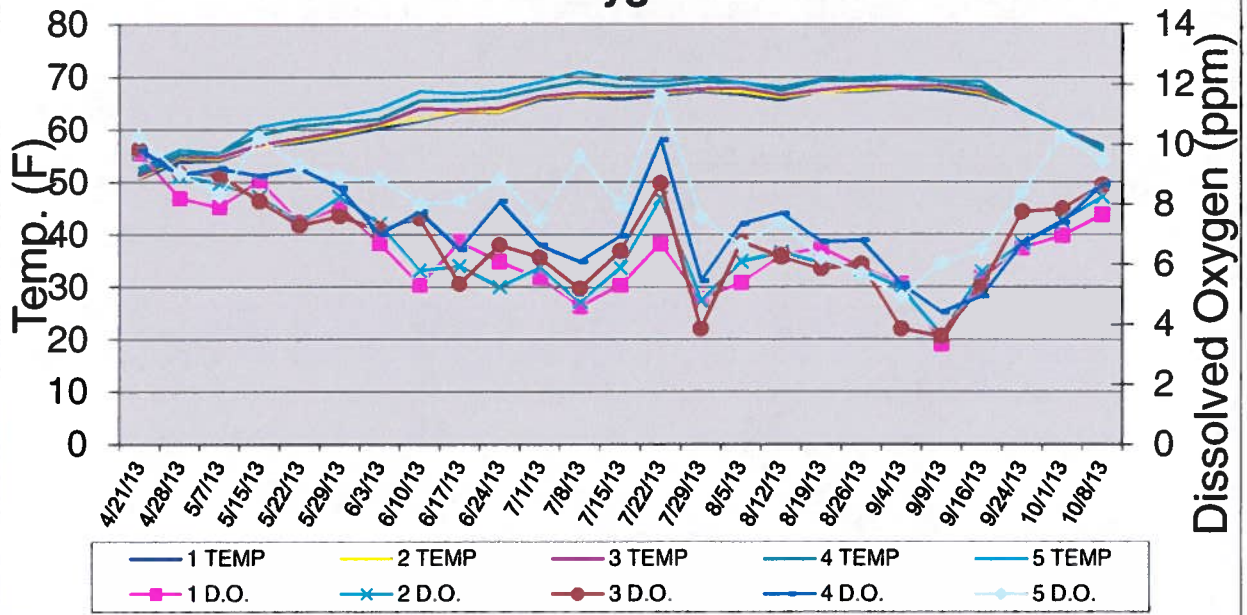
A review of Lake bottom dissolved oxygen concentration indicates a poorly defined oxycline developed twice during the year. The first was in mid-July and the second was in late August.

Surface water temperatures peaked in July and were mostly uniform in the very high 60's throughout the Lake surface area.

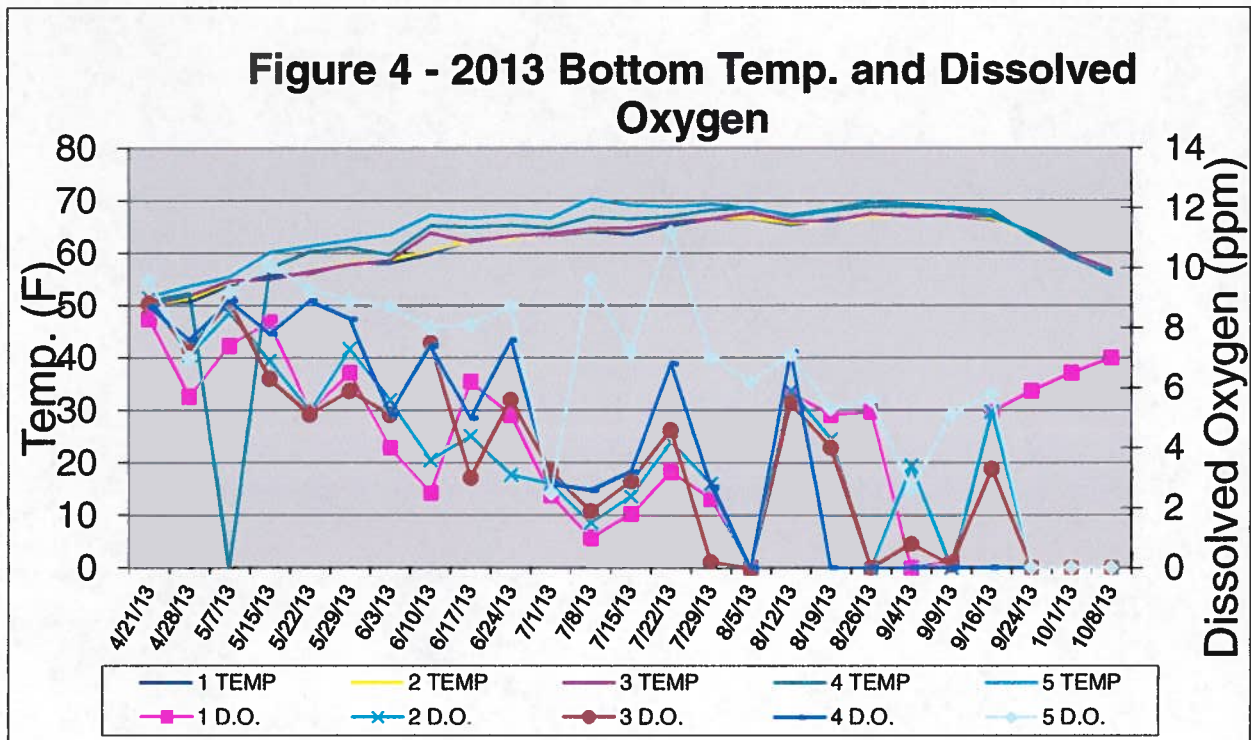
**Figure 2 - Surface Temp. & Dissolved Oxygen**



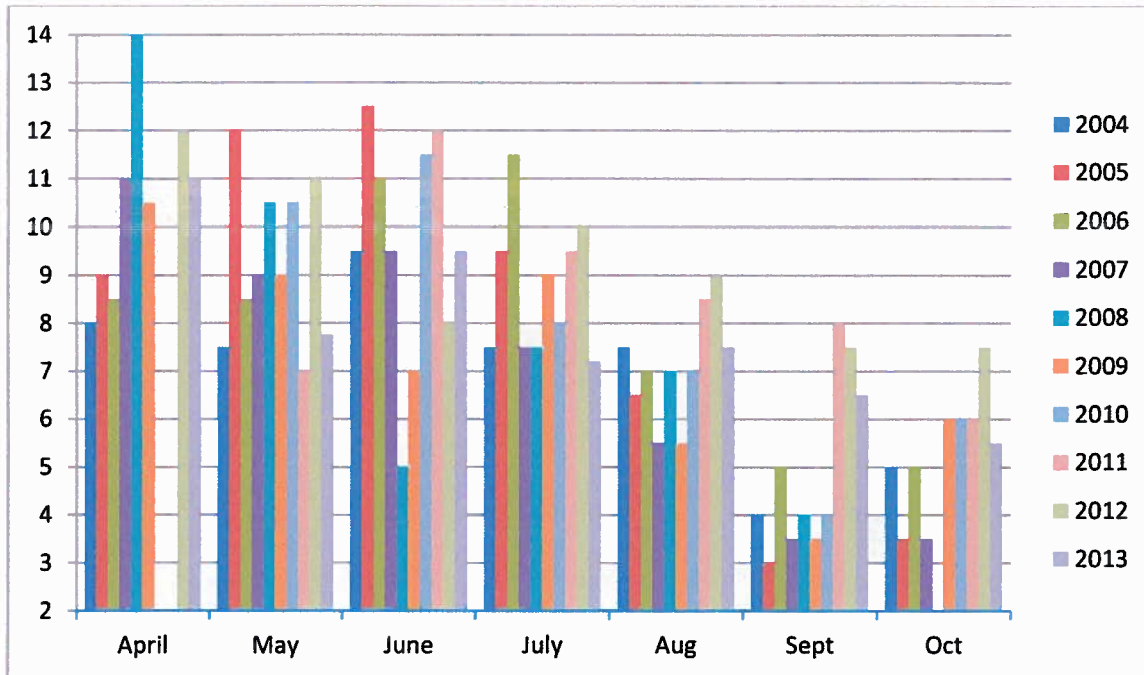
**Figure 3 - Mid-depth Temp. and Dissolved Oxygen**



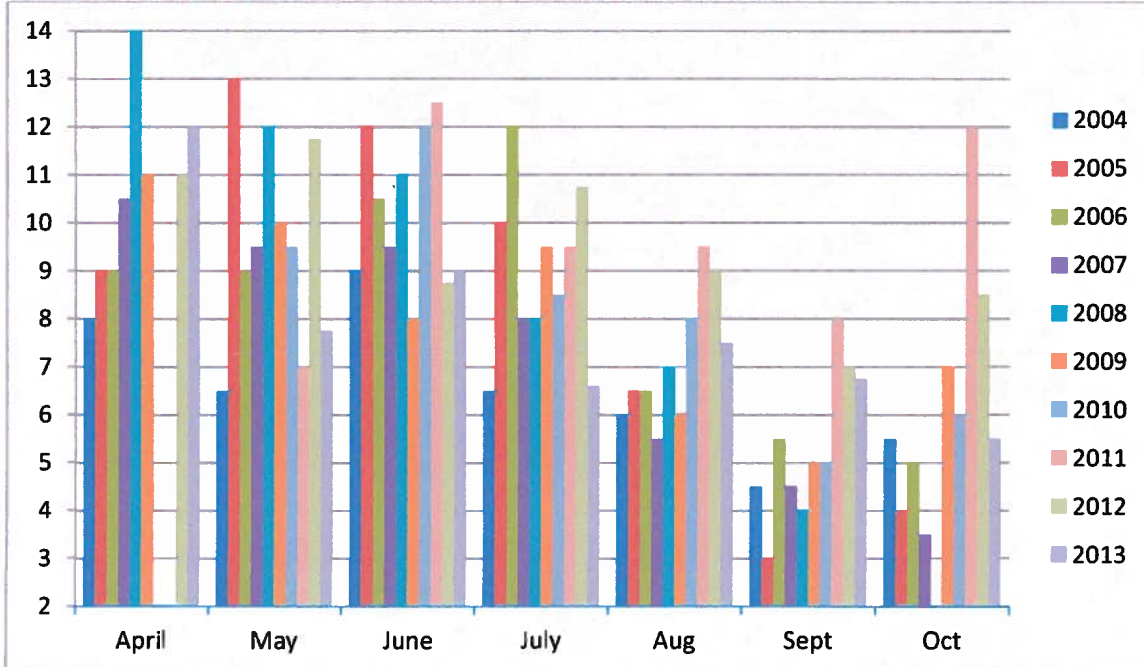
Secchi readings vary widely year to year over the spring and summer months when the Lake is stratified. In 2011-12 Secchi depths maxed at 12-13 feet in mid-July. By late September water clarity declined to about 6 feet. Figures 5, 6, 7, 8, and 9 are charts showing average monthly Secchi water clarity results from 2004 through 2012.



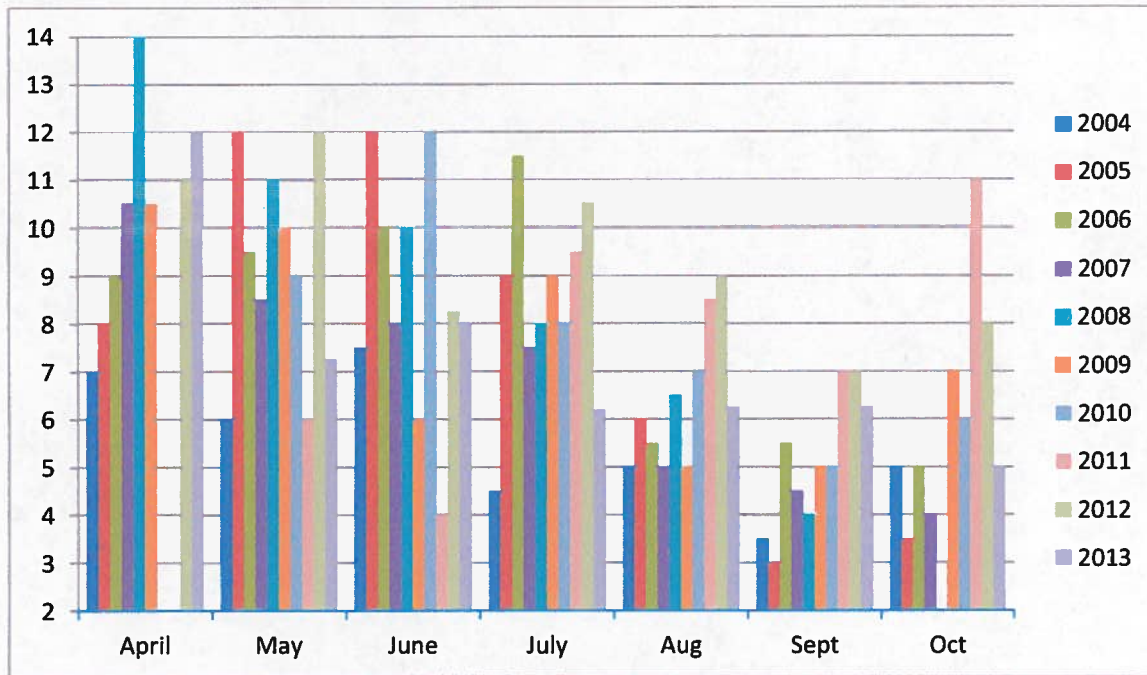
**Figure 5 - Secchi Monthly Average 2004-2013 - Boom-line**



