California Regional Water Quality Control Board
Los Angeles Region Westlake lake

Over 51 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Terry Tamminen
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.swrcb.ca.gov/rwqcb4

105

TO: Amy King
Tetra Tech, Inc.
1230 Columbia Street
Suite 520
San Diego, California 92101

FROM: Julie Clark
Environmental Scientist
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

DATE: March 9, 2004

SUBJECT: **DATA FOR WESTLAKE LAKE**
LOS ANGELES AND VENTURA COUNTIES
REGION 4

Dear Amy:

Please see enclosed hard copy monitoring data for the lake that was submitted by Clean Lakes, Inc. on behalf of the Westlake Lake Management Association. Data periods included are from March 2001 to December 2003, inclusive. This information is not electronically available.

Please feel free to contact me if you have questions.

Sincerely,

Attachments (35)

CLEAN LAKES, INC.

Aquatic Ecosystem Restoration & Maintenance

February 23, 2004

RECEIVED 2004 FEB 26 PM 2:01

Ms. Julie Clark, Environmental Scientist, NonPoint Source Unit
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

RE: Water Quality Monitoring Data For Westlake Lake

Dear Ms. Clark,

Per your letter dated February 3, 2004 to Ms. Linda Catlin and Mr. William Foreman of the Westlake Lake Management Association (WLLA) with regard to the above subject, please find enclosed the monitoring data that you requested for the period May 15, 2001 to December 30, 2003.

Clean Lakes, Inc is currently working with Westlake Lake Management Association in the monitoring of water quality and in the management of aquatic weeds and algae.

Should you need any further information or clarification, please contact me at (925) 957-1905.

Sincerely,

Thomas Moorhouse
Clean Lakes, Inc

CC: Ms. Linda Catlin, WLLA President
Mr. William Foreman, Interim Manager

Encl: Lake Monitoring Reports, May 15, 2001 to December 31, 2003

P.O. Box 3186 • Martinez, California 94553 USA
http://www.cleanlake.com • E-mail: info@cleanlake.com
Phone: (925) 957-1905 • Fax: (925) 957-1906 • (Toll Free) 877-FIX-LAKE

APR 05 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

March 29, 2001

2004 FEB 26 PM 2:03

RECEIVED

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the March analysis for the lake along with the monthly summary for March. Algal growth is at a minimum except at the ends of the fingers with some minor clumps of diatoms. However, algal problems will inevitably occur as the water continues to warm up.

The water was quite clear because all of the mud and silt that had been introduced by the rains has settled. Work has begin again on the bridge project and muddy water is again being pumped into the lake. The orange berm has been partialy replaced which may help to keep out a bit of the mud and silt.

Bill has requested that I address the problem of diatomaceous earth and swimming pool water being released into the lake via the city drains. I have included a note concerning this with the regular report.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

APR 05 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

March 30, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

I had been talking to Bill about the problem of diatomaceous earth from swimming pools being dumped directly into the Lake. Diatomaceous earth, of itself, should not be a problem. I am assuming that no one is dumping in a large amount. The diatomaceous earth is composed of the silica cell walls of diatoms that at one time were in the ocean. The diatomaceous earth that is purchased probably has some clay mixed in with the diatoms. It is used as a filter for swimming pools. I assume that what is being dumped into the lake is the residue that has already filtered material from the swimming pool. This is washed off with a hose and new diatomaceous earth is used to replace that which has been washed off. What will be entering the Lake, then, is the diatomaceous earth plus whatever has been filtered out of the swimming pool. The amount of algae, pollen, or whatever has been filtered out, however, is probably minimal compared to what enters the Lake from the local drains after a rain.

Of more concern than the diatomaceous earth from the filters is the release of water from a swimming pool into the lake. This would be a much larger volume and could contain algae and an accumulation of chemicals, including chlorine. Although it would be nice to prohibit such release, I do not see how it would be possible. Anyone upstream from the Lake could easily dump their pool water out into the gutter and it would eventually end up in the Lake. If we were to prevent it, how would they dispose of all the water?

My recommendation here would be for all homeowners around the Lake to be sure that any pool water released has been adequately aired so that chlorine is not introduced into the Lake.

Release of diatomaceous earth, however, should not be a problem, since it would only be a small addition and rather minor compared to other substances entering the lake.

March 29, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 23° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and clear. Some filamentous algae is on the surface.
   Algae - diatoms, and small amounts of *Cryptomonas*

2. Finger #7
   Temperature - 22°C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and clear. Lots of algae and some debris on the surface.
   Algae - diatoms

3. Triunfo Bridge
   Temperature - 20° C
   pH - 7.5
   Nitrate - .5 ppm
   Phosphate - < 1 ppm
   Appearance - the orange berm has been partially replaced and water is being pumped into the lake from the area under the bridge. Water was collected on the bridge side of the orange berm.
   Algae - none collected

4. School House
   Temperature - 21° C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is clear and dark. There is a small amount of algae on the surface.
   Algae - none collected

5. Finger #12

Temperature - 22° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - clear and dark; lots of debris and algae on the surface
Algae - filamentous diatoms

6. Basin #18

Temperature - 24° C
pH - 7.9
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear, but with lots of algae on the surface.
Algae - clumps of diatoms

7. Nadel's Point

Temperature - 22° C
pH - 7.9
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is clear and dark
Algae - none collected

8. Landing

Temperature - 22° C
pH - 7.8
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

9. Dam

Temperature - 21° C
pH - 7.8
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

10. Westshore drain
Temperature - 21° C
pH - 7.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is reasonably clear, but with lots of algae on the surface.
Algae - clumps of diatoms

11. Eastshore drain
Temperature - 21° C
pH - 7.9
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is relatively clear. A bit of algae is present on the surface.
Algae - diatoms

Conclusions:

The water is very clear at this time, although there are clumps of filamentous diatoms floating on the surface at the ends of the fingers and near the drains. On the east side of the lake, mud clumps are floating on the surface, having come up from the bottom during the spring overturn. These clumps contain the alga, *Oscillatoria.*

The orange berm has been replaced and slightly muddy water is again being pumped into the lake from the construction project at the bridge. Water entering the lake at the bridge had a higher nitrate content (0.5 ppm) than other areas of the lake.

After the rains of last month and the beginning of this month, I checked out some areas around Foxfield Horse Stables. I noticed that on the south side of Potrero Creek, there are no provisions to prevent runoff from the rain bringing mud and manure into the Creek. Because part of the equestrian area is on the far side of the Creek, horses walk through the Creek to get from one side to the other. In addition, in the main portion of the equestrian center, a stall in which manure is temporarily stored, has no protection to prevent manure from washing into the Creek during a heavy rainfall. As a result, it is inevitable that considerable manure did enter the Creek and ultimately entered Westlake Lake during the heavy rains of February and March.

We have also been checking E. coli in the Malibu Creek Watershed for its resistance to five common antibiotics. One of our check spots has been the Landing at Westlake Lake. We also collected water near Tapia Park and in a couple of areas of Malibu Lagoon. We found it very interesting that before the rains, resistance of E. coli to the antibiotics was very minimal, if present at all. However, after the rains, resistance was high. We found that 90% of the samples collected were resistant to at least 1 antibiotic, and some samples were resistant to as many as four antibiotics! Water entering the lake and the Malibu watershed from the heavy rains, undoubtedly introduced E. coli that was resistant to the antibiotics. Source of the E. coli is not known at this time.

Coliforms:

The coliform counts are low in the lake except at the dam and at the east shore drain. Presence of fecal coliforms at the dam is undoubtedly due to all the birds in that area. Likewise, fecal coliforms at the Landing are caused by the ducks that congregate there. The count at the Landing, though, was quite low.

A high coliform count at the east drain is indication that water is still draining in here.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

COLIFORM COUNTS

March 29, 2001

Location	MPN index per 100 ml	95% Confidence limits Lower	Upper	Bacteria present
Landing	460	71	2,400	*E. coli*
Triunfo Bridge	93	15	380	*Enterobacter*
School House	140	30	370	*Enterobacter*
E. shore drain	11,000	1,500	48,000	*E. coli*
Dam	2,400	360	13,000	*E. coli*
Rainfall	6.5 inches rain	between 3/4/01 and 3/7/01		

Abbrev. MPN = most probable number; tr = trace   Temp. = 21°

Comments

Coliform counts are low except at the East shore drain and at the dam. Water is still trickling in at the East shore drain and must be bringing coliforms in with it. The high count at the dam could be caused by the large number of birds that like to congregate there. Now that the rains have subsided, the only water entering the lake at the bridge is what is being pumped out of the dredged area under the bridge. Therefore, water carrying coliforms from upstream is minimal at this time.

Barbara J. Collins

WESTLAKE LAKE ANALYSES

March 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	73°	71°	68°	70°	71°	75°	71°	71°	70°	70°	70°
pH	7.8	8.5	7.5	7.9	8.3	7.9	7.9	7.8	7.8	7.6	7.9
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	4 ft.	4 ft.	4 ft.	4 ft.	4 ft.	4 ft.	4.5 ft.	4 ft.	4.5 ft	4 ft	4 ft.
Color	dark	dark	brown	dark	dark	dark	clear	clear	clear	clear	clear
Algal species	D Cry	D	none	none	D	D	none	none	none	D	D
Any Problem	none	none	*	none	none	none	none	none	none	none	none
City Ppt.	6.5"										
City Temp °F	58°										
City Factors	*										

Key to Algal species:
Aph = *Aphanizomenon*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* The dredged area was flooded during the first part of the month, when the rains came, and muddy water from Potrero Creek, the Bridgegate grading project, and Foxfield Stables entered the lake. Water also rushed over the dam at Lake Sherwood. At the end of the month, construction began again at Triunfo Bridge.

MAY 01 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

April 27, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the April analysis for the lake along with the monthly summary for April. During the warm days at the first part of the week, April 24th and 25th, there was a lot of algal growth. The lake was treated those two days which helped to cut down the abundance. More algal problems can be expected, however, in the weeks ahead when the water warms up. Considerble nutrients have been added to the lake during the winter rains. The nitrate level was quite high at the bridge area, indicating continual influx of nutrients. This will definitely stimulate algal growth in the weeks ahead.

I did not perform a coliform count this time. The purpose of the coliform count was to determine the base level of coliforms in the lake and then to determine the effects of the winter rain on the count. I purposely chose the school house drain, the east drain and the bridge area to see if coliforms were being introduced at those sites. I also checked the Landing and the dam to see what the levels were at these spots. It is now apparent that a large number of coliforms are being introduced into the lake with the rain. Otherwise, coliform levels in the lake are fairly low except in the vicinity of the landing and occasionally in the area around the east drain. If you should desire me to continue the coliform count, that will be readily possible.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

April 26, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 21° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and somewhat murky.
   Algae - none collected.

2. Finger #7
   Temperature - 21°C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and reasonably clear. Algae is minimal.
   Algae - *Spirogyra* and diatoms

3. Triunfo Bridge
   Temperature - 19° C
   pH - 7.5
   Nitrate - 8.8 ppm
   Phosphate - < 1 ppm
   Appearance - inside the orange berm, the water is very murky and has an unpleasant odor. Muddy water is still being pumped into the lake from the dredged area. Although algae was not visible during the morning of the visit, Erik indicated that the water in this area had been quite green two days earlier.
   Algae - diatoms

4. School House
   Temperature - 21° C
   pH - 7.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is murky with lots of mud-algal clumps floating on the surface.
   Algae - *Oscillatoria* and diatoms

5. Finger #12

Temperature - 20° C
pH - 7.5
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - murky with lots of algal clumps on the surface.
Algae - *Oscillatoria* and diatoms

6. Basin #18

Temperature - 21° C
pH - 7.7
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - mud algal clumps and filamentous sp. of algae on the surface
Algae - *Cladophora, Oscillatoria* and diatoms

7. Nadel's Point

Temperature - 21° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is clear and dark
Algae - traces of *Chlamydomonas*

8. Landing

Temperature - 21° C
pH - 7.8
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark with some debris on the surface near the shore. There were a few flecks of filamentous algae and algal clumps on the surface.
Algae - *Oscillatoria* and *Spirogyra*

9. Dam

Temperature - 21° C
pH - 7.9
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

10. Westshore drain
    Temperature - 20° C
    pH - 7.8
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is murky brown, with lots of algal clumps on the surface.
    Algae - *Spirogyra* and diatoms

11. Eastshore drain
    Temperature - 21° C
    pH - 7.9
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is murky with a lot of algal clumps floating on the surface.
    Algae - *Spirogyra, Oscillatoria*, and diatoms

12. Dock
    Temperature - 21° C
    pH - 7.9
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is dark with tiny clumps of algae on the surface.
    Algae - *Anabaena*

Conclusions:

During the first part of the week, April 24th and 25th, we had some unusually hot days. As a result, there was an algal problem in certain parts of the lake, particularly near the bridge and on the eastern side near the school house drain. Portions of the lake were treated on those two days. Nevertheless, there were still numerous algal clumps floating on the surface in the area of the school house drain and in the fingers on the eastern side of the lake. Influx of nutrients during the rains have been a contributing factor.

At the school house drain, considerable material is flushed into the lake when the rains come. The most recent rain on Friday night, April 20th, brought in algae and other material that had probably been accumulating in the drain. Oscillatoria, a Cyanobacteria, is usually found on the surface of mud and is commonly found on the bottom of the lake where the water is not too deep. It would also be expected to accumulate in a drain that contains some mud and water which has been allowed to sit for a period of time. The abundance of Oscillatoria around the school house drain and in the fingers close to that drain, suggest that considerable algae must have been flushed into the lake with the rain. A spring overturn of the lake will also contribute large amounts of mud-algal flecks loaded with *Oscillatoria*. Because the *Oscillatoria* does produce oxygen by photosynthesis, the extra blubbles enable it to float on the surface.

Water at the bridge area is very murky and loaded with sediment. Muddy water is still being pumped into the lake. With the large amount of nutrients being introduced here, planktonic algae should be expected as the water warms up. Nitrate levels were unusually high in this area. It is likely that the most recent rains introduced more fertilizer into the lake. The addition of large amounts of sediment into the lake with this project will be problematic, not only in causing sediment buildup, but also because of the nutrients introduced.

Coliforms:

I did not make a coliform count at the five locations in the lake at this time. The purpose of the counts was to document the level of coliforms in the lake during the dry season and then to determine the effects of the rain upon the count. Areas of the lake away from the drains had low counts, except at the Landing and occasionally at the dam. High counts in these rwo areas were caused by the large congregation of ducks and waterfowl. However, rather high counts of coliforms occurred at the drains after the rains, indicating that the major source of the coliforms into Westlake Lake is from upstream. Even during the dry period, we did get occasional high counts at the east drain, indicating influx of water here.

I will continue to check the resistance of the E. coli in the lake to various antibiotics. It should be noted again that 90% of the isolates of E. coli that we checked from the Malibu Creek Watershed after the winter rains were resistant to at least 1 antibiotic. It should also be noted that this resistance can be transferred to bacteria that are not resistant. such as bacteria in your own intestines.

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

April 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	70°	70°	66°	68°	70°	70°	70°	70°	70°	68°	70°
pH	7.8	7.9	7.5	7.5	7.5	7.7	8.3	7.8	7.9	7.8	7.6
Nitrate ppm.	< 1	< 1	8.8	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	3 ft.	3 ft.	3 ft.	3 ft.	4 ft.	4 ft.	4 ft	3 ft	3 ft.
Color	dark	dark	brown	murky	murky	murky	clear	clear	clear	murky	clear
Algal species	none	Spir D	D	Osc D	Osc D	Osc D	Chl tr	Osc Spir	none	Spir D	Osc Spir D
Any Problem	none	none	*	algae	algae	algae	none	none	none	algae	algae
City Ppt.	1"										
City Temp °F	56°										
City Factors	*										

Key to Algal species:
Aph = *Aphanizomenon*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* The dredging project continues, and muddy water is still being pumped into the lake from the bridge area. The orange berm filters some of this, but not all. The nitrate level at the bridge is quite high. Algal blooms will be expected as a result.

JUN 0 9 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

May 30, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the May analysis for the lake along with the monthly summary for May. The water is quite clear with only minimal amounts of algae in most parts of the lake. Clarity of the lake, however, is not without its problems. Light readily reaches the bottom layers of the lake, particularly in the fingers, and thus enables accelerated growth of grass. Presence of light, warm water, and nutrients in the form of nitrates all work together to make rapid growth possible. Although algae is minimal at this time, it is not unlikely that there will be algal blooms later on in the summer.

There was some concern about a strange oily film on the lake in Basin #4. The sample of water that I collected contained millions of tiny diatoms - more than I had ever seen before in a water sample. The diatoms (*Stauroneis*) were tiny, but all contained oil droplets (food storage) inside the cell. I am assuming that it was this oil that caused the oily film that had been observed in this area.

Water bearing nutrients enters the lake at the end of Basin #4 and it is these nutrients that could have contributed to the diatom bloom.

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

JUN 05 2001

May 31, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   - Temperature - 27° C
   - pH - 7.9
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - the water has a lot of grass and debris floating on the surface, particularly at the end of the basin. A strange oily film has also been present on the surface for several days.
   - Algae - numerous tiny diatoms and some Anabaena.

2. Finger #7
   - Temperature - 28°C
   - pH - 8.4
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - lots of grass fragments are floating on the surface. Circulation at the end of the finger is poor. Water lilies seem to be spreading.
   - Algae - large numbers of Chlamydomonas

3. Triunfo Bridge
   - Temperature - 26° C
   - pH - 7.9
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - inside the orange berm, the water is brown and murky. Water is still being pumped into the lake from the dredged area.
   - Algae - trace amounts of Chlamydomonas

4. School House
   - Temperature - 25° C
   - pH - 8.5
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - the water is clear with minimal grass fragments floating on the surface.
   - Algae - none collected

10. Westshore drain

Temperature - 25° C

pH - 8.1

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is unusually clear, making it easy to see how shallow the lake is here, probably due to washed in mud and silt during the winter rains.

Algae - none collected

11. Eastshore drain

Temperature - 27° C

pH - 8.1

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is clear, making the shallow bottom readily visible.

Algae - none collected.

Conclusions:

There is very little algae in the lake. However the grass growth has become very problematic. The clarity of the water has enabled sunlight to get to the bottom of the lake where the grass is rooted. In addition, nutrients from the winter rains and shallowness of the lake (much washed in dirt from the project during the winter rains) have acerbated the problem. Use of herbicides and manual removal of the grass seem to be the only things that can be done.

An oily film on the surface of the water in Basin #4 is rather interesting. Analysis of the surface scum under the microscope revealed numerous tiny diatom cells. The diatoms appeared healthy and probably were rapidly reproducing. The diatoms were small and actively moving around. Inside the diatom cells, oil globules were visible. It is the oil from the diatoms that is the most likely explanation for the strange oily film on the surface of the water in Basin #4.

The water is much warmer than last month and the increased temperature has undoubtedly been a contributing factor to the grass growth. Because nutrients have been introduced to the lake from the rains and because reclaimed water is used for irrigation around the lake, it is rather likely that the lake could experience one or more algal blooms during the summer months.

The level of nitrates in the water collected near the bridge was much lower than last month. An explanation could be that the runoff from nutrient rich sources, such as the horse stables, is no longer occurring and the massive mats of algae in Potrero Creek could be taking up most of the available nitrates.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

May 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	81°	83°	79°	77°	81°	83°	79°	79°	77°	77°	81°
pH	7.9	8.4	7.9	8.5	8.3	8.3	8.1	7.9	7.9	8.1	8.1
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	4 ft.	4 ft.	3 ft.	3 ft.	4 ft.	4 ft.	4 ft	3 ft	3 ft.
Color	dark	dark	brown	dark	dark	clear	clear	clear	clear	clear	clear
Algal species	D +++	Chl +++	Chl tr.	none coll.	none coll.	Chl +	none coll.	none coll.	none coll.	none coll	none coll.
Any Problem	oil film grass	grass	*	none	grass	grass	none	none	none	grass	none
City Ppt.	0"										
City Temp °F	66°										
City Factors	*										

Key to Algal species:
Aph = *Aphanizomenon*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms;
H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*;
Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Muddy water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well. The nitrate level is no longer high here, perhaps because the extensive amount of green algae in Potrero Creek has utilized most of it.

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

June 29, 2001

RECEIVED
2004 FEB 26 PM 2:02

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the June analysis for the lake along with the monthly summary for June. Growth of grass and weeds continues to be a problem. In some areas, leaves are also floating on the surface. I understand that there have been some complaints about the appearance of the lake. The warm water, introduction of nutrients from the winter rains, and the clarity of the lake all contribute to the growth of the grass. The fingers are the areas in which the problem is greatest because the water is shallow, circulation is poor, and the water is quite warm.

I have tried to address some of the problems and have suggested ways in which the homeowners can help to make the lake more aesthetically pleasing. The maintenance crew is continually working to remove the grass and weeds manually. However, it is not possible for them to remove all debris in front of everyone's dock daily. This would only be possible by hiring many more workers. Therefore, if homeowners understand the problem, they, too can help by having their gardeners remove grass and debris around the dock and be careful not to blow any grass or leaves into the lake.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

swimming pool might actually do the job.

Homeowners living along the fingers will naturally have more of a problem with grass and debris because the fingers are shallow, the water is warmer, and circulation of the water is poor. As a result, grass and weed growth will be greater than along the main channel where the water is deeper and cooler. Winds tend to concentrate the debris at the ends of the fingers. Homeowners at the end of the finger might be careful in how their boats are oriented to allow as much circulation as possible around the dock and at the end of the finger.

There has also been some concern expressed about the accumulation of grass or leaves being a health threat. Although the grass may not be particularly pleasing to look at, it should not be a health problem. More likely to be a health problem would be the water lilies (American lotus) that have been placed at various homeowner's docks because here the vegetation is matted and would allow little aeration or circulation. Such matted growth could then become a breeding ground for mosquitoes.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

June 26, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 27° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - a lot of grass and debris is floating on the surface of the channel
   Algae - none collected

2. Finger #7
   Temperature - 28°C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of grass fragments are floating on the surface.
   Algae - Trace amounts of *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 26° C
   pH - 8.0
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - inside the orange berm, the water is still brown and murky. Water continues to be pumped into the lake from the dredged area.
   Algae - none collected

4. School House
   Temperature - 27° C
   pH - 8.2
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is fairly clear, but lots of grass fragments are on the surface.
   Algae - none collected

5. Finger #12

Temperature - 28° C

pH - 8.2

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - lots of grass floating on the surface of the water. A green scum was also noticed on the north side of the basin.

Algae - the green scum was the motile alga, *Chlamydomonas.* It was particularly interesting because it was in the process of asexual reproduction. An adult *Chlamydomonas* loses its flagella, and its protoplasm divides several times, producing from 8 to 16 babies inside the mother cell. I observed the babies coming out of the ruptured mother cell and then rapidly swimming away.

6. Basin #18

Temperature - 29° C

pH - 8.0

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - lots of grass floating on the surface of the water. Some filamentous algae was observed along the north shore of the finger.

Algae - the filamentous algae was *Oedogonium.*

7. Nadel's Point

Temperature - 28° C

pH - 8.4

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is relatively clear but some grass is present on the surface.

Algae - none collected

8. Landing

Temperature - 28 C

pH - 8.0

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is clear and dark. Debris was minimal

Algae - none collected

9. Dam

Temperature - 27° C
pH - 8.0
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

10. Westshore drain

Temperature - 27° C
pH - 8.2
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is somewhat murky with grass floating on the surface.
Algae - none collected

11. Eastshore drain

Temperature - 28° C
pH - 8.0
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is relatively clear. There was a slight sulfur odor here.
Algae - none collected.

Conclusions:

The growth of grass seems to be the main problem with the lake at this time. The water is quite clear which probably compounds the problem since the light can readily reach the bottom of the lake, particularly in the shallow areas of the fingers. Algae was at a minimum except for an area on the north side of fingers #12, #16, and #17. The algae here was *Chlamydomonas*, a motile planktonic species. It was rapidly reproducing and could become problematic if not watched. At present it is quite local in distribution.

There have been several complaints about the appearance of the lake in front of various homeowner's docks. Leaves and grass on the surface can be a bit less than aesthetically pleasing. However, it would be possible for homeowners to help alleviate some of the problems. At present the maintenance crew is working daily to manually remove the grass and weeds. Because of the size of the lake, it is not possible to remove debris in front of everyone's dock once or twice a day. If homeowner's helped out in this removal, the appearance of the lake would be greatly enhanced. Gardeners could be encouraged to remove leaves and grass from the area adjacent to the docks. Because many gardeners have been seen actually blowing leaves and grass into the lake, requesting that the gardeners, instead, remove the debris around the area, this undesirable trend might be reversed.
A net with a long handle, somewhat similar to those used to skim off debris from a

WESTLAKE LAKE ANALYSES

June 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	81°	83°	79°	81°	83°	84°	83°	83°	81°	81°	83°
pH	7.8	7.9	8.0	8.2	8.2	8.0	8.4	8.0	8.0	8.2	8.0
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	4 ft.	4 ft.	3 ft.	3 ft.	4 ft.	4 ft.	4 ft	3 ft	3 ft.
Color	dark	dark	brown	dark	dark	clear	clear	clear	clear	clear	clear
Algal species	none coll.	Chl tr.	none coll.	none coll.	Chl. ++++	Oed	none coll.	none coll.	none coll.	none coll	none coll.
Any Problem	grass	grass	*	grass	grass	grass	none	none	none	grass	none
City Ppt.	0"										
City Temp °F	68°										
City Factors	*										

Key to Algal species:
Aph = *Aphanizomenon*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Muddy water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well.

JUL 05 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

June 29, 2001

2004 FEB 25 PM 2:02
RECEIVED

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the June analysis for the lake along with the monthly summary for June. Growth of grass and weeds continues to be a problem. In some areas, leaves are also floating on the surface. I understand that there have been some complaints about the appearance of the lake. The warm water, introduction of nutrients from the winter rains, and the clarity of the lake all contribute to the growth of the grass. The fingers are the areas in which the problem is greatest because the water is shallow, circulation is poor, and the water is quite warm.

I have tried to address some of the problems and have suggested ways in which the homeowners can help to make the lake more aesthetically pleasing. The maintenance crew is continually working to remove the grass and weeds manually. However, it is not possible for them to remove all debris in front of everyone's dock daily. This would only be possible by hiring many more workers. Therefore, if homeowners understand the problem, they, too can help by having their gardeners remove grass and debris around the dock and be careful not to blow any grass or leaves into the lake.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

June 26, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 27° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - a lot of grass and debris is floating on the surface of the channel
   Algae - none collected

2. Finger #7
   Temperature - 28°C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of grass fragments are floating on the surface.
   Algae - Trace amounts of *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 26° C
   pH - 8.0
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - inside the orange berm, the water is still brown and murky. Water continues to be pumped into the lake from the dredged area.
   Algae - none collected

4. School House
   Temperature - 27° C
   pH - 8.2
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is fairly clear, but lots of grass fragments are on the surface.
   Algae - none collected

5. Finger #12

Temperature - 28° C

pH - 8.2

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - lots of grass floating on the surface of the water. A green scum was also noticed on the north side of the basin.

Algae - the green scum was the motile alga, *Chlamydomonas*. It was particularly interesting because it was in the process of asexual reproduction. An adult *Chlamydomonas* loses its flagella, and its protoplasm divides several times, producing from 8 to 16 babies inside the mother cell. I observed the babies coming out of the ruptured mother cell and then rapidly swimming away.

6. Basin #18

Temperature - 29° C

pH - 8.0

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - lots of grass floating on the surface of the water. Some filamentous algae was observed along the north shore of the finger.

Algae - the filamentous algae was *Oedogonium*.

7. Nadel's Point

Temperature - 28° C

pH - 8.4

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is relatively clear but some grass is present on the surface.

Algae - none collected

8. Landing

Temperature - 28 C

pH - 8.0

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is clear and dark. Debris was minimal

Algae - none collected

9. Dam

Temperature - 27° C
pH - 8.0
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

10. Westshore drain

Temperature - 27° C
pH - 8.2
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is somewhat murky with grass floating on the surface.
Algae - none collected

11. Eastshore drain

Temperature - 28° C
pH - 8.0
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is relatively clear. There was a slight sulfur odor here.
Algae - none collected.

Conclusions:

The growth of grass seems to be the main problem with the lake at this time. The water is quite clear which probably compounds the problem since the light can readily reach the bottom of the lake, particularly in the shallow areas of the fingers. Algae was at a minimum except for an area on the north side of fingers #12, #16, and #17. The algae here was *Chlamydomonas*, a motile planktonic species. It was rapidly reproducing and could become problematic if not watched. At present it is quite local in distribution.

There have been several complaints about the appearance of the lake in front of various homeowner's docks. Leaves and grass on the surface can be a bit less than aesthetically pleasing. However, it would be possible for homeowners to help alleviate some of the problems. At present the maintenance crew is working daily to manually remove the grass and weeds. Because of the size of the lake, it is not possible to remove debris in front of everyone's dock once or twice a day. If homeowner's helped out in this removal, the appearance of the lake would be greatly enhanced. Gardeners could be encouraged to remove leaves and grass from the area adjacent to the docks. Because many gardeners have been seen actually blowing leaves and grass into the lake, requesting that the gardeners, instead, remove the debris around the area, this undesirable trend might be reversed.
A net with a long handle, somewhat similar to those used to skim off debris from a

swimming pool might actually do the job.

Homeowners living along the fingers will naturally have more of a problem with grass and debris because the fingers are shallow, the water is warmer, and circulation of the water is poor. As a result, grass and weed growth will be greater than along the main channel where the water is deeper and cooler. Winds tend to concentrate the debris at the ends of the fingers. Homeowners at the end of the finger might be careful in how their boats are oriented to allow as much circulation as possible around the dock and at the end of the finger.

There has also been some concern expressed about the accumulation of grass or leaves being a health threat. Although the grass may not be particularly pleasing to look at, it should not be a health problem. More likely to be a health problem would be the water lilies (American lotus) that have been placed at various homeowner's docks because here the vegetation is matted and would allow little aeration or circulation. Such matted growth could then become a breeding ground for mosquitoes.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

June 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	81°	83°	79°	81°	83°	84°	83°	83°	81°	81°	83°
pH	7.8	7.9	8.0	8.2	8.2	8.0	8.4	8.0	8.0	8.2	8.0
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	4 ft.	4 ft.	3 ft.	3 ft.	4 ft.	4 ft.	4 ft	3 ft	3 ft.
Color	dark	dark	brown	dark	dark	clear	clear	clear	clear	clear	clear
Algal species	none coll.	Chl tr.	none coll.	none coll.	Chl. ++++	Oed	none coll.	none coll.	none coll.	none coll	none coll.
Any Problem	grass	grass	*	grass	grass	grass	none	none	none	grass	none
City Ppt.	0"										
City Temp °F	68°										
City Factors	*										

Key to Algal species:
Aph = *Aphanizomenon*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Muddy water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well.

JUL 30 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

2004 FEB 26 PM 2:02

June 29, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the July analysis for the lake along with the monthly summary for July. Growth of grass and weeds continues to be the main problem, although it is not as bad as last month. The water is a bit murkier, but this may help to decrease the amount of grass growth.

Water continues to enter the lake from some of the drains and this inevitably brings nutrients into the lake - food for the algae or grass.

Removal of the water lilies seems to have been effective in the areas treated. However, the plants have a very good survival rate, even when only small remnants are left, and can easily grow back if not treated. Therefore, be sure to keep a close eye on the plants that have been removed.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

July 27, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 28° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - green, murky with a lot of grass and algal clumps floating on the surface at the end of the finger. Considerable grass could also be seen growing below the surface of the water along the finger.
   Algae - mostly diatoms, filamentous and single celled. Also present were smaller amounts of *Closterium* and *Chlamydomonas.*

2. Finger #7
   Temperature - 28°C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of grass fragments and debris are floating on the surface at the end of the finger. The water was quite murky along the finger.
   Algae - Diatoms and trace amounts of *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 26° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - Water continues to be pumped into the lake from the dredged area. Outside the berm the water was quite clear. Behind the mound of dirt, separating the drainage area from the lake, the water is very green with algae.
   Algae - traces amounts of *Chlamydomonas*

4. School House
   Temperature - 27° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is rather murky, green. Some grass is floating on the surface.
   Algae - none collected

9. Dam

Temperature - 27° C
pH - 8.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - none collected

10. Westshore drain

Temperature - 27° C
pH - 8.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is murky with grass and debris floating on the surface. The water was stagnant at the entrance of the drain.
Algae - mainly diatoms, filamentous and single celled species.

11. Eastshore drain

Temperature - 27° C
pH - 8.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is murky green with minimal debris.
Algae - some *Anabaena* and trace amounts of diatoms and the dinoflagellate, *Ceratium*.

Conclusions:

Algae is not problematic at this time, although there is a bit more present than last month. As a result the water is a bit murky, but this helps to keep the grass growth down. Grass is not quite as much of a problem as it has been. Ends of the fingers are still problematic because of lack of circulation, particularly when homeowner's boats are so placed as to impede any water movement. Again, it is important that gardeners be urged not to blow leaves or debris into the lake. This can be particularly problematic in the fingers.

The lake water is rather alkaline. This should not be a problem except for the fact that some algicides are not as effective when the water is alkaline.

Barbara Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

July 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	83°	83°	79°	81°	83°	83°	81°	81°	81°	81°	81°
pH	8.6	8.5	8.5	8.5	8.3	8.6	8.7	8.6	8.6	8.6	8.6
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	2.5 ft.	2.5 ft.	4 ft.	4 ft.	2.5 ft.	2.5 ft.	4 ft.	3 ft.	4 ft	3 ft	3 ft.
Color	murky	murky	dark	dark	murky	murky	clear	murky	clear	murky	dark
Algal species	D Chl tr.	D	Chl tr.	none coll.	Osc D	Osc D Chl tr	D	Osc D	D tr	D tr	Ana Chl
Any Problem	grass	grass	*	grass	grass	grass	none	none	none	grass	none
City Ppt.	0"										
City Temp °F	70°										
City Factors	*										

Key to Algal species:
Ana = *Anabaena*; Chl = *Chlamydomonas*; Clo = *Closterium*; Cry = *Cryptomonas*; D = Diatoms;
H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*;
Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well.

SEP 04 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

June 29, 2001

2004 FEB 25 PM 2:02

RECEIVED

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the August analysis for the lake along with the monthly summary for August. Growth of grass and weeds continues to be the main problem. The water is rather green and murky, but this may help to decrease the amount of grass growth. Algae is not problematic at present. However, if the weather remains warm, it could become a problem, parrticularly in the fingers and in the shallow areas of the lake. Hopefully, we will soon be getting cooler weather, which should help to slow the growth of both weeds and algae.

Water continues to enter the lake from some of the drains and this inevitably brings nutrients into the lake - food for the both algae and grass.

In areas where the water lilies were removed, many are recovering, illustrating their resistance and ability to survive. It will be necessary to keep a close eye on these plants to prevent a full recovery.

Hopefully, the dirt barrier where the bridge activity is occurring will be removed before the first winter rains, or we will be having more dirt and nutrients washed into the lake.

