MINUTES OF A REGULAR MEETING OF BIG BEAR MUNICIPAL WATER DISTRICT HELD ON THURSDAY, NOVEMBER 3, 2011

CALL TO ORDER
President Suhay called the Open Session to order at 1:00 PM. Those in attendance included Director Murphy, Director Fashempour, Director Eminger, Director Smith, District Counsel Wayne Lemieux (via Skype), Lake Manager Mike Stephenson, and Board Secretary Vicki Sheppard.

REPORTS
Lake Manager, Mike Stephenson reported that Flatiron Construction will be done with the construction at the dam bridge road by tomorrow. He stated that they also did some work on Gate 10 explaining that the District furnished the materials and they furnished the labor. He added that the electrical is complete. Mr. Stephenson reported that there is still no way to access the dam. He explained that he submitted a plan last week and expressed the urgency of obtaining access. He reported that Caltrans agreed and Flatiron will get a change order and complete the work. President Suhay asked if DSOD had been notified. Mr. Stephenson explained that they had been notified and agreed that the access did need to be provided. He added that Mike Rogers feels that the plan that he sent to Flatiron was fine. President Suhay commented that before we had access on both sides. Mr. Stephenson reported that they attempted to give us access on both sides but the new electrical will not allow it. He commented that access will be provided (as it was before they put the road on the dam) explaining that "it will serve our purpose". Mr. Stephenson reported on some work that County Flood is doing at Rathbun Creek explaining that they are dumping dirt in the creek just behind CVS. He added that he spoke to Pavlova Vitale of County Flood. He stated that she came out and looked at the work and reported that it was unacceptable explaining that they would fix the problem.
Mr. Stephenson shared a PowerPoint presentation on Milfoil Control Activities in Big Bear Lake that he made at the CALMS Conference he attended in early October (see attached).

APPROVAL OF CONSENT CALENDAR
Upon a motion by Director Murphy, seconded by Director Fashempour, the following consent items were unanimously approved:

- Minutes of a Regular Meeting of October 20, 2011
- Warrant list dated October 26, 2011 for $351,644.31

PUBLIC FORUM
No comments were made

ANNOUNCEMENTS
Mr. Stephenson reported that on last April 1st he predicted that the lake level would be 2' down from full on November 1st adding that the level was exactly 2' down from full on that date. He commented that he will be taking some vacation days on Thursday and Friday of next week.

DIRECTOR COMMENTS
Director Fashempour complimented Mr. Stephenson on his presentation. Director Eminger agreed.

ADJOURNMENT
There being no further business, the meeting was adjourned at 1:56 P.M.

NEXT MEETING Open Session at 1:00 P.M.
Thursday, November 17, 2011
Big Bear Municipal Water District
40524 Lakeview Drive, Big Bear Lake, CA

Vicki Sheppard
Secretary to the Board
Big Bear Municipal Water District

(SEAL)