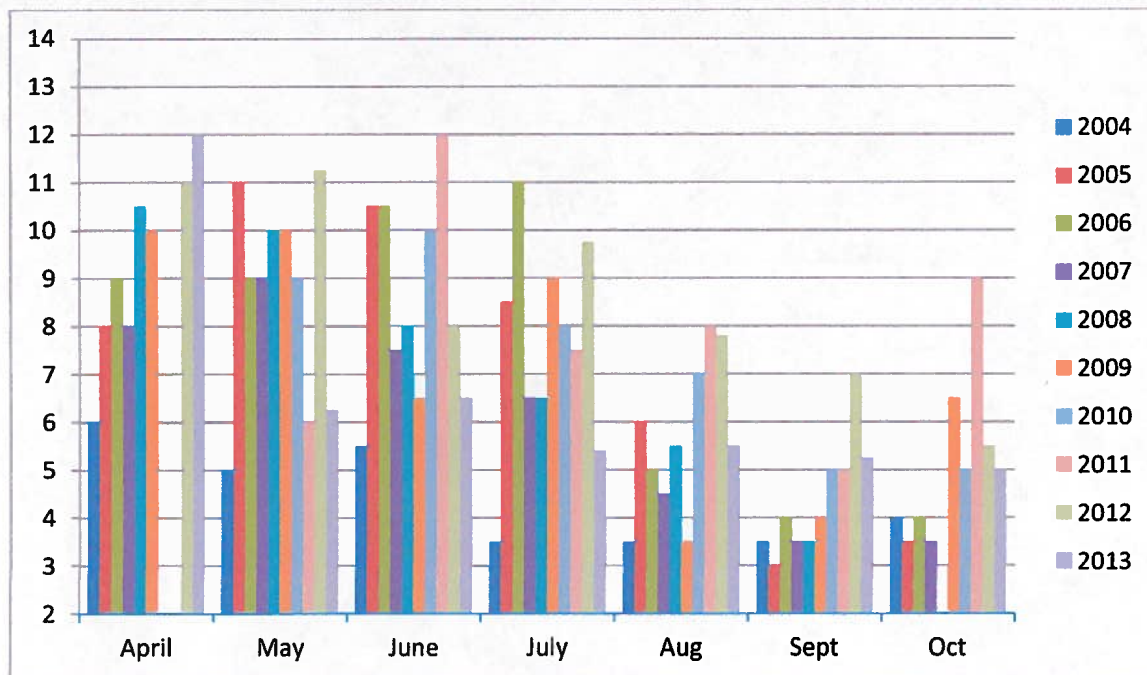
**Figure 6 - Secchi Monthly Average 2004-2013 – Papoose Bay**



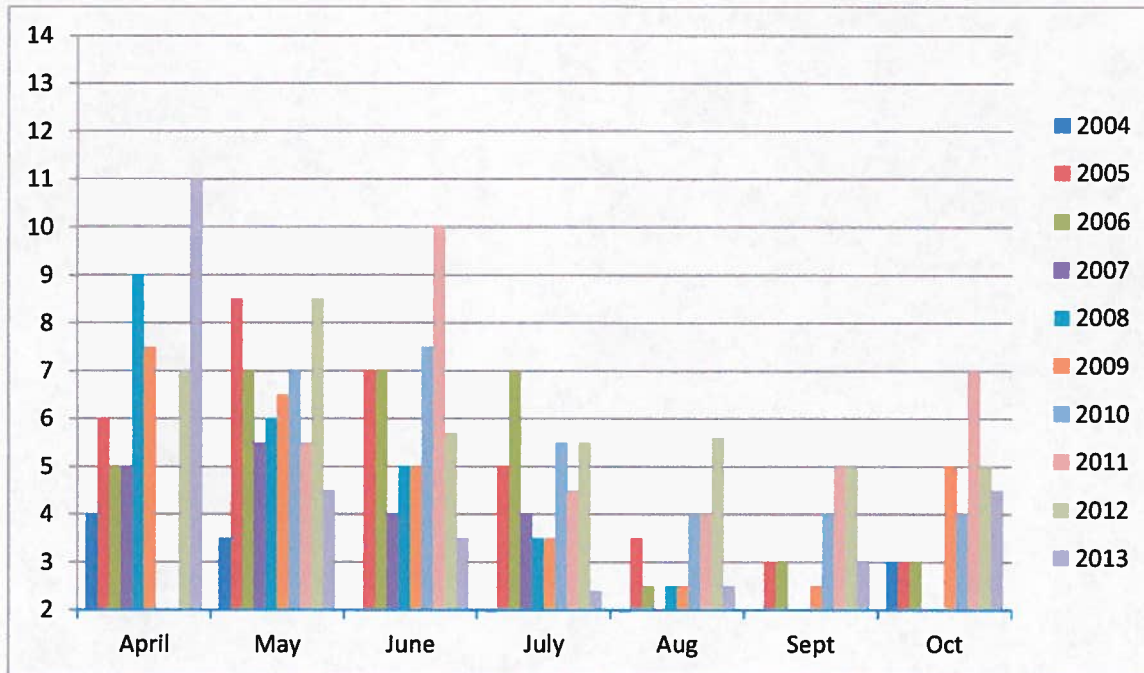
**Figure 7 - Secchi Monthly Average 2004-2013 – West Ramp**



**Figure 8 - Secchi Monthly Average 2004-2013 – Observatory**



**Figure 9 - Secchi Monthly Average 2004-2013 – Juniper Point**



Unlike most previous years the Lake only poorly stratified twice in 2013. The Lake maintained near uniform water column temperature throughout the season. Typically as the Lake surface warms the Lake stratifies with cold, dense oxygen depleted water forming a layer below the relatively warmer, less dense, oxygenated water above. Later in the year surface and bottom water temperatures typically equilibrate and the waters mix bringing oxygen depleted and nutrient laden water up into the water column to spur algae growth. Water clarity drops dramatically and water column oxygen is also diluted when this occurs. Table 1 lists the dates that the Lake has mixed. Mixing typically occurs in late August or early September.

**Table 1 – Lake Mixing History**

Year	Date Lake Mixed
2013	Poor stratification twice followed by mixing early August and mid-September
2012	No mixing, Lake did not stratify
2011	September 6 and June 7
2010	September 3
2009	June 12 and August 12
2008	August 19
2007	August 20
2006	August 28
2005	September 6
2004	No mixing, Lake did not stratify



The District installed a Lake aeration system in the summer of 2004. The decision to purchase and install the system was the result of low lake levels, warm water temperature, high concentrations of algae and low dissolved oxygen content when the Lake is stratified. High Lake water temperatures and low dissolved oxygen concentrations stressed trout species, sometimes resulting in fish die off in large numbers. The table below provides a qualitative summary of fish die off prior and subsequent to the installation of the aeration system.

**Table 2 – Big Bear Lake Fish Die Off History**

Year	Qualitative Die Off of Trout	Comments
1996	Minor	0-100 per week
1997	Minor	0-100 per week
1998	Minor	0-100 per week
1999	Moderate	100-200 per week
2000	Moderate	100-200 per week
2001	Moderate	100-200 per week
2002	Significant	200-1000 per week
2003	Very Significant	1000-2000 per week
2004	Very Significant	1000-2000 per week
2005	Insignificant	
2006	Insignificant	
2007	Insignificant	
2008	Insignificant	
2009	Insignificant	
2010	Insignificant	
2011	Insignificant	
2012	Insignificant	
2013	Insignificant	

The system is a stationary floating 25 horse power pump located between the boom line and the dam that draws Lake water and discharges it into the air at the rate of 8600 gallons per minute. The water cools and is oxygenated as it falls through the air before returning to the Lake. The result is an approximate 40 acre oxygenated, cooler water refuge for trout fish species. Although the system typically operates during the cooler night and early morning hours, under extreme problematic conditions it is run 24 hours a day. Since installation and operation of the aeration system no significant fish die offs have occurred.

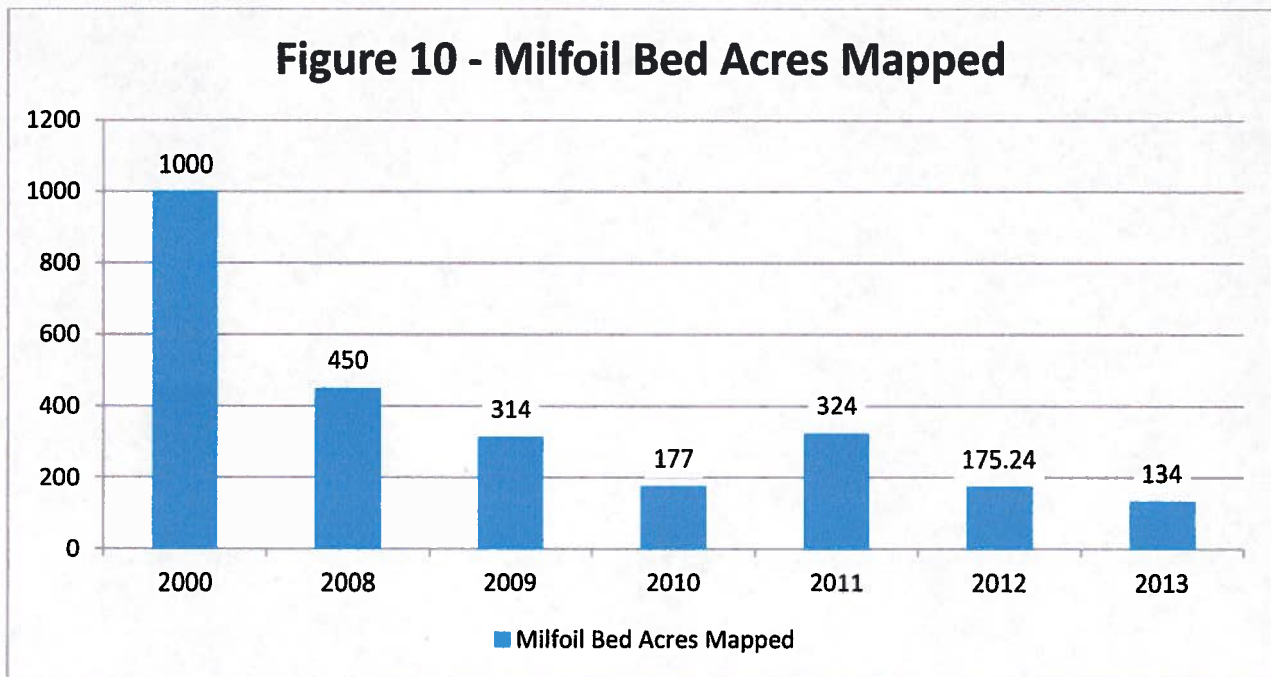
**Invasive Species Management**

The Invasive Species Management program consists of three major activities; aquatic plant control, carp removal and quagga mussel prevention program.

## Aquatic Plant Control

Activities associated with aquatic plant control have two components. Milfoil specific herbicides are used to treat areas infested with Eurasian Water Milfoil. Native aquatic plant species are typically controlled mechanically using a weed harvester. Cuttings are delivered to a composting facility operated by the City of Big Bear Lake. Harvesting operations are used to maintain navigation channels and boat dock lake access.

The District has made considerable progress in reducing the population of milfoil plants in the Lake compared to the baseline year 2000 when more than 1000 acres of the lake were infested. Figure 10 is a chart summarizing acres of Milfoil mapped each year. Figure 11 is a map depicting the geographic distribution of milfoil covering 134 acres in 2013.



**Figure 11 – Milfoil Beds Mapped in 2013, 134 Acres**



Three methods of herbicide application are used. Each of the application methods utilizes a pontoon boat and two Lake Maintenance employees. The boat driver uses a GPS mapping system to assure applications are made within the mapped boundaries and at the prescribed concentrations. Large areas are treated using vortex physics of water pumped through an eductor nozzle at pressure to draw dry product from a hopper to mix granular herbicide with Lake water and spray it onto the Lake surface. Nozzles installed on either side of the back of the weed harvester barge distribute product in swaths 30 feet wide as the barge moves through the milfoil infested littoral zone. Metering of product delivery in this unit is based on the known delivery rate of the equipment and the speed of the barge moving through the infested area. The other method employs vortex physics but uses air instead of water. Typically called the "Vortex" by the District this method is used for smaller, more pinpoint applications. The unit has a blower that moves air across the bottom opening of a funnel shaped hopper. The air draws the product out of the hopper and is then directed through a hose to a hand held control and nozzle. Metering with this unit is based on an even distribution of a preloaded quantity of product in the hopper and the known area to be treated. The liquid herbicide application was made below the water surface by injection from submerged discharge hoses. An electric metering pump draws herbicide from storage through calibrated hose nozzles trailing from the back of a moving work boat. In all cases application rates are computed using label instruction for plant species, treatment area and water depth.