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

SEP 04 2001

August 30, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 27° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - green, murky with a lot of grass floating on the surface.
   Algae - diatoms and *Chlamydomonas.*

2. Finger #7
   Temperature - 26°C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of grass fragments on the surface at the end of the finger. The water was murky green along the finger. Water lilies are recovering quickly
   Algae - Diatoms and *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 24° C
   pH - 7.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - Water continues to be pumped into the lake from the dredged area.
   Algae - none collected

4. School House
   Temperature - 26° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is murky, green. Some grass is floating on the surface.
   Algae - *Chlamydomonas*

5. Finger #12

Temperature - 27° C
pH - 8.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was murky, green along the finger. Some grass present.
Algae - *Chlamydomonas*

6. Basin #18

Temperature - 27° C
pH - 8.5
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - lots of grass floating on the surface of the water, particularly at the end of the finger. Water along the length of the finger was a murky green.
Algae - *Chlamydomonas*

7. Nadel's Point

Temperature - 25.5° C
pH - 8.5
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is relatively clear
Algae - *Cryptomonas*

8. Landing

Temperature - 26° C
pH - 8.6
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was murky green.
Algae - *Cryptomonas* and *Chlamydomonas*

9. Dam

Temperature - 25.5° C
pH - 8.4
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - *Cryptomonas* and *Chlamydomonas*

10. Westshore drain
    Temperature - 27° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is murky green with lots of grass and algal mats floating on the surface.
    Algae - filamentous diatoms and *Cladophora*

11. Eastshore drain
    Temperature - 27° C
    pH - 8.6
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - water is slowly trickling out from the drain, but the water in the drain is stagnant with lots of leaves and debris.
    Algae - *Cladophora* and diatoms

Conclusions:

The water is quite murky and growth of grass still remains a problem. Because the lake water is low, nutrients tend to be more concentrated and this can acerbate the problem of grass and algal growth. Algae is not problematic as yet and the murkiness of the water may help a bit in keeping the grass growth down.

I understand that attempts are being made to bring water into the lake from the wells and this should help to alleviate some of the nutrient problems.

The dredging activities are continuing, and water continues to be pumped into the lake from behind the dirt barrier. There is concern that a good deal of dirt could again end up in the lake if the dirt barrier is not removed before the winter rains come.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

August 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	81°	80°	75°	79°	81°	81°	78°	79°	78°	81°	81°
pH	8.6	8.6	7.6	8.6	8.6	8.5	8.5	8.6	8.4	8.3	8.6
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	2.5 ft.	2.5 ft.	4 ft.	3 ft.	2.5 ft.	2.5 ft.	4 ft.	3 ft.	4 ft	2.5 ft	3 ft.
Color	murky	murky	dark	dark	murky	murky	clear	murky	clear	murky	dark
Algal species	D Chl	D Chl	none coll.	Chl	Chl	Chl	Cry	Cry Chl	Cry Chl	D Clad	D Clad
Any Problem	grass	grass	*	grass	grass	grass	none	none	none	grass	debris
City Ppt.	0"										
City Temp °F	70°										
City Factors	*										

Key to Algal species:
Ana = *Anabaena*; Chl = *Chlamydomonas*; Clad = *Cladophora*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well.

OCT 02 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

September 27, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the September analysis for the lake along with the monthly summary for September. Growth of grass continues to be a problem along with increased growth of filamentous algae. The water remains quite green and murky. Although we are having a hot spell now, the nights are cool and, hopefully, the worst of the weed and algae growth will soon be over.

It should be noted that the basin adjacent to the bridge where the dredging activity is occurring is covered with a green mat of algae. This algae should not be allowed to enter the lake and should be removed before the winter rains come.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

OCT 02 2001

September 25, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 26° C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - greenish brown and murky with grass and filamentous algae floating on the surface.
   Algae - *Oedogonium, Tribonema,* and filamentous diatoms

2. Finger #7
   Temperature - 25°C
   pH - 8.1
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - grass fragments and filamentous algae are again abundant on the surface. The water is murky, green.
   Algae - *Oedogonium* and diatoms

3. Triunfo Bridge
   Temperature - 24.5° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - Water continues to be pumped into the lake from the dredged area. The basin from which the water is being pumped is covered with a green mat of filamentous algae. Water inside the orange barrier is brown and murky with some algal mats floating on the surface. Outside the barrier, the water is relatively clear.
   Algae - assorted filamentous species are present, including *Spirogyra, Oedogonium, Tribonema,* and diatom filaments.

4. School House
   Temperature - 25° C
   pH - 7.7
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is murky, green, with some algae floating on the surface.
   Algae - *Oedogonium, Oscillatoria*, and diatoms. Algae here looked very fresh. A lower pH suggests water is entering via the drain.

5. Finger #12

Temperature - 25° C
pH - 8.0
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was murky and brown along the finger with grass and filamentous algae floating on the surface.
Algae - *Oedogonium* and diatoms

6. Basin #18

Temperature - 26° C
pH - 8.1
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - lots of grass and algal clumps floating on the surface.
Algae - *Oedogonium* and diatoms

7. Nadel's Point

Temperature - 26° C
pH - 8.4
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is murky but no floating algal mats
Algae - none collected

8. Landing

Temperature - 25° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was murky but no algae on the surface
Algae - small amounts of the dinoflagellate, *Ceratium*

9. Dam

Temperature - 26° C
pH - 8.4
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and clear.
Algae - *Ceratium* and trace amounts of *Chlamydomonas*

10. Westshore drain

Temperature - 25° C

pH - 8.3

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - the water is murky green with lots of grass and algal mats floating on the surface.

Algae - filamentous diatoms and *Oedogonium*

11. Eastshore drain

Temperature - 25° C

pH - 8.4

Nitrate - < 1 ppm

Phosphate - < 1 ppm

Appearance - water is slowly trickling out from the drain. Although the water trickling out appeared relatively clear, there is an unpleasant odor emanating from the drain, suggesting that bacterial decomposition is occurring.

Algae - none collected

Conclusions:

The water is still quite murky and growth of grass remains a problem. Filamentous algae seems to be a bit problematic in the fingers and around the drains. The scooped out basin at the bridge where the construction activity is occurring is totally covered with mats of filamentous algae. Water from this basin is being pumped into the lake, behind the orange barrier. This enclosed area is quite murky and also contains mats of filamentous algae. It is this algae that was sampled at the last visit. The bridge area here may be a source for some or much of the algae in the other areas of the lake. Only a few cells need to be blown to other areas of the lake, and then nutrients from the drains will stimulate the growth.

The pH of the lake is around 8.4 except around the bridge and the School House drain. Water from the well or influx of water from the drains could cause the slight lowering of the pH.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

September 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	79°	77°	78°	77°	77°	79°	79°	77°	79°	77°	77°
pH	8.4	8.1	7.8	7.7	8.0	8.1	8.4	8.3	8.4	8.3	8.4
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	2.5 ft.	2.5 ft.	4 ft.	3 ft.	2.5 ft.	2.5 ft.	3 ft.	3 ft.	4 ft	2.5 ft	3 ft.
Color	murky	murky	dark	murky	murky	murky	clear	murky	clear	murky	dark
Algal species	Oed Tri D	Oed D	Spir Oed Tri D	Oed Osc D	Oed D	Oed D	none coll.	Cer tr.	Cer	Oed D	none coll.
Any Problem	grass algae	grass algae	*	grass	grass algae	grass algae	none	none	none	grass algae	debris
City Ppt.	0"										
City Temp °F	69°										
City Factors	*										

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Water is still being pumped into the lake from the bridge area. The orange berm seems to be filtering this fairly well. Filamentous algae is abundant in the basin area behind the dirt barrier.

RECEIVED NOV 1 2 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

2004 FEB 25 PM 2:02

November 1, 2001

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the October analysis for the lake along with the monthly summary for October. Growth of grass is less of a problem now. The temperature of the water is cooler and this should help to keep algal and grass growth at a minimum.

Although we did have a small amount of rain on October 30th, no major problems resulted. The water is quite clear and algal growth is at a minimum except at the west drain.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

RECEIVED NOV 1 2 2001

October 31, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 21° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - slightly murky
   Algae - none collected

2. Finger #7
   Temperature - 21°C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky with minor amounts of grass
   Algae - trace amounts of *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 23° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - water behind the orange barrier is quite murky. Dirt from the area is being removed.
   Algae - small amounts of *Chlamydomonas*

4. School House
   Temperature - 21° C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - small amounts of algae along the shore.
   Algae - *Chlamydomonas* is present in minor amounts

10. Westshore drain
    Temperature - 21° C
    pH - 8.5
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is murky with some debris
    Algae - large population of the dinoflagellate, *Ceratium*

11. Eastshore drain
    Temperature - 21° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - water is fairly clear
    Algae - none collected

Conclusions:

The water is fairly clear and algal growth is at a minimum except at the west drain. The water is colder than last month and the cooler temperature should keep the algal growth in check. The high population of *Ceratium* at the west drain is probably a result of the recent rain which would have flushed water that had been sitting in the drain into the lake. *Ceratium* is listed as a species that is known to produce a fish or septic odor. It is also capable of rapid multiplication. Odors have been noticed at that drain in the past and could be caused by this organism.

Otherwise, the lake looks quite good.

Barbara Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

October 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	70°	70°	73°	70°	69°	70°	69°	69°	70°	70°	70°
pH	8.3	8.5	8.3	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.3
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	4 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3.5 ft.
Color	murky	murky	dark	murky	murky	murky	clear	murky	clear	murky	dark
Algal species	none coll.	Chl tr	Chl tr	Chl tr	Cry Chl tr	none coll.	none coll.	none coll.	none coll.	Cer ++	none coll.
Any Problem	none	none	*	none	none	none	none	none	none	algae	none
City Ppt.	0.3"										
City Temp °F	65°										
City Factors	*										

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* Most of the dirt has been removed from the dirt berm at Triunfo Bridge. A light rain event occurred on Oct. 30th, but no major problems resulted.

RECEIVED DEC 0 4 2001

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

November 28, 2001

2004 FEB 26 PM 2:02

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the November analysis for the lake along with the monthly summary for November. Growth of grass is no longer a problem. The temperature of the water is considerably cooler than it has been. This is probably because of the recent rains and because of the colder weather.

Following the most recent rain on November 24th, Erik commented on the large amount of planktonic algae in the lake. It is likely that the rains introduced the algae (Cyanobacteria) through one of the drains. Hopefully, further rains will wash most of the algae out over the dam.

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

RECEIVED DEC 0 4 2001

November 27, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 14° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - slightly murky, with lots of green flecks of planktonic algae in the water.
   Algae - The green flecks are the Cyanobacteria, *Anabaena*. Also present were traces of *Ceratium*.

2. Finger #7
   Temperature - 14°C
   pH - 8.2
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - greenish brown with numerous flecks of tiny planktonic algae
   Algae - *Anabaena*

3. Triunfo Bridge
   Temperature - 14° C
   pH - 8.1
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - water is somewhat murky. Most of the bridge activity has been completed. Flecks of algae were found on the west end.
   Algae - *Anabaena*

4. School House
   Temperature - 14° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky green, but minimal debris.
   Algae - *Anabaena* with small amounts of *Ceratium*

5. Finger #12
   Temperature - 14° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water was slightly murky
   Algae - small amounts of *Cryptomonas*

6. Basin #18
   Temperature - 14° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky with lots of algal flecks
   Algae - *Anabaena*

7. Nadel's Point
   Temperature - 14° C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is fairly clear
   Algae - none collected

8. Landing
   Temperature - 15° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water was fairly clear
   Algae - none collected

9. Dam
   Temperature - 15° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and clear.
   Algae - none collected

10. Westshore drain

Temperature - 14.5° C
pH - 8.1
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is murky with some debris
Algae - none collected

11. Eastshore drain

Temperature - 15° C
pH - 8.5
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - water is fairly clear. Flecks of planktonic algae visible.
Algae - *Anabaena*

Conclusions:

After the rains on November 24th, Erik noted a large amount of planktonic algae throughout the lake. Since the algae were not present before the rains, the best conclusion is that much or all of it was introduced into the lake via the drains. The algae present is the blue-green algae called *Anabaena.* Technically it is a bacteria, a member of the Cyanobacteria. *Anabaena* can be troublesome as it is often implicated in algal blooms. It is also listed as a species likely to cause unpleasant odors if allowed to become a full fledged algal bloom. The algae should be watched, but it is doubtful if it will continue to reproduce rapidly at this time because of the colder temperature of the water. The water is now averaging 57° F.

On the 27th, no water was visible coming under Triunfo Bridge and into the lake. Therefore, it seems unlikely that the source of the algae is Potrero Creek. Because fresh *Anabaena* was found at the East drain, it is possible that this was the source of the algae.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

November 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	57°	57°	57°	57°	57°	57°	57°	59°	59°	58°	59°
pH	8.3	8.2	8.1	8.3	8.3	8.5	8.4	8.3	8.3	8.1	8.5
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	4 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3.5 ft.
Color	green	green	dark	murky	murky	green	clear	clear	clear	murky	clear
Algal species	Ana	Ana	Ana	Ana	Cry	Ana	none coll.	none coll.	none coll.	none coll.	Ana
Any Problem	algae	algae	*	none	none	algae	none	none	none	none	none
City Ppt.	2.5"										
City Temp °F	60°										
City Factors	*										

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* The dirt berm is now gone and the orange floating berm is all that remains. Dirt on the hill has been graded. New supports for the bridge, however, are wide and rather close together and hopefully will not create problems should there be a heavy rain carrying lots of debris.

RECEIVED JAN 0 2 2002

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

December 28, 2001

2004 FEB 25 PM 2:02

RECEIVED

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the December analysis for the lake, the monthly data chart, and the yearlong summary for the lake. The temperature of the water remains quite cold. Rainfall has been rather minimal, and the first rains of the season are usually heavily loaded with debris. Therefore, it is possible that the rains brought nutrients and algae into the lake via the drains.

The lake is presently experiencing an algal bloom caused by the species *Anabaena*, a Cyanobacteria. *Anabaena* can become problematic, but hopefully winter rains will wash much of it over the dam. Source of the *Anabaena* is not known. Treatment will have to wait until the water warms up, however.

Again, it is essential to alert homeowners that gardeners must not blow leaves into the lake.

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

December 27, 2001

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 12° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of green flecks of planktonic algae in the water. The algae is concentrated at the end of the finger and is obvious on the surface of the water.
   Algae - The green flecks are the Cyanobacteria, *Anabaena*.

2. Finger #7
   Temperature - 13°C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of green flecks of algae throughout the water in the basin.
   Algae - *Anabaena*

3. Triunfo Bridge
   Temperature - 13° C
   pH - 8.0
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is somewhat murky with lots of green flecks. The water is very green with the algae along the shoreline.
   Algae - *Anabaena*

4. School House
   Temperature - 12° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky green, with a large concentration of algae along the shore, forming a green scum
   Algae - *Anabaena*

5. Finger #12
   Temperature - 12° C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water was slightly murky with numerous algal flecks throughout
   Algae - *Anabaena*

6. Basin #18
   Temperature - 13° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - lots of algal flecks throughout. Willow leaves are a problem here, with evidence that gardeners are blowing leaves into the lake.
   Algae - *Anabaena*

7. Nadel's Point
   Temperature - 13° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is fairly clear, but algal flecks are present here, also
   Algae - *Anabaena*

8. Landing
   Temperature - 13° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water was fairly clear. Algal flecks seem to be a bit less numerous here.
   Algae - *Anabaena*

9. Dam
   Temperature - 13° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is dark and fairly clear. Algae is minimal here.
   Algae - *Anabaena*

10. Westshore drain
    Temperature - 13° C
    pH - 8.5
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - algal flecks are concentrated here, forming a green scum on the surface of the water
    Algae - *Anabaean*

11. Eastshore drain
    Temperature - 12° C
    pH - 8.1
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - water is murky. A few flecks of planktonic algae are visible.
    Algae - *Anabaena* and some small clumps of diatoms

Conclusions:

Anabaena, a Cyanobacteria, often called blue-green algae, is present throughout the lake. It seemed to be concentrated, however, at the north end, but this may be more dependent upon the wind rather than other factors. *Anabaena* is a filamentous species and occurs in small clusters which tend to be dispersed throughout the lake. The filaments are rather tightly coiled, forming tangled clusters, which help to hold the filaments together. In areas where the algae was abundant, it formed a green scum on the surface of the water. Otherwise, the clusters are small and are readily dispersed throughout the water.

Although *Anabaena* was present in the lake last month, it is much more abundant at this time. Because the temperature of the water is quite low, chemical treatment will be ineffective. Hopefully, we will get more rain and much of the algae will wash over the dam or become diluted.

Growth of the Cyanobacteria is stimulated by the presence of nitrates and phosphates and also occurs in greater abundance when flow of water is minimal. *Anabaena* readily floats and, therefore, receives an adequate supply of sunlight for photosynthetic activity. Conditions in Westlake Lake seem to be optimum for its growth at this time, allowing the *Anabaena* to outcompete other species, particularly the Chlorophyta or green algae. I suspect that the Cyanobacteria also tolerate the lower water temperatures better than other species.

When the water warms up in the spring, it will be possible to treat the *Anabaena* with copper. In the meantime, the best policy is to just wait it out. At present it is not particularly unsightly and should not harm the aquatic life. *Anabaena* is listed as being susceptible to copper sulfate.

Although there were a few small clumps of diatoms in the water, *Anabaena* was the main algal species present.

Erik and I noticed in one of the fingers that a great number of leaves were present on the water along the shore, particularly noticeable in front of an immaculate lawn without a single leaf. Several of the lawns had numerous leaves from the weeping willow trees and these leaves in the lake can be very problematic. It is essential that homeowners be alerted that gardeners **must not blow leaves into the lake!** This not only multiplies the amount of work that the maintenance crew must do, but ultimately deteriorates the quality of the lake water. Leaves landing on the bottom of the lake soon undergo decomposition, adding nutrients to the lake and causing anaerobic conditions. Anaerobic conditions on the bottom of the lake are harmful to the organisms living there and result in unpleasant odors. Toxic gases may even be produced. Nutrients released from the decomposed leaves are fuel for the growth of algae - a problem that is presently occurring in the lake. Perhaps it would be possible to put such information into a newsletter so that homeowners can be educated concerning this matter. Ideally, the gardeners could scoop out leaves with a net similar to that used in swimming pools to ensure that the quality of the lake water is not degraded.

Barbara Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

December 2001

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	54°	55°	55°	54°	54°	55°	55°	55°	55°	55°	54°
pH	8.5	8.5	8.0	8.5	8.4	8.6	8.6	8.5	8.5	8.5	8.5
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	3 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	green	green	green	green	green	green	clear	clear	clear	green	murky
Algal species	Ana +++	Ana +++	Ana +++	Ana +++ ++	Ana +++	Ana +++	Ana +	Ana +	Ana tr.	Ana +++ ++	Ana +
Any Problem *	algae	algae	algae	algae	algae	algae	none	none	none	algae	algae
City Ppt.	1.4"										
City Temp °F	53°										
City Factors											

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* The entire lake is experiencing an algal bloom caused by the Cyanobacteria, *Anabaena*.
Just enough rain to introduce nutrients into the lake and not enough to flush out the algae are contributing factors.

WESTLAKE LAKE ANALYSES

2001

Dr. Barbara J. Collins

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Temp. °F	54°	57°	71°	70°	81°	82°	82°	80°	78°	70°	58°	55°
pH	8.5	8.4	7.9	7.8	8.2	8.0	8.5	8.4	8.2	8.4	8.3	8.5
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Color	dark	brown	clear	dark	clear	dark	murky green	dark murky	green mrky	slight mrky	mrky	green
Algal species	Chl Cry	Chl + Cry	D	Osc Spir D	D +++ Chl	Chl +	D Chl tr.	Cry Chl	Oed D Tri	Cer	Ana	Ana +++
Any Prob-lems	*	**	**	filam. algae	grass, algae in #4	grass	grass & algae	grass	grass & algae	none	Ana	algae Ana
City Ppt.	rain 7.02"	rain 7.79"	rain 6.49"	rain 1"	none	none	none	none	none	0.3"	2.9"	1.4"
City av. temp.	52°	52°	58°	56°	66°	68°	70°	74°	70°	65°	60°	53°
City Factors	*	**	**	***	***	****	****	****	****	*** **	none	none

Key to Algal species:
Ana = *Anabaena*; Aph = *Aphanizomenon*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cl = *Cladophora*; Clo = *Closterium*; Cry = *Cryptomonas*; D = diatoms; Hm = *Haematococcus*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Scen = *Scenedesmus*; Spir = *Spirogyra*; Tri = *Tribonema*; Vau = *Vaucheria*; tr = trace

* Dredging at the bridge is continuing with piles of dirt above the lake. Mud and silt is entering the lake with the rain.
** Barrier at the bridge failed in Feb. after the rain. Considerable mud entered during the February and March rains.
*** Muddy water still being pumped into the lake at the bridge. Nitrates high (8 ppm) at the bridge in April, but low in May. Unusual algal bloom in Basin #4 in May causing an oily film.
**** Water continues to be pumped into the lake from behind the dirt barrier. Mat of green filamentous algae in dredged out basin by the bridge.
***** Dirt berm at the bridge is mostly removed. It was completely removed by the end of November.

RECEIVED FEB 0 5 2002

2004 FEB 26 PM 2:02

RECEIVED

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

January 29, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the January analysis for the lake and the monthly data chart. The temperature of the water remains quite cold. Rainfall has still been rather minimal, but has helped in clearing out algae and bringing fresh water in. The lake looks good at this time. The water is relatively clear and cold. Algae is minimal.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

January 29, 2002

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 11° C
   pH - 8.0
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky green-brown, but relatively clear with minimal debris
   Algae - small amounts of *Ceratium*

2. Finger #7
   Temperature - 11°C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - a bit murky brown with some debris at the end of the finger
   Algae - *Coelastrum* and *Ceratium* in small amounts

3. Triunfo Bridge
   Temperature - 12° C
   pH - 8.2
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is fairly clear
   Algae - *Cryptomonas* and *Ceratium* in small numbers

4. School House
   Temperature - 11° C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - murky brown, but no debris on the surface
   Algae - small amounts of *Ceratium* and *Cryptomonas.*

5. Finger #12

Temperature - 11° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was slightly murky with some debris at the end of the finger.
Algae - diatoms

6. Basin #18

Temperature - 11° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - dark and murky, but no debris on the surface
Algae - trace amounts of *Cryptomonas*

7. Nadel's Point

Temperature - 11° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is fairly clear and dark
Algae - small numbers of *Ceratium,* Diatoms, and *Cryptomonas*

8. Landing

Temperature - 11° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water was fairly clear.
Algae - *Ceratium*

9. Dam

Temperature - 11° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - the water is dark and fairly clear.
Algae - *Cryptomonas* in small amounts

10. Westshore drain
    - Temperature - 11° C
    - pH - 8.3
    - Nitrate - < 1 ppm
    - Phosphate - < 1 ppm
    - Appearance - dark and murky; no debris present
    - Algae - none collected

11. Eastshore drain
    - Temperature - 11° C
    - pH - 8.3
    - Nitrate - < 1 ppm
    - Phosphate - < 1 ppm
    - Appearance - water is dark and murky.
    - Algae - *Anabaena*

Conclusions:

Anabaena, a Cyanobacteria, often called blue-green algae, is no longer present in the lake except in small amounts at the Eastshore drain. I suspect that this was the source of the algal bloom that we had in December. Rains and cold weather have likely helped to diminish the amount of algae in the lake. The lake looks quite good at this time. Nitrate and phosphate levels were below detection limits and algae was only present in trace amounts. The pH of the lake is pretty much the same throughout and there ~~seem to~~ be no problems at present.

Barbara Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

January 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	52°	52°	54°	52°	52°	52°	52°	52°	52°	52°	52°
pH	8.0	8.3	8.2	8.4	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	3½ ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	brown	brown	dark	brown	brown	brown	dark	clear	clear	dark	dark
Algal species	Cer tr.	Cer tr.	Cry tr.	Cry Cer tr.	D	Cry tr.	Cry Cer D	Cer +	Cry tr.	none coll.	Ana +
Any Problem *	none	none	none	none	none	none	none	none	none	algae	algae
City Ppt.	.72"										
City Temp °F	53°										
City Factors	none										

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* The entire lake is experiencing an algal bloom caused by the Cyanobacteria, *Anabaena*.
Just enough rain to introduce nutrients into the lake and not enough to flush out the algae are contributing factors.

RECEIVED FEB 0 5 2002

INVOICE

January 29, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California
91361

I am charging for the January Westlake Lake report. This includes the monthly analysis and monthly summary.

TOTAL $300

Barbara J. Collins

Barbara J. Collins
139 Prentiss St.
Thousand Oaks, CA 91360

805-495-6260

RECEIVED MAR 0 5 2002

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

February 27, 2002

2004 FEB 26 PM 2:02

RECEIVED

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the February analysis for the lake and the monthly data chart. The temperature of the water has warmed up considerably from last month, which is not too surprising, considering the unusually warm weather that we have been having. The lake continues to look quite good. Rainfall continues to be minimal. One good aspect of this is that the small amount of runoff that we are getting will introduce only minor amounts of nutrients, such as fertilizer, into the lake.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

RECEIVED MAR 0 5 2002

February 27, 2002

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 18.5° C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - slightly turbid with some floating algae
   Algae - diatoms and *Tribonema*

2. Finger #7
   Temperature - 18.5°C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - slightly murky
   Algae - *Cryptomonas*

3. Triunfo Bridge
   Temperature - 18° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - the water is slightly turbid, mostly with pine pollen
   Algae - *Tribonema* and diatoms

4. School House
   Temperature - 18.5° C
   pH - 7.8
   Nitrate - < 1 ppm
   Phosphate - < 1 ppm
   Appearance - mud-algal flecks floating on the surface from the overturn
   Algae - *Oscillatoria*

5. Finger #12

    Temperature - 18 C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - some mud-algal clumps floating on the surface
    Algae - *Cryptomonas* and *Oscillatoria*

6. Basin #18

    Temperature - 18° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - fairly clear
    Algae - none collected

7. Nadel's Point

    Temperature - 17.5° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is fairly clear and dark
    Algae - small numbers of *Ceratium* and *Cryptomonas*

8. Landing

    Temperature - 18° C
    pH - 8.2
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - some mud algal clumps on the surface from the overturn
    Algae - *Oscillatoria*

9. Dam

    Temperature - 18° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - the water is fairly clear.
    Algae - *Cryptomonas*

10. Westshore drain
    Temperature - 19° C
    pH - 7.9
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - murky with some floating algae
    Algae - diatoms and *Tribonema*

11. Eastshore drain
    Temperature - 19.5° C
    pH - 8.2
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - water is dark and murky with some algal flecks on the surface
    Algae - *Ceratium, Tribonema, Osciallatoria*, and diatoms

Conclusions:

The lake looks quite good. Algae is at a minimum, except in areas where there has been a spring overturn. In these places, small flecks of mud-algae are brought to the surface. A few small clumps of diatoms are in some of the fingers and at the drains, but these pose no problem. The water is quite a bit warmer than last month because of the unseasonable warm weather. Rainfall has been very minimal. Because of the decreased amount of runoff, fewer nutrients will be entering the lake. Hopefully, this will keep algal and grass growth at a minimum when the water warms up more.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

January 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	52°	52°	54°	52°	52°	52°	52°	52°	52°	52°	52°
pH	8.0	8.3	8.2	8.4	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	3½ ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	brown	brown	dark	brown	brown	brown	dark	clear	clear	dark	dark
Algal species	Cer tr.	Cer tr.	Cry tr.	Cry Cer tr.	D	Cry tr.	Cry Cer D	Cer +	Cry tr.	none coll.	Ana +
Any Problem	none	none	none	none	none	none	none	none	none	algae	algae
City Ppt.	.72"										
City Temp °F	53°										
City Factors	none										

Key to Algal species:
Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

WESTLAKE LAKE ANALYSES

February 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	65°	65°	64°	65°	64°	64°	63°	64°	64°	66°	67°
pH	7.9	8.3	7.8	7.8	8.3	8.3	8.3	8.2	8.3	7.9	8.2
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Secchi ft.	3 ft.	3 ft.	3½ ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	brown	brown	dark	brown	brown	brown	dark	clear	clear	turbid	turbid
Algal species	Tri D	Cry.	Tri D	Osc	Osc Cry	none coll.	Cry Cer	Osc	Cry tr.	Tri D	Cerat Tri Osc D
Any Problem	none	none	none	mud-algal clumps	mud-algal clump	none	none	none	none	algae	algae
City Ppt.	.45"										
City Temp °F	60°										
City Factors	none										

Key to Algal species:

Ana = *Anabaena*; Cer = *Ceratium*; Chl = *Chlamydomonas*; Cry = *Cryptomonas*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

RECEIVED APR 0 8 2002

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

RECEIVED
2004 FEB 25 PM 2: 02
REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

April 1, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the March analysis for the lake and the monthly data chart. The temperature of the water has continued to warm up. As a result, the lake experienced an algal bloom on the 22nd to 26th of March. The species causing the bloom was most likely the blue-green alga, *Anabaena.* Warm water and the presence of nutrients in the lake are the necessary stimuli for the increased growth. The small amount of rain received on Saturday the 23rd could have introduced additional nutrients into the lake.

Homeowners around the lake need to be alerted that runoff from fertilized lawns can be detrimental to the lake. Although the fertilizer will keep the lawns green, it will also cause the lake to become green, a rather unpleasant side effect. If fertilizer is deemed necessary, then care should be taken to **water the lawn conservatively** so that **no extra water runs off into the lake.**

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

INVOICE

RECEIVED APR 0 8 2002

April 2, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California
91361

I am charging for the March Westlake Lake report. This includes the monthly analysis and monthly summary.

TOTAL $300

Barbara J. Collins

Barbara J. Collins
139 Prentiss St.
Thousand Oaks, CA 91360

805-495-6260

RECEIVED APR 0 8 2002

April 1, 2002

WESTLAKE WATER ANALYSIS

1. Finger #4
   - Temperature - 21° C
   - pH - 8.5
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - a few clumps of filamentous green algae on the surface.
   - Algae - *Spirogyra*

2. Finger #7
   - Temperature - 21°C
   - pH - 8.3
   - Nitrate - < 1 ppm
   - Phosphate - <.05 ppm
   - Appearance - slightly murky; some grass fragments on the surface
   - Algae - none collected

3. Triunfo Bridge
   - Temperature - 21° C
   - pH - 8.4
   - Nitrate - < 1 ppm
   - Phosphate - < .05 ppm
   - Appearance - the water is fairly clear; no floating debris
   - Algae - none collected

4. School House
   - Temperature - 20° C
   - pH - 8.0
   - Nitrate - < 1 ppm
   - Phosphate - < 1 ppm
   - Appearance - murky; algae present along the shoreline
   - Algae - *Ceratium*, diatoms, dead filamentous species, most likely *Anabaena*; and *Coelosphaerium* - blue-green alga within a mucilaginous matrix.

5. Finger #12

    Temperature - 21° C
    pH - 8.2
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - lots of tiny flecks in the water near the end of the finger
    Algae - *Ceratium;* diatoms; and *Aphanizomenon*. Lot of pine pollen present.

6. Basin #18

    Temperature - 21.5° C
    pH - 8.2
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - fairly clear; some fine debris at the end of the finger
    Algae - none collected

7. Nadel's Point

    Temperature - 20° C
    pH - 8.4
    Nitrate - < 1 ppm
    Phosphate - <.05 ppm
    Appearance - the water is fairly clear and dark
    Algae - small numbers of *Ceratium*

8. Landing

    Temperature - 21° C
    pH - 8.4
    Nitrate - < 1 ppm
    Phosphate - < 1 ppm
    Appearance - slightly murky; minimal debris on the surface
    Algae - none collected

9. Dam

    Temperature - 21° C
    pH - 8.4
    Nitrate - < 1 ppm
    Phosphate - < .05 ppm
    Appearance - the water is fairly clear.
    Algae - none collected

10. Westshore drain
Temperature - 20° C
pH - 8.3
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - murky with some floating algae
Algae - *Spirogyra* and lots of pine pollen

11. Eastshore drain
Temperature - 20° C
pH - 7.9
Nitrate - < 1 ppm
Phosphate - < 1 ppm
Appearance - water is dark with some algal along the shore and the surface.
Algae - *Cladophora, Spirogyra, Oscillatoria, Ceratium,* and diatoms

Conclusions:

The lake looks quite good at this time. However, Erik tells me that there was an algal bloom this past week centered around the west drain, the School House drain and Finger #18. Wind, of course dispersed the algae through the lake, some of which concentrated around the maintenance dock.

The algae, probably a species of blue-green algae (Cyanobacteria), was first noticed around Friday, the 22nd of March. Considerably more algae was present on Monday the 25th. The lake was then treated on the 26th and 27th of March.

Although I cannot be certain of the species causing the problem I will speculate that it was probably the blue-green algae, *Anabaena*. We had an algal bloom this past December, also centered around the School House area and the West drain, that was caused by *Anabaena*. It is likely that this species is again causing problems.

The cause of the algal bloom is undoubtedly the presence of nitrates and phosphates in the lake and the recent warming up of the water. In most areas of the lake, the water is presently 70° F, a favorable temperature for algal growth. The daily high temperature recorded for Thousand Oaks was 80 degrees F. on March 20th and was 81 degrees F. on the 21th, unusually high temperatures for that time of year, and sufficient to stimulate algal growth.

Other contributing factors could be the springtime fertilization of lawns and plantings by homeowners. Any runoff from watering fertilized lawns which happens to enter the lake could cause algal growth, whether from some of the drains that enter the lake or from fertilized lawns around the lake. The very light rainfall on Saturday, the 23rd of March could have introduced some nutrient laden water into the lake.

Barbara J Collins

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

March 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	70°	70°	70°	68°	70°	71°	68°	70°	70°	68°	68°
pH	8.5	8.3	8.4	8.0	8.2	8.2	8.4	8.4	8.4	8.3	7.9
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1
Secchi ft.	3 ft.	3 ft.	4 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	brown	brown	dark	brown	brown	brown	clear	dark	clear	brown	brown
Algal species	Spir	none coll.	none coll.	Cer Ana	Cer D Aph	none coll.	Cer	none coll.	none coll.	Spir	Cl Cer Spir Osc D
Any Problem *	none	none	none	none	none	none	none	none	none	algae	none
City Ppt.	.38"										
City Temp °F	56°										
City Factors	none										

Key to Algal species:
Ana = *Anabaena*; Aph = *Aphanizomenon;* Cer = *Ceratium*; Cl = *Cladophora*; D = Diatoms;
H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*;
Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

* There was an algal bloom in the lake on March 20-23. The lake was treat on the 22nd and 23rd. The algae most likely causing the bloom was the blue-green alga, *Anabaena*.

RECEIVED MAY 0 7 2002

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

2004 FEB 26 PM 2:02
RECEIVED

April 30, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the April analysis for the lake and the monthly data chart. The temperature of the water is about the same as it was last month. Algae is not a problem at this time, but could be when the lake begins to warm up more. The species of concern is the planktonic alga, *Chlamydomonas,* which was quite abundant at the eastshore drain.