Big Bear Lake Milfoil Control Activities

Presented by
Mike Stephenson
Lake Manager
Big Bear Municipal water District

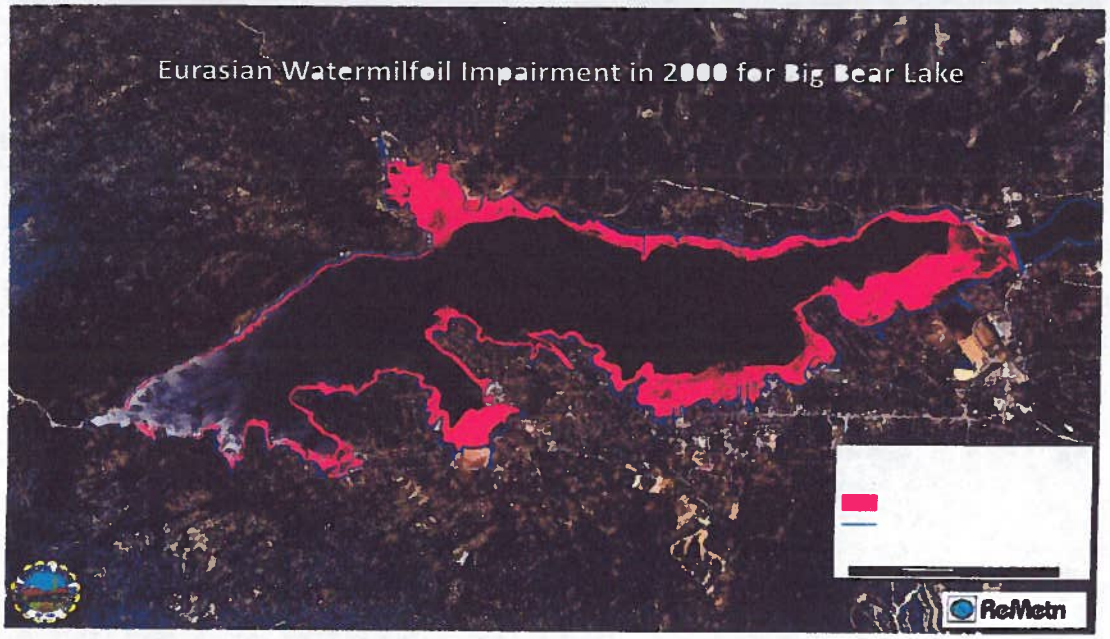
History

- Harvesting on Big Bear Lake began in late 60's
- Approximately 3,000 tons annually during peak operations 1990-2002
- Aqua Mog operations began in 1980's
- First substantial herbicide treatment was in 2002
- Currently using a combination of both harvesting and herbicide treatments

Typical Early Summer Conditions

Aqua Mog

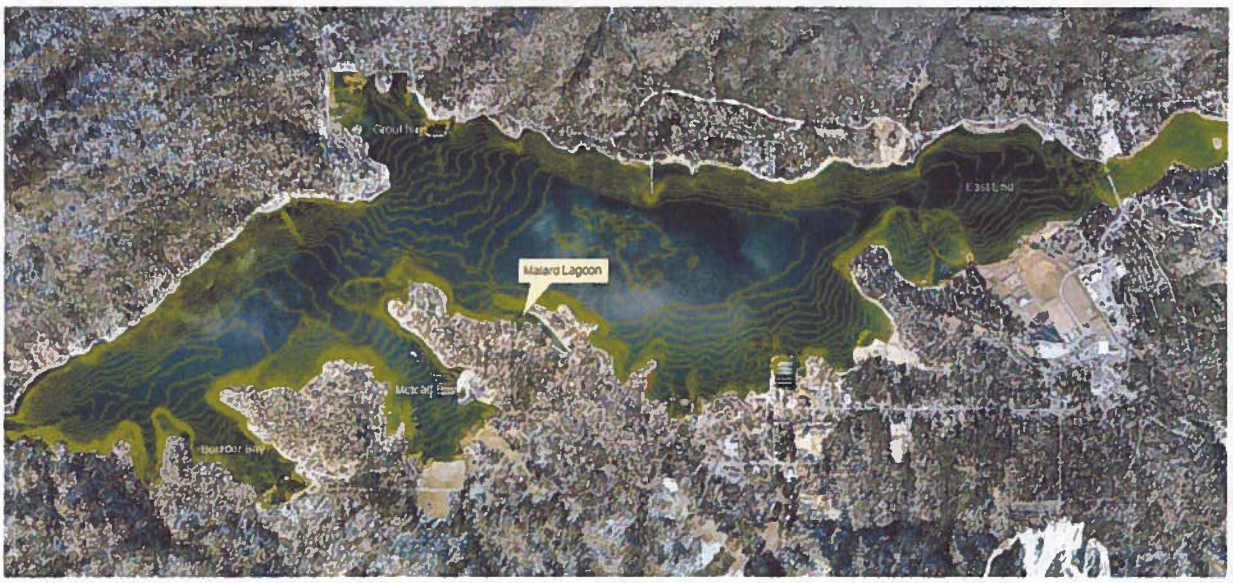
900 Acres Milfoil in 2000



First Major Herbicide Treatment in 2002

- Five large areas were treated with Fluridone
- Metcalf Bay approximately 30 acres
- Boulder Bay approximately 20 acres
- Mallard Lagoon approximately 5 acres
- East end of the Lake approximately 50 acres
- Grout Bay approximately 35 acres

Areas Treated in 2002



Harvesting and Aqua Mog Resumed

- Purchased a transporter as off loading sites became more difficult to access.
- District purchased another harvester
- Lake began to drop due to drought