In 2013, 24,365 pounds of granular and 155 gallons of liquid herbicide were used to treat 113 acres of milfoil. Treatment began on May 29 and was completed on July 2, 2013. The cost of herbicide used for

treating both the docks and general lake areas totaled \$85,033. Employee expenses, fuel and depreciation for the 2013 program came to \$2386 for a total program cost of \$87,419.

In areas where native aquatic plants (excludes Milfoil) restrict navigation in and out of private docks and marinas, mechanical means are used to clear paths for vessels. Harvesting efforts began on June 15 and continued through September 15, 2013. A total of 156 loads of weeds were removed to the City composting facility with a wet weight of 1,105,825 pounds or about 553 tons. The dry weight of the material removed was 110,583 pounds assuming dry weight is 10% of wet weight for an average load.

As plants are harvested the operator notes the species collected during his run. Using the weight and species of aquatic plant and average phosphorous and nitrogen content based on previous sampling and laboratory analysis results for each species, the District estimates total phosphorous and nitrogen removed by the harvesting operation each year. For 2013 an estimated 327 pounds of phosphorous and 2772 pounds of nitrogen were removed from the Lake.

In order to improve the effectiveness of the harvesting program a second harvester will be put into operation in 2014. The District anticipates that the yield using this second harvester will likely increase by 50% in 2014.

Weed harvesting expenses, including labor, fuel and depreciation, totaled \$22,828 for 2013.

### **Carp Removal**

After observing the effectiveness of electro-shock fishing for Carp by a District contractor in 2007 the District purchased an electro-shock boat in 2008 and installed a commercial grinder placed over a sewer manhole in 2009. Shocked carp are netted and after the boat is filled they are ground up and disposed of in the sanitary sewer at the back of the District shop. The Big Bear Area Regional Wastewater Agency (BBARWA) charges the District \$150 for every 1000 pounds of Carp discharged to the sewer.

Electro-shock fishing began June 22 and the efforts ended after 11 work days on August 30, 2013. The annual Carp Round-Up event also removes carp from the lake. Cash and prizes are awarded for winners in the various divisions. Bow hunters came from California and the southwest to compete in this District sponsored event on the weekend of June 22 and 23, 2013.

Including the 3,930 pounds of carp shot during the Carp Round-Up the District removal efforts netted 7,050 pounds of carp during summer 2013.

Expenses for the carp removal program including depreciation on the electro-shock boat and the grinder, wages, fuel costs and BBARWA charges for carp disposal in 2013 totaled \$7135. Fish surveys conducted by the California Department of Fish and Game indicate that the District's carp removal program has dramatically improved game fish populations. Future annual reports will incorporate details from California Department of Fish and Wildlife surveys when they become available.

**Table 3 – Carp Removal Statistics**

Year	Carp Tournament	Electro Shock Fishing	Total Pounds Removed	Cost (approx.)
2007	6,119	96,000	102,119	\$96,000
2008	4,200	26,000	30,200	\$8,909
2009	6,350	36,000	42,350	\$12,490
2010	10,128	39,350	49,478	\$14,551
2011	11,000	20,491	31,491	\$7,000
2012	4,115	18,955	23,070	\$10,090
2013	3,930	3,120	7,050	\$7135

**Quagga Mussel Prevention Program**

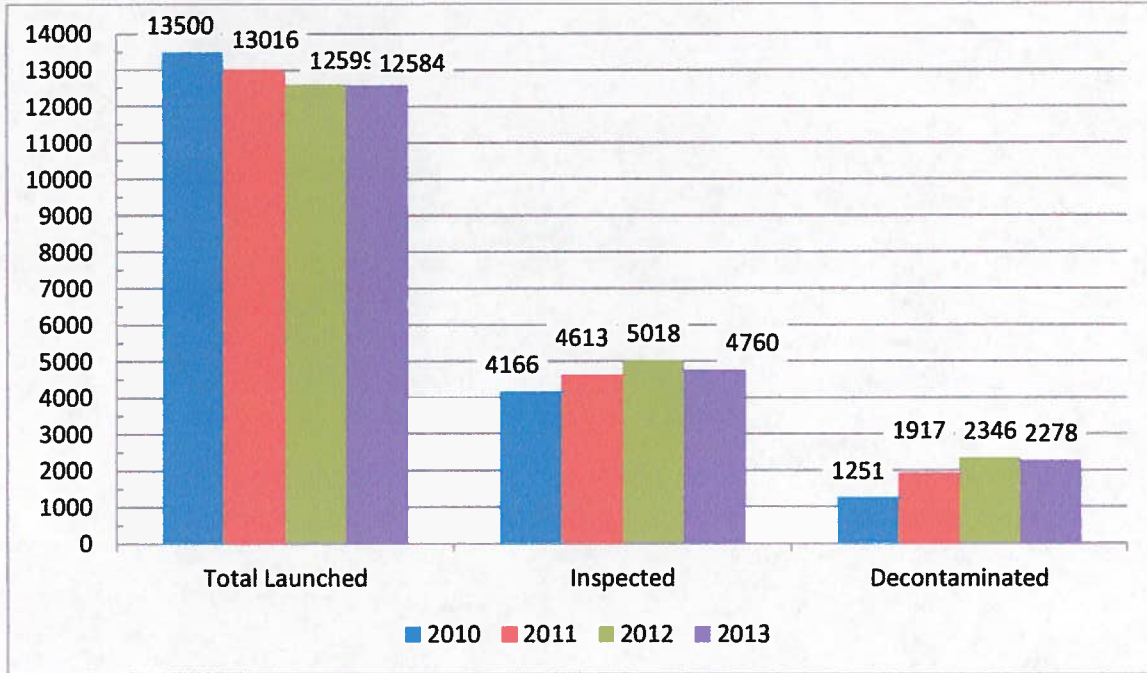
Starting with the boating season of 2008, the District implemented a quagga mussel prevention program aimed at preventing the spread of quagga mussels in Big Bear Lake. The general policy is clean, drained and dry before a vessel can launch. If a vessel does not meet these criteria, the vessel will be decontaminated at one of our public launch ramps. Private marinas along the lake are required to have a level 1 certified quagga mussel inspector available to inspect boats prior to launch. If they encounter a vessel that does not meet the policy, they are sent to one of the public launch ramps for decontamination.

The District has 3 decontamination stations. The East Ramp and West Ramp handle the bulk of the decontaminations. The third station is located at the District’s main office and is only run on holidays or special events. The decontamination is conducted by flushing suspect areas of the vessel with hot water. The entire process can take 5 minutes up to 45 minutes depending on the size of the vessel and level of decontamination.

In the spring of each year, the District’s Level II quagga mussel inspection trainers conduct a Level I quagga mussel training class to certify new and returning inspectors. The class is a free-of-charge all-day course for both private marina employees and District staff.

The District employs 9 seasonal ramp attendants whose job is to inspect and decontaminate vessels as they arrive at the public launch ramps. In total, the District inspected 4,843 boats at the public launch ramps. Of this number 2,482 vessels were clean and no decontamination was necessary and 2,278 vessels were decontaminated. Figure 12 below depicts 2010 through 2013 decontamination statistics.

**Figure 12 – Boat Launches, Inspections and Decontaminations**



**Summary of 2012 Lake Management Operations Expenses**

In Lieu Agreement	\$ 1,187,658
Herbicide Treatment	\$ 85,033
Weed Harvesting	\$ 22,828
Carp Removal and Disposal	\$ 7,135

# **2013 Weekly Limnology Reports**

Lake Level: 6739  
Down: 4.6

Big Bear Lake  
Limnological Monitoring

Taken By: 308  
Date: 4/21/2013

All stations are at mid lake  
1 = Boom Line  
2 = Papoose  
3 = West Ramp  
4 = Observatory  
5 = Juniper Point

STATION	1		2		3		4		5	
TIME	9:35	10:05	10:30	10:55	11:10					
SECCI	11	12	12	12	11					
WATER COLOR	MED GRN	MED GRN	MED GRN	MED GRN	MED GRN					
SKY	CLR	CLR	CLR	CLR	CLR					
WIND SPEED (kts)	7	6.8	9	9.1	8.6					
WIND DIRECTION	W	W	W	W	W					
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
<b>SURFACE</b>	51.1	11.1	51.6	10.6	52.6	10.9	53.1	10.9	53.7	10.9
1 mtr./3.28 ft. R	51.1	11.1	51.6	10.6	52.6	10.9	53.1	10.9	53.7	10.9
2 mtr./6.56 ft. (W)	51	10.8	51.5	10.5	52.6	10.8	52.8	10.9	53.5	10.8
3 mtr./9.84 ft. (BL)	50.9	10.8	51.3	10.5	52	10.6	52.3	10.9	53.3	10.8
4 mtr./13.12 ft. (BL/R)	50.9	10.7	51.1	10.5	51.8	10.5	52.1	10.7	52.9	10.5
5 mtr./16.40 ft. R	50.9	10.5	51.1	10.5	51.7	10.4	51.7	10.7	52.3	10.2
6 mtr./19.68 ft. (W)	50.8	10.4	51	10.3	51.5	10.4	51.4	10.1	51.7	9.6
7 mtr./22.96 ft. (BL)	50.8	10.4	50.8	10.2	51	9.9	51.3	9.9		
8 mtr./26.24 ft. (BL/W)	50.7	10.3	50.7	10.1	50.6	9.7	51.1	9.4		
9 mtr./29.52 ft. R	50.7	10.3	50.6	10.1	50.3	9.5	50.8	8.7		
10 mtr./32.80 ft. (W)	50.7	10.2	50.5	10	50.2	9.2				
11 mtr./36.00 ft. (BL)	50.7	10.2	50.5	9.8	50.1	8.8				
12 mtr./39.36 ft.(BL/BL)	50.7	10.2	50.4	9.6						
13 mtr./42.64 ft. R	50.7	10.1	50.3	9.5						
14 mtr./45.92 ft. (W)	50.7	10	50.2	9						
15 mtr./49.20 ft. (BL)	50.6	9.9								
16 mtr./52.48 ft. (BL/R)	50.6	9.7								
17 mtr./55.76 ft. R	50.4	9.4								
18 mtr./59.04 ft. (W)	50.4	8.3								
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	50.4		50.2		50.1		50.8		51.7	

50.64

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	51.1	11.1	51.6	10.6	52.6	10.9	53.1	10.9	53.7	10.9
min reading	50.4	8.3	50.2	9	50.1	8.8	50.8	8.7	51.7	9.6
mid range reading	50.75	9.7	50.9	9.8	51.35	9.85	51.95	9.8	52.7	10.25

63.3



Lake Level: 6739

Down: 4.6

### Big Bear Lake Limnological Monitoring

Taken By: \_\_\_\_\_ 308

Date: 4/28/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	10:10		10:50		11:30		11:55		12:15	
SECCI			12		12		12		10	
WATER COLOR	MED GRN		MED GRN		MED GRN		MED GRN		MED GRN	
SKY	CLR		CLR		CLR		CLR		CLR	
WIND SPEED (kts)	CALM		CALM		7.2		CALM		CALM	
WIND DIRECTION	NA		NA		E		NA		NA	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
<b>SURFACE</b>	57.1	10.7	57.7	10.8	57.7	10.8	58.3	10.7	58.5	11.1
1 mtr./3.28 ft. R	57.1	10.7	57.9	10.8	57.7	10.8	58.3	10.7	58.5	11.1
2 mtr./6.56 ft. (W)	56.5	10.6	56.7	10.8	57	10.8	57.1	10.7	56.7	10.9
3 mtr./9.84 ft. (BL)	56.2	10.5	56.5	10.8	56.7	10.6	56.9	10.7	56	9.8
4 mtr./13.12 ft. (BL/R)	56	10.2	56.4	10.8	56.3	10.5	56.3	10.7	55.4	9.1
5 mtr./16.40 ft. R	55.5	10.2	56.1	10.7	56.2	10.5	55.4	10.3	54.2	7.7
6 mtr./19.68 ft. (W)	55.3	10	54.9	10.5	55.6	10.2	54.4	9.7	53.7	7
7 mtr./22.96 ft. (BL)	54.9	9.9	54	10.2	53.6	9.9	53.5	9		
8 mtr./26.24 ft. (BL/W)	54.5	9.7	53.4	9.8	53.2	9.5	52.6	7.3		
9 mtr./29.52 ft. R	54.3	9	52.9	9.5	53	9.2	52.3	7.6		
10 mtr./32.80 ft. (W)	52	8.6	52.2	8.6	52.9	9.2				
11 mtr./36.00 ft. (BL)	51.8	8.4	51.6	8	51.8	7.3				
12 mtr./39.36 ft.(BL/BL)	51.5	8	51.4	7.7						
13 mtr./42.64 ft. R	51.3	7.6	51.3	7.5						
14 mtr./45.92 ft. (W)	51.2	7.5	51.2	7.1						
15 mtr./49.20 ft. (BL)	51.1	7.3								
16 mtr./52.48 ft. (BL/R)	51	7.2								
17 mtr./55.76 ft. R	50.9	6.7								
18 mtr./59.04 ft. (W)	50.7	5.7								
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	50.7		51.2		51.8		52.3		53.7	