Sincerely,

Barbara J. Collins, Ph.D.
Professor of Biology

RECEIVED MAY 0 7 2002

April 30, 2002

WESTLAKE WATER ANALYSIS

1. Finger #4
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - lots of clumps of filamentous green algae on the surface, mostly at the end of the finger.
   Algae - *Spirogyra* and diatoms

2. Finger #7
   Temperature - 21°C
   pH - 8.4
   Nitrate - < 1 ppm
   Phosphate - <.1 ppm
   Appearance - slightly murky; no large clumps of algae present
   Algae - small amounts of *Chlamydomonas*

3. Triunfo Bridge
   Temperature - 20° C
   pH - 8.3
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - the water is fairly clear; no floating debris. Some algae is present along the shore line.
   Algae - *Spirogyra* and *Chlamydomonas*

4. School House
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - murky; lots of green algae along the shoreline
   Algae - *Spirogyra*

5. Finger #12
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - water is fairly clear; no debris on the surface
   Algae - none collected

6. Basin #18
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - fairly clear; lots of tree catkins on the surface of the water
   Algae - small amounts of *Chlamydomonas*

7. Nadel's Point
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - <.1 ppm
   Appearance - the water is clear and dark
   Algae - small numbers of *Chlamydomonas*

8. Landing
   Temperature - 21° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - clear and dark
   Algae - *Chlamydomonas*

9. Dam
   Temperature - 20° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - the water is fairly clear.
   Algae - *Chlamydomonas*

10. Westshore drain
    Temperature - 21° C
    pH - 8.3
    Nitrate - < 1 ppm
    Phosphate - < .1 ppm
    Appearance - murky with lots of floating algae
    Algae - *Spirogyra* and diatoms

11. Eastshore drain
    Temperature - 21° C
    pH - 7.9
    Nitrate - < 1 ppm
    Phosphate - < .1 ppm
    Appearance - water is murky with lots of algal on the surface.
    Algae - *Spirogyra,* large numbers of *Chlamydomonas* and a few diatoms

Conclusions:

The lake looks quite good. The worst of the algae seems to be at the westshore and eastshore drains. The filamentous, green alga, *Spirogyra* is present in both of these locations and is quite abundant. The planktonic alga, *Chlamydomonas* was abundant at the eastshore drain and could become problematic in the future. It is a common cause of algal blooms. It will be important to keep tabs on the lake as the water begins to warm up. The temperature of the lake at this time is about the same as it was last month.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

WESTLAKE LAKE ANALYSES

April 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	70°	70°	68°	70°	70°	70°	70°	70°	68°	70°	70°
pH	8.5	8.4	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.3	7.9
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1
Secchi ft.	3 ft.	3 ft.	4 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	brown	brown	dark	brown	brown	brown	clear	clear	clear	brown	brown
Algal species	Spir D	Chl tr.	Spir Chl ++	Spir	none coll.	Chl tr.	Chl tr.	Chl +	Chl +	Spir D	Spir D Chl +++
Any Problem	none	none	none	none	none	none	none	none	none	algae	algae
City Ppt.	.1"										
City Temp °F	58.4°										
City Factors	none										

Key to Algal species:
Ana = *Anabaena*; Aph = *Aphanizomenon;* Chl = *Chlamydomonas*; Cl = *Cladophora*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

RECEIVED JUN 0 4 2002

Department of Biology
California Lutheran University
Thousand Oaks, CA, 91360

2004 FEB 26 PM 2:02
RECEIVED

May 30, 2002

Mr. Lenny Targon, President
Westlake Lake Management Association
32353 West Triunfo Canyon Road
Westlake Village, California, 91361

Dear Mr. Targon,

Enclosed is the May analysis for the lake and the monthly data chart. The temperature of the water is considerably warmer than last month. As a result, this increased warmth could be contributing to the algal and "weed" problem. Unfortunately you have a couple of positive feedback mechanisms working against you. As the algae continue to grow, they absorb the sun's rays, causing the water to warm up and thus increasing the algal growth. In addition, breakdown of the increased organic matter also produces nutrients which again will stimulate growth of algae and pondweed.

It is recommended that the algae be chemically treated along with mechanical removal. Herbicides will also be necessary to cut down the excessive growth of the pondweed. Unfortunately, there is not a lot that can be done to prevent the influx of nutrients into the lake, so the algal problem is one that will always be a concern. Keeping on top of it before it gets out of hand will be the best solution.

Sincerely,

Barbara J. Collins

Barbara J. Collins, Ph.D.
Professor of Biology

WESTLAKE LAKE ANALYSES

May 2002

Dr. Barbara J. Collins

Location	Fin 4	Fin 7	Bridge	School	Fin 12	Fin 18	Nadel	Land	Dam	W.Dr	E.Dr.
Temp. °F	79°	81°	79°	81°	79°	81°	77°	79°	77°	79°	77°
pH	8.5	8.5	7.9	8.6	8.6	7.9	8.1	8.5	8.5	8.1	7.9
Nitrate ppm.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phosph. ppm.	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1	< .1
Secchi ft.	3 ft.	3 ft.	4 ft.	3 ft.	3 ft.	3 ft.	4 ft.	3.5 ft.	4 ft	2.5 ft	3 ft.
Color	green	green	dark	brown	brown	brown	clear	clear	clear	brown	cloudy
Algal species	Spir ++	Spir ++	Spir +	Spir ++	Cl ++	Cl +	Cl	Osc +	none coll.	Spir +++ Cl	Spir +++ Cl
Any Problem	algae weeds	algae weeds	algae weeds	algae weeds	algae weeds	algae	none	none	none	algae weeds	algae weeds
City Ppt.	.07"										
City Temp °F	62°										
City Factors	none										

Key to Algal species:

Ana = *Anabaena*; Aph = *Aphanizomenon;* Chl = *Chlamydomonas*; Cl = *Cladophora*; D = Diatoms; H = *Hydrodictyon*; Oed = *Oedogonium*; Osc = *Oscillatoria*; Pha = *Phacotus*; Spir = *Spirogyra*; Spr = *Spirulina*; Tri = *Tribonema*; Ulo - *Ulothrix*; Vau = *Vaucheria*; tr = trace.

RECEIVED JUN 0 4 2002

May 30, 2002

WESTLAKE WATER ANALYSIS

1. Finger #4
   - Temperature - 26° C
   - pH - 8.5
   - Nitrate - < 1 ppm
   - Phosphate - < .1 ppm
   - Appearance - lots of clumps of filamentous green algae and dead pondweed on the surface, at the end of the finger and along the shore.
   - Algae - *Spirogyra*

2. Finger #7
   - Temperature - 27°C
   - pH - 8.5
   - Nitrate - < 1 ppm
   - Phosphate - <.1 ppm
   - Appearance - lots of filamentous algae and dead pondweed on the surface, particularly at the end of the finger.
   - Algae - *Spirogyra*

3. Triunfo Bridge
   - Temperature - 26° C
   - pH - 7.9
   - Nitrate - < 1 ppm
   - Phosphate - < .1 ppm
   - Appearance - duckweed and filamentous algae are present on the surface of the water, particularly along the shore. Considerable pondweed can be seen growing beneath the surface.
   - Algae - *Spirogyra*

4. School House
   - Temperature - 27° C
   - pH - 8.6
   - Nitrate - < 1 ppm
   - Phosphate - < .1 ppm
   - Appearance - murky; lots of filamentous green algae and pondweed along the shore. The growth of algae extends quite a bit below the surface with long stringers.
   - Algae - *Spirogyra*, some of which is undergoing sexual reproduction with presence of zygotes.

5. Finger #12
   Temperature - 26° C
   pH - 8.6
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - lots of algae along the shore and at the end of the finger. Pondweed is also abundant, fruiting and even above the surface in areas.
   Algae - *Cladophora*

6. Basin #18
   Temperature - 27° C
   pH - 7.9
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - less pondweed in the channel here. Chemical treatment here has helped in the abatement of its growth. Algae still abundant along the shore.
   Algae - *Cladophora*

7. Nadel's Point
   Temperature - 25° C
   pH - 8.1
   Nitrate - < 1 ppm
   Phosphate - <.1 ppm
   Appearance - water is clear, but algae and pondweed are also present here along the shore.
   Algae - *Cladophora*

8. Landing
   Temperature - 26° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - somewhat murky; bottom mud algal flecks are floating on the surface
   Algae - *Oscillatoria*

9. Dam
   Temperature - 25° C
   pH - 8.5
   Nitrate - < 1 ppm
   Phosphate - < .1 ppm
   Appearance - the water is fairly clear.
   Algae - none collected

10. Westshore drain
    Temperature - 26° C
    pH - 8.1
    Nitrate - < 1 ppm
    Phosphate - < .1 ppm
    Appearance - surface of water covered with lots of floating filamentous algae and pondweed
    Algae - *Cladophora* and *Spirogyra*

11. Eastshore drain
    Temperature - 25° C
    pH - 7.9
    Nitrate - < 1 ppm
    Phosphate - < .1 ppm
    Appearance - water is murky with lots of filamentous algal on the surface. The algae is extensive and stringers of it can be seen below the surface of the water.
    Algae - *Spirogyra* is the dominant algal species, although a small amount of *Cladophora* is also present. The *Spirogyra* is sexually reproducing with lots of zygotes forming.

Conclusions:

The lake is suffering from a different kind of algal bloom. This time it is caused by the excessive growth of filamentous algae, particularly *Spirogyra*. The worst of the algae seems to be at the westshore and eastshore drains, although it is throughout the lake and also concentrated in the fingers. In some places, specifically at the School House drain and at the East drain, *Spirogyra* is actively reproducing sexually, with the production of numerous zygotes, each of which can give rise to new filaments.

The lake is considerably warmer than last month which of course is contributing to the problem. As the summer progresses, the water will continue to warm up. Therefore, it is most important to be treating the algae, since the greater the growth, the more difficult it will become to get it under control. Algae in the water absorbs heat, making the water even warmer, thus stimulating continued growth. In addition, the extra organic matter that is being created will ultimately sink to the bottom and be decomposed by bacteria, producing more nutrients for accelerated algal growth and other undesirable end products such as hydrogen sulfide. Bacterial use of the oxygen available will cause anaerobic conditions as well. Therefore, it is important to get the algae under control as soon as possible. Manual removal can help, but that will definitely not be sufficient. Both *Spirogyra* and *Cladophora* are listed as being susceptible to copper sulfate.

The "grass" that is growing in a large portion of the lake is "pondweed" (*Potamogeton*). This also needs some sort of treatment as it is already becoming a severe nuisance. *Potamogeton* is common in shallow ponds throughout California, and its growth is also stimulated by presence of nutrients such as nitrates and phosphates.

It is expected that the nitrates and phosphates in the lake will test low because the algae and pondweed are rapidly taking them up as soon as they become available. Source of the nutrients could be from the various drains, from use of reclaimed water, and runoff from fertilized lawns. In addition, breakdown of organic material in the lake will also release nutrients into the water.

Barbara J. Collins, Ph.D.
Professor of Biology
California Lutheran University

AquaTechnex

P.O. Box 33191
San Diego, CA 92163-33191
Tel: 760-272-6132
www.aquatechnex.com

WESTLAKE, VENTURA COUNTY
JULY WATER QUALITY MONITORING REPORT
07/30/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into a long term management program provided by AquaTechnex LLC. The second month of monitoring was completed on July 10, 2002 and has been included into the data set. The data currently being collected will provide a baseline for future comparison to the dominant non-point source discharging season (winter months).

Overall the current water quality results for Westlake show no areas of concern. We are analyzing general parameters such as dissolved oxygen, temperature, nitrogen, phosphorus, pH, water clarity and turbidity.

In the past months Westlake has performed numerous herbicide treatments including one larger scale treatment using different types of herbicides. This larger treatment appears to have controlled the nuisance plant (flat-stem pondweed). When treating large amounts of plant biomass, a lake can experience substantial dips in the dissolved oxygen levels due to the decay of the plants. The July monitoring shows no evidence of this reaction and has normal levels of dissolved oxygen.

One of the main driving forces for problematic plant and algae is the amount of phosphorus in the water. There are two main types of phosphorus in the water, total phosphorus and reactive phosphorus. Total phosphorus is the combination of phosphorus which is not available and the phosphorus which is available for plant uptake. The phosphorus which is unavailable is bound to soil particles, plankton and within the actual plants. The reactive or available phosphorus is the type that is readily used by plants and can cause algae blooms and nuisance plant conditions. When a herbicide treatment is completed levels can increase due to the phosphorus which was once within a plant is released when the plant dies. Reactive phosphorus in Westlake is currently at levels which will likely cause algae blooms and low water clarity. Most lakes experience this during the fall months when plants are naturally dying off, but it is also very common in lakes which have herbicide treatments done in the summer months. Reactive phosphorus results and secchi disk readings are showing that an algae bloom has already begun. This will likely continue for a period of time and cease in the fall months. Ways to control algae blooms are to treat the algae with an herbicide and also by controlling the amount of phosphorus in

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50
FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	
7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75

the water by dredging, alum treatments and better management of the surrounding watershed.

Another indicator that is used to analyze the probability of nuisance plant conditions, algae blooms and non-point source pollutions is nitrogen. So far the nitrogen levels in Westlake are either below detection or extremely low. We will continue to monitor this parameter, but not at all locations.

There are other general parameters that can be tested to monitor the quality of Westlake, such as, fecal coliform, biological oxygen demand (BOD) and iron.

Fecal coliform is a bacteria which is found in the intestines of humans and warm blooded animals. Discharges from agricultural areas, treatment plants and sewage disposal can enter the lake via numerous avenues. Monitoring this parameter will tell how safe the water is to swim in, recreate in and have general contact with. Fecal coliform alone will not likely harm a person, but the presence of it is associated with other pathogens, viruses and bacteria which do cause sickness.

Biological oxygen demand (BOD) is a measure of the quantity of oxygen used by microorganisms which are breaking down the organic matter (plants, fish, etc.) in the lake. This parameter can help predetermine the likelihood of dangerous dips in the dissolved oxygen level and when nutrient release will occur. Microorganisms use the dissolved oxygen to break down the decaying matter (aerobic bacteria) and the byproduct of this process releases the nutrients which are stored in the decaying matter (phosphorus, nitrogen).

Iron can be an indicator of how intense of an algae bloom is to be expected. Iron is used by bacteria (cyanobacteria) for energy. This bacteria helps in the breakdown of decaying matter and releases nutrients into the water. The more energy the bacteria has the more matter they will decompose. This results in more nutrients being released.

To assess these parameters (Fecal Coliform, BOD and Iron) an analytical laboratory will need to be used. We have contacted a laboratory in Southern California and they are available to do the analysis. Aquatechnex will perform the sampling and use a chain of custody to assure that the results are valid. For proper monitoring and to keep costs low it is recommended that 3 areas of Westlake are sampled. One from a substantial discharge, one from the dam and one from a control area (Finger 16) where there are no discharge influences. The cost for sampling, delivery and analysis is estimated at $500 per sampling event. It is not necessary to perform this type of sampling every month, but quarterly or 3 times a year is recommended.

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek
Aquatic Specialist
AquaTechnex, LLC
Southern California
760-272-6132

CC: LINDA
LENNY

AquaTechnex

P.O. Box 33191
San Diego, CA 92163-33191
Tel: 760-272-6132
www.aquatechnex.com

RECEIVED AUG 2 6 2002

WESTLAKE, VENTURA COUNTY
AUGUST WATER QUALITY MONITORING REPORT
08/20/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into a long term management program provided by AquaTechnex LLC. The current month's of monitoring was completed on August 08, 2002 and has been included into the data set. The data currently being collected will provide a baseline for future comparison to the dominant non-point source discharging season (winter months).

During the August monitoring it was documented that the dissolved oxygen (d.o.) levels at the dam have decreased substantially. Dissolved oxygen levels which were once above 10.00ppm (parts per million) within the top 2 meters were at levels below 6.50ppm. After consulting with Lake Manager David DuVarney it was noted that a number of the aerations systems have been inactive. We also observed the presence of fish breeching the surface at a number of the active aeration locations. The documentation of this fish behavior and the data accumulated definitely support the use and necessity of aeration systems in Westlake. We recommend that these systems be checked on a daily basis to ensure their activity and the benefits from them. A desirable fishery needs the presence of dissolved oxygen at levels or above 2.0ppm. Rough fish species such as carp and bullheads are able to survive at levels below 2.0ppm, but game species such as large mouth bass and panfish need higher levels.

It was brought to our attention during our sampling effort that there was blue colored water entering Westlake via a drainage pipe from the Westlake Village Golf Course. This discharge is located adjacent to La Venta bridge. The blue water is believed to be a colorant or herbicide used commonly in ponds to control algae and aquatic plants. The amount of colored water/algaecide entering the lake was not enough to impact the lake, but brings concern of how the discharge of the ponds is managed. The presence of an unregulated discharge from a golf course can pose serious threats to a lake. Golf courses commonly use high amounts of fertilizers and irrigation on their courses. This discharge coupled with the nuisance amounts of vegetation in the lake is not a favorable combination. We will add this sampling point to future monitoring to determine as to what degree this is impacting Westlake.

2004 FEB 26 PM 2:02

RECEIVED

The results of the August monitoring show no other areas of concern. The secchi disk readings (clarity of the water) are decreasing as the summer algae bloom peaks. Turbidity levels (amount of suspended soil and organic matter) have decreased related to the herbicide treatments and lack of rainfall. Phosphorus levels have also decreased as the algae binds up most of the free or reactive phosphorus.

The presence of aquatic plants in Westlake is minimal. We were able to locate plants in most of the main channels, but not at nuisance levels and only in small stands. Controlling aquatic plants in areas where the water is moving and disturbed by boats is difficult when "spot spraying" herbicides. We were able to document the presence of two different species of plants in the lake that have not been collected until now. A species of Pipewort (Eriocaulon sp.) was documented. This plant is considered a turf former and forms small clumps of needle-like rosettes. This species is not known to create a nuisance. The others species that was documented is Southern Naiad/Common Water Nymph (Najas guadalupensis). This species like most Naiad species can create a nuisance under the right conditions. It is likely that this species of plant was historically identified as flat stem pondweed (Potamogeton zosteriformis). We are not aware of the distribution of Southern Naiad in Westlake nor should its presence be alarming. Flat-stem pondweed does occur in the lake and is still the most abundant species. Control of Southern Naiad would be the same as Flat Stem Pondweed.

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek
Aquatic Specialist
AquaTechnex, LLC
Southern California
760-272-6132

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
8/08/2002	26.4	6.42	8.6	0.01	0.00	10.10	3.00
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
8/08/2002	26.1	7.03	8.5	0.22		3.20	2.50
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50
8/08/2002	26.0	9.16	8.4	0.31	0.01	5.10	3.00
FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
8/08/2002	25.6	10.47	8.2	0.17		3.50	4.00
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
8/08/2002	26.9	11.25	8.5	0.35	0.01	7.50	2.50
MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
8/08/2002	25.6	11.25	8.6	0.07		8.10	3.25

MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	
7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
8/08/2002	26.5	11.48	8.6	0.11		3.20	3.25
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75
8/08/2002	27.3	11.92	8.6	0.24	0.00	13.50	2.50

AquaTechnex

P.O. Box 33191
San Diego, CA 92163-33191
Tel: 760-272-6132
www.aquatechnex.com

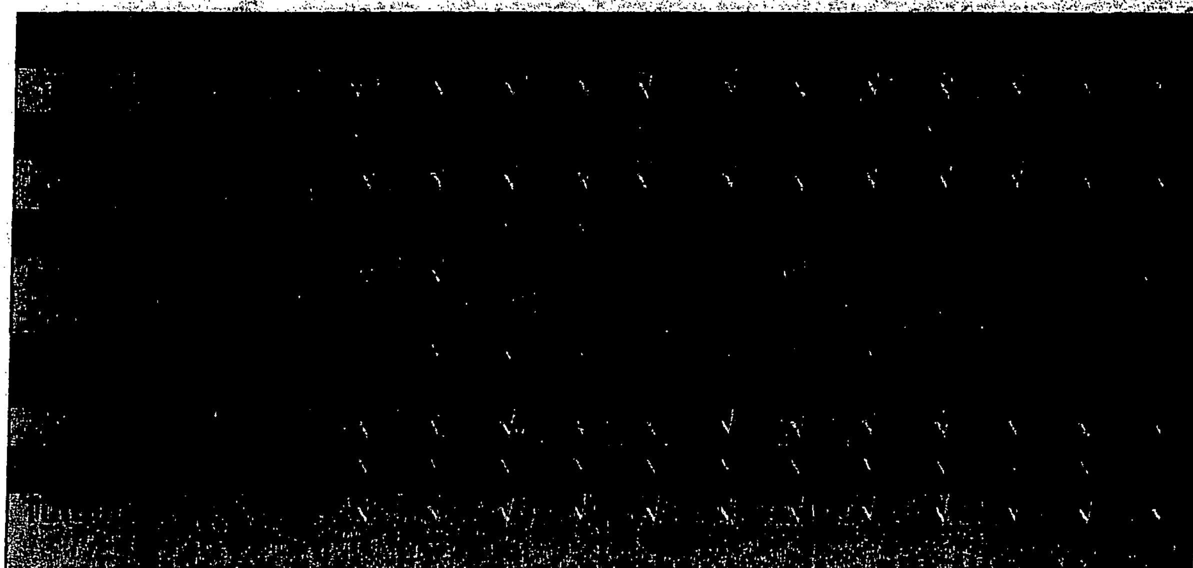
WESTLAKE, VENTURA COUNTY
SEPTEMBER WATER QUALITY MONITORING REPORT
09/19/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into a long term management program provided by AquaTechnex LLC. The current month's of monitoring was completed on September 11, 2002 and has been included into the data set. The data currently being collected will provide a baseline for future comparison to the dominant non-point source discharging season (winter months).

Observations during the September monitoring show a succession of aquatic plant growth occurring in Westlake. Southern naiad (Najas guadalupensis) has begun to grow rapidly in most areas of the lake. A good understanding of species competition, growth cycle, herbicide effects and shading effects are the culpable factors. Sago pondweed (Stuckenia pectinata), which was the previous species of plant posing a nuisance in the lake this year, is an early developer. This species initiates growth earlier in the year than most other species present in the lake. With the early jump it is able to put on large amounts of biomass and shade out most other species by creating a canopy above. Once this canopy is removed and the plants themselves have died other species are now able to proliferate. This is likely the result of the herbicide treatment of the sago pondweed earlier this year. Southern naiad, on the other hand, is a late bloomer (July – September) and is one of the few aquatic plants that grow only from seed. With these two characteristics this species of plant will have a difficult time gaining a foothold. Therefore it is unlikely that Southern naiad will ever out compete Sago pondweed.

AquaTechnex has initiated with David DuVarney a more useful lake management protocol. Different management protocols are used for a variety of reasons. Some protocols may be look into what the fisheries are like in the case of need for future stocking, catch and release programs or predator-prey relationships. Others will look at the healthiness of the lake and try to ascertain what problems may be in the future or in the present. The protocol that has been setup for Westlake has been done to look at how the surrounding communities are influencing the lakes health. It is also looking further into the current state of the lake. An index called "Trophic State Index" is being used to help document this and is used widely across the United States by lake managers alike. This index evaluates the nutrient condition of the lake using parameters that are currently being monitored for and new ones that previously were not. The answers tell the eutrophication level of the lake. Eutrophication is the process by which lakes are enriched with nutrients, increasing production of rooted aquatic plants and algae. Describing information in this manner will also make it easier for all people to understand with very little training. In the chart below the first three parameters are the ones needed to calculate this index (Phosphorus, Secchi Disk and Chlorophyll a), the others are used to look at direct impacts to the lake form the surrounding watershed.

Monthly Sampling Parameters. Months are represented along the top row. √'s represent what sample is being attained for each month



With the exception of Chlorophyll a and Fecal Coliform, all parameters are being analyzed at each sample point. Chlorophyll a is being sampled at the dam and at the main channel near Chelsea Bay. Fecal coliform is being sampled at the dam, finger/basin 4, main channel near Chelsea Bay and at the discharge from Westlake Village Golf Course.

Current TSI values indicate that the lake is moderately eutrophic. This value does not contain the amount of Chlorophyll a in the lake due to the waiting period for its analysis. TSI values will be adjusted when the sample results are received.

The hierarchy of Lake Eutrophication is as follows:

Oligitrophic (TSI <30 - 40) - nutrient poor with low productivity. A very clear lake!

Mesotrophic (TSI 40 – 50) – moderate nutrients, moderate productivity, intermediate water clarity.
Eutrophic (TSI 50 - 70) – very productive and fertile/high nutrients, low water clarity.
Highly Eutrophic (TSI >70) – extremely productive with very low water clarity.

Westlake has initiated a large scale dredging project to remove unwanted sediment. The dredging operation will remove materials from the main channels and basins of the lake for the improvement of navigation and nuisance aquatic plant growth. The results of dredging may have other effects on the lake ecosystem. Removal of tuber/rootstock of aquatic plants can produce a species shift. Disturbance of the bottom sediment can allow the release of nutrients and elements that once were concealed from the environment. Nutrients such as phosphorus which were once in anoxic (no oxygen) environments are now available for uptake by plants and algae. Contaminated sediment which was once bound to sediment particles and in anoxic conditions may also be able for leaching or entering the lake water column. AquaTechnex will continue to provide water quality monitoring which will show some of the changes to the lake environment related to the dredging project.

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek

Kurt Roblek
Aquatic Specialist
AquaTechnex, LLC
Southern California
760-272-6132

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
8/08/2002	26.4	6.42	8.6	0.1	0.00	10.10	3.00
9/11/2002	24.4	2.86	8.5	0.1		11.5	2.00
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
8/08/2002	26.1	7.03	8.5	0.22		3.20	2.50
9/11/2002	24.1	6.18	8.7	0.15		9.80	1.90
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50
8/08/2002	26.0	9.16	8.4	0.31	0.01	5.10	3.00
9/11/2002	24.1	6.79	8.5	0.26		8.70	2.50
FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
8/08/2002	25.6	10.47	8.2	0.17		3.50	4.00
9/11/2002	24.0	8.26	8.6	0.10		8.00	2.10
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
8/08/2002	26.9	11.25	8.5	0.35	0.01	7.50	2.50

9/11/2002	24.7	10.19	8.9	0.27		9.60	2.20
MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
8/08/2002	25.6	11.25	8.6	0.07		8.10	3.25
9/11/2002	24.6	8.66	8.6	0.1		7.50	2.10
MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	
7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
8/08/2002	26.5	11.48	8.6	0.11		3.20	3.25
9/11/2002	25.4	8.55	8.6	0.1		10.10	2.00
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75
8/08/2002	27.3	11.92	8.6	0.24	0.00	13.50	2.50
9/11/2002	25.3	8.26	8.6	0.19		12.30	1.80

AquaTechnex

P.O. Box 33191
San Diego, CA 92163-33191
Tel: 760-272-6132
www.aquatechnex.com

RECEIVED
2004 FEB 26 PM 2:02

RECEIVED OCT 29 2002

WESTLAKE, VENTURA COUNTY
OCTOBER WATER QUALITY MONITORING REPORT
10/21/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into an Integrated Aquatic Vegetation Management Plan provided by AquaTechnex. The current month's monitoring was completed on October 07, 2002 and has been included into the data set. The data currently being collected will provide a baseline for future comparison to the dominant non-point source discharging season (winter months).

Observations during the October monitoring show the Fall succession of aquatic plants in Westlake is underway. Southern naiad (*Najas guadalupensis*), which last month was at near nuisance levels, has begun to die back. Herbicide treatments have been performed which have accelerated this process. However, the difference between herbicide treatments and natural die-off can be distinguished.

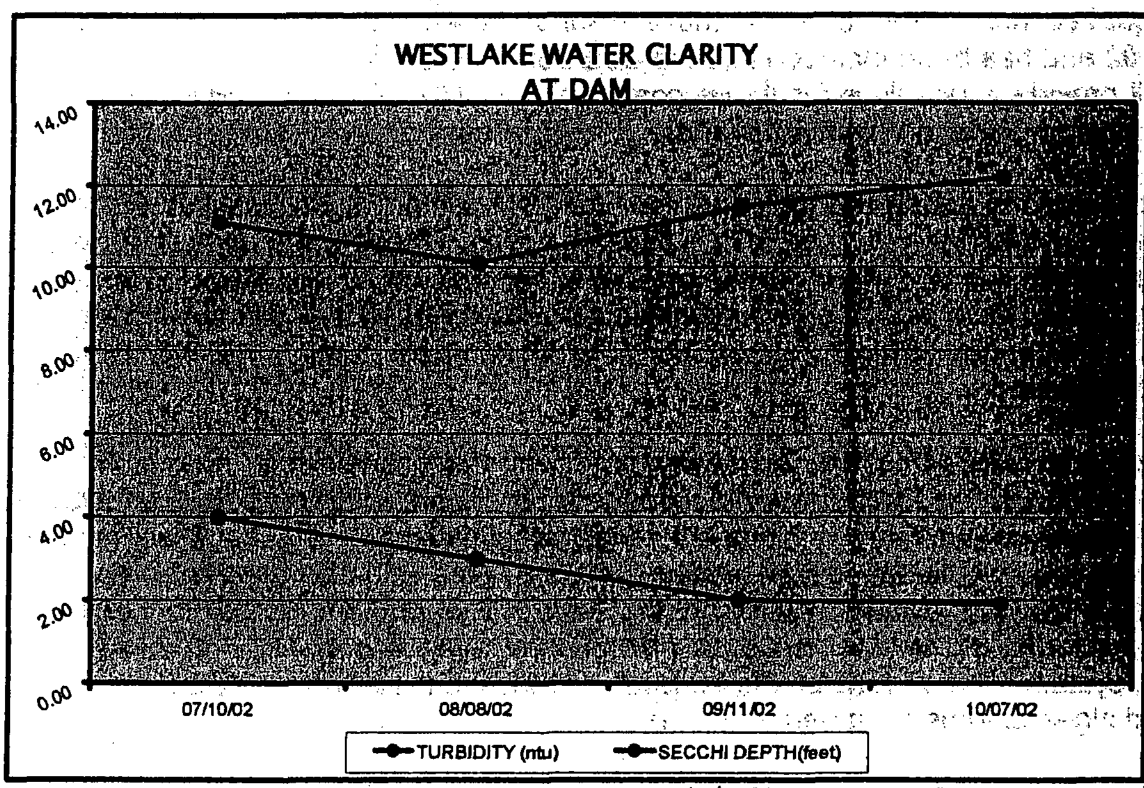
Dredging operations are underway providing Westlake with A new look. As mentioned in the September monitoring report the dredging may have effects on the plant community and nutrient levels in Westlake. The plant community abundance will likely decrease for a period of time until the dredged areas are recolonized by existing plants in the lake. The nutrient levels, in particular phosphorus, should decrease as phosphorus laden sediment is removed from the system. The results of this removal may lessen the severity of plant nuisance and algae blooms for a period of time.

The results from last months Trophic State Index (TSI) monitoring have been finalized. The TSI of a lake is an excellent way to measure a lake's enrichment/nutrient level at present time and its progression over a period of time. The higher the TSI number the more enriched and resulting poorer water quality the lake has. These values use 3 parameters (Secchi Disc, Phosphorus and Chlorophyll a) which are averaged together for one value. Resulting Chlorophyll a levels were 5.0 ug/L at the Dam and 9.0 ug/L at Chelsea Bay. These results are low in comparison to what summer months can produce when increased amounts of algae and aquatic plants are present. With these results the TSI values have been adjusted.

Dam	TSI = 56.97	Moderately Eutrophic
Chelsea Bay	TSI = 58.92	Moderately Eutrophic

The hierarchy of Lake Eutrophication is as follows:

Oligitrophic (TSI <30 - 40) - nutrient poor with low productivity. A very clear lake!
Mesotrophic (TSI 40 – 50) – moderate nutrients, moderate productivity, intermediate water clarity.
Eutrophic (TSI 50 - 70) – very productive and fertile/high nutrients, low water clarity.
Highly Eutrophic (TSI >70) – extremely productive with very low water clarity.



The above graph represents the existing water clarity parameters over time. Secchi depth is a direct measurement of water clarity and turbidity measures the amount of suspended solids in the water column. These two parameters usually are normally correlating. However, secchi disc depth normally increases as winter approaches. The amount of turbidity on the other hand is relative to the amount of runoff the lake receives (rain events) and the amount of turbulence to the lake (boat traffic, high winds). As the graph depicts secchi depth is still decreasing and turbidity is increasing. With the onset of dredging in Westlake and the chance of disturbed sediments being released from the silt curtains (by either poor placement or when relocating them) these parameters may show uncommon variances from the norm.

Also during the September monitoring a parameter to measure organic loading from partially/untreated sewage was measured. Fecal coliform which is a bacteria found in the intestines of warm-blooded animals can enter waterbodies from a variety means. Fecal coliform alone does not cause direct concern, but the presence of this bacteria is commonly associated with pathogens which are of concern. Monitoring the location(s) of discharges for fecal coliform will tell lake managers where to get more involved in watershed management. The initial monitoring of this parameter was done at the Dam, Finger 4 discharge, Main Channel 1 and at the discharge from Westlake Village Golf Course. Results are given in a colonies/100mL format. If fecal coliform counts are greater than 200 colonies/100mL there a much greater chance that pathogens are present and total body contact should be avoided. The most likely culprits for high fecal coliform levels at Westlake will be from waterfowl and runoff from surrounding yards and parks that are frequented by animals. Results from the September monitoring are as follows:

Dam	7colonies/100mL
Finger 4	23colonies/100mL
Main Channel 1	<2colonies/100mL
Golf Course Discharge	80colonies/100mL

With the absence of any recent rainfall, which would normally increase fecal concentrations, some areas are showing levels that should be watched closely. The presence of higher fecal counts at Finger 4 and the Golf Course discharge may need to be investigated at some point. These levels are not alarming, but may already point to some management problem areas.

The Integrated Vegetation Management Plan for Westlake is almost complete. AquaTechnex would like to provide the Westlake Lake Management Association Board of Directors a brief presentation on this plan and the related monitoring that has been completed.

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek

Kurt Roblek
Aquatic Specialist
AquaTechnex
Southern California
760-272-6132

RECEIVED DEC 0 3 2002 RECEIVED

2004 FEB 26 PM 2:02

REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

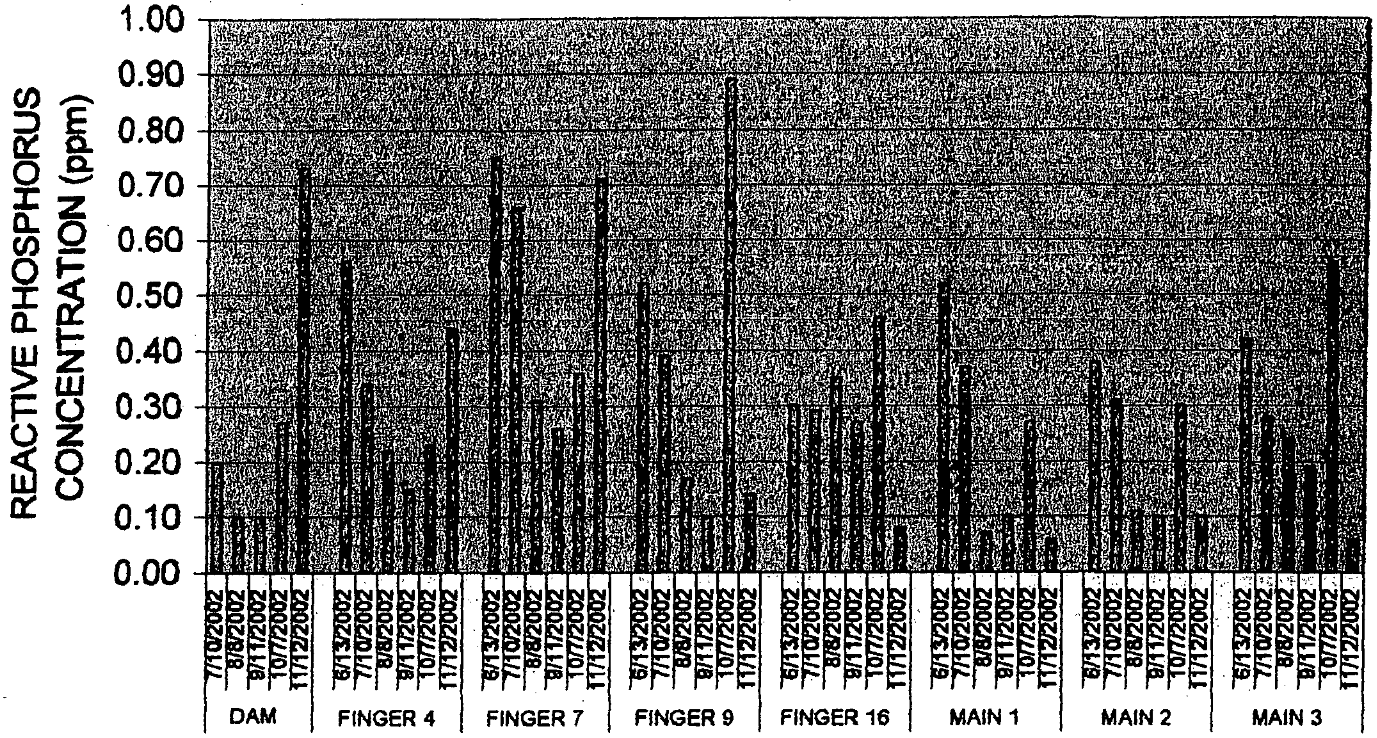
WESTLAKE, VENTURA COUNTY
NOVEMBER WATER QUALITY MONITORING REPORT
11/12/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into an Integrated Aquatic Vegetation Management Plan provided by AquaTechnex. The current month's monitoring was completed on November 12, 2002 and has been included into the data set. The date of sampling followed a large precipitation event (~2.0 inch rainfall) two days prior. Inlet pipes on the day of sampling still appeared to have above normal flow conditions, implying that runoff was entering the lake. The lake was also experiencing a large planktonic algae bloom in all portions of the lake.