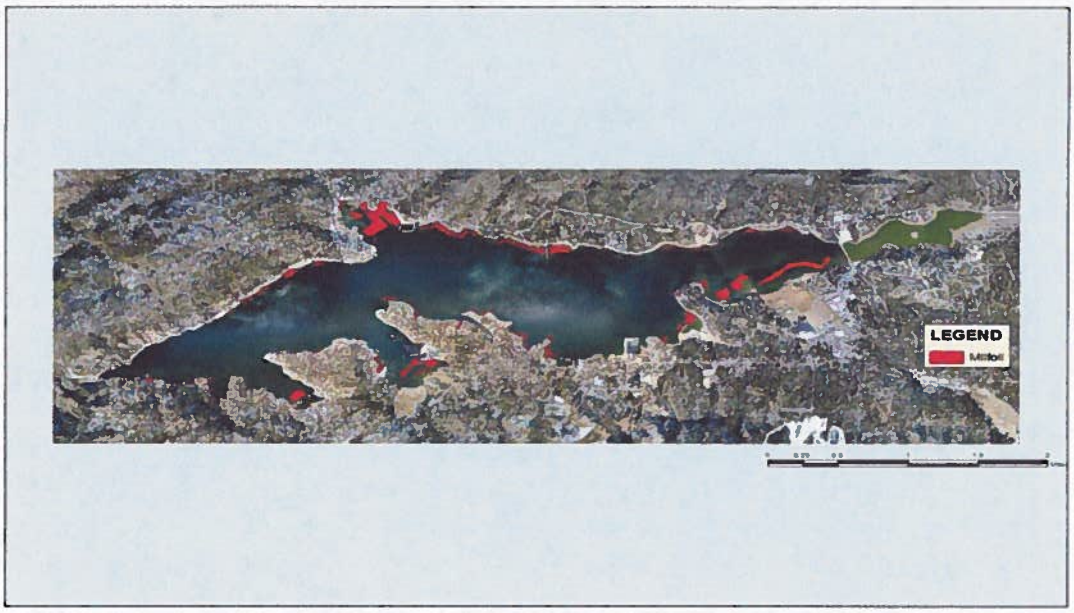
Transporter Off Loading

Big Bear Lake Full Pool

Drawdown 4 Feet

Drawdown 16 Feet

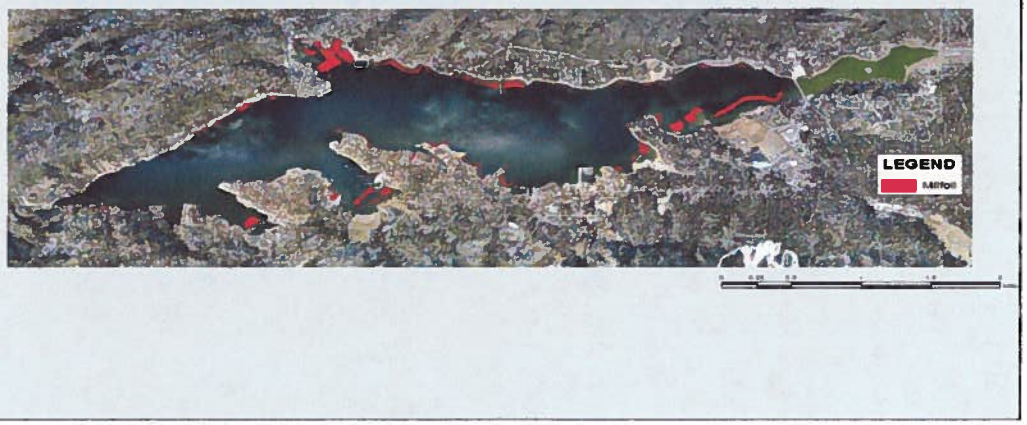
2008 Milfoil Locations
450 Acres



2008 Treatment 312 acres

- Triclopyr granular was mostly was used

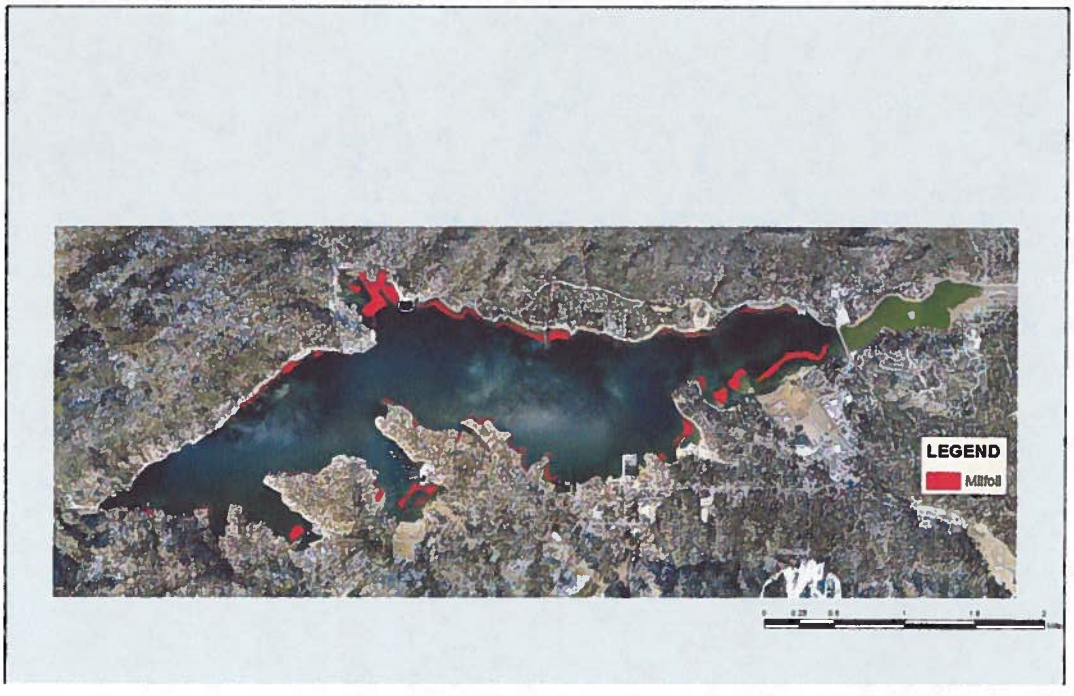
2009 Milfoil Locations
317 acres



2009 Treated 234 Acres

- Triclopyr liquid
- Triclopyr granular
- Diquat

2010 Milfoil Locations
177 acres



2010 112 acres Treated

- Triclopyr
- 2,4-D
- Diquat

2011 Milfoil locations

2011 Treated 284 Acres

- Mapped 324 Acres of Milfoil
- Used a combination of Floridone , Triclopyr, Diquat
- Harvested 105 Tons Natives
- Removed 130 Tons Milfoil Fragments

2010 Herbicide

								Labor Cost						Cost of Treatment	
Date	Zone	Dock %	Lake %	Prep Time in Min.	Total App. Min.	Dock Min.	Lake Min.	Dock	Lake	Prep	Total lbs.	# lbs Dock	# lbs. Lake	Dock	Lake
7/26	48	40%	60%	60	180	72	108	$55.44	$83.16	$46.20	1000	400	600	$1,390.00	$2,094.00
7/29	54	40%	60%		240	96	144	$73.92	$110.88		1200	480	720	$1,675.20	$2,512.80
7/23	7	50%	50%		160	80	80	$61.60	$61.60	$0.00	340	170	170	$593.30	$593.30
7/23	8	50%	50%	0	160	80	80	$61.60	$61.60		340	170	170	$593.30	$593.30
7/23	9	50%	50%		160	80	80	$61.60	$61.60		340	170	170	$593.30	$593.30
7/22	10	50%	50%		120	60	60	$46.20	$46.20	$0.00	340	170	170	$593.30	$593.30
7/22	11	50%	50%	0	120	60	60	$46.20	$46.20		340	170	170	$593.30	$593.30