51.94

68.68

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	57.1	10.7	57.9	10.8	57.7	10.8	58.3	10.7	58.5	11.1
min reading	50.7	5.7	51.2	7.1	51.8	7.3	52.3	7.3	53.7	7
mid range reading	53.9	8.2	54.55	8.95	54.75	9.05	55.3	9	56.1	9.05

Lake Level: 6738.4

Down: 4.77

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 5/7/2013

All stations are at mid lake  
 1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	10:05		9:40		9:15		8:30		8:50	
SECCI	6		6		5		5		5	
WATER COLOR	MED GRN Overcast		MED GRN Overcast		MED GRN Overcast		MED GRN Overcast		MED GRN Overcast	
WIND SPEED (kts)	6		13		17		9		14	
WIND DIRECTION	W		W		W		S		SW	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	54.2	8.4	54.5	8.9	54.7	9.1	56	9.5	55.6	9.3
1 mtr./3.28 ft. R	54.1	8.4	54.5	8.9	54.7	9.1	56	9.5	55.6	9.3
2 mtr./6.56 ft. (W)	54.1	8.4	54.4	8.9	54.7	9.1	56	9.4	55.6	7.3
3 mtr./9.84 ft. (BL)	54	8.3	54.4	8.9	54.7	9.1	55.8	9.3	55.5	9.3
4 mtr./13.12 ft. (BL/R)	54	8.3	54.4	8.9	54.7	9.1	55.7	9.2	55.5	9.3
5 mtr./16.40 ft. R	54	8.3	54.4	8.9	54.7	9	55.6	9.2	55.4	9.3
6 mtr./19.68 ft. (W)	54	8.3	54.4	8.9	54.7	9	55.6	9.2	55.4	9.2
7 mtr./22.96 ft. (BL)	54	8.3	54.4	8.9	54.7	9	55.4	9.2		
8 mtr./26.24 ft. (BL/W)	54	8.3	54.4	8.8	54.7	9	55.2	9.2		
9 mtr./29.52 ft. R	54	8.3	54.4	8.8	54.7	9	55	8.9		
10 mtr./32.80 ft. (W)	54	8.2	54.4	8.8	54.7	8.9				
11 mtr./36.00 ft. (BL)	53.9	8.2	54.4	8.8	54.6	8.9				
12 mtr./39.36 ft.(BL/BL)	53.9	8.2	54.3	8.7						
13 mtr./42.64 ft. R	53.9	8.1	54.3	8.7						
14 mtr./45.92 ft. (W)	53.9	8	54.3	8.5						
15 mtr./49.20 ft. (BL)	53.9	8								
16 mtr./52.48 ft. (BL/R)	53.9	7.8								
17 mtr./55.76 ft. R	53.9	7.4								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	53.9		54.3		54.6		55		55.4	

64.04

54.64

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	54.2	8.4	54.5	8.9	54.7	9.1	56	9.5	55.6	9.3
min reading	53.9	7.4	54.3	8.5	54.6	8.9	55	8.9	55.4	7.3
mid range reading	54.05	7.9	54.4	8.7	54.65	9	55.5	9.2	55.5	8.3

Lake Level: 6738.4

Down: 4.83

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 5/15/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	12:30	12:00	11:30	1:15	11:00
SECCI	9	9	9	7	5
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	5.4	4.4	1.1	7	11.5
WIND DIRECTION	NW	NW	NW	NW	NW
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>TEMP</b>	<b>TEMP</b>	<b>TEMP</b>	<b>TEMP</b>
	<b>D.O.</b>	<b>D.O.</b>	<b>D.O.</b>	<b>D.O.</b>	<b>D.O.</b>
<b>SURFACE</b>					
1 mtr./3.28 ft. R	58.2	58.6	59.1	60.8	60.9
	9.4	9.6	9.9	10.1	10.3
2 mtr./6.56 ft. (W)	58.2	58.4	59	60.8	60.8
	9.4	9.6	9.9	10.1	10.3
3 mtr./9.84 ft. (BL)	57.6	57.7	59	60.3	60.7
	9.4	9.6	9.9	10.1	10.2
4 mtr./13.12 ft. (BL/R)	57.2	57.3	58	58.9	60.6
	9.4	9.5	9.9	10.1	10.2
5 mtr./16.40 ft. R	57	57.1	57.8	58.8	60.4
	9.4	9.3	9.9	9.6	10.2
6 mtr./19.68 ft. (W)	56.6	56.9	57.7	58.7	60.3
	9.2	9.2	9.5	9.6	10.2
7 mtr./22.96 ft. (BL)	56.5	56.8	57.3	58.7	60.1
	9.2	8.9	8.8	9.6	10.1
8 mtr./26.24 ft. (BL/W)	56.3	56.5	57	58.7	
	8.9	8.9	8.8	9.6	
9 mtr./29.52 ft. R	56.3	56.1	56.8	58.4	
	8.8	8.6	8.6	9.2	
10 mtr./32.80 ft. (W)	56.2	56	56.3	57.1	
	8.7	8.4	8.3	7.8	
11 mtr./36.00 ft. (BL)	56	56	55		
	8.4	8.4	6.8		
12 mtr./39.36 ft.(BL/BL)	55.9	56	55		
	8.4	8.4	6.3		
13 mtr./42.64 ft. R	55.9	55.5			
	8.4	8.1			
14 mtr./45.92 ft. (W)	55.9	55.2			
	8.4	7.5			
15 mtr./49.20 ft. (BL)	55.9	55			
	8.4	6.9			
16 mtr./52.48 ft. (BL/R)	55.9				
	8.4				
17 mtr./55.76 ft. R	55.6				
	8.2				
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	55.6	55	55	57.1	60.1

69.38

56.56

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	58.2	9.4	58.6	9.6	59.1	9.9	60.8	10.1	60.9	10.3
min reading	55.6	8.2	55	6.9	55	6.3	57.1	7.8	60.1	10.1
mid range reading	56.9	8.8	56.8	8.25	57.05	8.1	58.95	8.95	60.5	10.2

Lake Level: 67.38

Down: 4.95

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 5/22/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	11:15	11:55	12:30	13:05	13:30
SECCI	9	9	8	8	4
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	12.2	11.8	13.5	17	17.1
WIND DIRECTION	W	W	W	W	W
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>
	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>
<b>SURFACE</b>	58.9	9.6	59.5	9.6	60.2
1 mtr./3.28 ft. R	58.9	9.6	59.4	9.6	60.2
2 mtr./6.56 ft. (W)	58.7	9.6	59.4	9.6	60.1
3 mtr./9.84 ft. (BL)	58.6	9.6	59.4	9.6	60
4 mtr./13.12 ft. (BL/R)	58.6	9.3	59.1	9.5	59.8
5 mtr./16.40 ft. R	58.5	9.3	58.6	9.1	59.7
6 mtr./19.68 ft. (W)	58.4	9.1	58.4	8.6	59.6
7 mtr./22.96 ft. (BL)	58.1	8.7	58.2	8.6	59.6
8 mtr./26.24 ft. (BL/W)	57.7	8.4	58	8.4	59.6
9 mtr./29.52 ft. R	57.2	7.3	58	8.4	59.6
10 mtr./32.80 ft. (W)	57.2	7.2	57.7	8	58.7
11 mtr./36.00 ft. (BL)	57.1	7.1	57.5	7.8	56.4
12 mtr./39.36 ft.(BL/BL)	57	6.9	57.2	7.1	
13 mtr./42.64 ft. R	56.7	6.2	56.5	5.7	
14 mtr./45.92 ft. (W)	56.4	5.6	56.3	5.2	
15 mtr./49.20 ft. (BL)	56.4	5.3			
16 mtr./52.48 ft. (BL/R)	56.3	5.2			
17 mtr./55.76 ft. R	56.1	5.2			
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	56.1	56.3	56.4	60.2	61.3

69.9

58.06

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	58.9	9.6	59.5	9.6	60.2	9.5	61.1	9.5	62.3	9.3
min reading	56.1	5.2	56.3	5.2	56.4	5.1	60.2	8.9	61.3	9.3
mid range reading	57.5	7.4	57.9	7.4	58.3	7.3	60.65	9.2	61.8	9.3

Lake Level: 6738.1

Down: 5.11

### Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 5/29/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	1:30	2:10	2:50	3:18	4:10
SECCI	7	7	7	5	4
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	17.5	16.5	19.6	12.2	20
WIND DIRECTION	NW	NW	NW	NW	NW
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>
<b>SURFACE</b>	59.5	9.3	60.2	9.2	61.4
1 mtr./3.28 ft. (R)	59.4	9.3	60.2	9.2	61.4
2 mtr./6.56 ft. (W)	59.3	9.3	60.2	9.2	61.3
3 mtr./9.84 ft. (BL)	59.3	9.3	60.1	9.2	61.1
4 mtr./13.12 ft. (BL/R)	59.3	9.2	60.1	9.2	61
5 mtr./16.40 ft. (R)	59.2	9.2	59.8	9.1	60.7
6 mtr./19.68 ft. (W)	59.2	9.1	59.4	9	59.4
7 mtr./22.96 ft. (BL)	59.1	8.9	59.2	9	58.9
8 mtr./26.24 ft. (BL/W)	58.9	8.5	59.2	8.9	58.9
9 mtr./29.52 ft. (R)	58.8	8.5	59.2	8.8	58.8
10 mtr./32.80 ft. (W)	58.8	8.5	59	8.5	58
11 mtr./36.00 ft. (BL)	58.8	8.5	58.8	8.3	57.8
12 mtr./39.36 ft.(BL/BL)	58.4	8.1	58.6	8.2	
13 mtr./42.64 ft. (R)	58.3	7.9	58.5	8	
14 mtr./45.92 ft. (W)	58.3	7.9	58.1	7.3	
15 mtr./49.20 ft. (BL)	58.1	7.6			
16 mtr./52.48 ft. (BL/R)	58	6.9			
17 mtr./55.76 ft. (R)	58	6.5			
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. (R)					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	58	58.1	57.8	61	62.5

70.18

59.48

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	59.5	9.3	60.2	9.2	61.4	9.3	61.8	8.8	62.5	8.9
min reading	58	6.5	58.1	7.3	57.8	5.9	61	8.3	62.5	8.9
mid range reading	58.75	7.9	59.15	8.25	59.6	7.6	61.4	8.55	62.5	8.9

Lake Level: 6738.0

Down: 5.17

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 6/3/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	8:30		9:15		9:45		10:15		10:35	
SECCI	10		10		10		8		5	
WATER COLOR	Med Grn		Med Grn		Med Grn		Med Grn		Med Grn	
SKY	Clear		Clear		Clear		Clear		Clear	
WIND SPEED (kts)	5.2		11.4		10.5		11.6		15.5	
WIND DIRECTION	W		W		W		W		W	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	62.5	9.4	63	9.1	63.6	9.2	64.2	8.9	64.4	9
1 mtr./3.28 ft. R	62.5	9.4	63	9.1	63.6	9.2	64.2	8.9	64.4	9
2 mtr./6.56 ft. (W)	62.2	9.2	63	9.1	63.5	9.2	63.8	8.9	64.2	9
3 mtr./9.84 ft. (BL)	62.1	9.2	62.6	8.8	63.2	9.2	63.5	8.9	63.8	9
4 mtr./13.12 ft. (BL/R)	61.9	9	62.5	8.8	63	9.1	63.5	8.9	63.6	9
5 mtr./16.40 ft. R	61.9	9	62.1	8.5	62.8	8.9	63.4	8.9	63.6	9
6 mtr./19.68 ft. (W)	61.9	9	62	8.5	62	7.9	63.3	8.9	63.5	8.7
7 mtr./22.96 ft. (BL)	61.8	8.9	61.9	8.5	60.4	6.9	63.1	8.9		
8 mtr./26.24 ft. (BL/W)	61.4	8.6	61.7	8.5	59.3	6.2	61.5	7.2		
9 mtr./29.52 ft. R	61.2	8.5	61.4	8.5	58.8	5.8	59.7	5.1		
10 mtr./32.80 ft. (W)	61.2	8.5	60.4	7.9	58.7	5.5				
11 mtr./36.00 ft. (BL)	61.1	8.3	60.3	7.8	58.5	5.1				
12 mtr./39.36 ft.(BL/BL)	60.9	8.2	60.2	7.8						
13 mtr./42.64 ft. R	60.5	7.8	59.2	6.4						
14 mtr./45.92 ft. (W)	58.8	5.8	58.6	5.6						
15 mtr./49.20 ft. (BL)	58.5	5.1								
16 mtr./52.48 ft. (BL/R)	58.2	4.4								
17 mtr./55.76 ft. R	58.1	4								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	58.1		58.6		58.5		59.7		63.5	