The ongoing dredging operations have been active for approximately 1 month. Adjacent to the Westlake Lake Management Association office the dredge slurry treatment machinery is located along with the effluent pipe for treated carriage water return. During field sampling on 11/12/2002 it was noted that the effluent was "partially clear to extremely turbid". It appeared that untreated dredge material was being directly discharged into the lake. This area was partitioned off by the placement of one silt curtain, however this curtain was under stress and being overtopped by the pressure of the discharge. Turbidity measurements located at the dam show a dramatic increase from previous months (12.2 ntu October, 150.0 ntu November. These results are likely correlated to the activities occurring at the lake. The release of untreated/raw dredge material back to the lake allows for infinite amount of phosphorus and nutrients to become available for plant and algae consumption. These lapses in control also allow for contaminants, once buried and unavailable, to reenter the lake. Contaminants such as PCB's, mercury and lead can pose a risk to fish, invertebrates and water quality through their bioaccumulation properties. The restriction of untreated dredge material from entering the lake is necessary to keep Westlake's health at ideal levels.

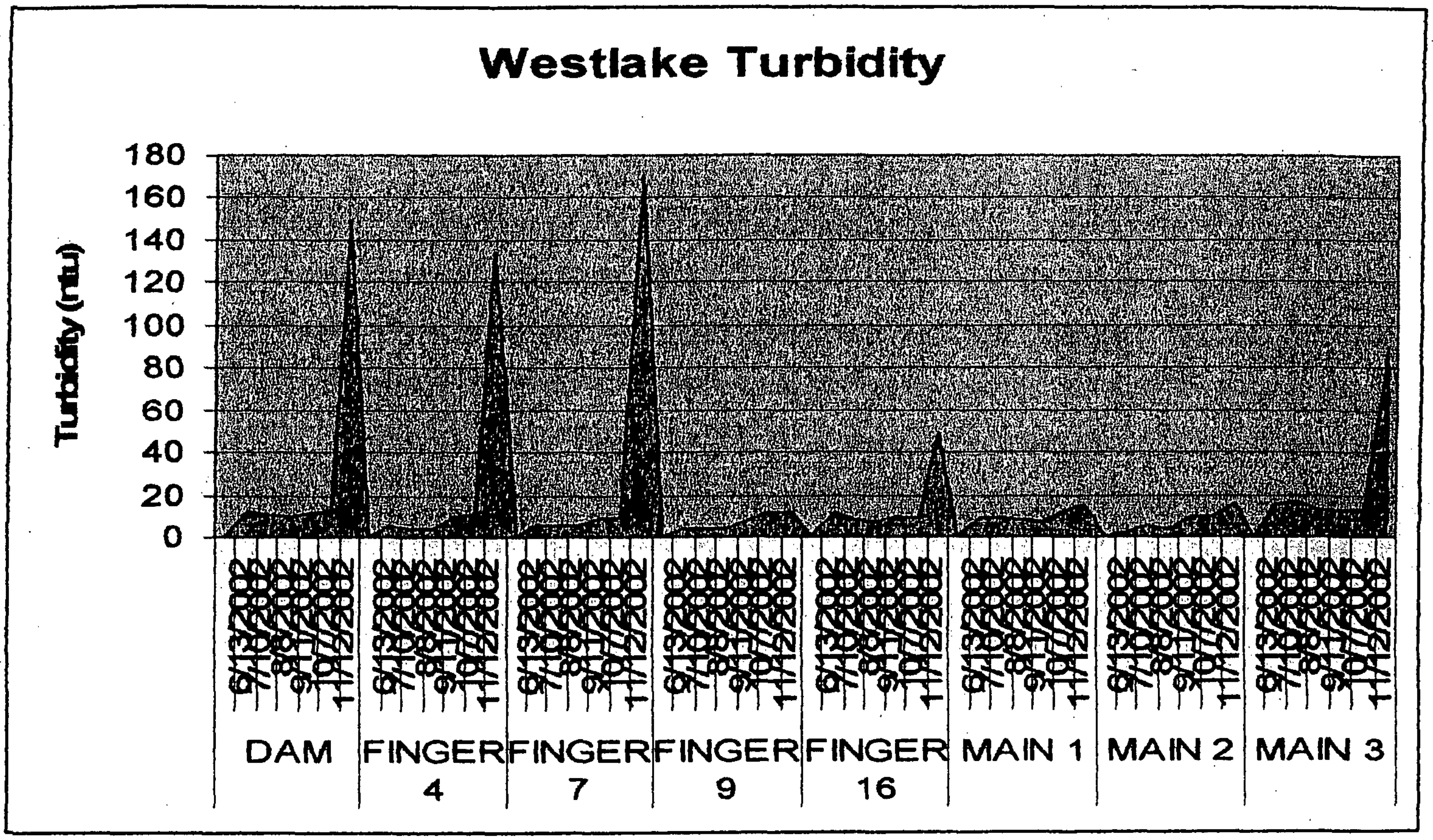
Monitoring results from the November sampling are the first ones to document a large rainfall event. The previous months have been extremely dry and have therefore provided a good baseline for comparison of results. The current sampling effort will give a better indication as to where any non-point source pollution may be entering the lake, how much pollution is entering at a given time, and how the lake itself is affected by these inputs. The graph below shows the phosphorous levels at the designated sampling points.

REACTIVE PHOSPHORUS, WESTLAKE



Based on the graph above some correlations between rainfall and non-point source inputs can be made. The sample dates between 6/02 and 10/02 show phosphorus concentrations in each area with virtually no non-point source inputs related to rainfall. These concentrations do vary and that is likely due to natural factors within the lake (plant growth and decomposition, disturbance to bottom substrates by wind/wave action, etc). Results from the recent sampling effort (11/12/02) were taken approximately 2 days post a large rain event. The sample points showing a response from the rainfall are; Dam, Finger 4 and Finger 7. These results can be related to the control site (Finger 16) where no discharges occur within in the immediate area. The Finger 16 basin has limited exchange with the lake proper and therefore a large rainfall event will show very little change in the parameters being monitored. The discharges entering the lake from Finger 4 and Finger 7 show a significant increase in phosphorus when relating them to Finger 16 and most other sample points within the lake. The amount of phosphorus at the Finger 4 discharge had a 0.46ppm increase in levels (0.27ppm to 0.73ppm). The discharge at Finger 7 increased 0.35ppm from 0.36ppm to 0.71ppm. These are substantial

increases and are likely due to the discharges when factoring in that other areas of the lake including those near discharges actually had a decrease in phosphorus amounts.
Another parameter which has shown dramatic increases post rainfall and may also be related to problems with the dredging project is the amount of turbidity in the lake.



Turbidity is the measure of the relative clarity of the water: the greater the turbidity, the murkier the water. Turbidity increases as a result of suspended solids in the water that reduce the transmission of light. Suspended solids are varied, ranging from clay, silt, and plankton, to industrial wastes and sewage. As on can see from the graph above the turbidity has substantially increased at a number of sites. See map for sample locations. Finger 4 and Finger 7 again show the highest response from the storm event. These sites also had large increases in phosphorus levels. The increase in this parameter reflects how well the water coming into Westlake is being treated. From the results, this water is likely coming straight off of curb and gutter, exposed land or even the result of a bypass from a treatment plant.

Whatever the culprit is for these increase, the amounts coming into the lake are pretty dramatic and should necessitate.some type of remedial action.

The increase occurring at the Dam is likely a response from the rain event and poor carriage water return control from the dredging activities. The sampling site located at the Dam is used to look at how the lake is affected as a whole. All the water located in Westlake must at some point be discharged at the Dam. It acts as a type of collection area. The sampling results at the Dam should have shown a mild increase, not as substantial, because of the dilution factor the lake has. The increase seen is very likely a result of the failing silt curtain and occasional discharge of untreated dredge material. This is also an issue that should have some type of remedial action

If you wish to discuss any types of remedial action plans please let me know if I can be of any assistance.

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek
Aquatic Specialist
AquaTechnex
Southern California
760-272-6132

Technex

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
8/08/2002	26.4	6.42	8.6	0.1	0.00	10.10	3.00
9/11/2002	24.4	2.86	8.5	0.1		11.5	2.00
10/7/2002	21.3	7.1	9.0	0.27	0.00	12.2	1.90
11/12/2002	17.9	9.19	9.7	0.73	0.03	150.0	0.25
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
8/08/2002	26.1	7.03	8.5	0.22		3.20	2.50
9/11/2002	24.1	6.18	8.7	0.15		9.80	1.90
10/7/2002	21.0	7.85	9.0	0.23		11.10	1.90
11/12/2002	16.3	10.30	8.9	0.44	0.03	135.0	1.60
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50
8/08/2002	26.0	9.16	8.4	0.31	0.01	5.10	3.00
9/11/2002	24.1	6.79	8.5	0.26		8.70	2.50
10/7/2002	21.2	9.14	8.9	0.36		8.80	2.10
11/12/2002	15.7	12.60	9.7	0.71		170.0	0.25

FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
8/08/2002	25.6	10.47	8.2	0.17		3.50	4.00
9/11/2002	24.0	8.26	8.6	0.10		8.00	2.10
10/7/2002	20.8	9.63	8.9	0.89		11.20	2.00
11/12/2002	15.7	10.32	9.5	0.14		11.7	0.75
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
8/08/2002	26.9	11.25	8.5	0.35	0.01	7.50	2.50
9/11/2002	24.7	10.19	8.9	0.27		9.60	2.20
10/7/2002	21.0	9.77	8.8	0.46		8.70	2.00
11/12/2002	15.7	9.40	9.0	0.08		49.0	0.5
MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
8/08/2002	25.6	11.25	8.6	0.07		8.10	3.25
9/11/2002	24.6	8.66	8.6	0.1		7.50	2.10
10/7/2002	21.9	10.93	8.7	0.27		12.20	2.00
11/12/2002	16.1	13.20	9.4	0.06		15.1	1.75
MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	

7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
8/08/2002	26.5	11.48	8.6	0.11		3.20	3.25
9/11/2002	25.4	8.55	8.6	0.1		10.10	2.00
10/7/2002	20.8	13.09	8.9	0.30		10.00	1.70
11/12/2002	15.7	12.60	9.2	0.10		16.0	0.50
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75
8/08/2002	27.3	11.92	8.6	0.24	0.00	13.50	2.50
9/11/2002	25.3	8.26	8.6	0.19		12.30	1.80
10/7/2002	22.5	10.99	8.7	0.56		13.00	1.90
11/12/2002	15.7	9.40	9.0	0.06	0.00	87.7	0.50

RECEIVED DEC 2 3 2002

2004 FEB 26 PM 2:02

WESTLAKE, VENTURA COUNTY
DECEMBER WATER QUALITY MONITORING REPORT
12/16/2002

The following report and data contains information which will aide in the management of Westlake. The current water quality analysis will be incorporated into an Integrated Aquatic Vegetation Management Plan provided by AquaTechnex. The current month's monitoring was completed on December 11, 2002 and has been included into the data set. Overall, the lake appears to be settling into it's wintering cycle. There were no observed problems at the lake during this months monitoring.

The ongoing dredging operations have been active for approximately 2 months. On the date of sampling the operations were not active and no carriage water return was observed. Per Lake Association staff the carriage water has been cleaned up to the point where there are very few untreated dredge material discharges into the lake. It is unclear as to what impacts the previous discharges of dredged materials will have on the lake this upcoming year, therefore only hypothesis can be made. It was evident from the recent algal bloom that the nutrient laden dredged material was greatly impacting the system and after correction this has ceased. Next spring may show some residual effects from the dredging operation such as stronger than usual algal blooms. However, if the operation is completed smoothly with little or no untreated material re-entering the lake these chances will be minimized.

Monitoring results from the December sampling show how dramatically the lake changes after being impacted by the dredging operation and a large precipitation event. The graphs below depict the reactive phosphorus concentrations and turbidity amounts from October to December.

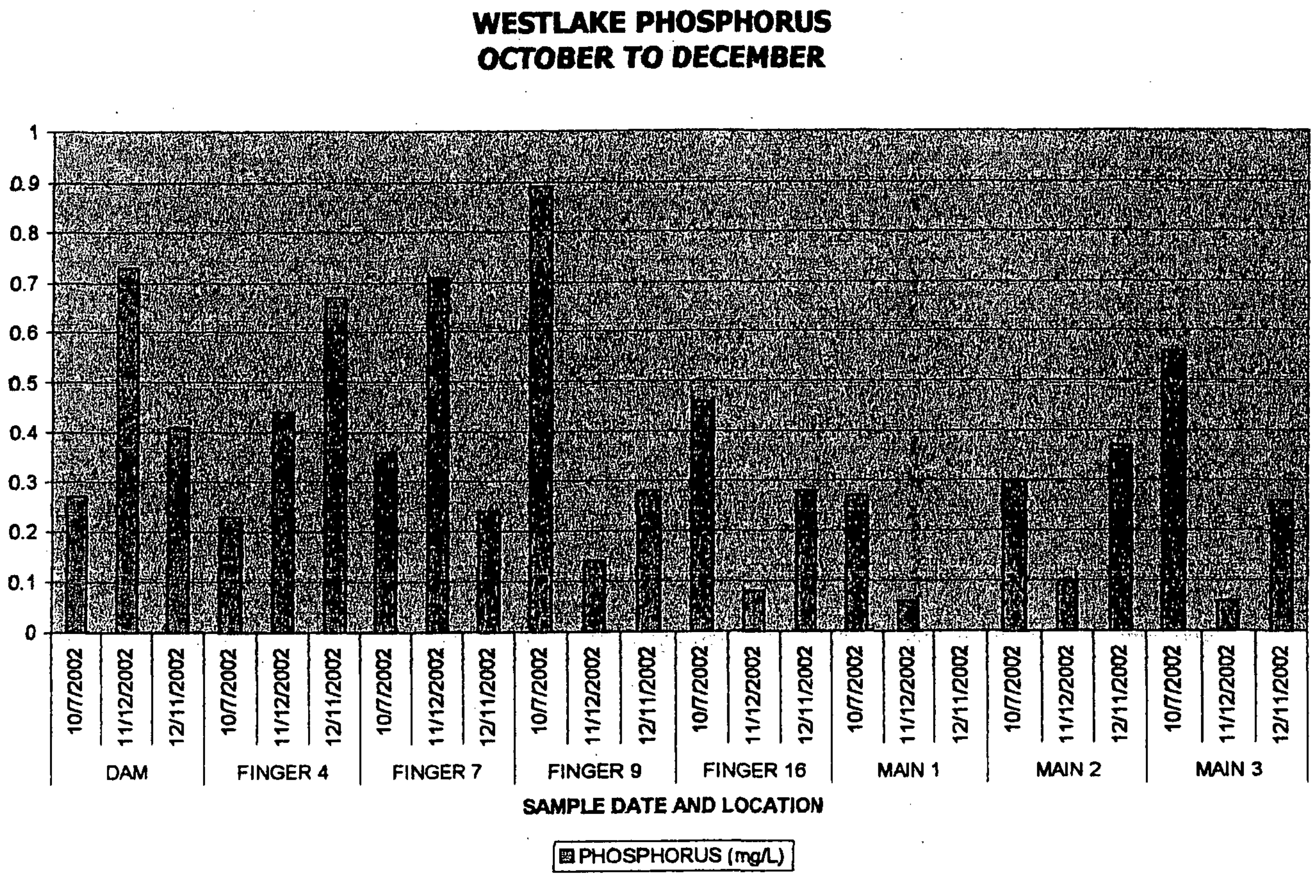
During the winter months the phosphorus concentrations should be lower than the summer, due to decreased microbial and plant activity. What the graph depicts is an inverse reaction showing a decrease in phosphorus concentrations. This decrease is very likely a direct result from the uptake of nutrients by the algae in the previous month. The increase in nutrient input to the lake resulted from run-off and poor treatment of the carriage water return.? November's monitoring showed strong suggestions that there are a few discharge pipes entering the lake that contain nutrient laden water. Given that these discharges also contain likely sources of street and gutter runoff other materials such as petroleum products, heavy metals and yard waste may be present.

The algae bloom that did happen last month was definitely fueled by both the rain and dredging operation. Normally, the amount of phosphorus in the water this time of year would

This water was discharged into area surrounded by silt curtain.

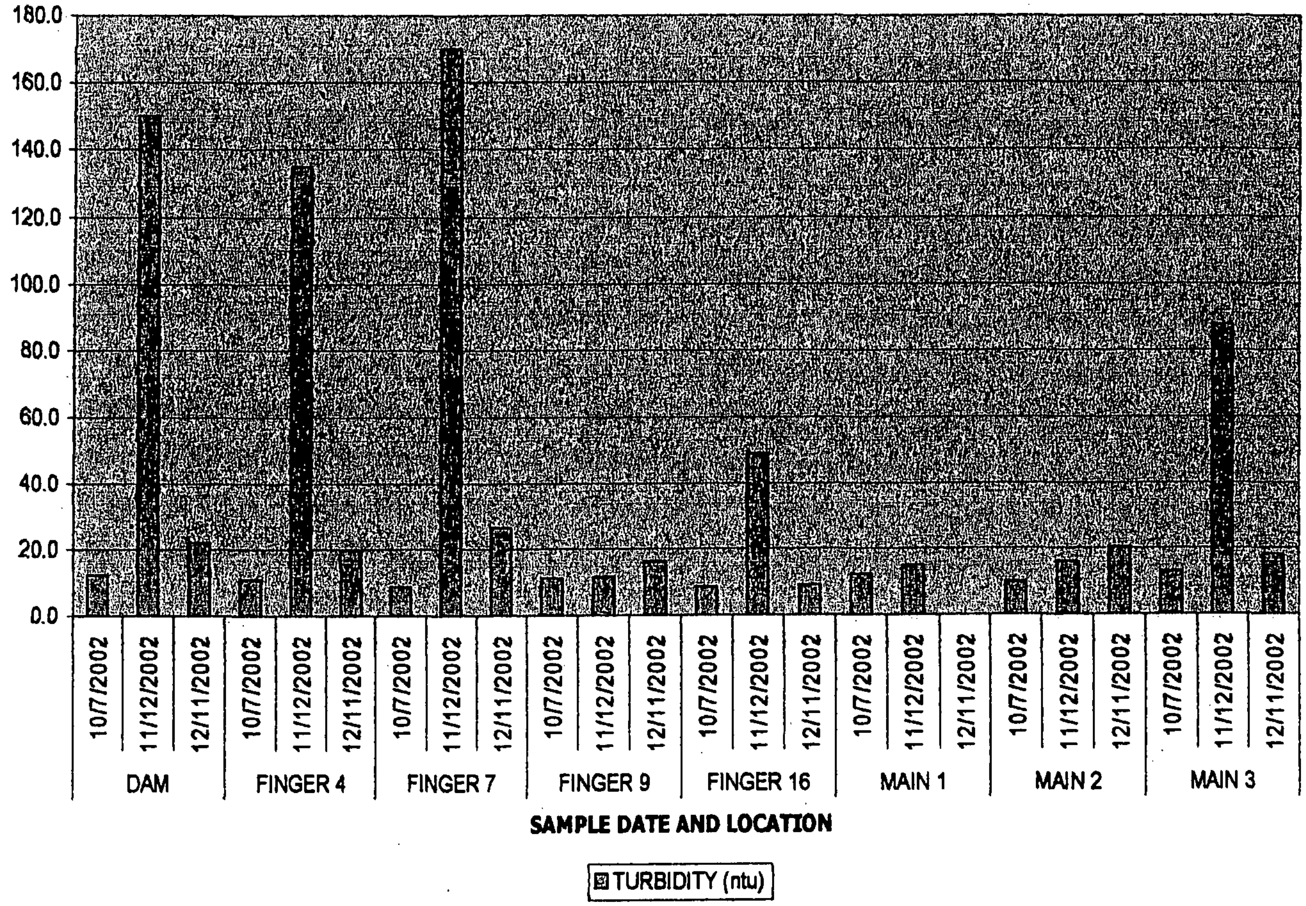
AquaTechnex

be much higher if there was no algal bloom. Algal blooms don't normally occur in the winter months because when water temperatures drop below about 15C most algal species become inactive. When they become inactive they are not uptaking the nutrients. The nutrients are then able to either drop out (return to bottom) or remain suspended in the water column until the growing season begins.



The turbidity amounts between the months of October and December are the most dramatic. The combination of the impacts from rainfall and the discharge of untreated carriage water are the culprits of these results. It is difficult to decipher the impact of each factor related to increased turbidity when sampling one time a month. Ideally this parameter could be measured during the next rainfall event, assuming that the dredging discharge is in good working condition. This parameter could also be done when there is not rain to look closer at the dredging impacts. One must assume that when a lake is dredged there will be an increase in turbidity. High amounts of turbidity can have negative impacts on the ecosystem of the lake by decreasing light penetration for aquatic plant growth (not a factor this time of year), decreasing visibility needed by fish for predation, burying beneficial organisms on the lake bottom and by allowing for an increase in phosphorus availability.

WESTLAKE TURBIDITY
OCTOBER TO DECEMBER



Results are not available for the month of December at sampling location Main Channel 1. This is due to the presence of the dredging equipment and associated barriers.

During observations at the lake it was noted that there has been a substantial increase in the amount of waterfowl. As they make their migration they have chosen Westlake as a wintering refuge. We have been keeping a running list of the flora and fauna species present. This ongoing list of species should be retained as Westlake advances in it's lake management. Such lists can assist in the completion of reports and formal management plans.

Waterfowl species observed at Westlake:

Double crested Cormorant	Mallard
Olivaceous Cormorant	White Pelican
Bufflehead	Green Heron
American Coot	Canadian Goose
Lesser Scaup	California Gull
Great Egret	Herring Gull
Snowy Egret	Mute Swan

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek

Kurt Roblek
Aquatic Specialist
AquaTechnex
Southern California
760-272-6132

AquaTechnex

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
8/08/2002	26.4	6.42	8.6	0.1	0.00	10.10	3.00
9/11/2002	24.4	2.86	8.5	0.1		11.5	2.00
10/7/2002	21.3	7.1	9.0	0.27	0.00	12.2	1.90
11/12/2002	17.9	9.19	9.7	0.73	0.03	150.0	0.25
12/11/2002	13.8	3.51	8.7	0.41	0.02	22.1	2.6
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
8/08/2002	26.1	7.03	8.5	0.22		3.20	2.50
9/11/2002	24.1	6.18	8.7	0.15		9.80	1.90
10/7/2002	21.0	7.85	9.0	0.23		11.10	1.90
11/12/2002	16.3	10.30	8.9	0.44	0.03	135.0	1.60
12/11/2002	13.6	5.94	8.8	0.67	0.00	19.5	2.4
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50
8/08/2002	26.0	9.16	8.4	0.31	0.01	5.10	3.00

9/11/2002	24.1	6.79	8.5	0.26		8.70	2.50
10/7/2002	21.2	9.14	8.9	0.36		8.80	2.10
11/12/2002	15.7	12.60	9.7	0.71		170.0	0.25
12/11/2002	13.3	6.07	8.7	0.24	0.00	26.4	1.9
FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
8/08/2002	25.6	10.47	8.2	0.17		3.50	4.00
9/11/2002	24.0	8.26	8.6	0.10		8.00	2.10
10/7/2002	20.8	9.63	8.9	0.89		11.20	2.00
11/12/2002	15.7	10.32	9.5	0.14		11.7	0.75
12/11/2002	13.1	6.11	8.9	0.28	0.0	16.2	2.2
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
8/08/2002	26.9	11.25	8.5	0.35	0.01	7.50	2.50
9/11/2002	24.7	10.19	8.9	0.27		9.60	2.20
10/7/2002	21.0	9.77	8.8	0.46		8.70	2.00
11/12/2002	15.7	9.40	9.0	0.08		49.0	0.5
12/11/2002	13.3	8.81	9.0	0.28	0.00	9.2	1.9
MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
8/08/2002	25.6	11.25	8.6	0.07		8.10	3.25

9/11/2002	24.6	8.66	8.6	0.1		7.50	2.10
10/7/2002	21.9	10.93	8.7	0.27		12.20	2.00
11/12/2002	16.1	13.20	9.4	0.06		15.1	1.75
12/11/2002	na	na	na	na	na	na	na
MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	
7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
8/08/2002	26.5	11.48	8.6	0.11		3.20	3.25
9/11/2002	25.4	8.55	8.6	0.1		10.10	2.00
10/7/2002	20.8	13.09	8.9	0.30		10.00	1.70
11/12/2002	15.7	12.60	9.2	0.10		16.0	0.50
12/11/2002	13.6	8.24	8.9	0.37	0.00	20.2	1.9
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75
8/08/2002	27.3	11.92	8.6	0.24	0.00	13.50	2.50
9/11/2002	25.3	8.26	8.6	0.19		12.30	1.80
10/7/2002	22.5	10.99	8.7	0.56		13.00	1.90
11/12/2002	15.7	9.40	9.0	0.06	0.00	87.7	0.50
12/11/2002	14.1	6.10	8.7	0.26	0.00	18.1	2.1

Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

RECEIVED FEB 0 7 2003

WESTLAKE, VENTURA COUNTY
January WATER QUALITY MONITORING REPORT
1/17/2003

The following report and data contain information which will aide in the management of Westlake. The current water quality analysis will be incorporated into an Integrated Aquatic Vegetation Management Plan provided by AquaTechnex. This current month's monitoring was completed on January 15, 2003 and has been included into the data set. Overall, Westlake is still settling into it's winter mode. There were no observed problems at the lake during this months monitoring.

The ongoing dredging operations have been active for a number of months now. During the day of sampling the dredging operation and carriage water return were functioning. The carriage water return* (water being released back into the lake) appears to contain high amounts of fine sediment that were not removed during the shaking and centrifuge process. Concerns arise when discharges containing excessive amounts of sediment re-enter the lake. The contractor performing the operation has installed and recently improved the functionality of a silt curtain to capture fine sediment entering the lake. There is still room for improvement by moving the curtain around and repairing leaks to decrease the amount of sediment escaping back into the lake. Observations during the previous months witnessed the actual discharge contacting the curtain with force that appeared to be above and beyond it's threshold. Sediment was overtopping the curtain as a result and entering the lake proper. The curtain has been repositioned since last month but there are still multiple areas where the curtain is failing. Turbidity samples were taken to document how much sediment was re-entering the lake as a result of this on January 15, 2003. Results prove that the curtain is failing to a degree. Four areas were sampled; within the discharge area, outside of the discharge area, a distance away that no impacts were possible and at the Dam.

SAMPLE ID	SAMPLE LOCATION	TURBIDITY AMOUNT (NTU)
TCurtain		158.0
TOut		36.8
TMid		10.1
Dam		14.7

The results above show that a portion of the sediment is being released into the lake (TCurtain vs. TOut). This was also visually observed by the presence of a silt plume exiting the curtain.

AquaTechnex

Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

*within silt curtain

The amount of sediment, at that particular time, being released is not a substantial amount. However, it is probable that before the curtain was improved a higher amount of sediment was being released. There is no data to support or degrade this, but observations have been made that the amount of sediment being released was substantially higher.

Attached to the sediment within the lake is the nutrient phosphorous. Algal blooms within Westlake have been directly linked to the amount of phosphorous present. Nitrates are the other type of nutrients that play a role in blooms, but have been found at extremely low levels throughout the year, therefore they are not what is considered a limiting factor for algal production. A portion of phosphorous, usually that found in the lake bed sediment, is not available for plant or algae uptake because of the absence of oxygen. When phosphorous laden sediment is exposed to oxygen either to the air or within the water column the phosphorous binds can be broken. The result can be a dramatic increase in available phosphorous and result in stronger algal blooms and aquatic plant growth. This is a concern for Westlake and care should be taken to decrease this potential.

Laboratory results from November's monitoring have been received by Westlake recently. In particular the laboratory analyzed for fecal coliform in water samples taken two days after a heavy rain event. Samples were taken at three locations where water was being discharged into the lake. Sampling post rainfall events can show varying results. The initial influx of materials (chemicals, nutrients, organic wastes, etc.) is usually greatest at the beginning of a runoff event. Continuous sampling (every couple of hours post rainfall) is the best way to document this notion. The dimensions of the lake's watershed will also play a role in how long it takes for material to enter the waterbody. Therefore sampling two days post rainfall may show lower than maximum amounts of material entering the lake.

Measuring fecal coliform amounts is one of many parameters that look closer at the lake's overall health. Fecal coliform is measured for mainly two reasons. One is to look at how much fecal matter is entering the lake and from where. The other is to decipher how safe the lake is for human contact and other recreational activities. Results from these tests are usually what causes beach closures and are monitored consistently. The recent sampling has narrowed down where high amounts of fecal matter are entering the lake (maximum at Finger 4 discharge, Three Springs). The result from the Three Springs discharge was at 900 colonies/100mL on November 12, 2002 and exceeds the US EPA human threshold limit of 200 colonies/100mL for human body contact. Both Three Springs and Big Ditch (at 220 colonies/100mL) were above the threshold on that date.

Reasons for having such high fecal counts can be from many factors and would need to be investigated to find the correct source(s). Common culprits can be runoff from areas which contain concentrated amounts of animals (golf courses, parks, farms), from failing sewer systems, illegal sewer connections or even from sewage bypasses during peak flows.

Contacting your local waste management service can provide some insight as to what their procedures are for dealing with excess flows in their carriage systems, bypasses tend to be fairly common.

Action plans should also be developed at the lake to deal with these occurrences. Immediate monitoring after rainfall events and quick turn-around times from the laboratory will at minimum result in a quantification as to what degree the problem is at. A plan to instruct lake users (citizens, visitors, workers) to limit their exposure to the lake water after rainfall events should be implemented. If you wish to discuss this matter please contact me.

There are a few lake management related seminars coming up that can provide citizens and lake mangers alike with valuable information. Below are a few from the North American Lake Management Society (nalms.org) and Aquatic Plant Management Society (apms.org).

Urban Storm Water, Enhancing Programs at the Local Level, February 17-20, Chicago IL
Western Aquatic Plant Management Meeting, March 3-5, Sacramento, CA
National Aquatic Plant Management Meeting, July 21-24, Portland, ME
Dam Safety, September 7-10, Minneapolis, MN
North American Lake Management Society Annual Meeting, Mashantucket, CT

We have attached the results of the past monitoring efforts for your review and files. If you wish to discuss the results please feel free to call me anytime.