7/22	12	50%	50%		120	60	60	$46.20	$46.20		340	170	170	$593.30	$593.30
7/22	13	50%	50%		120	60	60	$46.20	$46.20		340	170	170	$593.30	$593.30
7/21	14	50%	50%		80	40	40	$30.80	$30.80	$0.00	600	300	300	$1,047.00	$1,047.00
7/21	15	50%	50%		80	40	40	$30.80	$30.80		600	300	300	$1,047.00	$1,047.00
7/21	16	50%	50%	0	80	40	40	$30.80	$30.80		600	300	300	$1,047.00	$1,047.00
7/21	17	50%	50%		80	40	40	$30.80	$30.80		600	300	300	$1,047.00	$1,047.00
7/21	18	50%	50%		80	40	40	$30.80	$30.80		600	300	300	$1,047.00	$1,047.00
7/21	20	70%	30%		80	56	24	$43.12	$18.48		300	210	90	$732.90	$314.10
7/20	22	50%	50%		80	40	40	$30.80	$30.80	$0.00	520	260	260	$907.40	$907.40
7/20	23	50%	50%		80	40	40	$30.80	$30.80		520	260	260	$907.40	$907.40
7/20	25	50%	50%	0	80	40	40	$30.80	$30.80		520	260	260	$907.40	$907.40
7/20	26	50%	50%		80	40	40	$30.80	$30.80		520	260	260	$907.40	$907.40
7/20	27	50%	50%		80	40	40	$30.80	$30.80		520	260	260	$907.40	$907.40
7/20	28	50%	50%		80	40	40	$30.80	$30.80		520	260	260	$907.40	$907.40
7/16	48	30%	70%		30	9	21	$6.93	$16.17	$188.85	600	240	560	$837.60	$1,954.40
7/16	49	0%	100%		30	0	30	$0.00	$23.10		840	0	840	$0.00	$2,930.60
7/16	54	10%	90%		70	7	63	$5.39	$48.51		560	56	504	$195.44	$1,758.96
7/16	15	70%	30%	245	80	56	24	$43.12	$18.48		600	420	180	$1,465.80	$628.20
7/16	56	0%	100%		10	0	10	$0.00	$7.70		100	0	100	$0.00	$349.00
7/16	57	0%	100%		10	0	10	$0.00	$11.55		100	0	100	$0.00	$349.00