72.66

59.68

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	62.5	9.4	63	9.1	63.6	9.2	64.2	8.9	64.4	9
min reading	58.1	4	58.6	5.6	58.5	5.1	59.7	5.1	63.5	8.7
mid range reading	60.3	6.7	60.8	7.35	61.05	7.15	61.95	7	63.95	8.85

Lake Level: 6737.9

Down: 5.33

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 6/10/2013

All stations are at mid lake      1 = Boom Line      2 = Pappoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	9:00		9:35		10:25		12:55		13:20	
SECCI	10		10		7		7		3	
WATER COLOR	Med Grn		Med Grn		Med Grn		Med Grn		Med Grn	
SKY	Clear		Clear		Clear		Clear		Clear	
WIND SPEED (kts)	11.2		11.5		17.2		20.5		23	
WIND DIRECTION	W		W		SW		SW		SW	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
<b>SURFACE</b>	63.4	8.1	63.5	8	64.1	7.6	65.7	8.1	67.2	8
1 mtr./3.28 ft. R	63.4	8.1	63.5	8	64.1	7.6	65.7	8.1	67.2	8
2 mtr./6.56 ft. (W)	63.3	7.9	63.5	7.9	64.1	7.6	65.7	8	67.2	8
3 mtr./9.84 ft. (BL)	63.1	7.7	63.5	7.8	64	7.6	65.7	8	67.2	8
4 mtr./13.12 ft. (BL/R)	62.8	7.5	63.4	7.8	64	7.6	65.6	8	67.2	8
5 mtr./16.40 ft. R	62.1	6.7	63.4	7.8	64	7.5	65.6	8	67.2	8
6 mtr./19.68 ft. (W)	61.6	5.9	63.2	7.7	64	7.5	65.6	8	67.2	8
7 mtr./22.96 ft. (BL)	61.2	5.4	62.7	6.9	64	7.5	65.5	7.9	67.2	8
8 mtr./26.24 ft. (BL/W)	61.1	5.1	62.2	6.2	64	7.5	65.3	7.7		
9 mtr./29.52 ft. R	61	4.9	60.6	4.1	64	7.5	65.2	7.4		
10 mtr./32.80 ft. (W)	60.8	4.7	60.5	3.9	63.9	7.5				
11 mtr./36.00 ft. (BL)	60.7	4.5	60.5	3.8	63.8	7.5				
12 mtr./39.36 ft.(BL/BL)	60.6	4.5	60.4	3.7						
13 mtr./42.64 ft. R	60.5	4.2	60.4	3.6						
14 mtr./45.92 ft. (W)	60.3	3.7	60.4	3.6						
15 mtr./49.20 ft. (BL)	60.1	3.2								
16 mtr./52.48 ft. (BL/R)	59.9	2.9								
17 mtr./55.76 ft. R	59.8	2.5								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	59.8		60.4		63.8		65.2		67.2	

72.74

63.28

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	63.4	8.1	63.5	8	64.1	7.6	65.7	8.1	67.2	8
min reading	59.8	2.5	60.4	3.6	63.8	7.5	65.2	7.4	67.2	8
mid range reading	61.6	5.3	61.95	5.8	63.95	7.55	65.45	7.75	67.2	8

Lake Level: 6737.7

Down: 5.48

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 6/17/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	9:50	10:20	10:20	8	11:10	8:30	11:35			
SECCI	10	8	8	8	8	6	4			
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm			
SKY	Clear	Clear	Clear	Clear	Clear	Clear	Clear			
WIND SPEED (kts)	6.6	11.3	11.6	11.6	11.6	0.2	13.2			
WIND DIRECTION	W	W	W	W	W	W	W			
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
<b>SURFACE</b>	64.2	7.3	64.7	7.5	65.3	7.7	66.1	8	67.1	8.1
1 mtr./3.28 ft. R	64.1	7.3	64.6	7.5	65.3	7.7	66.1	8	67.1	8.1
2 mtr./6.56 ft. (W)	63.7	7.3	64.5	7.5	65.2	7.7	65.9	8	67.1	8.1
3 mtr./9.84 ft. (BL)	63.7	7.2	64.1	7.4	65.1	7.7	65.9	8	67	8.1
4 mtr./13.12 ft. (BL/R)	63.6	7.2	64	7.4	64.7	7.7	65.8	7.9	66.9	8.1
5 mtr./16.40 ft. R	63.6	7.2	63.8	7.4	64.5	7.6	65.8	7.8	66.8	8.1
6 mtr./19.68 ft. (W)	63.6	7.1	63.7	7.2	64.3	7.2	65.8	7.8	66.6	8.1
7 mtr./22.96 ft. (BL)	63.5	7.1	63.6	7.2	63.9	6.4	65.7	7.8		
8 mtr./26.24 ft. (BL/W)	63.5	7	63.4	7.2	62.3	3.7	65.5	7.4		
9 mtr./29.52 ft. R	63.3	6.9	63.3	7.1	62.2	3.4	64.9	5		
10 mtr./32.80 ft. (W)	63.2	6.8	63.1	7	62.1	3				
11 mtr./36.00 ft. (BL)	63.2	6.8	63	6.7	62.1	3				
12 mtr./39.36 ft.(BL/BL)	63.1	6.7	63	6.7						
13 mtr./42.64 ft. R	63.1	6.6	62.4	5.2						
14 mtr./45.92 ft. (W)	63	6.6	62.3	4.4						
15 mtr./49.20 ft. (BL)	63	6.6								
16 mtr./52.48 ft. (BL/R)	62.8	6.4								
17 mtr./55.76 ft. R	62.5	6.2								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	62.5		62.3		62.1		64.9		66.6	

73.2

63.68

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	64.2	7.3	64.7	7.5	65.3	7.7	66.1	8	67.1	8.1
min reading	62.5	6.2	62.3	4.4	62.1	3	64.9	5	66.6	8.1
mid range reading	63.35	6.75	63.5	5.95	63.7	5.35	65.5	6.5	66.85	8.1



Lake Level: 6737.5

Down: 5.67

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 6/24/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	9:00	9:45	10:30	11:00	11:30
SECCI	8	8	7	5	2
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Partly Overcast	Partly Overcast	Partly Overcast	Partly Overcast	Partly Overcast
WIND SPEED (kts)	7.9	16.6	14	14.2	10.6
WIND DIRECTION	NW	NW	NW	NW	NW
DEPTH IN METERS/FEET	TEMP	TEMP	TEMP	TEMP	TEMP
	D.O.	D.O.	D.O.	D.O.	D.O.
SURFACE	63.6	63.9	64.9	66.9	67.4
	7.1	7.4	7.7	8.6	8.6
1 mtr./3.28 ft. R	63.6	63.9	64.9	66.9	67.4
	7.1	7.4	7.7	8.6	8.9
2 mtr./6.56 ft. (W)	63.6	63.9	64.9	66.9	67.4
	6.9	7.4	7.7	8.6	8.9
3 mtr./9.84 ft. (BL)	63.6	63.9	64.9	66.8	67.3
	6.9	7.3	7.7	8.6	8.9
4 mtr./13.12 ft. (BL/R)	63.6	63.8	64.9	66.8	67.3
	6.7	7.3	7.7	8.4	8.9
5 mtr./16.40 ft. R	63.6	63.7	64.9	66.5	67.2
	6.7	7.3	7.7	8.3	8.7
6 mtr./19.68 ft. (W)	63.5	63.6	64.8	66.5	67.2
	6.5	7.3	7.7	8.3	8.7
7 mtr./22.96 ft. (BL)	63.5	63.4	64.8	66	67.2
	6.5	7	7.7	8.2	
8 mtr./26.24 ft. (BL/W)	63.4	63.3	64.8	66	
	6.5	6.6	7.7	8.1	
9 mtr./29.52 ft. R	63.4	63.3	64.8	65.3	
	6.5	6.6	7.7	7.6	
10 mtr./32.80 ft. (W)	63.2	63.2	63.4		
	6.2	6.2	6.8		
11 mtr./36.00 ft. (BL)	63.2	63.1	63.2		
	6.2	5.3	5.6		
12 mtr./39.36 ft.(BL/BL)	63.2	63			
	6	4.7			
13 mtr./42.64 ft. R	63.2	62.9			
	5.9	3.7			
14 mtr./45.92 ft. (W)	63.1	62.8			
	5.8	3.1			
15 mtr./49.20 ft. (BL)	63.1				
	5.7				
16 mtr./52.48 ft. (BL/R)	63				
	5.2				
17 mtr./55.76 ft. R	62.9				
	5.1				
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	62.9	62.8	63.2	65.3	67.2

73.3

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	63.6	7.1	63.9	7.4	64.9	7.7	66.9	8.6	67.4	9
min reading	62.9	5.1	62.8	3.1	63.2	5.6	65.3	7.6	67.2	8.7
mid range reading	63.25	6.1	63.35	5.25	64.05	6.65	66.1	8.1	67.3	8.85

64.28

Lake Level: 6737.4

Down: 5.77

### Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 7/1/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	9:15		9:55		10:40		11:15		11:40	
SECCI	9		7		7		6		2	
WATER COLOR	Med Grn Overcast		Med Grn Overcast		Med Grn Overcast		Med Grn Overcast		Med Grn Overcast	
SKY	0.6		1.5		3.5		1.5		6.1	
WIND SPEED (kts)	W		W		W		W		SE	
WIND DIRECTION	W		W		W		W		SE	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
1 mtr./3.28 ft. R	67.9	8.7	68.5	9	68.8	9.3	70.6	10.5	71.3	12.5
2 mtr./6.56 ft. (W)	67.8	8.7	68.5	9	68.7	9.3	70.5	10.5	71.3	12.5
3 mtr./9.84 ft. (BL)	67.7	8.7	68.5	9	68.5	9.2	70.2	10.2	70.8	10.6
4 mtr./13.12 ft. (BL/R)	67.6	8.5	68.1	9	68.3	9.2	69.9	9.7	70.6	9.8
5 mtr./16.40 ft. R	67.6	8.4	67.7	8.7	68.2	9.1	69.6	9.3	69.9	9.1
6 mtr./19.68 ft. (W)	67.5	8.2	67.6	8.6	67.5	8.8	68.9	8.7	67.9	4.2
7 mtr./22.96 ft. (BL)	67.3	8.1	67.5	8.6	67.1	6.3	67.4	7.3	66.7	2.5
8 mtr./26.24 ft. (BL/W)	67.1	7.9	66.5	8	65.5	6.2	66.3	4.8		
9 mtr./29.52 ft. R	66.8	7.4	65.5	6.6	64.6	4.5	65	2.9		
10 mtr./32.80 ft. (W)	65.7	6.3	65	5.7	64.3	3.8	64.8	2.8		
11 mtr./36.00 ft. (BL)	64.1	4.1	65	5.6	63.9	3.5				
12 mtr./39.36 ft.(BL/BL)	63.9	3.8	64.1	4.2	63.7	3.2				
13 mtr./42.64 ft. R	63.8	3.5	63.6	3.2						
14 mtr./45.92 ft. (W)	63.7	3.1	63.5	2.8						
15 mtr./49.20 ft. (BL)	63.5	2.5	63.5	2.8						
16 mtr./52.48 ft. (BL/R)	63.5	2.5								
17 mtr./55.76 ft. R	63.5	2.4								
18 mtr./59.04 ft. (W)	63.4	2.4								
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	63.4		63.5		63.7		64.8		66.7	

79.42

64.42

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.9	8.7	68.5	9	68.8	9.3	70.6	10.5	71.3	12.5
min reading	63.4	2.4	63.5	2.8	63.7	3.2	64.8	2.8	66.7	2.5
mid range reading	65.65	5.55	66	5.9	66.25	6.25	67.7	6.65	69	7.5