Sincerely,

Kurt Roblek
Aquatic Specialist
AquaTechnex
Southern California
760-272-6132

AquaTechnex

Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

WESTLAKE, VENTURA COUNTY
WATER QUALITY DATA

	TEMP C	DO	pH	REACTIVE P	Nitrate (ppm)	Turbidity (ntu)	Secchi Depth (feet)
DAM							
6/13/2002	26.9	10.86	8.5	0.51	0.01	12.90	
7/10/2002	29.8	10.15	9.2	0.20	0.00	11.10	4.00
8/08/2002	26.4	6.42	8.6	0.1	0.00	10.10	3.00
9/11/2002	24.4	2.86	8.5	0.1		11.5	2.00
10/7/2002	21.3	7.1	9.0	0.27	0.00	12.2	1.90
11/12/2002	17.9	9.19	9.7	0.73	0.03	150.0	0.25
12/11/2002	13.8	3.51	8.7	0.41	0.02	22.1	2.6
1/15/2003	13.5	12.04	9.0	0.14	0.05	14.7	1.75
FINGER 4							
6/13/2002	26.9	6.79	8.3	0.56	0.01	5.10	
7/10/2002	29.9	7.99	8.7	0.34	0.00	4.00	4.50
8/08/2002	26.1	7.03	8.5	0.22		3.20	2.50
9/11/2002	24.1	6.18	8.7	0.15		9.80	1.90
10/7/2002	21.0	7.85	9.0	0.23		11.10	1.90
11/12/2002	16.3	10.30	8.9	0.44	0.03	135.0	1.60
12/11/2002	13.6	5.94	8.8	0.67	0.00	19.5	2.4
1/15/2003	13.2	11.49	8.6	0.10	0.00	11.1	1.4
FINGER 7							
6/13/2002	28.2	6.12	8.1	0.75	0.01	5.50	
7/10/2002	30.3	8.61	8.7	0.66	0.02	5.30	4.50

AquaTechnex

Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

8/08/2002	26.0	9.16	8.4	0.31	0.01	5.10	3.00
9/11/2002	24.1	6.79	8.5	0.26		8.70	2.50
10/7/2002	21.2	9.14	8.9	0.36		8.80	2.10
11/12/2002	15.7	12.60	9.7	0.71		170.0	0.25
12/11/2002	13.3	6.07	8.7	0.24	0.00	26.4	1.9
1/15/2003	12.3	10.39	8.9	0.11	0.00	9.7	1.75
FINGER 9							
6/13/2002	25.5	6.62	7.8	0.52	0.02	3.40	
7/10/2002	28.9	9.60	8.7	0.39	0.01	4.00	5.75
8/08/2002	25.6	10.47	8.2	0.17		3.50	4.00
9/11/2002	24.0	8.26	8.6	0.10		8.00	2.10
10/7/2002	20.8	9.63	8.9	0.89		11.20	2.00
11/12/2002	15.7	10.32	9.5	0.14		11.7	0.75
12/11/2002	13.1	6.11	8.9	0.28	0.0	16.2	2.2
1/15/2003	12.8	8.57	8.5	0.21	0.03	10.0	2.0
FINGER 16							
6/13/2002	27.7	11.35	8.3	0.30	0.02	11.40	
7/10/2002	29.5	9.47	8.9	0.29	0.02	8.20	6.00
8/08/2002	26.9	11.25	8.5	0.35	0.01	7.50	2.50
9/11/2002	24.7	10.19	8.9	0.27		9.60	2.20
10/7/2002	21.0	9.77	8.8	0.46		8.70	2.00
11/12/2002	15.7	9.40	9.0	0.08		49.0	0.5
12/11/2002	13.3	8.81	9.0	0.28	0.00	9.2	1.9
1/15/2003	12.4	13.31	9.2	0.08	0.03	8.3	2.0

AquaTechnex

Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

MAIN 1							
6/13/2002	25.3	7.26	8.0	0.52	0.01	8.60	
7/10/2002	28.7	9.70	8.8	0.37	0.01	9.10	5.10
8/08/2002	25.6	11.25	8.6	0.07		8.10	3.25
9/11/2002	24.6	8.66	8.6	0.1		7.50	2.10
10/7/2002	21.9	10.93	8.7	0.27		12.20	2.00
11/12/2002	16.1	13.20	9.4	0.06		15.1	1.75
12/11/2002	na	na	na	na	na	na	Na
1/15/2003	12.5	9.81	8.3	0.22	0.01	8.4	2.0
MAIN 2							
6/13/2002	25.5	7.94	8.2	0.38	0.02	2.00	
7/10/2002	28.7	9.20	8.9	0.31	0.03	5.30	6.00
8/08/2002	26.5	11.48	8.6	0.11		3.20	3.25
9/11/2002	25.4	8.55	8.6	0.1		10.10	2.00
10/7/2002	20.8	13.09	8.9	0.30		10.00	1.70
11/12/2002	15.7	12.60	9.2	0.10		16.0	0.50
12/11/2002	13.6	8.24	8.9	0.37	0.00	20.2	1.9
1/15/2003	12.6	13.10	9.1	0.08	0.00	5.9	2.1
MAIN 3							
6/13/2002	26.6	9.72	8.3	0.42	0.00	15.20	
7/10/2002	30.2	11.40	8.8	0.28	0.00	16.50	4.75
8/08/2002	27.3	11.92	8.6	0.24	0.00	13.50	2.50
9/11/2002	25.3	8.26	8.6	0.19		12.30	1.80
10/7/2002	22.5	10.99	8.7	0.56		13.00	1.90

AquaTechnex

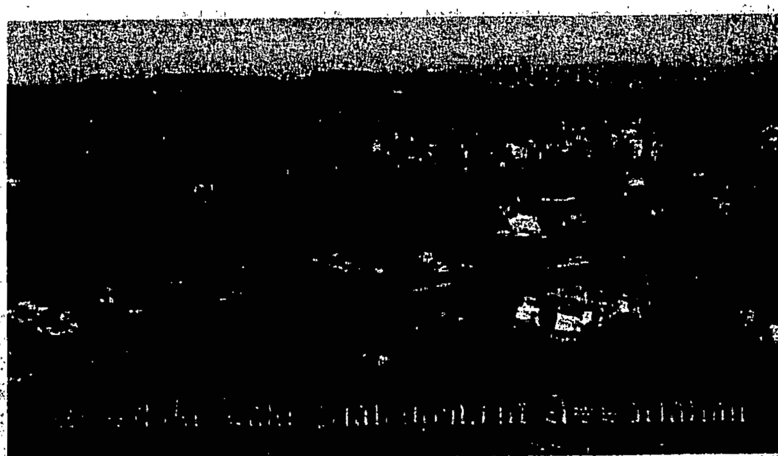
Aquatechnex • POB 33191, San Diego CA 92163 • 760.272.6132 phone/fax

11/12/2002	15.7	9.40	9.0	0.06	0.00	87.7	0.50
12/11/2002	14.1	6.10	8.7	0.26	0.00	18.1	2.1
1/15/2003	12.7	13.80	9.5	0.11	0.02	9.4	1.75

FEBRUARY 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

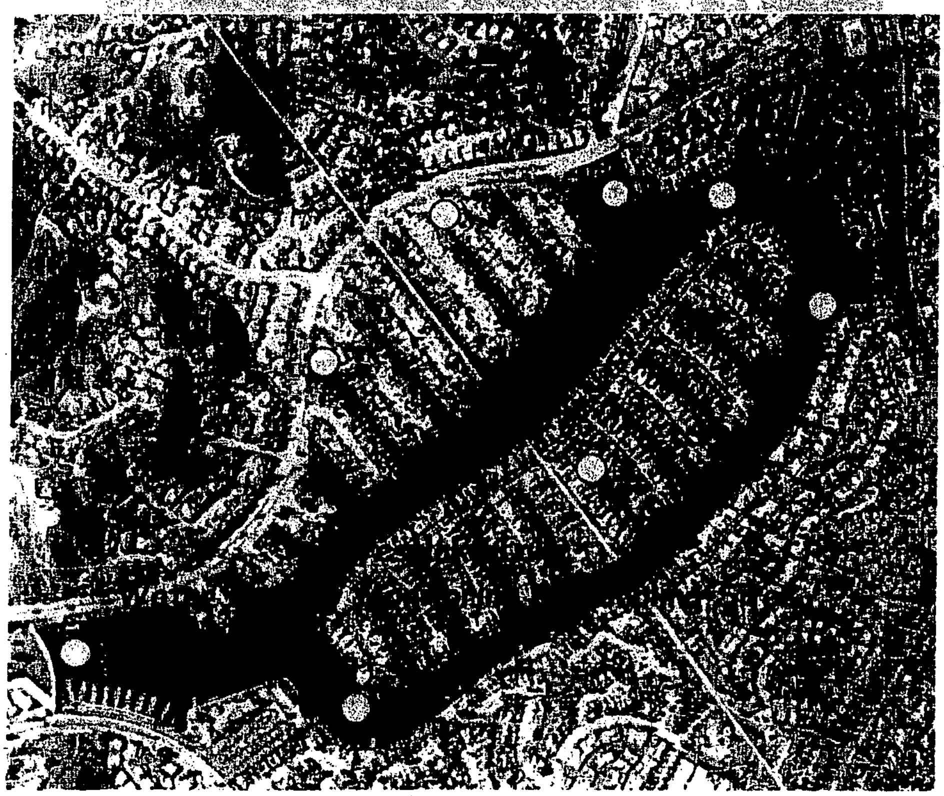
March 2003

1: BACKGROUND INFORMATION

Clean Lakes, Inc. entered into a contract to support West Lake Management Association's (WLMA's) Aquatic Vegetation Management, Water Quality Monitoring Program and Quality Assurance Project Plan in February 2003. The objective of the 2003 Aquatic Vegetation Management Plan is to keep nuisance growths from impacting beneficial uses of the lake system.

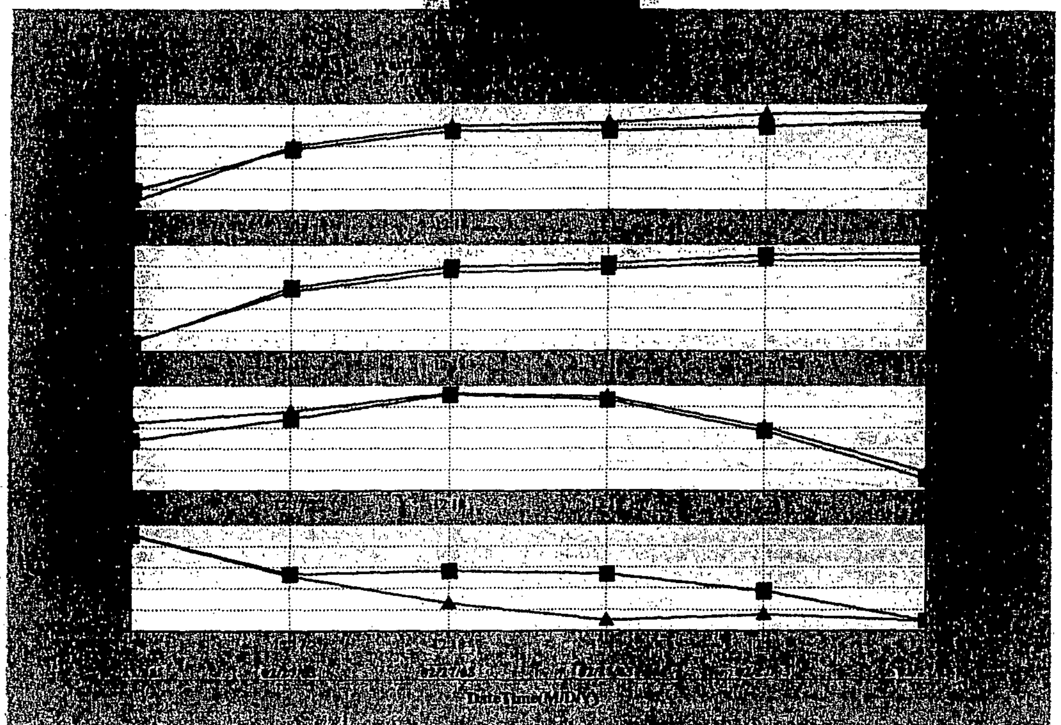
2: FEBRUARY INSPECTION AND MONITORING SCHEDULE: The schedule for February 2003 called for one (1) inspection that was carried out on February 27, 2003.

- **Water Quality Monitoring:** Westlake Water Quality Analysis will be conducted on a monthly basis at eight (8) existing monitoring sites. A site map was provided by WLMA staff that identifies the monitoring sites as follows:



The water quality results for the parameters monitored on February 27, 2003 are presented in graph and statistical format as follows for each site:

Site F4



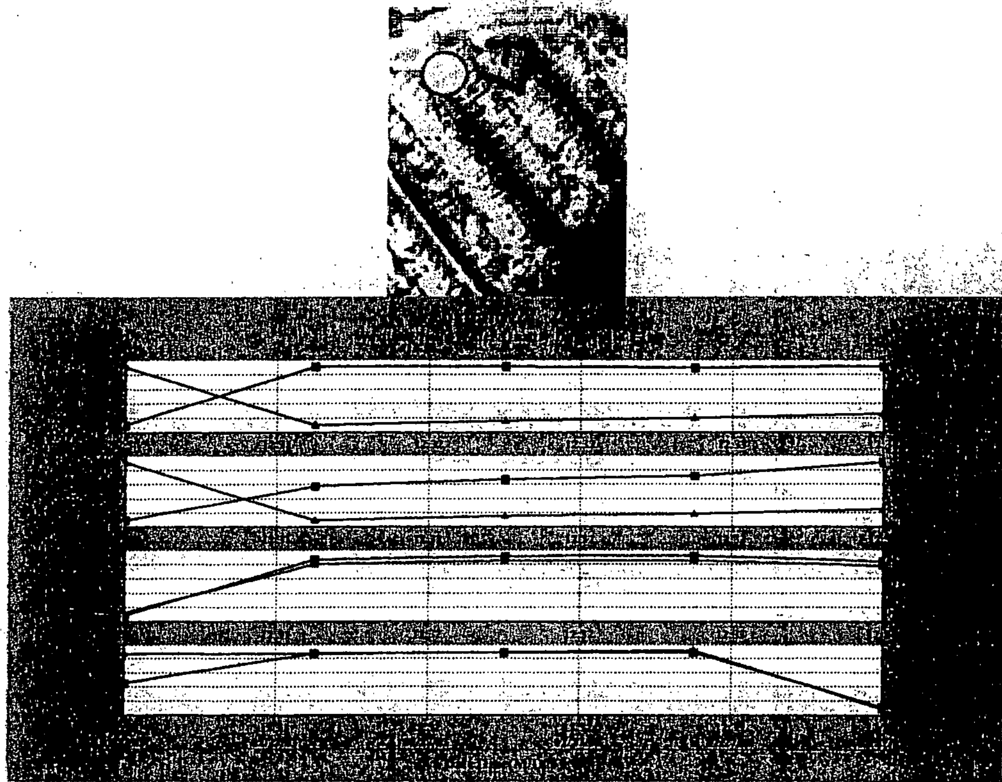
February 27, 2003
Westlake Lake Water Quality Data: Site F4
-- Statistical Report --

From 02/27/03 12:16 to 02/27/03 12:21
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	13.33	13.79	13.65	0.16
SpCond (uS/cm)	1000.0	1129.0	1093.2	44.7
Cond (uS/cm)	777.0	887.0	856.3	38.0
TDS (g/L)	0.650	0.734	0.711	0.029
DO % (%)	114.9	121.3	118.8	2.1
DO Conc (mg/L)	11.86	12.53	12.30	0.22
pH ()	7.90	8.16	8.03	0.08
ORP (mV)	404	423	410	7

Secchi Disk Reading: 4 foot
Observations: No vegetation growth present at this time.

Site F7



February 27, 2003
Westlake Lake Water Quality Data: Site F7
-- Statistical Report --

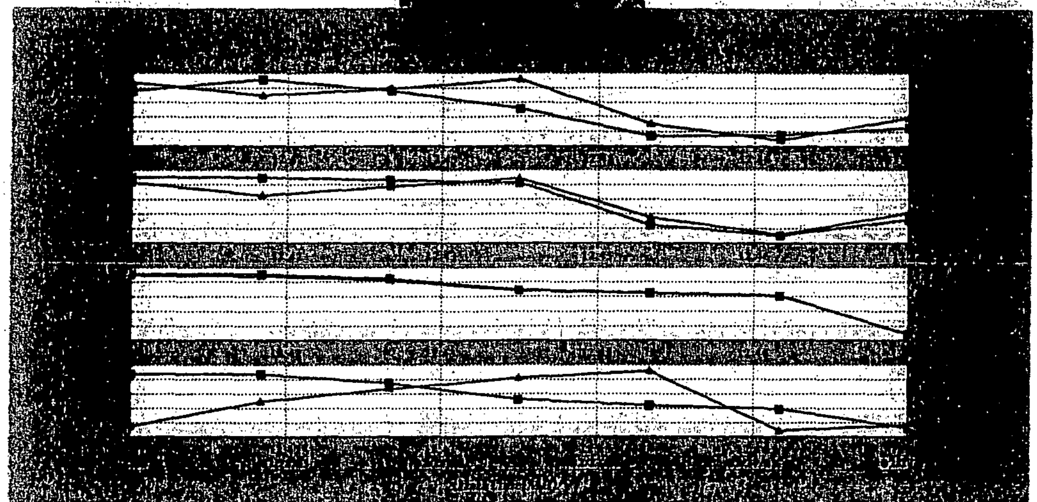
From 02/27/03 12:30 to 02/27/03 12:34
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	11.65	13.59	13.19	0.77
SpCond (uS/cm)	1104.0	1145.0	1115.4	15.0
Cond (uS/cm)	853.0	870.0	863.4	5.7
TDS (g/L)	0.718	0.744	0.725	0.010
DO % (%)	96.5	184.8	164.1	34.0
DO Conc (mg/L)	10.45	19.17	17.11	3.35
pH ()	8.39	9.01	8.81	0.25
ORP (mV)	253	438	396	72

Secchi Disk Reading: 3.0 foot

Observations: The attached algae Chara (Muskgrass) was found growing within this site. Some species of Chara will stay close to the bottom and not interfere with water use. Low bottom growths of Chara help stabilize bottom sediments, provide good fish habitat, and crowd out less desirable plant species. The Chara will be closely monitored to insure growth levels do not reach nuisance proportions.

Site F9



February 27, 2003

Westlake Lake Water Quality Data: Site F9

-- Statistical Report --

From 02/27/03 12:41 to 02/27/03 12:47

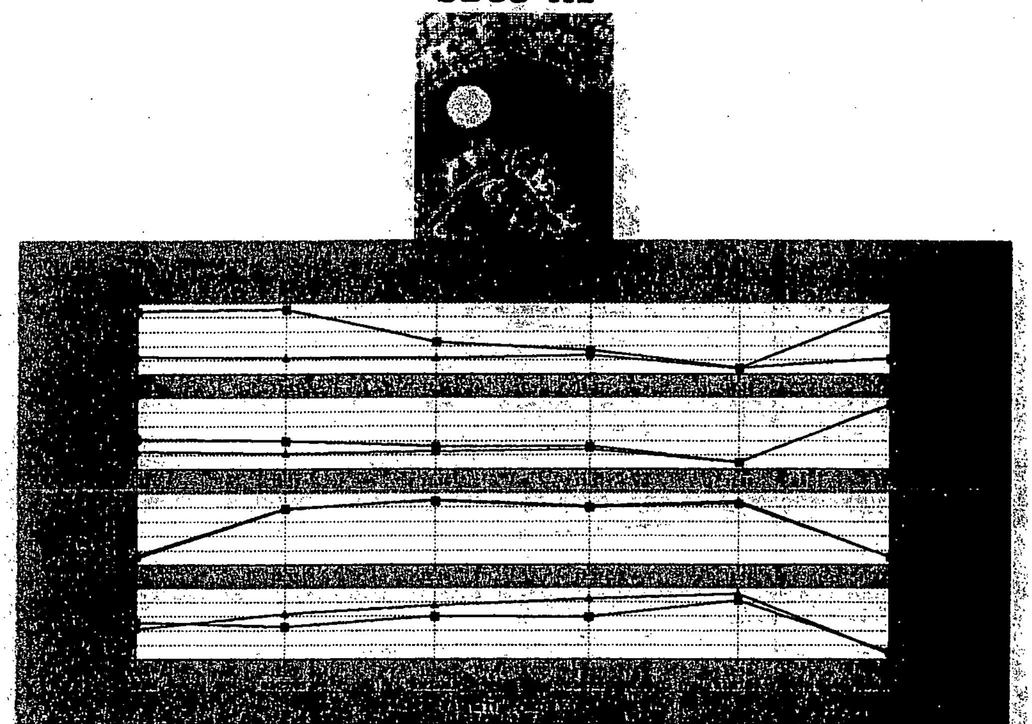
Number of samples: 7

Parameter	Min	Max	Mean	Std
Temp (C)	12.70	13.24	12.95	0.21
SpCond (uS/cm)	1091.0	1110.0	1102.3	6.8
Cond (uS/cm)	835.0	857.0	848.6	9.0
TDS (g/L)	0.709	0.722	0.717	0.004
DO % (%)	31.1	138.0	106.8	34.2
DO Conc (mg/L)	3.29	14.45	11.22	3.56
pH ()	7.46	8.44	8.04	0.34
ORP (mV)	272	429	344	60

Secchi Disk Reading: 4.5 foot

Observations: No vegetation growth present at this time.

Site M1



February 27, 2003

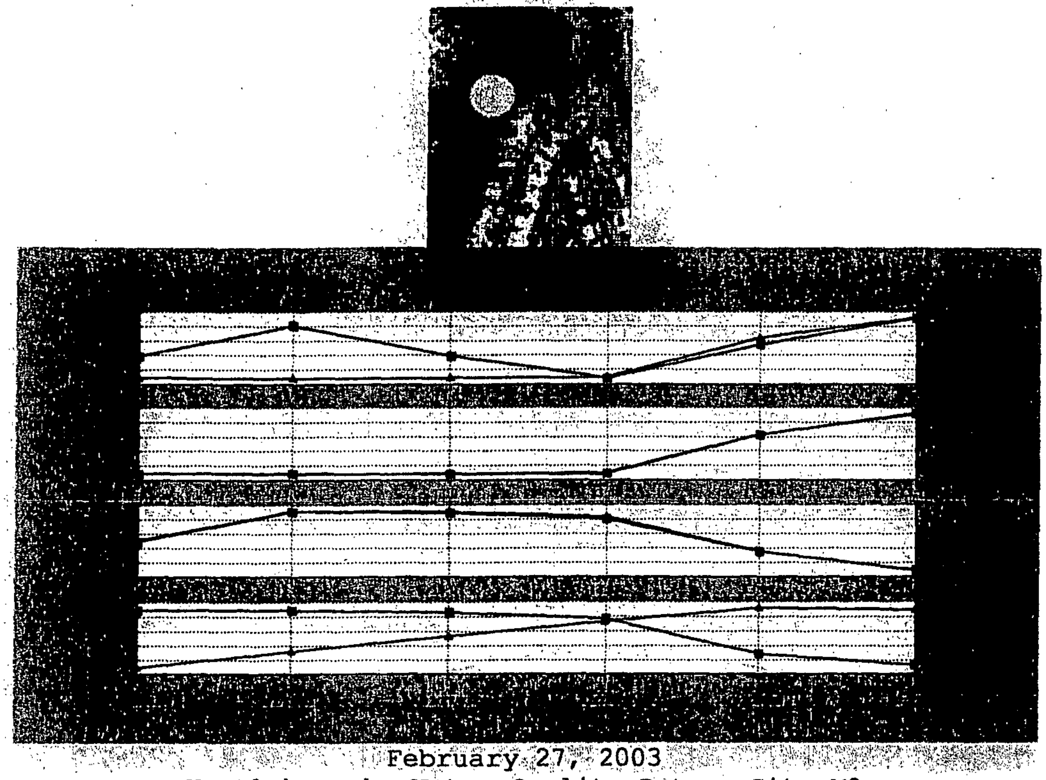
Westlake Lake Water Quality Data: Site M1
-- Statistical Report --

From 02/27/03 12:54 to 02/27/03 12:59
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	13.46	13.82	13.63	0.14
SpCond (uS/cm)	1151.0	1191.0	1162.8	12.9
Cond (uS/cm)	898.0	930.0	910.5	9.7
TDS (g/L)	0.748	0.774	0.756	0.008
DO % (%)	129.2	151.8	143.2	9.8
DO Conc (mg/L)	13.38	15.72	14.83	1.02
pH ()	7.69	8.26	8.01	0.17
ORP (mV)	151	402	309	85

Secchi Disk Reading: 3.5 foot
Observations: No vegetation growth present at this time.

Site M2



February 27, 2003

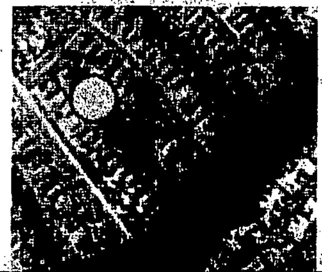
Westlake Lake Water Quality Data: Site M2
-- Statistical Report --

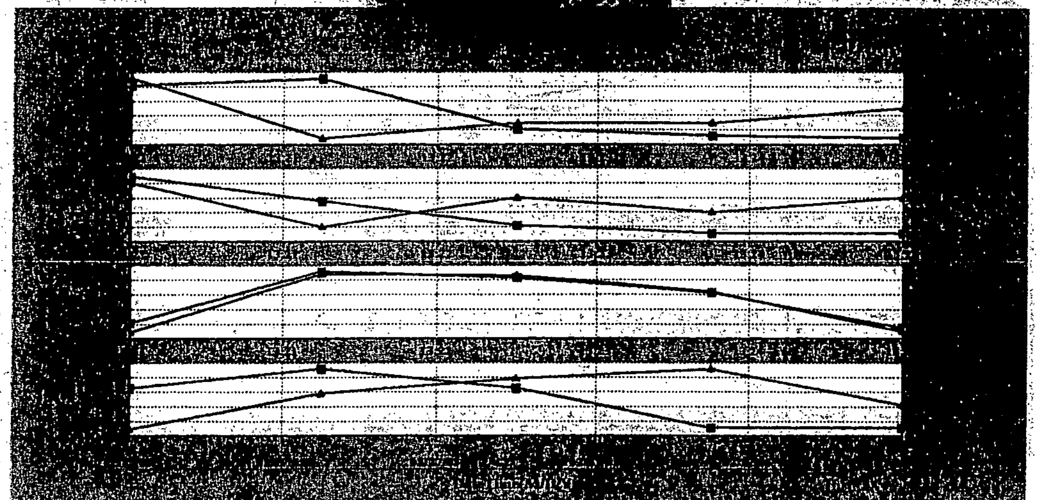
From 02/27/03 13:05 to 02/27/03 13:10
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	13.49	13.87	13.69	0.13
SpCond (uS/cm)	1125.0	1592.0	1257.0	187.0
Cond (uS/cm)	883.0	1254.0	985.8	148.8
TDS (g/L)	0.731	1.035	0.817	0.122
DO % (%)	127.4	163.9	149.6	13.6
DO Conc (mg/L)	13.11	16.90	15.47	1.43
pH ()	8.39	8.92	8.74	0.22
ORP (mV)	376	437	412	22

Secchi Disk Reading: 3.5 foot
Observations: No vegetation growth present at this time.

Site M6





February 27, 2003

Westlake Lake Water Quality Data: Site M6

-- Statistical Report --

From 02/27/03 13:21 to 02/27/03 13:25

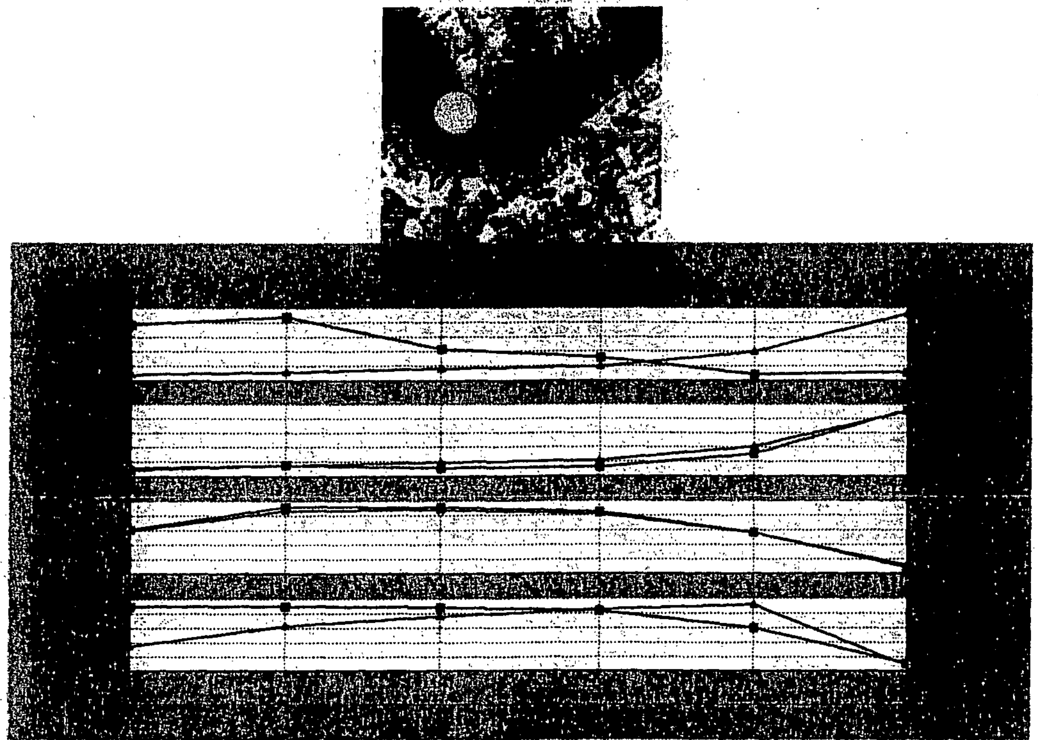
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	13.73	14.00	13.84	0.12
SpCond (uS/cm)	1098.0	1102.0	1099.6	1.4
Cond (uS/cm)	863.0	870.0	865.4	2.7
TDS (g/L)	0.713	0.716	0.715	0.001
DO % (%)	162.6	171.1	167.0	3.5
DO Conc (mg/L)	16.79	17.58	17.21	0.35
pH ()	9.15	9.18	9.16	0.01
ORP (mV)	284	413	357	45

Secchi Disk Reading: 3.5 foot

Observations: No vegetation growth present at this time.

Site M3



February 27, 2003

Westlake Lake Water Quality Data: Site M3

-- Statistical Report --

From 02/27/03 13:39 to 02/27/03 13:44

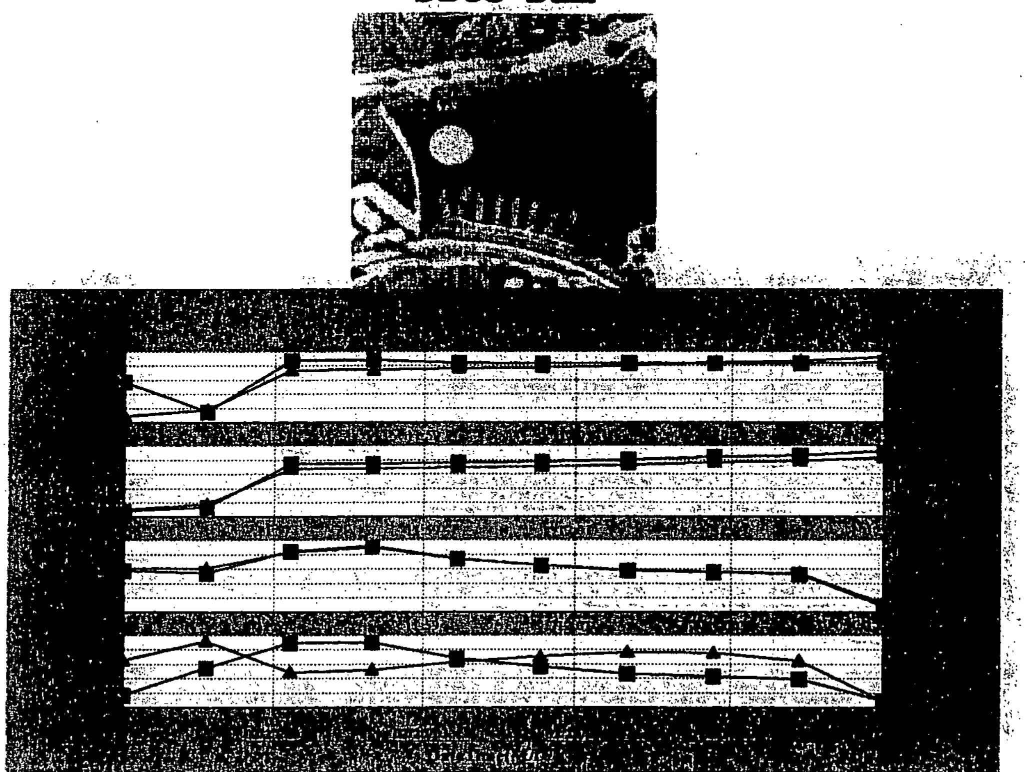
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	14.13	15.31	14.65	0.45
SpCond (uS/cm)	1136.0	1328.0	1188.3	66.6
Cond (uS/cm)	922.0	1054.0	953.2	46.5
TDS (g/L)	0.738	0.863	0.772	0.043
DO % (%)	43.0	202.0	152.5	55.6
DO Conc (mg/L)	4.39	20.40	15.41	5.58
pH ()	7.54	9.19	8.78	0.59
ORP (mV)	156	416	316	92

Secchi Disk Reading: 3.0 foot

Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.



February 27, 2003
Westlake Lake Water Quality Data: Site Dam
-- Statistical Report --

From 02/27/03 11:56 to 02/27/03 12:05
Number of samples: 10

Parameter	Min	Max	Mean	Std
Temp (C)	9.88	14.27	13.49	1.30
SpCond (uS/cm)	432.0	1331.0	1062.5	297.8
Cond (uS/cm)	328.0	1053.0	835.1	246.2
TDS (g/L)	0.281	0.865	0.691	0.194
DO % (%)	22.5	166.5	111.9	37.0
DO Conc (mg/L)	2.30	17.00	11.62	3.76
pH ()	7.56	8.93	8.27	0.43
ORP (mV)	382	489	450	27

Secchi Disk Reading: 3.0 foot
Observations: No vegetation growth present at this time.

- Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable.

- Chlorophyll a and Nutrient samples will be collected on a quarterly basis, a chain of custody form completed, and they will be delivered to a State of California Certified Laboratory for analysis along with the water samples for the analysis of aquatic herbicide residues per the NPDES Permit requirements.

- February Inspection Staff: Robert Lombardo of Clean Lakes, Inc. accompanied by Eric Lysdal of WLMA staff, performed the site inspection and monitoring conducted on February 27, 2003.

3: MARCH INSPECTION AND MONITORING SCHEDULE: The schedule for March 2003 calls for two (2) inspections that will be carried out on March 13th and 27th, 2003. In addition to the normal inspection schedule, CLI staff McNabb will meet with WLMA staff and golf course staff in mid March to review and coordinate aquatic herbicide treatment schedules in an effort to avoid any potential conflicts that could develop with the golf course's irrigation schedule.

4: THE 2003 AQUATIC VEGETATION MANAGEMENT PLAN

- Submerged Aquatic Plant and Algae Control: Submerged aquatic plant control will be obtained via the use of the US-EPA and State of California approved Aquatic Herbicide Sonar. The entire lake system will be treated with Sonar in the early spring (late March or early) when submerged plant growth begins. Sonar concentrations would be maintained within the lake system for a period of approximately 6-8 weeks.

  Late season submerged aquatic plant control (Naiad) may be obtained via the Sonar application. In August 2002, approximately 10-15 acres of the submerged aquatic plant

Naiad (Najas sp.) grew to nuisance proportions in isolated areas of the lake system. The aquatic herbicides Aquathol K or Reward would be used to control any late season plant growth that may develop. It is anticipated that Sonar levels can be maintained within the lake system at sufficient ppb to provide season long control of the Sago Pondweed, and potentially the Naiad as well.

- Algae Control: Algae control will be accomplished via the use of the algaecide Cutrine-Plus. To insure algae growths do not reach nuisance proportions, a regular treatment schedule has been established, and algae growth present along shoreline areas will be treated every ten (10) days or as needed.

- Aquashade: To limit light penetration and in turn reduce plant growth (primarily algae following the Sonar treatment), Aquashade will be added to the lake system in mid April, early May 2003.

- NPDES Permit Requirements: In compliance with WLMA's **WATER QUALITY MONITORING PROGRAM AND QUALITY ASSURANCE PROJECT PLAN** on file with the Regional Water Quality Control Board, a Notice of Intent (NOI) for 2003 will be filled in March 2003 that will include the Aquatic Herbicides and Algaecides for use during 2003.

5: FEBRUARY'S GENERAL OBSERVATIONS: Water quality parameters for the month of February are consistent with those recorded by AquaTechnex on January 17, 2003. The lake system appears to be in a normal winter state at this time. Aquatic vegetation growth was not observed in the system during the month of February, other then some isolated patches of the attached algae Chara. Turbidity levels on an average have decreased from those recorded in January 2003, and this may be a result of less water runoff into the lake system over the past month.

With the 2003 Aquatic Vegetation Management Plan in place, CLI looks forward to developing a monthly reporting format that meets the needs of WLMA's Board. As such, comments and suggestions to the format of this report would be appreciated.

END OF REPORT

CLEAN LAKES, INC.

March 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE

Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

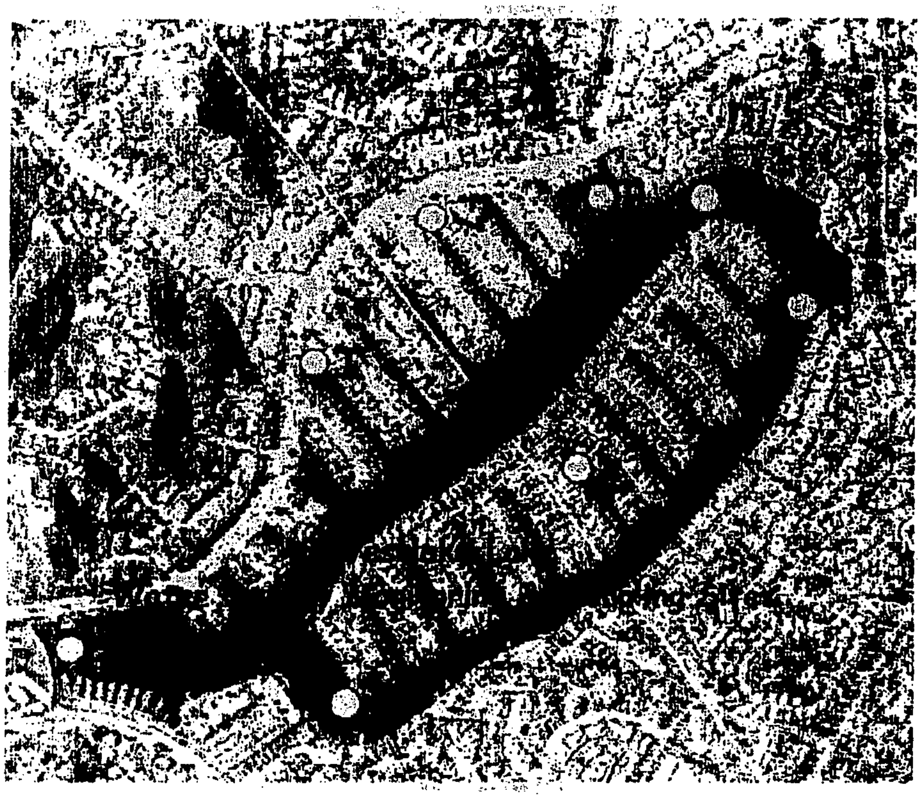
Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

April 1st 2003

CLEAN LAKES, INC.