TOTALS FOR SEASON

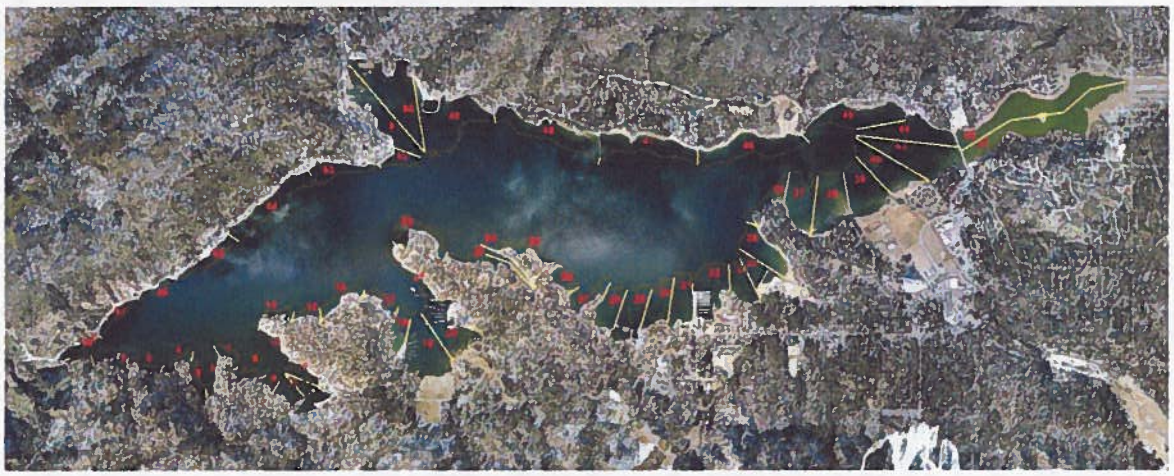
Dock %	Lake %	Prep Time	App Time	Dock Time	Lake Time	Labor Dock Cost	Labor Lake Cost	Labor Prep Cost	lbs	# lbs Dock	# lbs Lake	Dock Treatment Cost	Lake Treatment Cost
46.53%	53.47%	3875	4,765	2,125	2,640	$1,636	$2,033	$2,984	28,640	12,182	16,458	$42,515.18	$57,438.42
		TOTAL MIN.				Total Labor Cost						Total Treatment Cost	
		8540				$6,653.00						$99,953.60	

Fuel Cost Per Day	Days	TOTAL
$24.50	18	$441.00

GRAND TOTAL $107,047.60

Please note: All application were MAX-G with the exception of those noted with an asterisk, which were treated with OTF.