Lake Level: 6737.3

Down: 5.90

### Big Bear Lake Limnological Monitoring

Taken By: 309 Date: 7/8/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5					
TIME	9:00	9:30	10:15	11:15	11:40					
SECCI	8	7	6	6	2					
WATER COLOR	Med Grn	Med Grn	Med Grn	Med Grn	Med Grn					
SKY	Clear	Clear	Clear	Clear	Clear					
WIND SPEED (kts)	3.5	6.9	7.8	3.5	7.8					
WIND DIRECTION	W	W	W	W	W					
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>					
					<b>D.O.</b>					
<b>SURFACE</b>	68.4	8.2	68.6	8	69.3	8.5	71.2	9.6	71.6	9.6
1 mtr./3.28 ft. R	68.3	8.2	68.6	8	69.3	8.5	71.2	9.6	71.6	9.6
2 mtr./6.56 ft. (W)	68.1	7.9	68.2	8	69.1	8.5	71.1	9.6	71.5	9.6
3 mtr./9.84 ft. (BL)	67.9	7.9	68.1	8	68.7	8.5	70.6	9.6	71.3	9.6
4 mtr./13.12 ft. (BL/R)	67.9	7.8	68	7.9	68.6	8.3	70.4	9.5	71.3	9.6
5 mtr./16.40 ft. R	67.9	7.8	68	7.9	68.5	8.3	70.3	9.4	71	9.6
6 mtr./19.68 ft. (W)	67.8	7.7	67.9	7.9	68.4	8.1	69.6	8.7	70.3	9.6
7 mtr./22.96 ft. (BL)	67.8	7.7	67.9	7.9	67	5.5	68.9	8.2		
8 mtr./26.24 ft. (BL/W)	67.7	7.5	67.5	7.8	65.8	4.3	67.9	5.6		
9 mtr./29.52 ft. R	67.6	7.5	66.9	7.1	65.2	2.4	66.9	2.6		
10 mtr./32.80 ft. (W)	67.5	7.3	65.9	4.8	64.9	2				
11 mtr./36.00 ft. (BL)	66	4.5	65.5	3.8	64.6	1.9				
12 mtr./39.36 ft. (BL/BL)	64.7	1.9	64.8	2.3						
13 mtr./42.64 ft. R	64.5	1.4	64.4	1.6						
14 mtr./45.92 ft. (W)	64.4	1.1	64.4	1.5						
15 mtr./49.20 ft. (BL)	64.3	1.1								
16 mtr./52.48 ft. (BL/R)	64.2	1.1								
17 mtr./55.76 ft. R	64.1	1								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	64.1	64.4	64.6	66.9	70.3					

78.6

66.06

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	68.4	8.2	68.6	8	69.3	8.5	71.2	9.6	71.6	9.6
min reading	64.1	1	64.4	1.5	64.6	1.9	66.9	2.6	70.3	9.6
mid range reading	66.25	4.6	66.5	4.75	66.95	5.2	69.05	6.1	70.95	9.6

Lake Level: 6737.2  
Down: 6.03

Taken By: 309 Date: 7/15/2013

### Big Bear Lake Limnological Monitoring

STATION	1 = Boom Line		2 = Papoose		3 = West Ramp		4 = Observatory		5 = Juniper Point	
	TIME	SECCI	TIME	SECCI	TIME	SECCI	TIME	SECCI	TIME	SECCI
WATER COLOR	Med Grn	Clear	Med Grn	Clear	Med Grn	Clear	Med Grn	Clear	Med Grn	Clear
WIND SPEED (kts)	4.5	W	8.9	W	10.5	W	10.5	W	12.8	W
WIND DIRECTION										
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	67.9	8.8	68.4	9.4	68.9	10	69.9	10.7	70.1	8.7
1 mtr./3.28 ft. R	67.9	8.8	68.4	9.4	68.9	10	69.9	10.7	69.9	8.7
2 mtr./6.56 ft. (W)	67.7	8.5	68.3	9.4	68.8	10	69.5	10.7	69.6	8.7
3 mtr./9.84 ft. (BL)	67.6	8.4	68.3	9.4	68.5	10	69.1	10.2	69.3	8.7
4 mtr./13.12 ft. (BL/R)	67.6	8.2	68.1	9.3	68.4	10	69	10.2	69.1	7.2
5 mtr./16.40 ft. R	67.5	8.2	67.9	9.1	68.4	10	68.9	10	69.1	7.2
6 mtr./19.68 ft. (W)	67.5	8.2	67.9	9.1	68.3	10	68.8	9	69.1	7.2
7 mtr./22.96 ft. (BL)	67.5	8.1	67.7	9.1	66.8	5.5	68.2	7.8		
8 mtr./26.24 ft. (BL/W)	67.5	8.1	67.6	8.9	66.4	4.3	66.9	3.2		
9 mtr./29.52 ft. R	67.4	7.9	67.2	6.6	65.3	2.9	66.5	3.2		
10 mtr./32.80 ft. (W)	67.3	7.7	66.8	5.3	64.8	2.9				
11 mtr./36.00 ft. (BL)	67.3	7.7	66.2	4.1	64.8	2.9				
12 mtr./39.36 ft.(BL/BL)	65.6	2.4	65.2	2.5						
13 mtr./42.64 ft. R	64.6	1.9	65	2.4						
14 mtr./45.92 ft. (W)	64.4	1.8	64.7	2.4						
15 mtr./49.20 ft. (BL)	64.2	1.8								
16 mtr./52.48 ft. (BL/R)	63.9	1.8								
17 mtr./55.76 ft. R	63.6	1.8								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	63.6		64.7		64.8		66.5		69.1	

78.56

65.74

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.9	8.8	68.4	9.4	68.9	10	69.9	10.7	70.1	8.7
min reading	63.6	1.8	64.7	2.4	64.8	2.9	66.5	3.2	69.1	7.2
mid range reading	65.75	5.3	66.55	5.9	66.85	6.45	68.2	6.95	69.6	7.95

Lake Level: 6737.1

Down: 6.15

### Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 7/22/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:30	9:15	9:45	10:15	10:50
SECCI	6	6	6	5	3
WATER COLOR	Med Gm <sup>+</sup> Clear	Med Gm <sup>+</sup> Clear	Med Gm <sup>+</sup> Clear	Med Gm <sup>+</sup> Overcast	Med Gm <sup>+</sup> Overcast
SKY	4.4	10.2	10.2	3.2	3.4
WIND SPEED (kts)	W	W	W	W	SE
WIND DIRECTION					
DEPTH IN METERS/FEET	TEMP	TEMP	TEMP	TEMP	TEMP
	D.O.	D.O.	D.O.	D.O.	D.O.
SURFACE	67.7	67.9	68.6	68.4	69.6
	10.2	12.2	12.8	12.8	13.5
1 mtr./3.28 ft. R	67.6	67.9	68.6	68.3	69.4
	10.2	12.2	12.8	12.8	13.5
2 mtr./6.56 ft. (W)	67.6	67.9	68.6	68.3	69.3
	10.2	12.2	12.8	12.8	13.5
3 mtr./9.84 ft. (BL)	67.5	67.8	68.5	69	69.1
	9.9	11.7	12.8	12.9	11.3
4 mtr./13.12 ft. (BL/R)	67.5	67.8	68.4	68.9	69
	9.9	11.7	12.8	12.7	11.2
5 mtr./16.40 ft. R	67.5	67.8	68.3	68.9	68.9
	9.9	11.7	12.8	12.7	11.2
6 mtr./19.68 ft. (W)	67.5	67.8	67.4	68.9	68.8
	9.6	11.7	10.2	12.7	11.2
7 mtr./22.96 ft. (BL)	67.4	67.7	67	68.8	
	9.5	11.6	9.1	12.4	
8 mtr./26.24 ft. (BL/W)	67.4	67.7	66.7	67.5	
	9.5	11.6	8.5	8.9	
9 mtr./29.52 ft. R	67.2	67.2	66.1	67	
	9.2	9.4	5.8	6.8	
10 mtr./32.80 ft. (W)	67.2	67.1	66		
	9.1	9.1	5		
11 mtr./36.00 ft. (BL)	66.9	66.8	65.8		
	7.3	7.9	4.6		
12 mtr./39.36 ft.(BL/BL)	66.5	66.2			
	5.5	5.7			
13 mtr./42.64 ft. R	66	65.9			
	4.1	4.6			
14 mtr./45.92 ft. (W)	65.7	65.8			
	3.2	4.2			
15 mtr./49.20 ft. (BL)	65.6				
	3.2				
16 mtr./52.48 ft. (BL/R)	65.4				
	3.2				
17 mtr./55.76 ft. R	65.3				
	3.2				
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	65.3	65.8	65.8	67	68.8

80.8

66.54

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.7	10.2	67.9	12.2	68.6	12.8	69.4	13.5	69.6	12.1
min reading	65.3	3.2	65.8	4.2	65.8	4.6	67	6.8	68.8	11.2
mid range reading	66.5	6.7	66.85	8.2	67.2	8.7	68.2	10.15	69.2	11.65

Lake Level: 6737.1

Down: 6.13

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 7/29/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:30	9:10	9:45	10:15	11:15
SECCI	6	6	6	5	2
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	8.9	11.9	9.8	8.2	8.2
WIND DIRECTION	W	W	W	W	W
DEPTH IN METERS/FEET	TEMP	TEMP	TEMP	TEMP	TEMP
	D.O.	D.O.	D.O.	D.O.	D.O.
SURFACE	67.9	68.2	68.8	69.8	70.4
	7.4	6.8	7.5	8.2	8.1
1 mtr./3.28 ft. R	67.9	68.2	68.8	69.6	70.4
	7.4	6.8	7.5	8.2	8.1
2 mtr./6.56 ft. (W)	67.8	68.2	68.8	69.6	70.2
	6.9	6.8	7.4	8.2	7.8
3 mtr./9.84 ft. (BL)	67.8	68.1	68.7	69.3	70
	6.8	6.7	7.3	7.6	7.4
4 mtr./13.12 ft. (BL/R)	67.8	68	68.7	69.3	69.8
	6.7	6.4	7.2	7.4	7.4
5 mtr./16.40 ft. R	67.7	67.9	68.6	69.3	69.4
	6.4	6.2	7	7.4	7.4
6 mtr./19.68 ft. (W)	67.7	67.9	68.5	69.2	69.3
	6.3	6.2	6.9	7.2	7
7 mtr./22.96 ft. (BL)	67.7	67.9	68.1	69.2	69.3
	6.2	6.2	6.4	7.2	7
8 mtr./26.24 ft. (BL/W)	67.7	67.8	66.8	68.5	68.5
	6.2	6.1	1.2	3.7	3.7
9 mtr./29.52 ft. R	67.5	67.5	66.6	68.2	68.2
	6	5.6	0.7	2.7	2.7
10 mtr./32.80 ft. (W)	67.5	67.4	66.5	68.2	68.2
	5.9	5.4	0.5	2.7	2.7
11 mtr./36.00 ft. (BL)	67.5	67.2	66.5	68.2	68.2
	5.8	4.6	0.2	2.7	2.7
12 mtr./39.36 ft.(BL/BL)	67.4	66.8	66.5	68.2	68.2
	5.8	3.5	0.2	2.7	2.7
13 mtr./42.64 ft. R	67.3	66.7	66.5	68.2	68.2
	5.7	3	0.2	2.7	2.7
14 mtr./45.92 ft. (W)	67.2	66.7	66.5	68.2	68.2
	5.3	2.8	0.2	2.7	2.7
15 mtr./49.20 ft. (BL)	67.1	66.7	66.5	68.2	68.2
	5	2.8	0.2	2.7	2.7
16 mtr./52.48 ft. (BL/R)	67	66.7	66.5	68.2	68.2
	4.5	2.8	0.2	2.7	2.7
17 mtr./55.76 ft. R	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
18 mtr./59.04 ft. (W)	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
19 mtr./62.32 ft. (BL)	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
20 mtr./65.60 ft. (BL/W)	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
21 mtr./68.88 ft. R	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
22 mtr./72.16 ft. (W)	66.5	66.7	66.5	68.2	68.2
	2.3	2.8	0.2	2.7	2.7
<b>BOTTOM TEMPS</b>	66.5	66.7	66.5	68.2	69.3

76.62

67.44

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.9	7.4	68.2	6.8	68.8	7.5	69.8	8.2	70.4	8.1
min reading	66.5	2.3	66.7	2.8	66.5	0.2	68.2	2.7	69.3	7
mid range reading	67.2	4.85	67.45	4.8	67.65	3.85	69	5.45	69.85	7.55

Lake Level: 6736.9

Down: 6.31

### Big Bear Lake Limnological Monitoring

Taken By: \_\_\_\_\_ 309 \_\_\_\_\_ Date: 8/5/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:15	8:45	9:15	9:40	9:55
SECCI	6	6	6	5	2
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	5.6	12.2	11.3	11.6	8.1
WIND DIRECTION	W	W	W	W	W
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>
<b>SURFACE</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>
1 mtr./3.28 ft. R	66.7	5.7	68	7.6	69.3
2 mtr./6.56 ft. (W)	66.7	5.6	68	7.5	69.3
3 mtr./9.84 ft. (BL)	66.7	5.5	67.9	7.4	69
4 mtr./13.12 ft. (BL/R)	66.7	5.5	67.9	7.3	68.8
5 mtr./16.40 ft. R	66.7	5.5	67.9	7.1	68.6
6 mtr./19.68 ft. (W)	66.7	5.4	67.8	6.9	68.5
7 mtr./22.96 ft. (BL)	66.7	5.4	67.7	6.3	68.7
8 mtr./26.24 ft. (BL/W)	66.7	5.4	67.7	6.1	68.7
9 mtr./29.52 ft. R	66.7	5.4	67.7	6.1	
10 mtr./32.80 ft. (W)	66.7	5.4	67.7	6	
11 mtr./36.00 ft. (BL)	66.7	5.3	66.8	5.3	
12 mtr./39.36 ft.(BL/BL)	66.7	5.3	66.7	5.3	
13 mtr./42.64 ft. R	66.6	5.3	66.7	5.2	
14 mtr./45.92 ft. (W)	66.6	5.3			
15 mtr./49.20 ft. (BL)	66.6	5.3			
16 mtr./52.48 ft. (BL/R)	66.6	5.1			
17 mtr./55.76 ft. R					
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	66.6	66.7	67.7	68.7	68.5