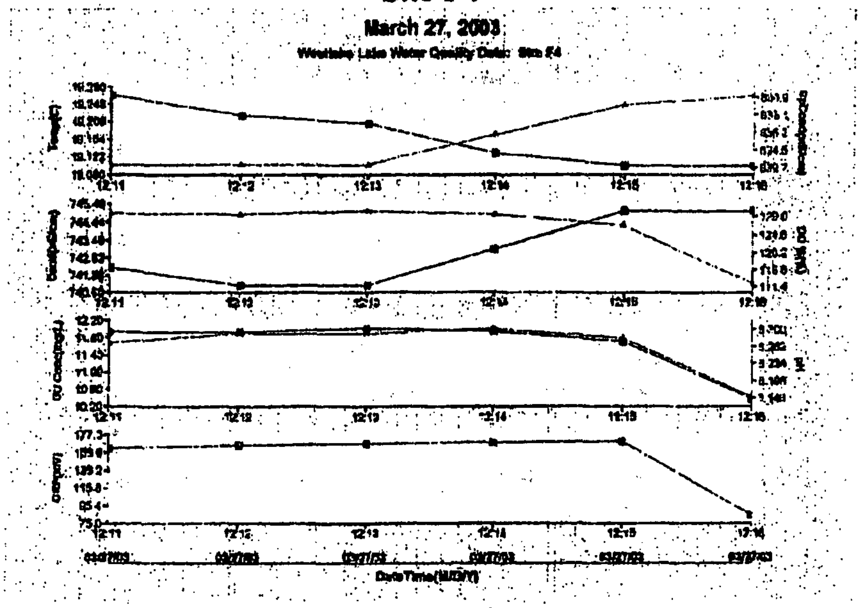
1: MARCH INSPECTION AND MONITORING SCHEDULE: The schedule for March 2003 called for two (2) inspection that were carried out on March 13 and March 27, 2003.

- **Water Quality Monitoring:** Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites. A site map identifies the monitoring sites as follows:



The water quality results for the parameters monitored on March 27. 2003 are presented in graph and statistical format as follows for each site:

Site F4



March 27, 2003
Westlake Lako Water Quality Data: Site F4
-- Statistical Report --

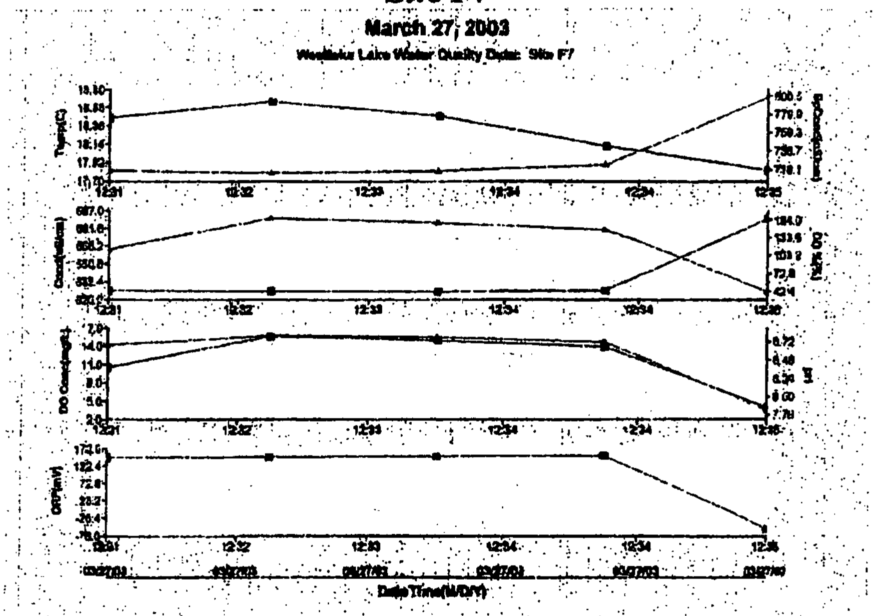
From 03/27/03 12:11 to 03/27/03 12:16
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	19.10	19.27	19.17	0.06
SpCond (uS/cm)	833.0	840.0	835.7	2.9
Cond (uS/cm)	741.0	745.0	742.8	1.7
DO % (%)	112.3	130.2	126.2	6.3
DO Conc (mg/L)	10.37	12.30	11.64	0.58
pH ()	8.15	8.30	8.26	0.05
ORP (mV)	84	169	152	30

Secchi Disk Reading: 4 foot
Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.

Site F7



March 27, 2003
Westlake Lake Water Quality Data: Site F7
-- Statistical Report --

From 03/27/03 12:31 to 03/27/03 12:35
Number of samples: 5

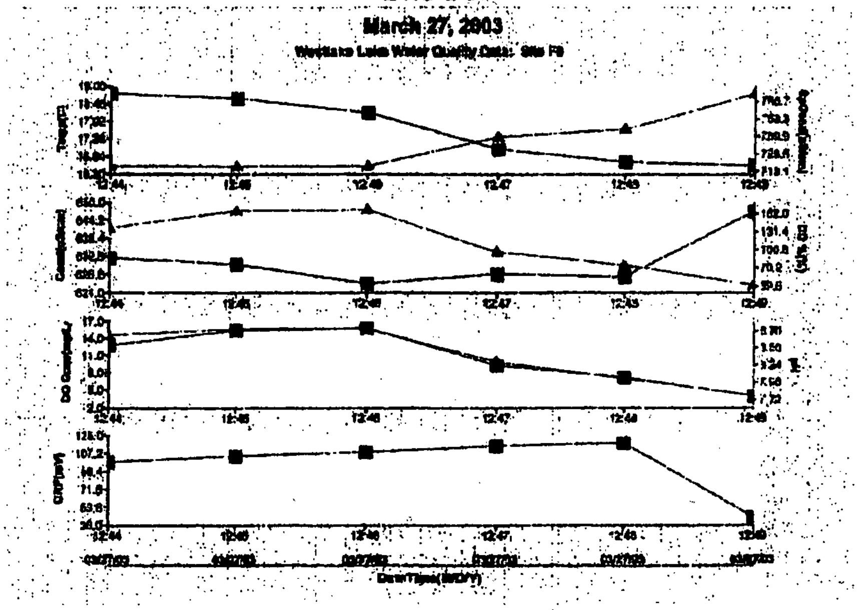
Parameter	Min	Max	Mean	Std
Temp (C)	17.83	18.65	18.30	0.29
SpCond (uS/cm)	714.0	799.0	733.8	32.7
Cond (uS/cm)	627.0	690.0	640.0	25.0
DO % (%)	41.2	166.8	125.3	45.9
DO Conc (mg/L)	3.90	15.55	11.74	4.28
pH ()	7.81	8.79	8.55	0.37
ORP (mV)	-55	151	108	82

Secchi Disk Reading: 3 foot

Observations: Chara growth found growing in non nuisance proportions.

CLEAN LAKES, INC.

Site F9



March 27, 2003
Westlake Lake Water Quality Data: Site F9
-- Statistical Report --

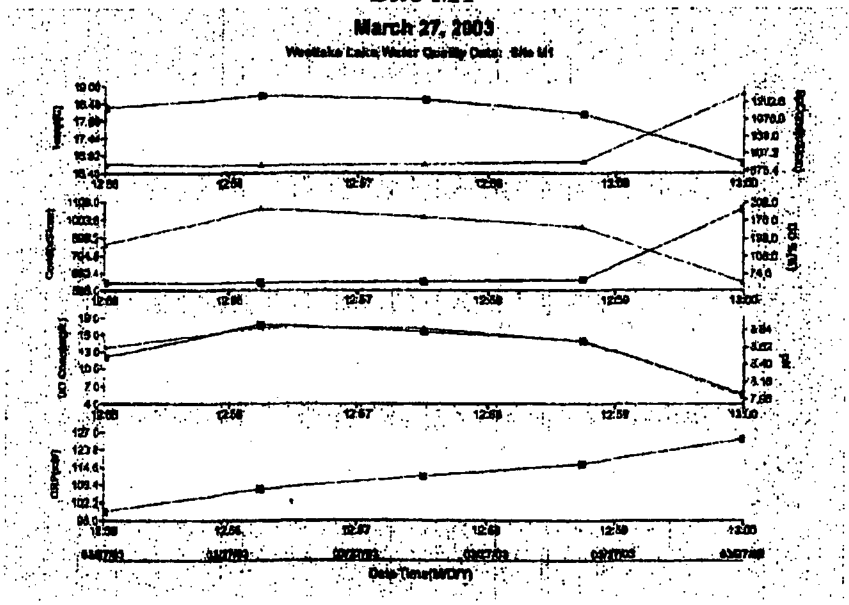
From 03/27/03 12:44 to 03/27/03 12:49
Number of samples: 6

Parameter	Min	Max	Mean	Std
Temp (C)	16.56	18.77	17.64	0.91
SpCond (uS/cm)	717.0	772.0	734.5	20.2
Cond (uS/cm)	624.0	647.0	631.0	7.6
DO % (%)	40.9	167.8	113.7	47.3
DO Conc (mg/L)	3.98	15.79	10.74	4.34
pH ()	7.76	8.79	8.39	0.39
ORP (mV)	44	118	98	25

Secchi Disk Reading: 4 foot
Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.

Site M1



March 27, 2003
Westlake Lake Water Quality Data: Site M1
-- Statistical Report --

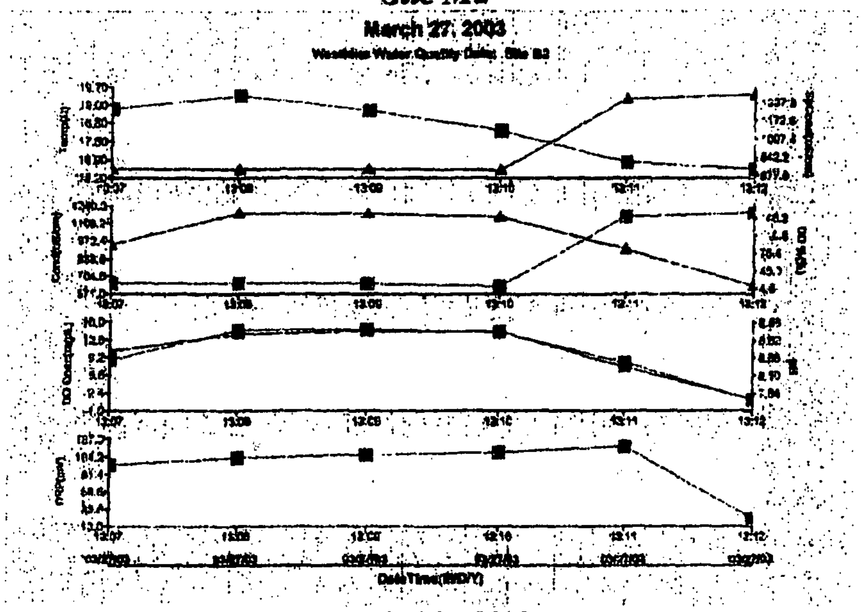
From 03/27/03 12:56 to 03/27/03 13:00
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	16.70	18.71	18.11	0.73
SpCond (uS/cm)	715.0	1264.0	833.4	215.5
Cond (uS/cm)	630.0	1064.0	721.2	171.5
DO % (%)	57.8	190.0	141.8	46.9
DO Conc (mg/L)	5.60	17.69	13.30	4.30
pH ()	7.99	8.86	8.60	0.32
ORP (mV)	99	124	111	8

Secchi Disk Reading: 3.5 foot
Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.

Site M2



March 27, 2003
Westlake Water Quality Data: Site M2
-- Statistical Report --

From 03/27/03 13:07 to 03/27/03 13:12
Number of samples: 6

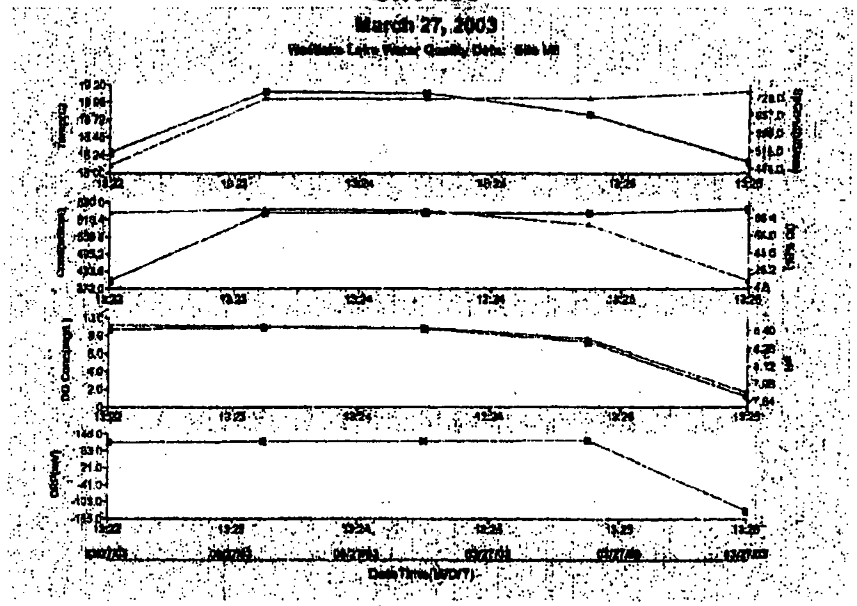
Parameter	Min	Max	Mean	Std
Temp (C)	16.54	19.36	18.05	1.06
SpCond (uS/cm)	724.0	1412.0	950.8	311.2
Cond (uS/cm)	627.0	1184.0	819.0	248.[illegible]
DO % (%)	10.1	156.4	107.9	52.7
DO Conc (mg/L)	0.99	14.50	10.10	4.87
pH ()	7.76	8.76	8.45	0.36
ORP (mV)	23	117	92	32

Secchi Disk Reading: 3.5 foot

Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.

Site M6



March 27, 2003

Westlake Lake Water Quality Data: Site M6

-- Statistical Report --

From 03/27/03 13:22 to 03/27/03 13:26

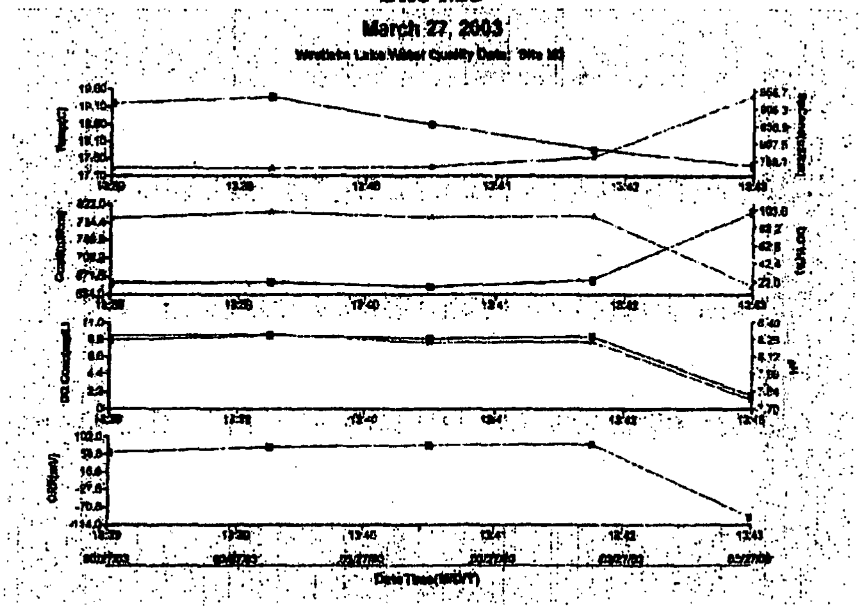
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	18.15	19.10	18.68	0.40
SpCond (uS/cm)	457.0	752.0	676.0	110.1
Cond (uS/cm)	398.0	654.0	594.8	98.5
DO % (%)	12.0	95.2	74.6	32.0
DO Conc (mg/L)	1.13	8.68	6.93	2.96
pH ()	7.91	8.44	8.31	0.20
ORP (mV)	-138	119	65	102

Secchi Disk Reading: 7 foot

Observations: No vegetation growth present at this time.

Site M3



March 27, 2003
Westlake Lake Water Quality Data: Site M3
-- Statistical Report --

From 03/27/03 13:39 to 03/27/03 13:43
Number of samples: 5

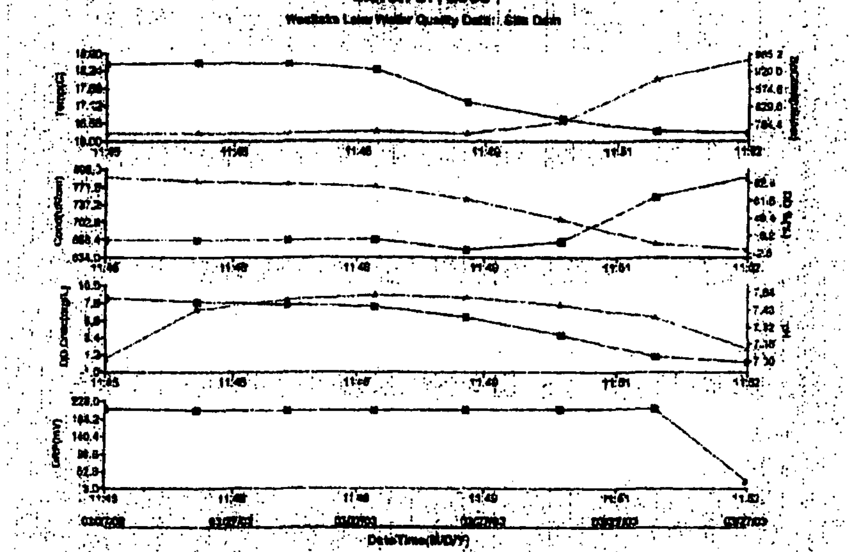
Parameter	Min	Max	Mean	Std
Temp (C)	17.38	19.36	18.47	0.76
SpCond (uS/cm)	738.0	943.0	786.0	79.3
Cond (uS/cm)	650.0	806.0	687.2	59.5
DO % (%)	16.8	101.3	80.9	32.[illegible]
DO Conc (mg/L)	1.60	9.31	7.53	2.97
pH ()	7.77	8.30	8.17	0.20
ORP (mV)	-96	83	41	69

Secchi Disk Reading: 9 foot
Observations: No vegetation growth present at this time.

CLEAN LAKES, INC.

Site Dam

March 27, 2003



March 27, 2003
Westlake Lake Water Quality Data: Site Dam
-- Statistical Report --

From 03/27/03 11:45 to 03/27/03 11:52
Number of samples: 8

Parameter	Min	Max	Mean	Std
Temp (C)	16.26	18.48	17.52	0.94
SpCond (uS/cm)	762.0	950.0	807.5	69.8
Cond (uS/cm)	649.0	791.0	691.1	47.8
DO % (%)	2.4	89.8	55.9	32.7
DO Conc (mg/L)	0.24	8.40	5.28	3.05
pH ()	7.02	7.61	7.41	0.21
ORP (mV)	28	210	184	59

Secchi Disk Reading: 10 foot
Observations: No vegetation growth present at this time.

- Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable.

CLEAN LAKES, INC.

- Chlorophyll a and Nutrient samples will be collected on a quarterly basis, a chain of custody form completed, and they will be delivered to a State of California Certified Laboratory for analysis along with the water samples for the analysis of aquatic herbicide residues per the NPDES Permit requirements.

- NPDES Permit Requirements: In compliance with WLMA's **WATER QUALITY MONITORING PROGRAM AND QUALITY ASSURANCE PROJECT PLAN** on file with the Regional Water Quality Control Board (RWQCB), WLM received an Invoice from the RWQCB on February 18, 2003. WLMA has been assigned a facility No. 4B197300006 from the RWQC for the use of aquatic herbicides and algaecides during 2003. The 2002 Annual Report was filed with the RWQCB in March of 2003 with a copy forwarded to WLMS staff David DuVarney.

March Inspections:

- March 13, 2003: Robert Lombardo of Clean Lakes, Inc. accompanied by Eric Lysdal of WLMA staff, performed the site inspection and monitoring conducted on March 13, 2003. Water samples were drawn from Monitoring Sites Dam and M2 and sent to Sequoia Analytical for analysis. Sampling results are attached and Nitrate as NO3 and Phosphate at both sites were non detectable. Chara was noticed growing in some parts of the lake system and Sago Pondweed (2-3 inch length) and decomposed Naiad were found growing in fingers 7, 8, 13, 14 and in the main channel off monitoring site F9. The plant growth will be monitored for treatment timing.

- March 27, 2003: Shaun Hyde of SePRO Corporation accompanied Robert Lombardo on March 27, 2003 so that he could review the lake system in preparations for the Sonar treatment. The lake system was inspected and water quality monitoring conducted. Water samples were drawn from Monitoring Sites M2 and sent to Sequoia Analytical for analysis for chloraphyll a. In addition to the normal inspection schedule, CLI staff McNabb met with WLMA staff and golf course staff on Monday, March 17th to review and coordinate aquatic herbicide treatment schedules in an

CLEAN LAKES, INC.

effort to avoid any potential conflicts that could develop with the golf course's irrigation schedule. Through email coorispondance between David DuVarney (WLMA) and Norm Buehring of LVMWD, it was determined that the golf course receives water from LVMWD free after April 15th, so any water use restrictions that would follow the Sonar treatment will not affect golf course irrigation after April 15th, as the course would be able to use free water received from LVMWD rather then using lake water. Aquatic vegetation growth was about the same as recorded during the March 13th inspection with the exception of some minor algae growths in areas of the system where water clarity has improved over last month.

3: APRIL INSPECTION AND MONITORING SCHEDULE: The schedule for April 2003 calls for two (2) inspections that will be carried out on April 10th and 24th, 2003.

5: MARCH'S GENERAL OBSERVATIONS: Water quality parameters for the month of March showed water temperatures on a mean average of 18.24C or 64 F, a bit cooler then the 68-70 range recorded in March of 2002, and have increased since last month. Secchi disk reading (water clarity) was recorded at 10 foot at the dam compared with 4 foot in 2002 and water clarity is improving in the southern sections of the lake system (monitoring Site M3 towards the Dam). Aquatic vegetation growth was observed in the system during the month of March as isolated patches of the attached algae Chara, new growth of Sago Pondweed, and some last years decayed growth of Naiad. Turbidity levels on an average have decreased from those recorded in February 2003, and this may be a result of less water runoff into the lake system over the past month. In general, the lake water is warming, clarity in increasing, and the aquatic plant and algae growth season will soon by upon us.

Comments and suggestions to the format of the monthly reports would be appreciated.

ATTACHMENTS: Sequoia Analytical Sampling Results (4 pages)

END OF REPORT

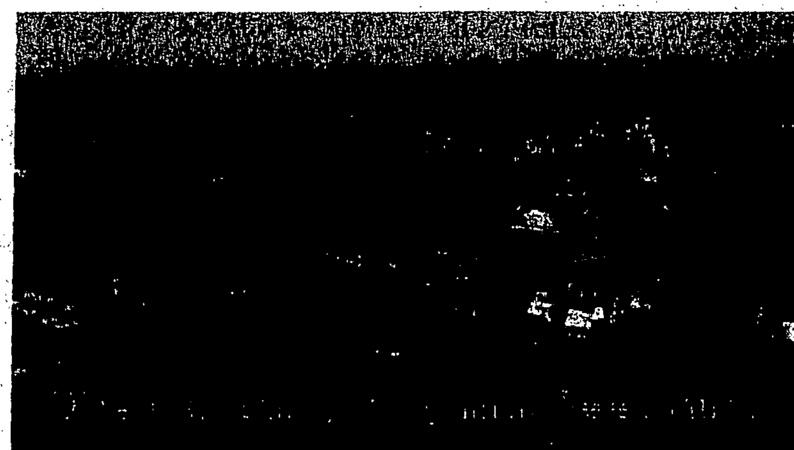
CLEAN LAKES, INC.

RECEIVED MAY 0 6 2003

April 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



2004 FEB 26 PM 2:02

Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

May 2003

1: APRIL INSPECTION AND MONITORING SCHEDULE: The schedule for April 2003 called for two (2) inspections. Inspections were carried out on April 9 & 10, April 22 & 23, and on April 29, 2003 as follows:

- April 9 & 10, 2003: Robert Lombardo and Jay Kasheta performed the site inspection and treatment of the entire shoreline for the control of algae. Approximately 50 acres of the system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre. A total of 89 gallons of Cutrine-Plus was used, of which 18 gallons were from WLMA stock. Water samples were drawn from Monitoring Sites Dam and sent to Sequoia Analytical for analysis of copper per pre-treatment requirements of the NPDES Permit. Filamentous algae growth was found throughout the lake system shoreline areas. Chara was noticed growing in some parts of the lake system and Sago Pondweed has reached a point where the Sonar treatment was scheduled for the following week.

- Due to rains, water flows over the dam, and unresolved issues with PYJ Corporation related to the use of lake water for irrigation of the golf course, the lake could not be treated with Sonar Aquatic Herbicide this week.

- April 22, 2003: Thomas McNabb and Arturo Flores performed the site inspection and treatment of the entire shoreline for the control of algae. Approximately 50 acres of the system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre. A total of 90 gallons of Cutrine-Plus was used. Blue green algae were present throughout the lake's water column as well as some filamentous algae along some shoreline areas. McNabb attended a meeting with WLMA and PYJ Corporation to resolve water use and irrigation issues related to the Sonar treatment. It was determined by all parties that the Sonar treatment would proceed the following day.

- April 23, 2003: The lake system was treated for the control of submerged aquatic vegetation with Sonar A.S. Aquatic Herbicide @ 20-25 ppb. Water samples were drawn from Monitoring Sites Dam and the intake for PYJ's irrigation system for Sonar residual analysis.

- April 28, 2003: FasTEST Samples were collected at four (4) locations within the lake system and send to SePRO Corporation for analysis of Sonar residues. Test results indicated a 14.1 ppb average concentration of Sonar within the lake system.

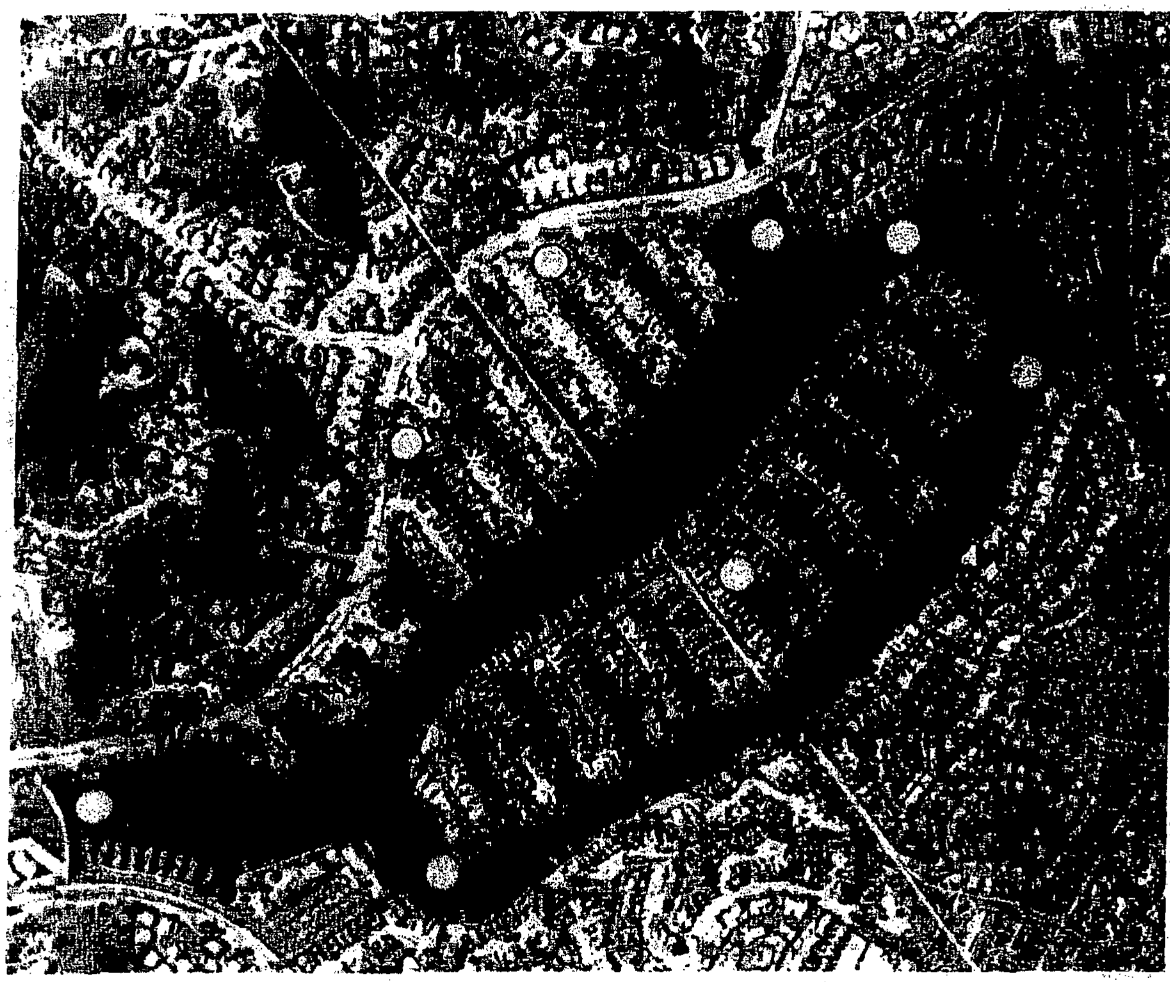
- April 29, 2003: Thomas McNabb and Arturo Flores performed the site inspection and treatment of the entire shoreline and some open water areas for the control of blue green algae. Approximately 53 acres of the system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre. A total of 95 gallons of Cutrine-Plus was used. Blue green algae were present throughout the lake's water column as well as some filamentous algae along some shoreline areas. Blue green algae growths of the magnitude present within the lake system had not been seen in prior years by CLI or WLMA staff. Sonar Aquatic Herbicide was added to the lake system @ 5 ppb to bump concentrations above 15 ppb.

2: MAY INSPECTION AND MONITORING SCHEDULE: The schedule for May 2003 calls for three (3) inspections.

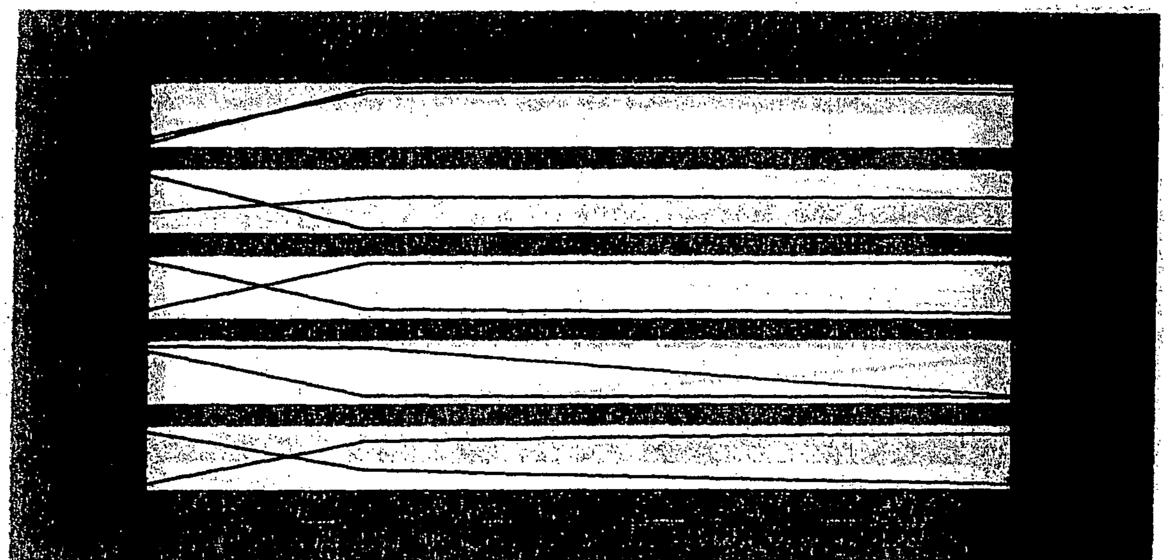
3: APRIL GENERAL OBSERVATIONS: Water quality parameters for the month of March showed water temperatures on a mean average of 17.59C, a bit cooler then the previous month. Secchi disk reading (water clarity) was recorded at 8.5 foot at the dam compared with 10 foot last month and 4 foot in April 2002. Algae growth was a problem during the month with blue green's growing in dense quantities within the water column, and filamentous growths around the shoreline areas. It is speculated that potential nutrient cycling from the sediments is occurring as a result of the dredging operations, thus increased algae growth over prior years.

4: WATER QUALITY MONITORING: Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites. A site map identifies the monitoring sites as follows:

The water quality results for the parameters monitored on April 29, 2003 are presented in graph and statistical format as follows for each site:



Site F4



April 29, 2003
Westlake Lake Water Quality Data: Site F4

-- Statistical Report --

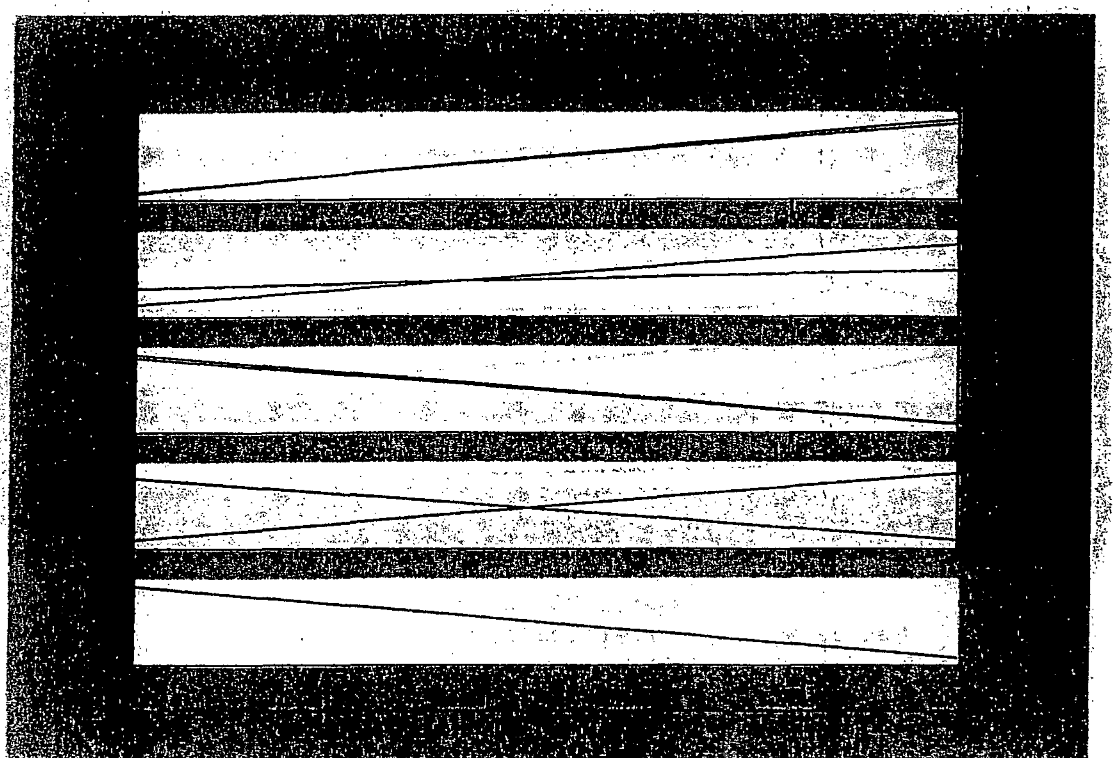
From 04/29/03 11:47 to 04/29/03 11:51
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	10.75	18.36	16.83	3.04
SpCond (uS/cm)	15.0	1041.0	835.2	410.1
Resistivity (KOhm.cm)	1.10	91.32	19.14	36.09
TDS (Kg/L)	0.000	0.001	0.001	0.000
Salinity (ppt)	0.01	0.52	0.42	0.20
DO % (%)	94.6	133.1	103.7	14.7
DO Conc (mg/L)	8.86	14.77	10.18	2.30
Depth (ft)	-0.007	8.505	3.566	3.323
pH ()	7.30	7.97	7.81	0.26
ORP (mV)	288	349	307	22

Secchi Disk Reading: 6 foot

Observations: Blue Green algae growth within water column, some shoreline filamentous algae, and 15% of finger had sago growth present.