Weed Treatment Zones



Current Harvesting Operations

- Navigation channels for access to docks
- Topped out natives for aesthetic reasons
- Cleaning up milfoil fragments after herbicide treatments
- Strategic harvesting for improving treatment efficacy
- Harvesting for fish habitat

2010

Weed Harvesting / Nutrient Removal

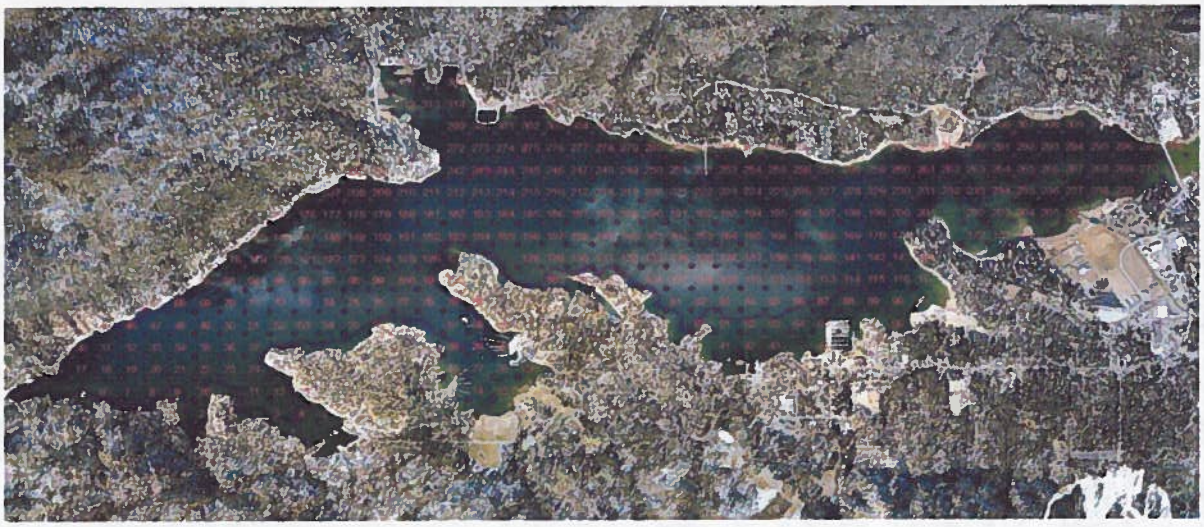
Date	# Loads	Total Wet Weight Lb's	Total Dry Weight Lb's	Phosphorous Content Removed In	Nitrogen Content Removed In	Emp. Unload Min.	Emp. Harvest Min.	Emp. Prep Cost	Employee Harvesting Cost	Date	# Loads	Total Wet Weight Lb's	Total Dry Weight Lb's	Phosphorous Content Removed In	Nitrogen Content Removed In	Emp. Unload Min.	Emp. Harvest Min.	Emp. Prep Cost	Employee Harvesting Cost
Jul-06	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Aug-17	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30
Jul-07	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-18	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30
Jul-09	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-19	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30
Jul-12	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-20	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50
Jul-16	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Aug-23	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50
Jul-19	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-24	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Jul-27	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30	Aug-25	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50
Jul-28	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-26	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30
Jul-29	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Aug-27	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Jul-30	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Aug-30	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-02	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Aug-31	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-03	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30	Sep-01	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-04	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30	Sep-02	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-05	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Sep-03	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-06	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Sep-07	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-09	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Sep-08	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-10	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Sep-09	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-11	3	21300	2,106.57	6.3045	53.3956	90	390	$69.30	$300.30	Sep-10	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50
Aug-12	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40	Sep-13	2	14,200	1,404.38	4.2030	35.5971	60	420	$46.20	$323.40
Aug-13	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Sep-14	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50
Aug-16	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50	Sep-15	1	7,100	702.19	2.1015	17.7985	30	450	$23.10	$346.50

TOTALS

# Loads	Wet Weight	Dry Weight		Phosphorous	Nitrogen		Unload Min.	Harvest Min.	Prep Cost	Harvest Cost
79	560,900	55,473.01		166.02	1,406.08		2,370	17,790	$1,824.90	$13,698.30
	Wet Weight in Tons		Fuel Cost Per Day	No. of Days	TOTAL Fuel Cost		TOTAL Employee Min.		TOTAL Employee Cost	
	280		$24.50	42	$1,029.00		20,160		$15,523.20	

Eductor System

Survey Points



Current Plant Beds

Current Plants Without Milfoil

Aquatic weeds present

- Eurasian Water milfoil (Myriophyllum Spicatum)
- Curley Leaf Pondweed (Potamogeton Crispus)
- CoonTail (Ceratophyllum Demersum)
- Widgeon grass (Ruppia Maritima)
- Smartweed (Polygonum Amphibium)
- Elodea (Elodea canadensis)