75.12

67.64

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	66.7	5.7	67.5	7	68	7.5	69.2	7.6	69.3	7.1
min reading	66.6	5.1	66.7	5.2	67.7	6	68.7	7.1	68.5	6.2
mid range reading	66.65	5.4	67.1	6.1	67.85	6.75	68.95	7.35	68.9	6.65

Lake Level: 6736.7  
Down: 6.50

### Big Bear Lake Limnological Monitoring

Taken By: 309 Date: 8/12/2013

All stations are at mid lake 1 = Boom Line 2 = Papoose 3 = West Ramp 4 = Observatory 5 = Juniper Point

STATION	1	2	3	4	5	
TIME	8:30	9:05	9:35	10:05	10:45	
SECCI	7	7	5	5	3	
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm	
SKY	Clear	Clear	Clear	Clear	Clear	
WIND SPEED (kts)	1.5	2.8	2.7	2.4	6	
WIND DIRECTION	SE	SE	SE	W	W	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	65.8	6.8	66.5	6.9	67.8	8.2
1 mtr./3.28 ft. R	65.8	6.8	66.4	6.9	67.8	8.2
2 mtr./6.56 ft. (W)	65.7	6.6	66.2	6.9	67.4	7.9
3 mtr./9.84 ft. (BL)	65.7	6.3	66.1	6.9	67.4	7.7
4 mtr./13.12 ft. (BL/R)	65.7	6.2	66.1	6.8	67.3	7.5
5 mtr./16.40 ft. R	65.6	6.2	66.1	6.7	67.3	7.3
6 mtr./19.68 ft. (W)	65.6	6.1	66	6.6	67.2	7.4
7 mtr./22.96 ft. (BL)	65.6	6.1	66	6.6	67.1	7.4
8 mtr./26.24 ft. (BL/W)	65.6	6.1	65.9	6.5	67.1	7.3
9 mtr./29.52 ft. R	65.6	6	65.9	6.4	67	7.2
10 mtr./32.80 ft. (W)	65.6	6	65.9	6.3	66.2	5.8
11 mtr./36.00 ft. (BL)	65.6	6	65.8	6.2	66.1	5.5
12 mtr./39.36 ft.(BL/BL)	65.5	6	65.7	6		
13 mtr./42.64 ft. R	65.5	6	65.7	5.9		
14 mtr./45.92 ft. (W)	65.5	5.9	65.7	5.9		
15 mtr./49.20 ft. (BL)	65.5	5.9				
16 mtr./52.48 ft. (BL/R)	65.5	5.9				
17 mtr./55.76 ft. R	65.4	5.8				
18 mtr./59.04 ft. (W)						
19 mtr./62.32 ft. (BL)						
20 mtr./65.60 ft. (BL/W)						
21 mtr./68.88 ft. R						
22 mtr./72.16 ft. (W)						
<b>BOTTOM TEMPS</b>	65.4		65.7	66.1	67	67.3

74.46

66.3

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	65.8	6.8	66.5	6.9	67.8	8.2	68.7	7.7	68.7	7.7
min reading	65.4	5.8	65.7	5.9	67	7.2	67.3	7.1	67.3	7.1
mid range reading	65.6	6.3	66.1	6.4	67.4	7.7	68	7.4	68	7.4



Lake Level: 6736.6

Down: 6.60

### Big Bear Lake Limnological Monitoring

Taken By: 309 Date: 8/19/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:30	9:10	9:35	10:05	10:35
SECCI	9	9	8	7	3
WATER COLOR	Med Grn	Med Grn	Med Grn	Med Grn	Med Grn
SKY	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy
WIND SPEED (kts)	3.7	2.3	0.9	7.3	7.1
WIND DIRECTION	SE	SE	SE	SE	SE
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>
<b>SURFACE</b>	<b>88</b>	<b>8</b>	<b>88.2</b>	<b>7.8</b>	<b>7.7</b>
1 mtr./3.28 ft. R	68	8	68.2	7.8	7.7
2 mtr./6.56 ft. (W)	67.9	7.8	68.2	7.7	7.6
3 mtr./9.84 ft. (BL)	67.8	7.7	68.1	7.6	7.6
4 mtr./13.12 ft. (BL/R)	67.8	7.7	68.1	7.6	7.6
5 mtr./16.40 ft. R	67.8	7.6	68	7.4	7.5
6 mtr./19.68 ft. (W)	67.8	7.5	67.9	7.4	7
7 mtr./22.96 ft. (BL)	67.8	7.5	67.9	7.3	6.2
8 mtr./26.24 ft. (BL/W)	67.7	7.5	67.8	7.2	6.2
9 mtr./29.52 ft. R	67.7	7.5	67.6	7.2	6.1
10 mtr./32.80 ft. (W)	67.7	7.5	67.4	7.1	6.1
11 mtr./36.00 ft. (BL)	67.6	7.5	67.3	7	6.1
12 mtr./39.36 ft.(BL/BL)	67.5	7.2	66.4	5.7	6.1
13 mtr./42.64 ft. R	67.1	7	66.1	4.3	6.1
14 mtr./45.92 ft. (W)	67	7	66.1	4.3	6.1
15 mtr./49.20 ft. (BL)	66.9	6.8			6.1
16 mtr./52.48 ft. (BL/R)	66.6	6			6.1
17 mtr./55.76 ft. R	66.4	5.1			6.1
18 mtr./59.04 ft. (W)					6.1
19 mtr./62.32 ft. (BL)					6.1
20 mtr./65.60 ft. (BL/W)					6.1
21 mtr./68.88 ft. R					6.1
22 mtr./72.16 ft. (W)					6.1
<b>BOTTOM TEMPS</b>	<b>66.4</b>	<b>66.1</b>	<b>66.1</b>	<b>68.1</b>	<b>68.3</b>

76.94

67

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	68	8	68.2	7.8	68.8	7.7	70.4	8	70.7	7.1
min reading	66.4	5.1	66.1	4.3	66.1	4	68.1	5.5	68.3	5.3
mid range reading	67.2	6.55	67.15	6.05	67.45	5.85	69.25	6.75	69.5	6.2

Lake Level: 6736.4

Down: 6.77

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 8/26/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:20	9:00	9:35	10:00	10:25
SECCI	8	8	6	5	2
WATER COLOR	Dark Gm Overcast	Dark Gm Overcast	Dark Gm Overcast	Dark Gm Overcast	Dark Gm Overcast
SKY	2	1.8	0.5	2.1	7.7
WIND SPEED (kts)	SE	W	W	W	SE
WIND DIRECTION					
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP
	67.5	6.6	68	6.8	68.8
SURFACE					
1 mtr./3.28 ft. (R)	67.5	6.6	68	6.8	68.8
2 mtr./6.56 ft. (W)	67.4	6.3	68	6.8	68.7
3 mtr./9.84 ft. (BL)	67.4	6.2	68	6.7	68.6
4 mtr./13.12 ft. (BL/R)	67.4	6	68	6.6	68.5
5 mtr./16.40 ft. (R)	67.4	5.9	68	6.6	68.5
6 mtr./19.68 ft. (W)	67.3	5.9	68	6.6	68.4
7 mtr./22.96 ft. (BL)	67.3	5.8	67.8	6.4	68.4
8 mtr./26.24 ft. (BL/W)	67.3	5.6	67.7	6.2	68.3
9 mtr./29.52 ft. (R)	67.3	5.6	67.5	6.1	68.2
10 mtr./32.80 ft. (W)	67.2	5.6	67.4	6.1	67.5
11 mtr./36.00 ft. (BL)	67.1	5.6	67.4	6.1	
12 mtr./39.36 ft. (BL/BL)	67.1	5.6	67.1	5.3	
13 mtr./42.64 ft. (R)	67.1	5.5	67	4.8	
14 mtr./45.92 ft. (W)	67	5.5			
15 mtr./49.20 ft. (BL)	67	5.4			
16 mtr./52.48 ft. (BL/R)	67	5.4			
17 mtr./55.76 ft. (R)	67	5.2			
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. (R)					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	67	67	67.5	68.9	69.7

75.44

68.02

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.5	6.6	68	6.8	68.8	7.1	69.6	7	70	5.8
min reading	67	5.2	67	4.8	67.5	4.9	68.9	6.6	69.7	5.6
mid range reading	67.25	5.9	67.5	5.8	68.15	6	69.25	6.8	69.85	5.7

Lake Level: 6736.3

Down: 6.86

### Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 9/4/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	8:15	8:50	9:30	10:00	10:20
SECCI	7	7	6	5	4
WATER COLOR	Med Gm	Med Gm	Med Gm	Med Gm	Med Gm
SKY	Clear	Clear	Clear	Clear	Clear
WIND SPEED (kts)	1.4	7	4.4	2.4	2.4
WIND DIRECTION	SE	W	W	W	W
DEPTH IN METERS/FEET	TEMP	TEMP	TEMP	TEMP	TEMP
	D.O.	D.O.	D.O.	D.O.	D.O.
SURFACE	68.5	68.9	69.4	70.5	70.7
	7.1	7	6.9	7.3	7.2
1 mtr./3.28 ft. R	68.5	68.8	69.4	70.5	70.7
	7.1	7	6.9	7.3	7.2
2 mtr./6.56 ft. (W)	68.4	68.7	69.3	70	70.4
	6.8	6.6	6.8	7.1	7
3 mtr./9.84 ft. (BL)	68.3	68.7	69.3	69.8	70.3
	6.6	6.7	6.6	6.9	6.5
4 mtr./13.12 ft. (BL/R)	68.3	68.7	69.1	69.8	70.3
	6.4	6.7	5.8	6.9	6
5 mtr./16.40 ft. R	68.2	68.6	68.9	69.7	69.6
	6.4	6.5	5.8	6.9	3.6
6 mtr./19.68 ft. (W)	68.2	68.4	68.8	69.5	69.3
	6.4	6.4	5	6.7	2.6
7 mtr./22.96 ft. (BL)	68.2	68.2	68.2	69.2	69.3
	6.4	6.4	4.9	4.8	
8 mtr./26.24 ft. (BL/W)	68.1	68.1	67.3	68.9	68.9
	6.3	6.3	2.5	3.4	
9 mtr./29.52 ft. R	68.1	67.9	67.1	68.9	68.9
	6.2	6.3	1.8		
10 mtr./32.80 ft. (W)	68	67.8	67.1		
	6.2	6	1.5		
11 mtr./36.00 ft. (BL)	68	67.7	67		
	6.2	6.7	0.8		
12 mtr./39.36 ft.(BL/BL)	67.9	67.3			
	6.1	3.8			
13 mtr./42.64 ft. R	67.8	67.2			
	6	3.4			
14 mtr./45.92 ft. (W)	67.7	67.2			
	5.7	3.4			
15 mtr./49.20 ft. (BL)	67.4				
	4.2				
16 mtr./52.48 ft. (BL/R)	67.3				
	3.6				
17 mtr./55.76 ft. R					
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	67.3	67.2	67	68.9	69.3

76.7

67.94

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	68.5	7.1	68.9	7	69.4	6.9	70.5	7.3	70.7	7.2
min reading	67.3	3.6	67.2	3.4	67	0.8	68.9	3.4	69.3	2.6
mid range reading	67.9	5.35	68.05	5.2	68.2	3.85	69.7	5.35	70	4.9

Lake Level: 6736.4

Down: 6.84

## Big Bear Lake Limnological Monitoring

Taken By: 309

Date: 9/9/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	8:40		9:20		9:55		10:20		10:45	
SECCI	7		7		6		5		2	
WATER COLOR	Med Grn		Med Grn		Med Grn		Med Grn		Med Grn	
SKY	Clear		Clear		Clear		Partly Cloudy		Partly Cloudy	
WIND SPEED (kts)	3.3		0.9		3.3		8.4		6.4	
WIND DIRECTION	SE		SE		E		NW		NW	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	67.9	6.5	68.7	6.8	69.3	7.1	69.7	7.3	69.7	7
1 mtr./3.28 ft. R	67.9	6.5	68.6	6.8	69.3	7.1	69.6	7.3	69.7	7
2 mtr./6.56 ft. (W)	67.9	6.5	68.5	6.8	68.8	7	69.5	7.1	68.9	5.9
3 mtr./9.84 ft. (BL)	67.9	6.5	68.3	6.6	68.8	7	69.2	6.1	68.8	5.6
4 mtr./13.12 ft. (BL/R)	67.9	6.3	68.3	6.3	68.6	6.9	69.1	5.9	68.8	5.4
5 mtr./16.40 ft. R	67.9	6.1	68.2	6.3	68.6	6.9	68.9	5.7	68.7	5.4
6 mtr./19.68 ft. (W)	67.8	6.1	68.2	5.9	68.5	6.7	68.8	5.2	68.6	5.1
7 mtr./22.96 ft. (BL)	67.8	6.1	68.2	5.9	68.4	6.6	68.7	4.2		
8 mtr./26.24 ft. (BL/W)	67.8	6.1	68.1	5.7	67.6	1.5	68.5	1.5		
9 mtr./29.52 ft. R	67.8	6.1	68	4.9	67.4	0.5				
10 mtr./32.80 ft. (W)	67.8	5.9	67.8	3.9	67.2	0.1				
11 mtr./36.00 ft. (BL)	67.8	5.7	67.5	1.6	67.2	0.1				
12 mtr./39.36 ft.(BL/BL)	67.8	5.7	67.4	0.8						
13 mtr./42.64 ft. R	67.7	5.6	67.3	0.5						
14 mtr./45.92 ft. (W)	67.4	1.2								
15 mtr./49.20 ft. (BL)	67.3	0.6								
16 mtr./52.48 ft. (BL/R)	67.1	0.2								
17 mtr./55.76 ft. R	67.1	0.2								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	67.1		67.3		67.2		68.5		68.6	