Site F7



April 29, 2003
Westlake Lake Water Quality Data: Site F7

-- Statistical Report --

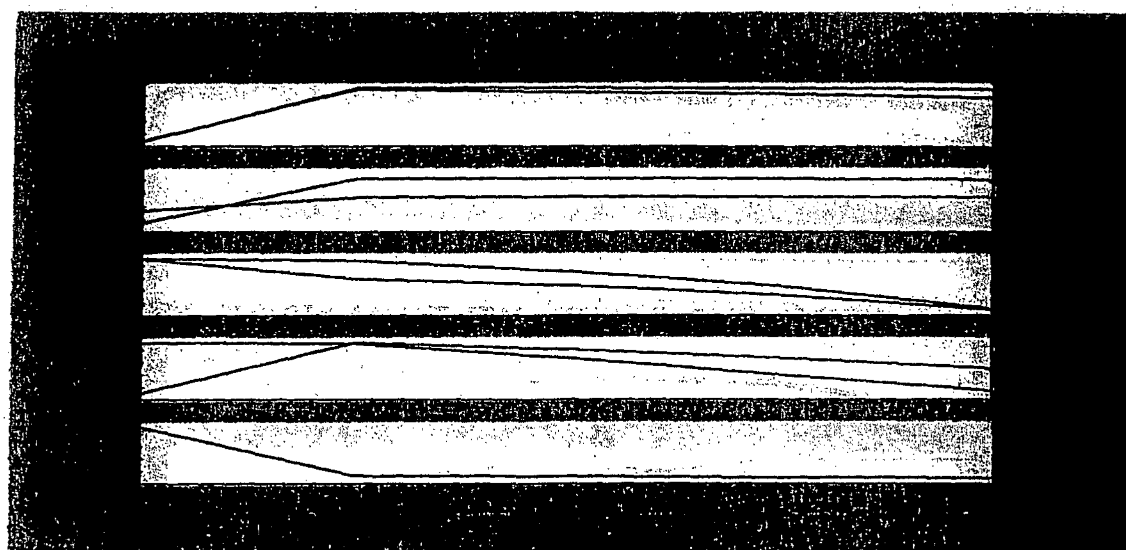
From 04/29/03 12:05 to 04/29/03 12:06
Number of samples: 2

Parameter	Min	Max	Mean	Std
Temp (C)	13.58	18.25	15.91	2.34
SpCond (uS/cm)	10.0	969.0	489.5	479.5
TDS (Kg/L)	0.000	0.001	0.000	0.000
Salinity (ppt)	0.00	0.48	0.24	0.24
DO % (%)	94.5	106.8	100.6	6.1
DO Conc (mg/L)	8.88	11.11	9.99	1.12
Depth (ft)	0.015	0.437	0.226	0.211
pH ()	6.97	8.18	7.57	0.60
ORP (mV)	281	336	308	27

Secchi Disk Reading: 2.25 foot

Observations: The dredge was working in this finger at the time of sampling, water very turbid, some 2″ floating sago pondweed.

Site F9



April 29, 2003
Westlake Lake Water Quality Data: Site F9

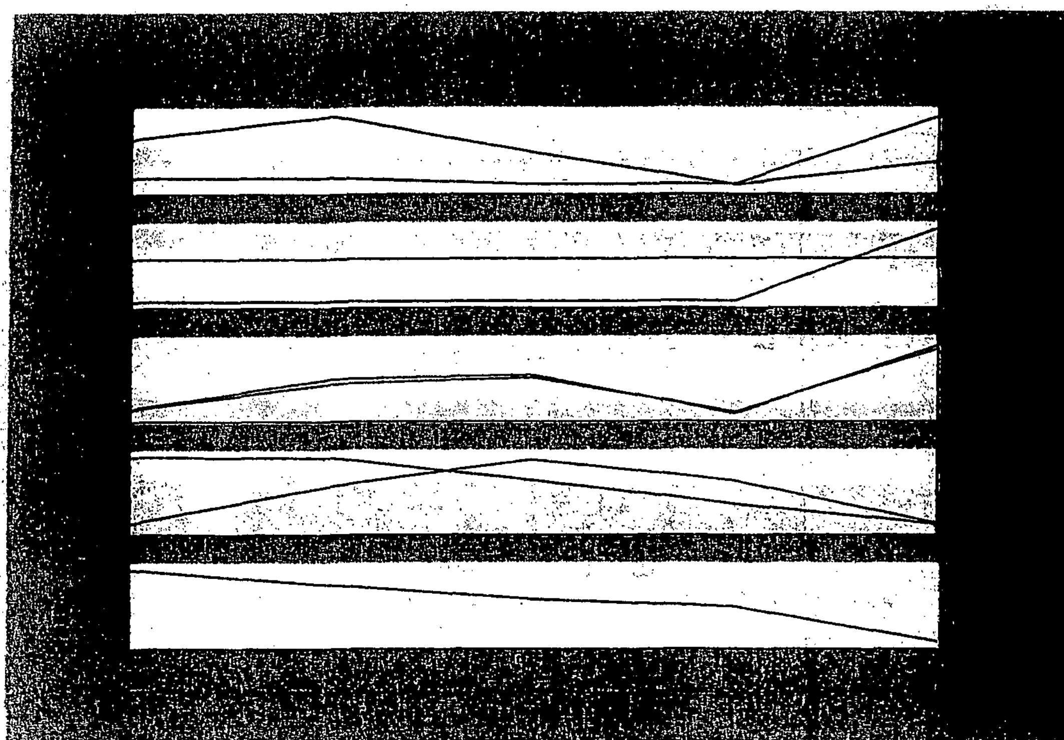
-- Statistical Report --

From 04/29/03 12:15 to 04/29/03 12:19
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	12.66	18.31	16.80	2.09
SpCond (uS/cm)	13.0	971.0	772.4	379.8
TDS (Kg/L)	0.000	0.001	0.000	0.000
Salinity (ppt)	0.00	0.48	0.38	0.19
DO % (%)	80.6	106.8	97.1	9.7
DO Conc (mg/L)	7.72	11.34	9.44	1.20
Depth (ft)	0.000	9.264	3.743	3.564
pH ()	7.40	8.12	7.84	0.25
ORP (mV)	273	313	281	16

Secchi Disk Reading: 8.5 foot
Observations: Some Blue Green Algae growth, sago pondweed 12-18" length.

Site M1



April 29, 2003
Westlake Lake Water Quality Data: Site M1

-- Statistical Report --

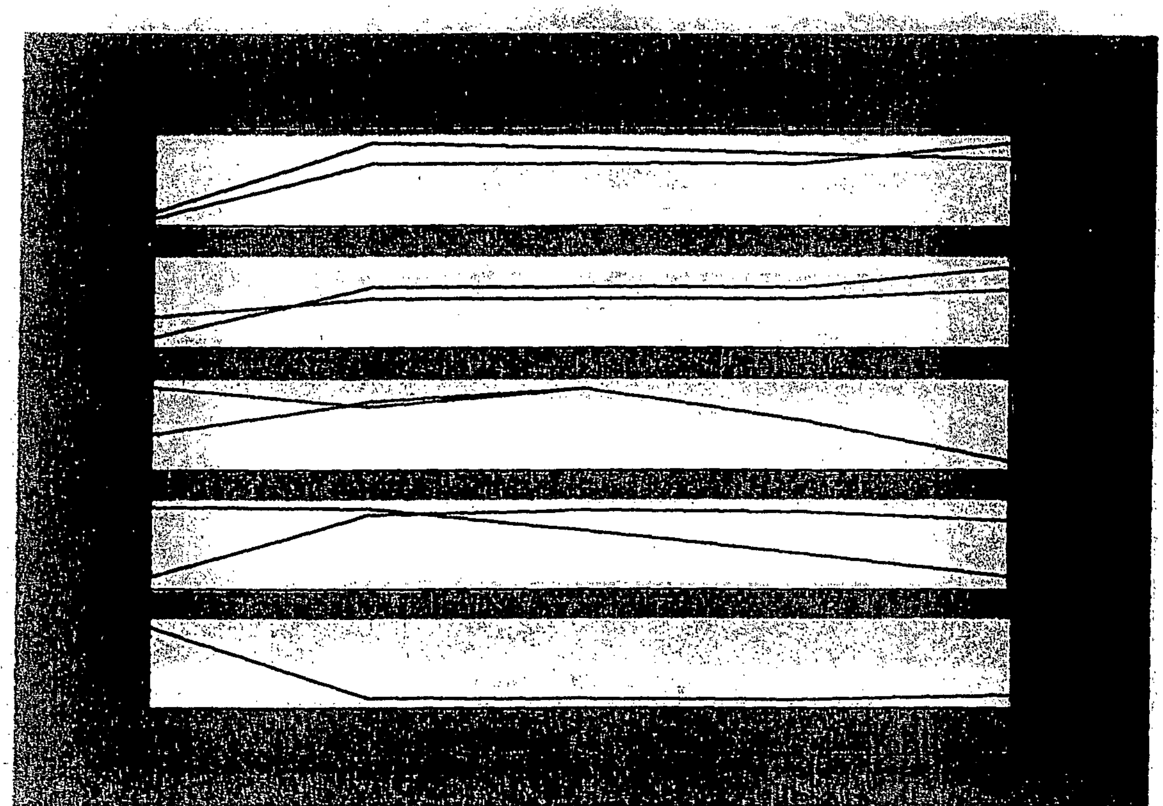
From 04/29/03 12:26 to 04/29/03 12:30
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	18.32	18.62	18.47	0.10
SpCond (uS/cm)	1002.0	1023.0	1007.0	8.0
TDS (Kg/L)	0.001	0.001	0.001	0.000
Salinity (ppt)	0.50	0.51	0.50	0.00
DO % (%)	107.9	115.8	111.3	2.9
DO Conc (mg/L)	10.11	10.84	10.41	0.27
Depth (ft)	-0.018	8.673	3.578	3.405
pH ()	8.00	8.12	8.05	0.05
ORP (mV)	266	269	267	1

Secchi Disk Reading: 8.0 foot

Observations: Slight blue green algae growth, not bad, some filamentous algae growth along shoreline.

Site M2



April 29, 2003
Westlake Lake Water Quality Data: Site M2

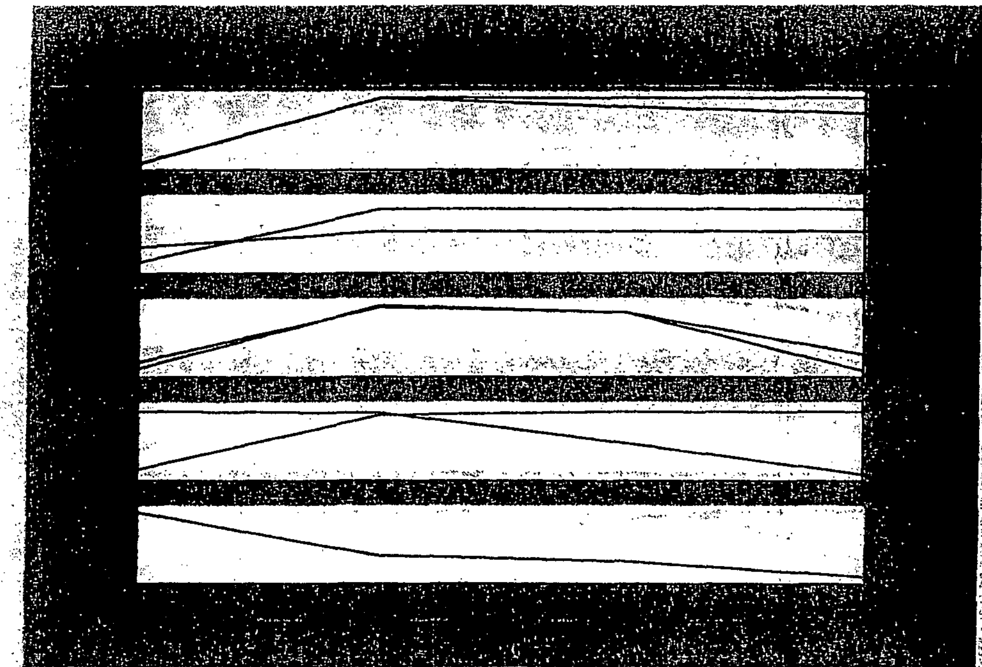
-- Statistical Report --

From 04/29/03 12:35 to 04/29/03 12:39
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	13.19	19.28	17.53	2.21
SpCond (uS/cm)	8.0	1367.0	870.0	454.9
TDS (Kg/L)	0.000	0.001	0.001	0.000
Salinity (ppt)	0.00	0.69	0.43	0.23
DO % (%)	98.8	120.1	110.5	7.5
DO Conc (mg/L)	9.32	11.19	10.55	0.68
Depth (ft)	0.003	9.148	3.710	3.507
pH ()	7.30	8.33	8.07	0.39
ORP (mV)	263	305	272	16

Secchi Disk Reading: 6.5 foot
Observations: Lots of blue green algae along shoreline areas.

Site M6



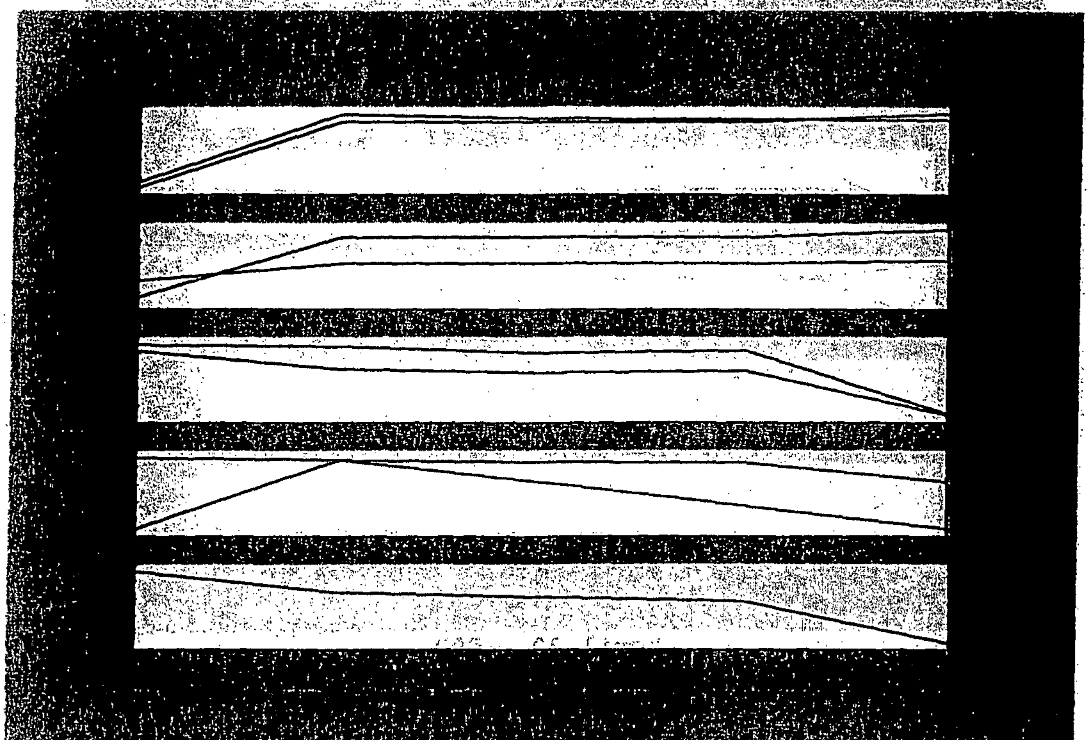
April 29, 2003
Westlake Lake Water Quality Data: Site M6
-- Statistical Report --

From 04/29/03 12:51 to 04/29/03 12:54
Number of samples: 4

Parameter	Min	Max	Mean	Std
Temp (C)	15.82	19.42	18.18	1.40
SpCond (uS/cm)	11.0	951.0	715.3	406.6
TDS (Kg/L)	0.000	0.001	0.000	0.000
Salinity (ppt)	0.00	0.47	0.35	0.20
DO % (%)	105.0	125.5	115.8	8.7
DO Conc (mg/L)	10.23	11.51	10.89	0.57
Depth (ft)	-0.069	6.353	2.390	2.629
pH ()	7.59	8.54	8.29	0.40
ORP (mV)	234	263	245	11

Secchi Disk Reading: 4.0 foot
Observations: Blue Green Algae present throughout water column.

Site M3



April 29, 2003
Westlake Lake Water Quality Data: Site M3

-- Statistical Report --

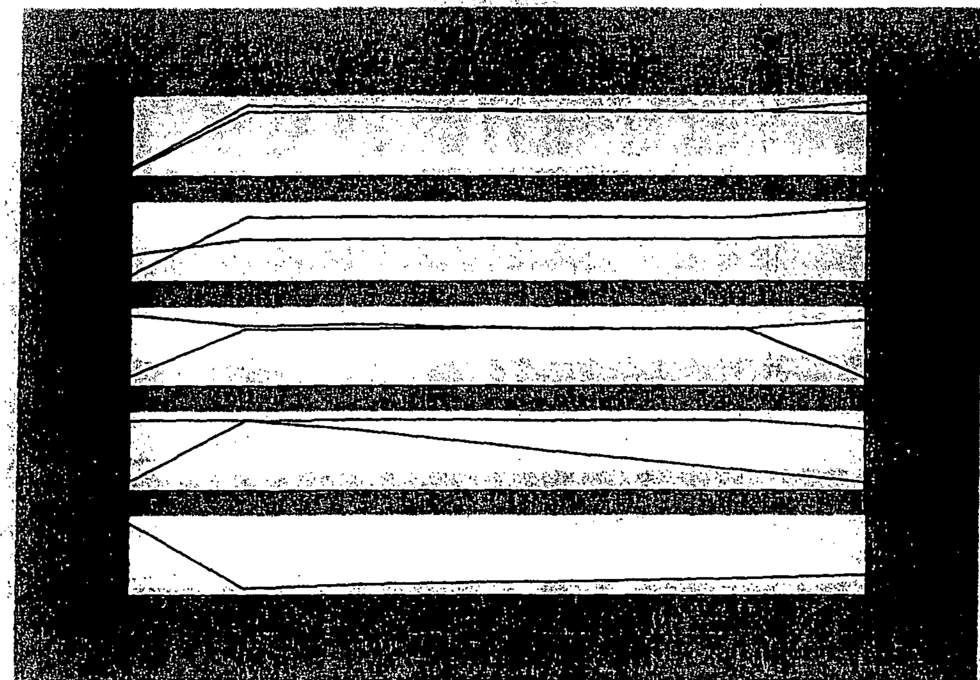
From 04/29/03 13:03 to 04/29/03 13:07
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	14.03	19.35	18.05	2.02
SpCond (uS/cm)	8.0	1089.0	798.8	398.3
TDS (Kg/L)	0.000	0.001	0.000	0.000
Salinity (ppt)	0.00	0.54	0.40	0.20
DO % (%)	70.5	106.5	97.7	13.7
DO Conc (mg/L)	6.53	10.97	9.25	1.46
Depth (ft)	-0.017	9.030	3.687	3.481
pH ()	7.69	8.48	8.26	0.30
ORP (mV)	179	302	251	40

Secchi Disk Reading: 7.5 foot

Observations: No vegetation growth present at this time, blue green algae growth not bad in this area.

Site Dam



April 29, 2003
Westlake Lake Water Quality Data: Site: Dam
-- Statistical Report --

From 04/29/03 13:16 to 04/29/03 13:22
Number of samples: 7

Parameter	Min	Max	Mean	Std
Temp (C)	14.65	19.32	18.35	1.52
SpCond (uS/cm)	10.0	1134.0	862.1	352.0
Cond (uS/cm)	8.0	997.0	762.9	311.4
TDS (Kg/L)	0.000	0.001	0.001	0.000
Salinity (ppt)	0.00	0.57	0.43	0.18
DO % (%)	67.8	106.3	95.4	11.6
Depth (ft)	0.010	15.047	6.469	5.458
pH ()	7.17	8.34	8.14	0.40
ORP (mV)	143	176	151	11

Secchi Disk Reading: 8.5 foot
Observations: Blue green algae throughout water column in upper few feet.

- Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Chlorophyll a and Nutrient samples were collected and sent to the lab for analysis.

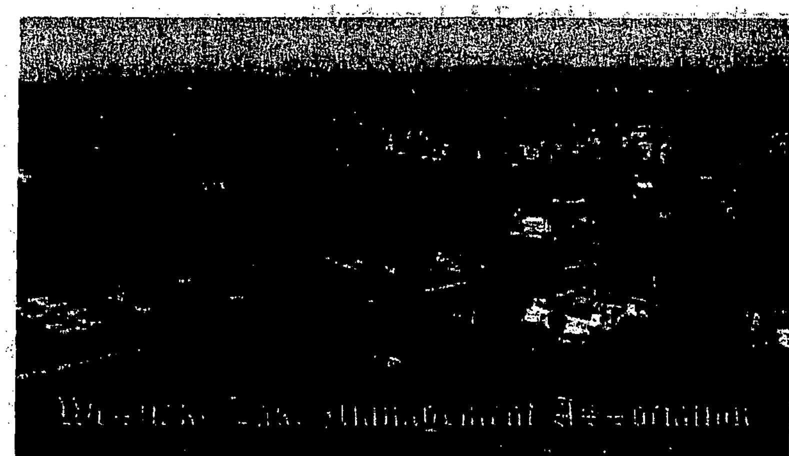
END OF REPORT

CLEAN LAKES, INC.

May 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

June 2003

1: MAY INSPECTION AND MONITORING SCHEDULE: The schedule for May 2003 called for three (3) inspections. Inspections were carried out on May 14 & 15, May 17, May 20, and on May 22 as follows:

- May 6, 2003: FasTEST Samples were collected at four (4) locations within the lake system and send to SePRO Corporation for analysis of Sonar residues. Test results indicated a 12.76 ppb average concentration of Sonar within the lake system. Heavy rains during the period of May 2 & 3 resulted in approximately 31 acre foot of water loss over the dam, and resulting loss and reduction in overall Sonar concentrations within the system.

- May 14 & 15, 2003: Robert Lombardo and Tom McNabb performed a site inspection and spot treatments of the entire shoreline for the control of algae. Approximately 8 acres of the system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre. A total of 15 gallons of Cutrine-Plus was used. Water samples were drawn from Monitoring Sites Dam and Site F9 and for analysis of nitrate as N and phosphorous. Pat-Chem Laboratories in Moorpark performed the analysis. Filamentous algae growth was minimal along the lake systems shoreline areas. Chara was noticed growing in some parts of the lake system and will be monitored to insure nuisance growths do not develop. Chara is a beneficial attached bottom growing algae that supports nutrient uptake with the lake system. The Sago Pondweed within the system was showing good signs of control following the Sonar treatments. As a result of the May 6, 2003 FasTest sample analysis for Sonar concentrations, Sonar was added to the lake system @ 5 ppb to bump concentrations above 15 ppb. In addition, 120 gallons of Cygnet Select Dye was added to the lake system to support the reduction in light penetration.

- May 15, 2003: McNabb and Lombardo met with Clint (PYJ Corporation) on May 15th to discuss the effects of the irrigation trials on the golf course turf. Clint reported that all looked good, no signs of turf damage from the irrigation trials with Sonar treated water.

- May 17, 2003: Thomas McNabb and Thomas Moorhouse performed a site inspection and to evaluate the color of the lake system following the Cygnet Select treatment. The dye had spread evenly throughout the system and looked good.

- May 20, 2003: Shaun Hyde of SePro Corporation, the manufacturers of Sonar, performed a site inspection of the lake system with Eric Lysdal at Clean Lakes request to evaluate the Sonar treatment and provide SePro's advice on the control achieved to date. Shaun reported that the plants present within the system showed good signs of control from the treatments, and that results were as expected. FasTest samples were collected and shipped to SePro's Lab for analysis. Test results indicated a 13.8 ppb average concentration of Sonar within the lake system.

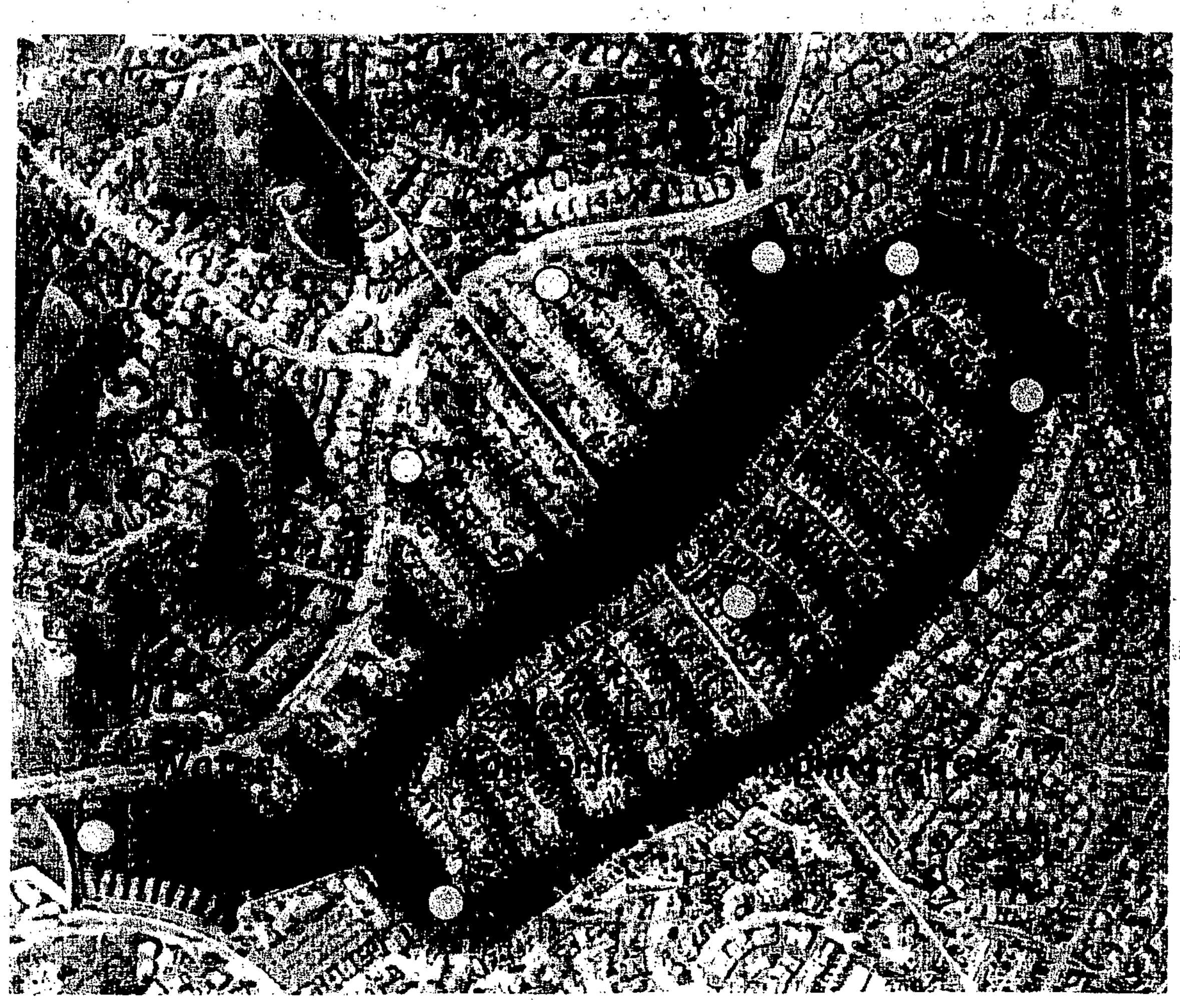
- May 22, 2003: Thomas Moorhouse and Arturo Flores performed a site inspection and spot treatments of the entire shoreline for the control of algae. Approximately 12.5 acres of the systems shoreline was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre. A total of 22.5 gallons of Cutrine-Plus was used. The Sago Pondweed within the system showed signs excellent control with minor patches present within some of the finger areas. Growth in these areas will be monitored and spot treated in June if required. FasTEST Samples were collected at four (4) locations within the lake system and send to SePRO Corporation for analysis of Sonar residues. Test results indicated a 14.1 ppb average concentration of Sonar within the lake system.

2: JUNE INSPECTION AND MONITORING SCHEDULE: The schedule for June 2003 calls for three (3) inspections.

3: MAY GENERAL OBSERVATIONS: The lake system was in good shape through May following algae and submerged vegetation control treatments during the month. The Sonar treatments have provided excellent control of the Sago Pondweed, and the Cygnet Select Dye that was added to the system should support reductions in algae growth. The attached algae Chara is growing in various areas within the lake and will be monitored and controlled as required. The turbidity curtain that surrounds the dredging operations discharge point is not working properly in mid May, with a resulting discharge of turbid water into the lake.

4: WATER QUALITY MONITORING: Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites. A site map identifies the monitoring sites as follows:

The water quality results for the parameters monitored on May 14, 2003 are presented in statistical format as follows for each site (graph format not available due to computer error during download):



Site F4

May 14, 2003
Westlake Lake Water Quality Data: Site F4

-- Statistical Report --

From 05/14/03 8:27 to 05/14/03 8:51
Number of samples: 5

Parameter	Min	Max	Mean
Temp (C)	11.55	19.16	11.63
SpCond (uS/cm)	14.0	1009.0	829.2
Resistivity (KOhm.cm)	1.20	96.42	19.14
TDS (Kg/L)	0.000	0.001	0.001
Salinity (ppt)	0.01	0.42	0.32
DO Conc (mg/L)	8.42	14.58	10.29
Depth (ft)	0.017	8.250	3.437
pH ()	7.38	7.76	7.84

Secchi Disk Reading: 6.5 foot

Observations: Some bottom algae growth, sago pondweed showed good signs of Sonar uptake.

Site F7

May 14, 2003
Westlake Lake Water Quality Data: Site F7

-- Statistical Report --

From 05/14/03 9:05 to 05/14/03 9:06
Number of samples: 2

Parameter	Min	Max	Mean
Temp (C)	14.01	19.15	16.72
SpCond (uS/cm)	10.0	969.0	489.5
TDS (Kg/L)	0.000	0.001	0.000
Salinity (ppt)	0.00	0.46	0.25
DO Conc (mg/L)	8.67	11.06	9.72
Depth (ft)	0.012	0.441	0.219
pH ()	6.96	8.16	7.55

Secchi Disk Reading: 2.0 foot bottom

Observations: Some bottom algae growth present.

Site F9

May 14, 2003

Westlake Lake Water Quality Data: Site F9

-- Statistical Report --

From 04/14/03 9:15 to 05/14/03 9:19

Number of samples: 5

Parameter	Min	Max	Mean
Temp (C)	13.02	19.19	17.73
SpCond (uS/cm)	12.0	832.0	672.4
TDS (Kg/L)	0.000	0.001	0.000
Salinity (ppt)	0.00	0.46	0.38
DO Conc (mg/L)	7.42	11.19	9.36
Depth (ft)	0.000	9.121	3.647
pH ()	7.44	8.17	7.88

Secchi Disk Reading: 8.5 foot

Observations: Some bottom algae growth.

Site M1

May 14, 2003

Westlake Lake Water Quality Data: Site M1

-- Statistical Report --

From 05/14/03 9:26 to 05/14/03 9:30

Number of samples: 5

Parameter	Min	Max	Mean
Temp (C)	18.11	18.42	18.48
SpCond (uS/cm)	978.0	1007.0	94.0
TDS (Kg/L)	0.001	0.001	0.001
Salinity (ppt)	0.49	0.50	0.50
DO Conc (mg/L)	10.16	10.86	10.43
Depth (ft)	0.020	8.748	3.684
pH ()	8.12	8.24	8.17

Secchi Disk Reading: 8.0 foot

Observations: minor bottom algae growth present, sago pondweed under control

Site M2

May 14, 2003
Westlake Lake Water Quality Data: Site M2

-- Statistical Report --

From 05/14/03 9:35 to 05/14/03 9:39
Number of samples: 5

Parameter	Min	Max	Mean
Temp (C)	13.69	19.78	18.23
SpCond (uS/cm)	8.0	1342.0	830.0
TDS (Kg/L)	0.000	0.001	0.001
Salinity (ppt)	0.00	0.71	0.38
DO Conc (mg/L)	9.82	11.69	10.85
Depth (ft)	0.013	9.124	3.670
pH ()	7.15	8.22	8.16

Secchi Disk Reading: 6.0 foot
Observations: The area looked good, minor bottom algae growth

Site M6

May 14, 2003
Westlake Lake Water Quality Data: Site M6
-- Statistical Report --

From 05/14/03 9:51 to 05/14/03 9:54
Number of samples: 4

Parameter	Min	Max	Mean
Temp (C)	16.32	19.91	18.67
SpCond (uS/cm)	10.8	949.0	719.4
TDS (Kg/L)	0.000	0.001	0.000
Salinity (ppt)	0.00	0.49	0.38
Depth (ft)	0.140	6.187	2.532
pH ()	7.61	8.56	8.31

Secchi Disk Reading: 5.5 foot
Observations: Some sago pondweed present, minor bottom algae growth

Site M3

May 14, 2003
Westlake Lake Water Quality Data: Site M3

-- Statistical Report --

From 05/14/03 10:03 to 05/14/03 10:07
Number of samples: 5

Parameter	Min	Max	Mean
Temp (C)	14.65	19.97	18.67
SpCond (uS/cm)	7.8	1049.0	784.8
TDS (Kg/L)	0.000	0.001	0.000
Salinity (ppt)	0.00	0.56	0.42
DO Conc (mg/L)	7.01	11.45	9.73
Depth (ft)	0.132	9.294	3.761
pH ()	7.72	8.50	8.28

Secchi Disk Reading: 7.0 foot
Observations: No vegetation growth present at this time, some minor bottom algae growth.

Site Dam

May 14, 2003
Westlake Lake Water Quality Data: Site: Dam
-- Statistical Report --

From 05/14/03 10:16 to 05/14/03 10:22
Number of samples: 7

Parameter	Min	Max	Mean
Temp (C)	15.03	19.70	18.73
SpCond (uS/cm)	9.9	1128.0	874.3
Cond (uS/cm)	8.2	984.0	749.6
TDS (Kg/L)	0.000	0.001	0.001
Salinity (ppt)	0.00	0.51	0.39
DO % (%)	67.8	106.3	95.4
Depth (ft)	0.210	15.129	7.151
pH ()	7.32	8.46	8.31

Secchi Disk Reading: 12.5 foot
Observations:

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Nutrient samples were collected and sent to the lab for analysis. Nutrient analysis of N showed levels 0.16 at F9 (inlet) and 0.12 at the Dam (approximately 0.04 high at the inlet then the dam), while P was the same at both sampling sites.