67.74

76

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	67.9	6.5	68.7	6.8	69.3	7.1	69.7	7.3	69.7	7
min reading	67.1	0.2	67.3	0.5	67.2	0.1	68.5	1.5	68.6	5.1
mid range reading	67.5	3.35	68	3.65	68.25	3.6	69.1	4.4	69.15	6.05

Lake Level: 6736.2

Down: 7.03

### Big Bear Lake Limnological Monitoring

Taken By: \_\_\_\_\_ Date: 9/16/2013

309

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5					
TIME	8:30	9:15	10:00	10:30	11:00					
SECCI	5	6	6	6	3					
WATER COLOR	Med Grn	Med Grn	Med Grn	Med Grn	Med Grn					
SKY	Clear	Clear	Clear	Clear	Clear					
WIND SPEED (kts)	0.9	8.7	9.5	5.6	4.9					
WIND DIRECTION	SE	W	W	SW	W					
<b>DEPTH IN METERS/FEET</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>					
	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>	<b>TEMP</b>	<b>D.O.</b>					
<b>SURFACE</b>	66.5	5.9	67.1	6.3	67.6	7.2	69	8	70.1	7.2
1 mtr./3.28 ft. R	66.5	5.9	67.1	6.3	67.6	7.2	68.9	8	68.9	7.2
2 mtr./6.56 ft. (W)	66.5	5.6	67	6.3	67.6	7.2	68.7	7.9	68.6	7.2
3 mtr./9.84 ft. (BL)	66.5	5.5	66.9	6.1	67.4	6.8	68.4	7.3	68.2	6.9
4 mtr./13.12 ft. (BL/R)	66.5	5.4	66.8	6	67.3	6.7	68.4	7.2	68.1	6.6
5 mtr./16.40 ft. R	66.5	5.3	66.8	5.9	67.3	6.7	68.3	7	68.1	6.2
6 mtr./19.68 ft. (W)	66.5	5.3	66.8	5.9	67.3	6.6	68	5.4	68	5.8
7 mtr./22.96 ft. (BL)	66.5	5.3	66.7	5.6	67.3	6.6	67.4	3	68	5.8
8 mtr./26.24 ft. (BL/W)	66.5	5.3	66.6	5.4	67.2	6.6	67.2	1.9	67.2	1.9
9 mtr./29.52 ft. R	66.5	5.3	66.6	5.4	67.1	6.5				
10 mtr./32.80 ft. (W)	66.5	5.3	66.5	5.3	66.9	4.2				
11 mtr./36.00 ft. (BL)	66.5	5.3	66.5	5.2	66.9	3.3				
12 mtr./39.36 ft.(BL/BL)	66.5	5.2	66.5	5.2						
13 mtr./42.64 ft. R	66.5	5.2	66.5	5.2						
14 mtr./45.92 ft. (W)	66.5	5.2	66.5	5.2						
15 mtr./49.20 ft. (BL)	66.4	5.2								
16 mtr./52.48 ft. (BL/R)	66.4	5.2								
17 mtr./55.76 ft. R	66.4	5.2								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	66.4	66.5	66.9	67.2	68					

74.98

67

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	66.5	5.9	67.1	6.3	67.6	7.2	69	8	70.1	7.2
min reading	66.4	5.2	66.5	5.2	66.9	3.3	67.2	1.9	68	5.8
mid range reading	66.45	5.55	66.8	5.75	67.25	5.25	68.1	4.95	69.05	6.5

Lake Level: 6735.8

Down: 7.4

## Big Bear Lake Limnological Monitoring

Taken By: 308

Date: 9/24/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	10:05		10:50		11:20		11:50		12:10	
SECCI	7		7		7		5		3	
WATER COLOR	Med Grm		Med Grm		Med Grm		Med Grm		Med Grm	
SKY	CLR		CLR		CLR		CLR		CLR	
WIND SPEED (kts)	5		11.2		12.6		12		13.8	
WIND DIRECTION	W		W		W		W		W	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	64.2	7.2	64.2	7.3	64.4	8.3	64.3	8.3	63.5	8.6
1 mtr./3.28 ft. R	64.2	7.2	64.2	7.3	64.4	8.3	64.3	8.3	63.5	8.6
2 mtr./6.56 ft. (W)	64	7	64.1	6.9	64.3	8.2	64.3	8.1	63.5	8.3
3 mtr./9.84 ft. (BL)	64	6.9	64.1	6.9	64.3	8.1	64.2	7.9	64.4	8.2
4 mtr./13.12 ft. (BL/R)	64	6.7	64.1	6.8	64.3	8	64.1	7.7	64.4	8.2
5 mtr./16.40 ft. R	63.9	6.6	64	6.7	64	7.6	64.1	7.5	63.2	8.2
6 mtr./19.68 ft. (W)	63.9	6.3	64	6.6	63.9	7.5	63.9	6.6		
7 mtr./22.96 ft. (BL)	63.9	6.5	64	6.6	63.9	7.5	63.7	5.7		
8 mtr./26.24 ft. (BL/W)	63.9	6.4	63.9	6.6	63.9	7.4	63.7	5.1		
9 mtr./29.52 ft. R	63.9	6.4	63.9	6.6	63.9	7.3				
10 mtr./32.80 ft. (W)	63.9	6.3	63.8	6.7	63.9	7.2				
11 mtr./36.00 ft. (BL)	63.9	6.3	63.8	6.8						
12 mtr./39.36 ft.(BL/BL)	63.9	6.4	63.7	6.1						
13 mtr./42.64 ft. R	63.9	6.4	63.7	6.9						
14 mtr./45.92 ft. (W)	63.8	6.2								
15 mtr./49.20 ft. (BL)	63.8	6.2								
16 mtr./52.48 ft. (BL/R)	63.8	6.2								
17 mtr./55.76 ft. R	63.9	5.9								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	63.9		63.7		63.9		63.7		63.2	

72.06

63.68

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	64.2	7.2	64.2	7.3	64.4	8.3	64.3	8.3	64.4	8.6
min reading	63.8	5.9	63.7	6.1	63.9	7.2	63.7	5.1	63.2	8.2
mid range reading	64	6.55	63.95	6.7	64.15	7.75	64	6.7	63.8	8.4

Lake Level: 6735.6

Down: 7.6

# Big Bear Lake Limnological Monitoring

Taken By: 308

Date: 10/1/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1		2		3		4		5	
TIME	10:10		10:55		11:45		12:15		12:45	
SECCI	5		5		5		5		5	
WATER COLOR	Med Grm		Med Grm		Med Grm		Med Grm		Med Grm	
SKY	CLR		CLR		CLR		CLR		CLR	
WIND SPEED (kts)	5.7		9.9		8.6		11.5		10.5	
WIND DIRECTION	SW		SW		SW		SW		SW	
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
SURFACE	59.8	7.4	60	8	60.6	9	60.8	9.8	60.9	10.7
1 mtr./3.28 ft. R	59.8	7.4	60	8	60.6	9	60.8	9.8	60.9	10.7
2 mtr./6.56 ft. (W)	59.7	7.3	59.9	7.9	60.6	8.8	60.7	9.6	60.7	10.3
3 mtr./9.84 ft. (BL)	59.7	7	59.9	7.6	60.5	8.7	60.5	9.5	60.1	9.9
4 mtr./13.12 ft. (BL/R)	59.7	7.1	59.8	7.6	60.4	8.6	60	9.1	59.8	9.8
5 mtr./16.40 ft. R	59.7	6.9	59.6	7.1	60.1	7.9	59.8	8.9	59.5	9.8
6 mtr./19.68 ft. (W)	59.7	6.9	59.6	7.2	60	7.9	59.7	8.8		
7 mtr./22.96 ft. (BL)	59.7	6.9	59.6	7.2	59.9	7.6	59.7	8.3		
8 mtr./26.24 ft. (BL/W)	59.7	6.8	59.5	7.1	59.8	7.3	59.1	5		
9 mtr./29.52 ft. R	59.7	6.8	59.5	7	59.6	7				
10 mtr./32.80 ft. (W)	59.6	6.8	59.5	7.1	59.5	6.7				
11 mtr./36.00 ft. (BL)	59.6	6.7	59.5	7.1						
12 mtr./39.36 ft.(BL/BL)	59.6	6.7	59.5	7						
13 mtr./42.64 ft. R	59.6	6.8	59.5	6.9						
14 mtr./45.92 ft. (W)	59.6	6.8								
15 mtr./49.20 ft. (BL)	59.5	6.6								
16 mtr./52.48 ft. (BL/R)	59.5	6.6								
17 mtr./55.76 ft. R	59.7	6.5								
18 mtr./59.04 ft. (W)										
19 mtr./62.32 ft. (BL)										
20 mtr./65.60 ft. (BL/W)										
21 mtr./68.88 ft. R										
22 mtr./72.16 ft. (W)										
<b>BOTTOM TEMPS</b>	59.7		59.5		59.5		59.1		59.5	

69.4

59.46

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	59.8	7.4	60	8	60.6	9	60.8	9.8	60.9	10.7
min reading	59.5	6.5	59.5	6.9	59.5	6.7	59.1	5	59.5	9.8
mid range reading	59.65	6.95	59.75	7.45	60.05	7.85	59.95	7.4	60.2	10.25

Lake Level: 6735.5

Down: 7.7

## Big Bear Lake Limnological Monitoring

Taken By: 308

Date: 10/8/2013

All stations are at mid lake      1 = Boom Line      2 = Papoose      3 = West Ramp      4 = Observatory      5 = Juniper Point

STATION	1	2	3	4	5
TIME	9:30	10:25	11:00	11:35	12:25
SECCI	6	6	5	5	4
WATER COLOR	Med Grm	Med Grm	Med Grm	Med Grm	Med Grm
SKY	CLR	CLR	CLR	CLR	CLR
WIND SPEED (kts)	8	12.2	10.5	6.8	12.2
WIND DIRECTION	SW	W	W	W	W
DEPTH IN METERS/FEET	TEMP	D.O.	TEMP	D.O.	TEMP
SURFACE	56.9	8.3	57	8.5	57.1
1 mtr./3.28 ft. R	56.9	8.3	57	8.5	57.1
2 mtr./6.56 ft. (W)	56.9	8.3	57	8.5	57.1
3 mtr./9.84 ft. (BL)	56.8	8.2	57	8.3	57.1
4 mtr./13.12 ft. (BL/R)	56.8	8.1	57	8.2	57
5 mtr./16.40 ft. R	56.8	8.1	57	8.2	57
6 mtr./19.68 ft. (W)	56.8	8	56.9	8.2	57
7 mtr./22.96 ft. (BL)	56.8	8.2	56.9	8.2	56.9
8 mtr./26.24 ft. (BL/W)	56.8	8.1	56.9	8.2	56.9
9 mtr./29.52 ft. R	56.8	8	56.9	8.2	56.9
10 mtr./32.80 ft. (W)	56.8	8	56.9	8.1	56.9
11 mtr./36.00 ft. (BL)	56.8	8	56.9	8.1	56.9
12 mtr./39.36 ft.(BL/BL)	56.8	8	56.9	8.1	56.9
13 mtr./42.64 ft. R	56.7	8	56.9	8	56.9
14 mtr./45.92 ft. (W)	56.7	7.8			
15 mtr./49.20 ft. (BL)	56.7	7.9			
16 mtr./52.48 ft. (BL/R)	56.7	7.7			
17 mtr./55.76 ft. R	56.9	7			
18 mtr./59.04 ft. (W)					
19 mtr./62.32 ft. (BL)					
20 mtr./65.60 ft. (BL/W)					
21 mtr./68.88 ft. R					
22 mtr./72.16 ft. (W)					
<b>BOTTOM TEMPS</b>	56.9	56.9	56.9	56.3	55.8

65.58

56.56

	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.	TEMP	D.O.
max reading	56.9	8.3	57	8.5	57.1	8.8	56.7	8.9	56	9.7
min reading	56.7	7	56.9	8	56.9	8.5	56.3	8.4	55.8	9.2
mid range reading	56.8	7.65	56.95	8.25	57	8.65	56.5	8.65	55.9	9.45