PAT-CHEM LABORATORIES

11990 Discovery Ct. • Moorpark, CA 93021 • Ph. (805) 532-0012 • Fax (805) 532-0016

Customer: Clean Lakes Inc.
P.O. Box 3186
Martinez CA, 94553

Page 1 of 1

Attention: Bob
Report Date: 21-May-03 09:57
Subject: Water Samples

Project/P.O.#: [none]

PARAMETER	METHOD	QC BATCH	REPORTING LIMIT	ANALYZED (ANALYST)		RESULT	NOTE
Westlake Dam (Sample I.D.# : 0305261-01) Collected: 14-May-03 By Bob Lombardo							
Nitrate as N	EPA 300.0	AE31919	0.05	19-May-03 (MS)		0.12 mg/l	
Phosphate	EPA 300.0	AE31919	0.10	19-May-03 (MS)	<	0.10 mg/l	
Westlake F9 (Sample I.D.# : 0305261-02) Collected: 14-May-03 By Bob Lombardo							
Nitrate as N	EPA 300.0	AE31919	0.05	19-May-03 (MS)		0.16 mg/l	
Phosphate	EPA 300.0	AE31919	0.10	19-May-03 (MS)	<	0.10 mg/l	

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis

Aquatic Plant Management Society Meeting: The Aquatic Plant Management Society will be holding its 43rd Annual meeting in Portland Maine during the period of July 20 through July 23, 2003. To keep abreast of developments in the field of aquatic plant management, it would be worth while to send David DuVarney to the meeting. David attended the APMS Annual meeting in Colorado in July of last year.

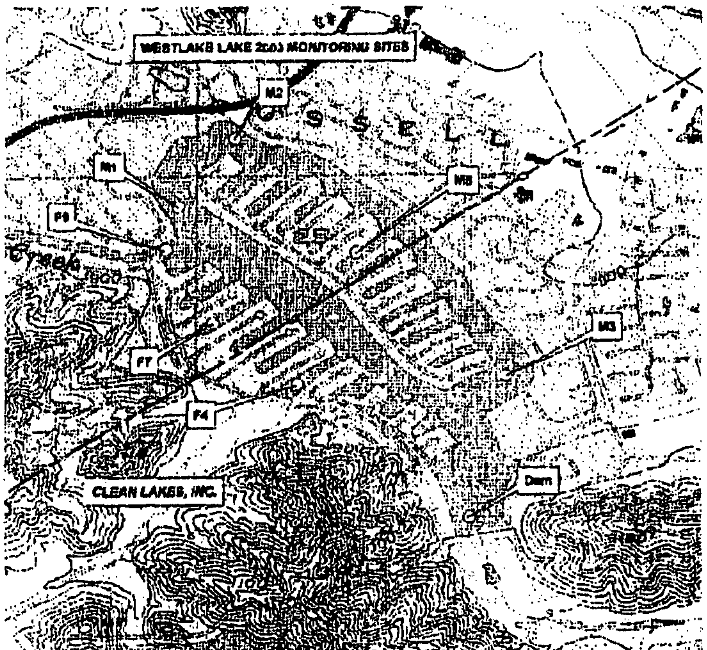
END OF REPORT

CLEAN LAKES, INC.

June 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

July 2003

CLEAN LAKES, INC.

1: JUNE INSPECTION AND MONITORING SCHEDULE: The schedule for June 2003 called for three (3) inspections. Inspections were carried out on June 5th, June 18th and 19th, and June 24th as follows:

- June 5, 2003: Moorhouse and Flores performed an inspection of the lake system. The system was in good condition at this time with minimal growth of Sago Pondweed still present along some of the shoreline areas following the Sonar Treatment.

- June 15, 2003: FasTEST Samples were collected at four (4) locations within the lake system and send to SePRO Corporation for analysis of Sonar residues. Test results indicated an 8.9 ppb average concentration of Sonar within the lake system.

- June 18, 2003: Mr. Ted Tomasovich was sent the following information on June 18, 2003 regarding the Sonar treatment and residual levels via email:

  Test sampling of Sonar residual levels within the lake system were conducted on June 15, 2003. Results show an average Sonar residual level of 8.9 ppb within the system, and 8.6 ppb at the PYJ golf course intake. Once Sonar concentrations drop below 10 ppb, "there are no irrigation precautions for irrigating established tree crops, established row crops or turf. For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded grasses such as overseeded golf course greens, do not use Sonar A.S. treated water if concentrations are greater then 5 ppb".

  So, the bottom line for the golf course is that there are no precautions required for the irrigation of turf, but precautions remain in effect for newly seeded grasses such as overseeded golf course greens.

- June 18, 2003: The lake system was inspected by Moorhouse on the morning of June 18th. Planktonic algae was present in the northern and southern portion of the lake system, and an oil slick was noticed within the open water area off of Finger No.16, in the area the dredge was working. Approximately 36 acres of the lake system was treated by Kasheta and Flores with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 65 gallons of Cutrine-Plus was used.

- June 19, 2003: Moorhouse and Flores add 36 gallons of Cygnet Select Dye to the lake system to support light suppression. The algae treatment on June 18th looked to be effective at reducing algae growths in the treatment areas.

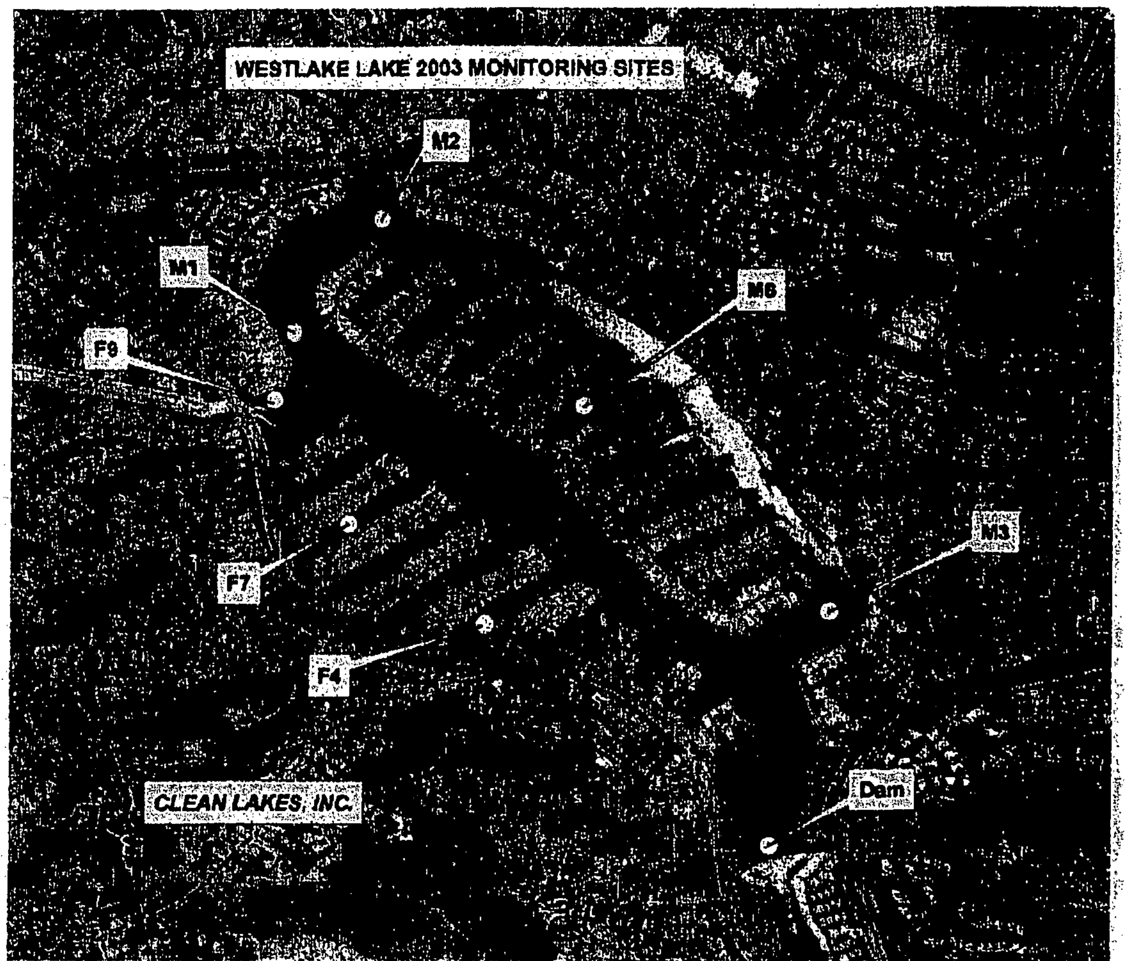
- June 24th: McNabb, Moorhouse and Eric Lysdal performed an inspection of the lake system as well as performed the monthly water quality monitoring (see results outlined below). Water samples were drawn from Monitoring Sites Dam and Site F9 and for analysis of nitrate as N and phosphorous. Pat-Chem Laboratories in Moorpark performed the analysis. The lake was a greenish color as a result of planktonic algae present in the water column, some minor growth of pondweeds were present, and a few small patches of the attached algae Nitella (beneficial algae, like Chara) was observed growing in the northwest end of the lake system.

2: JULY INSPECTION AND MONITORING SCHEDULE: The schedule for July 2003 calls for three (3) inspections.

3: JUNEGENERAL OBSERVATIONS: The lake system was in good shape through June with the exception of a planktonic algae bloom that occurred both mid and toward the end of the month. The Sonar treatments have provided excellent control of the Sago Pondweed, and the Cygnet Select Dye that was added to the system should support reductions in algae growth. Sonar concentration had dropped below 10 ppb by June 15th as expected, so PYJ Corporation was notified that lake water was again available for irrigation purposes. The attached algae Chara and a few patches of Nitella are growing in various areas within the lake and will be monitored and controlled as required. An oil slick was observed on June 18th that may have been a result of the dredging operations.

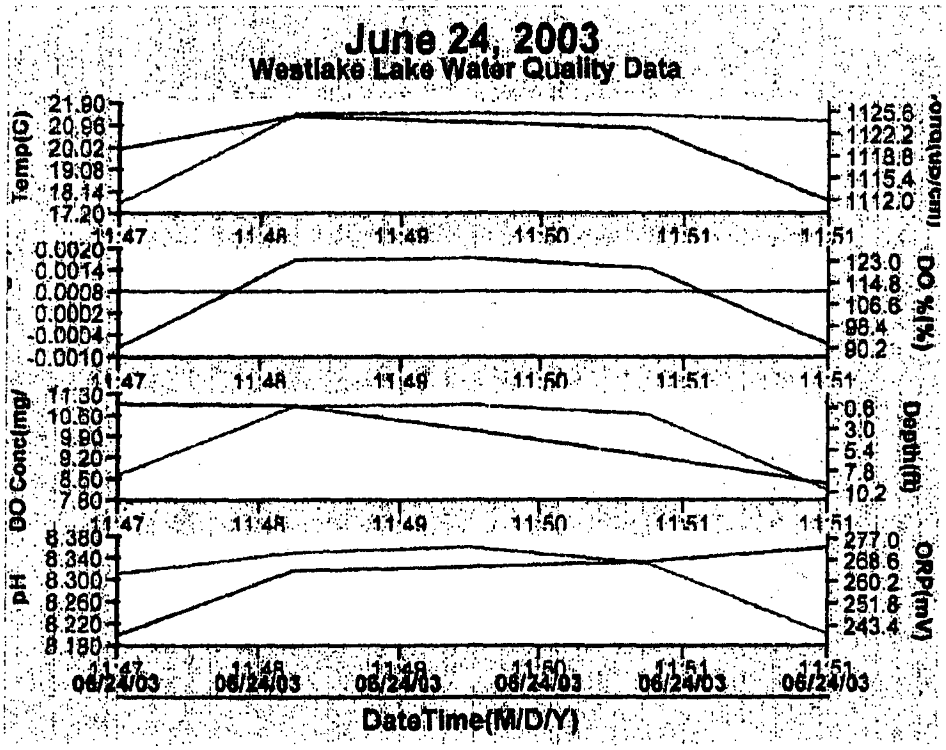
4: WATER QUALITY MONITORING: Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites. Revised site maps have been developed in two (2) formats, aerial imagery as well as USGS Map base that identify the monitoring sites within the system as follows:

CLEAN LAKES, INC.



The water quality results for the parameters monitored on June 24th are presented in graph and statistical format as follows for each site:

Site F4



June 24, 2003
Westlake Lake Water Quality Data
-- Statistical Report --

From 06/24/03 11:47 to 06/24/03 11:51
Number of samples: 5

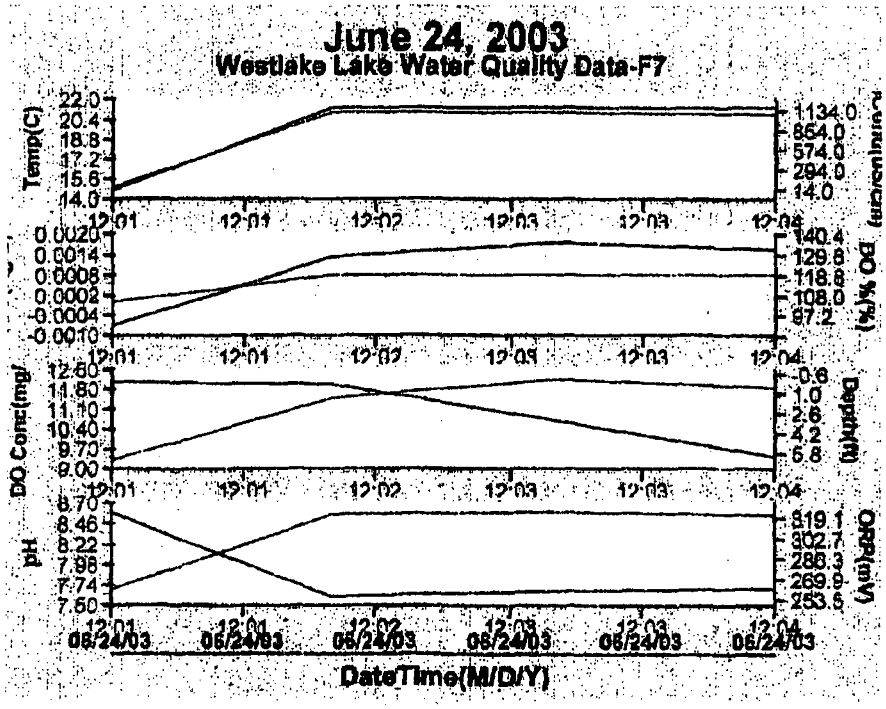
Parameter	Min	Max	Mean	Std
Temp (C)	17.61	21.45	20.59	1.49
Cond (uS/cm)	1112.0	1125.0	1120.8	4.7
TDS (Kg/L)	0.001	0.001	0.001	0.000
DO % (%)	90.5	124.3	110.1	15.6
DO Conc (mg/L)	8.13	10.95	9.84	1.22
Depth (ft)	0.102	9.148	3.712	3.464
pH ()	8.20	8.36	8.31	0.06
ORP (mV)	240	274	263	12

Secchi Disk Reading: 3.0 foot

Observations: There was a patch of Sago Pondweed approximately 3 x 10 foot growing along the shoreline area.

CLEAN LAKES, INC.

Site F7



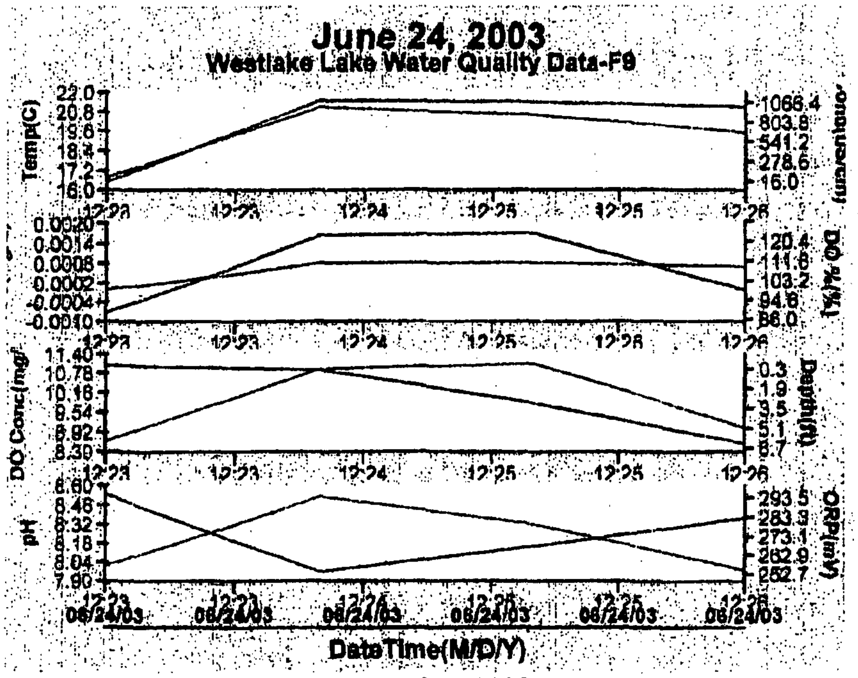
June 24, 2003
Westlake Lake Water Quality Data-F7
-- Statistical Report --

From 06/24/03 12:01 to 06/24/03 12:04
Number of samples: 4

Parameter	Min	Max	Mean	Std
Temp (C)	14.93	20.95	19.40	2.58
SpCond (uS/cm)	18.0	1184.0	891.5	504.3
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	92.1	136.4	122.5	17.8
DO Conc (mg/L)	9.30	12.14	11.19	1.12
Depth (ft)	-0.003	6.028	2.344	2.461
pH ()	7.69	8.59	8.35	0.38
ORP (mV)	256	323	276	28

Secchi Disk Reading: 3.0 foot bottom
Observations: The finger had a greenish color.

Site F9



June 24, 2003
Westlake Lake Water Quality Data-F9
-- Statistical Report --

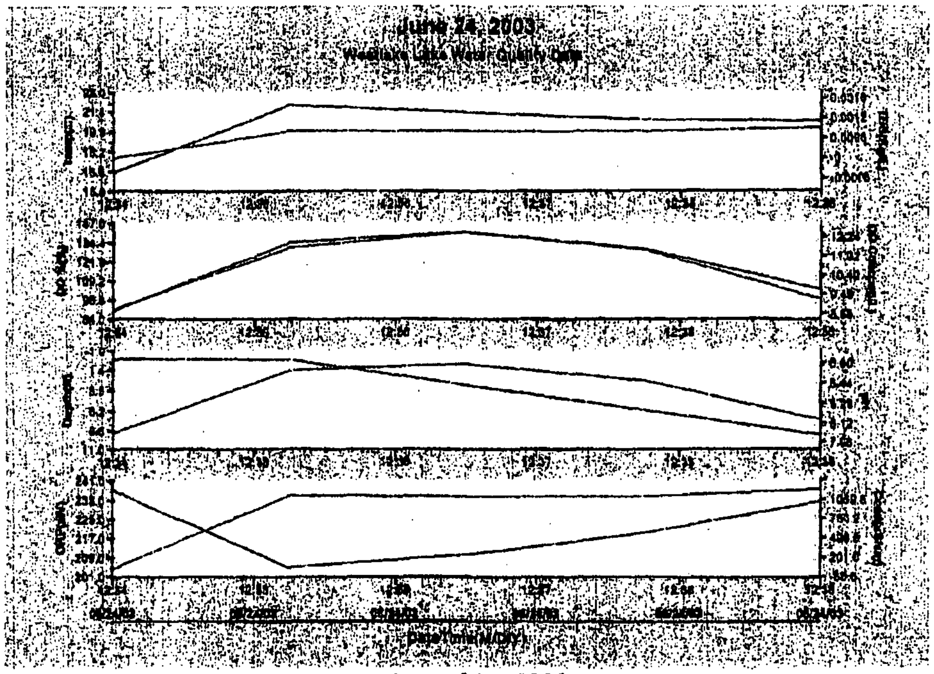
From 06/24/03 12:23 to 06/24/03 12:26
Number of samples: 4

Parameter	Min	Max	Mean	Std
Temp (C)	16.77	21.08	19.47	1.67
Cond (uS/cm)	8.0	1101.0	798.5	457.7
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	88.9	123.6	108.6	15.1
DO Conc (mg/L)	8.64	11.07	9.92	1.08
Depth (ft)	-0.029	6.282	2.423	2.531
pH ()	7.98	8.52	8.21	0.22
ORP (mV)	254	296	275	16

Secchi Disk Reading: 3.0 foot bottom
Observations: The finger hed a greenish color.

CLEAN LAKES, INC.

Site M1



June 24, 2003
Westlake Lake Water Quality Data
-- Statistical Report --

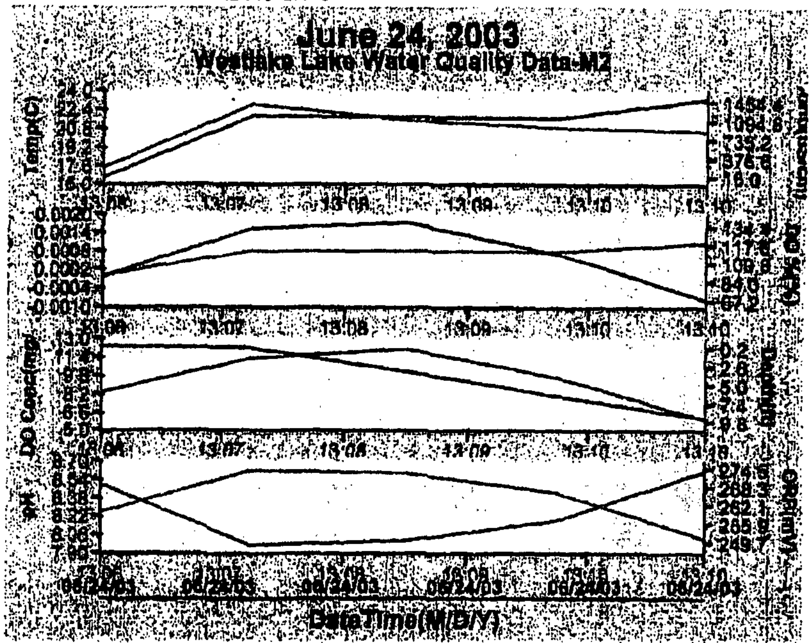
From 06/24/03 12:34 to 06/24/03 12:38
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	16.47	21.89	20.20	1.92
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	89.4	141.1	119.6	19.8
DO Conc (mg/L)	8.74	12.46	10.76	1.48
Depth (ft)	0.002	9.180	3.706	3.533
pH ()	8.04	8.59	8.36	0.22
ORP (mV)	203	237	221	12
Cond (uS/cm)	15.0	1221.0	914.8	451.9

Secchi Disk Reading: 3.5 foot

Observations: Area looked good, some algae growth along northwest end of system as well as a few patches of Nitella

Site M2



June 24, 2003
Westlake Lake Water Quality Data-M2
-- Statistical Report --

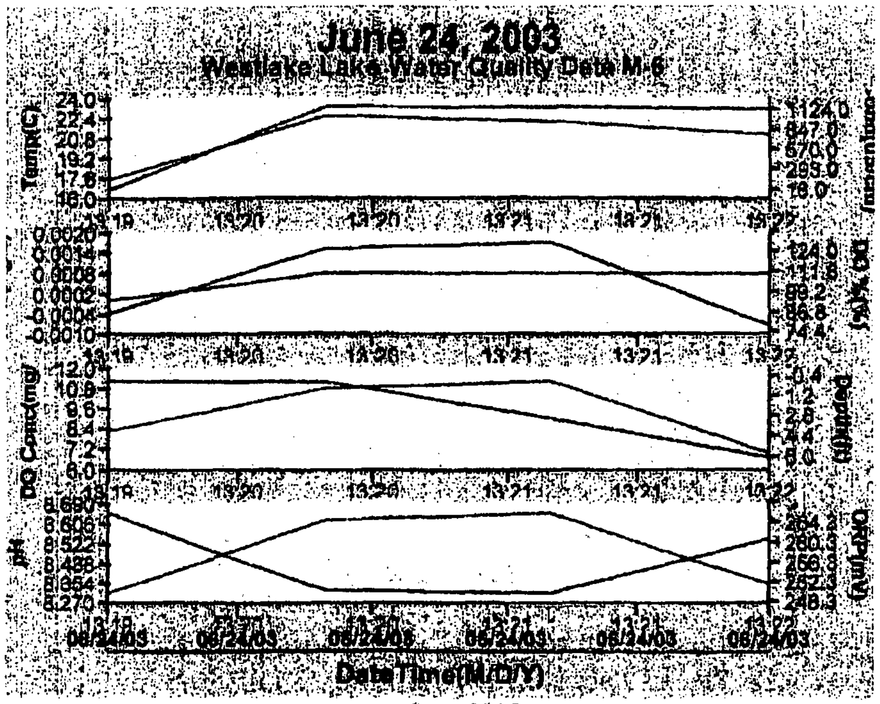
From 06/24/03 13:06 to 06/24/03 13:10
Number of samples: 5

Parameter	Min	Max	Mean	Std
Temp (C)	17.51	22.87	20.70	1.77
Cond (uS/cm)	10.0	1508.0	1001.6	513.6
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	68.0	137.7	106.9	26.3
DO Conc (mg/L)	6.08	12.11	9.52	2.14
Depth (ft)	-0.026	9.242	3.798	3.581
pH ()	8.03	8.62	8.39	0.22
ORP (mV)	249	274	260	10

Secchi Disk Reading: 3.0 foot
Observations: The area looked good, minor planktonic algae growth

CLEAN LAKES, INC.

Site M6



June 24, 2003
Westlake Lake Water Quality Data M-6
-- Statistical Report --

From 06/24/03 13:19 to 06/24/03 13:22
Number of samples: 4

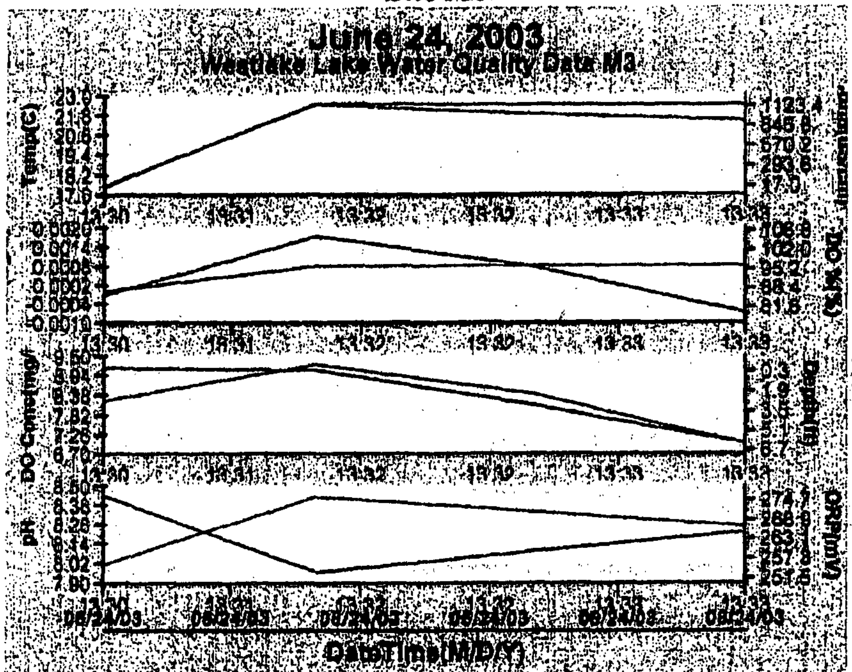
Parameter	Min	Max	Mean	Std
Temp (C)	17.46	22.60	20.82	2.01
Cond (uS/cm)	18.0	1163.0	863.3	492.8
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	78.3	129.1	104.6	22.7
DO Conc (mg/L)	6.94	11.23	9.29	1.78
Depth (ft)	0.002	6.060	2.301	2.488
pH ()	8.31	8.65	8.48	0.15
ORP (mV)	250	266	257	7

Secchi Disk Reading: 2.0 foot

Observations: Turbidity high in this area, the small dredge was working in the finger.

CLEAN LAKES, INC.

Site M3



June 24, 2003
Westlake Lake Water Quality Data M3
-- Statistical Report --

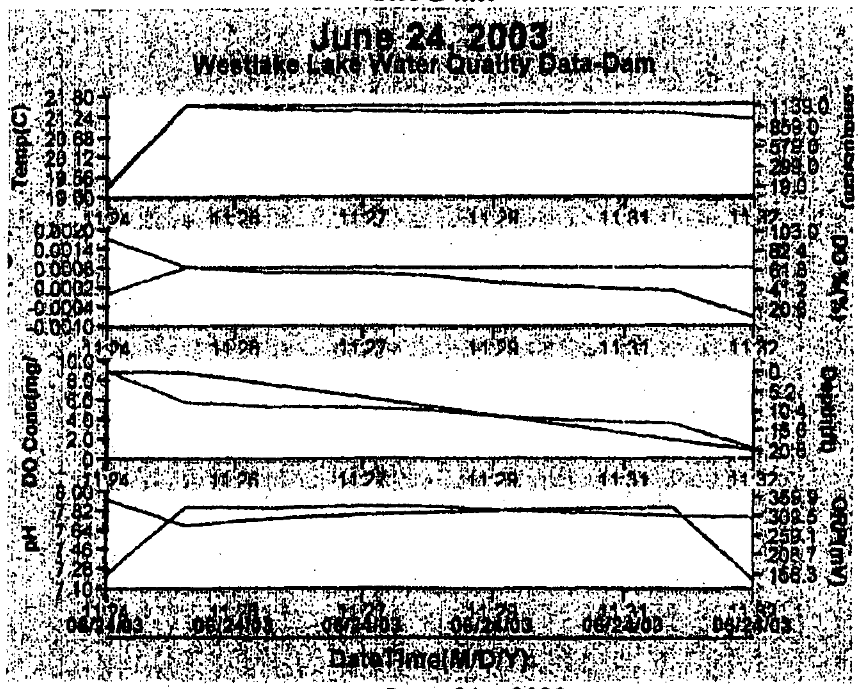
From 06/24/03 13:30 to 06/24/03 13:33
Number of samples: 4

Parameter	Min	Max	Mean	Std
Temp (C)	17.55	22.43	20.82	1.92
Cond (uS/cm)	11.0	1162.0	865.5	493.4
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	79.6	106.9	92.2	10.4
DO Conc (mg/L)	7.01	9.24	8.22	0.80
Depth (ft)	0.001	6.091	2.324	2.476
pH ()	8.01	8.43	8.26	0.16
ORP (mV)	253	276	263	8

Secchi Disk Reading: 4.0 foot
Observations: Greenish look

CLEAN LAKES, INC.

Site Dam



June 24, 2003
Westlake Lake Water Quality Data-Dam
-- Statistical Report --

From 06/24/03 11:24 to 06/24/03 11:32
Number of samples: 9

Parameter	Min	Max	Mean	Std
Temp (C)	19.29	21.54	21.13	0.66
Cond (uS/cm)	2.0	1168.0	1026.8	362.4
TDS (Kg/L)	0.000	0.001	0.001	0.000
DO % (%)	12.0	96.6	53.5	21.4
DO Conc (mg/L)	1.06	8.91	4.76	1.98
Depth (ft)	0.013	20.583	9.393	7.152
pH ()	7.22	7.86	7.75	0.19
ORP (mV)	144	352	300	58

Secchi Disk Reading: 7.5 foot
Observations: Water color nice and blue, low DO

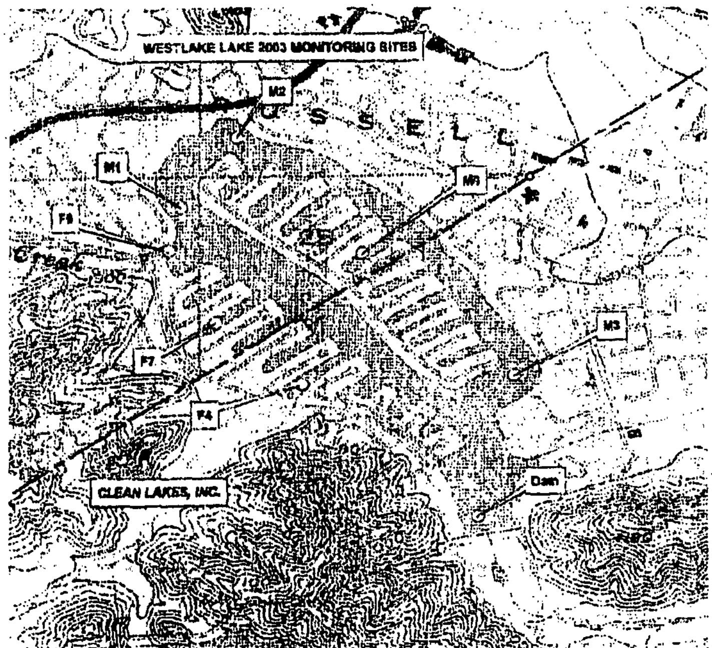
<u>Sampling Methods:</u> Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Nutrient samples were collected and sent to the lab for analysis. Nutrient analysis data has not been provided by the lab, report next month. END OF REPORT

CLEAN LAKES, INC.

July 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

August 2003

CLEAN LAKES, INC.

1: JULY INSPECTION AND MONITORING SCHEDULE: The schedule for July 2003 called for three (3) inspections. Inspections were carried out on July 2nd, July 8th, July 23rd & 24th, and July 30th and 31st as follows:

- July 2, 2003: Kasheta and Flores performed an inspection of the lake system. The system was in excellent condition at this time with minimal growth of algae around the lakes shoreline areas. Approximately 6 acres of the lake system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 10 gallons of Cutrine-Plus was used. 48 gallons of Cygnet Select Dye were added to the lake system to support light suppression.

- July 8, 2003: Shawn Hyde of SePRO Corporation performed a site inspection with David DuVarney to review the efficacy of the Sonar Treatments. The lake system looked great, there were some small patches of Pondweeds about the size of two docks spread within the system.

- July 23 and 24, 2003: Moorhouse and Lombardo performed an inspection of the lake system. The system was in good condition with the exception of some minor algae or surface scum in Fingers 17-20 that had the appearance of pollen or a dust mass. Approximately 12 acres of the lake system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 20 gallons of Cutrine-Plus was used. 20 gallons of Cygnet Select Dye were added to the lake system to support light suppression.

- July 30 and 31, 2003: The lake system was inspected by McNabb and Kasheta and water quality monitoring was performed. The end of most of the Fingers as well as the Dam end of the lake system had higher then normal growths of planktonic algae present. Approximately 29 acres of the lake system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 52

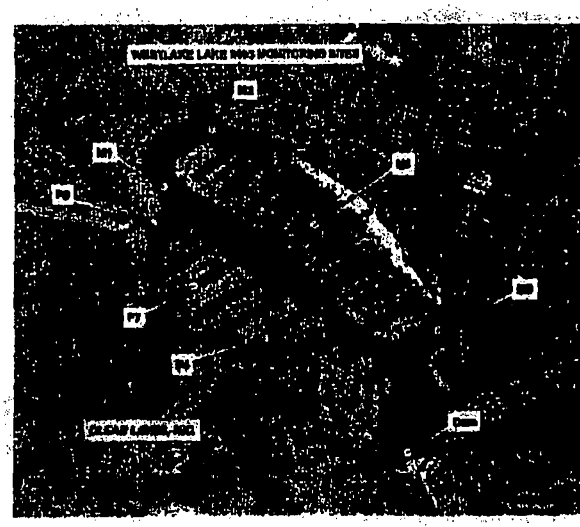
CLEAN LAKES, INC.

gallons of Cutrine-Plus was used. 40 gallons of Cygnet Select Dye were added to the lake system to support light suppression.

2: AUGUST INSPECTION AND MONITORING SCHEDULE: The schedule for August 2003 calls for three (3) inspections.

3: JULY GENERAL OBSERVATIONS: The lake system was in good shape through the middle of July with the exception of a planktonic algae bloom that occurred both mid and toward the end of the month. The Dam end of the lake as well as the majority of the Finger ends had mild to severe growths of planktonic algae present. The algae growths in these areas can be contributed to poor circulation and high nutrient levels in the fingers and high nutrient levels at the Dam end of the system due to the discharge return water from the dre4dging operation. It should be noted that the dredging of the lake system is supporting the concentration of nutrients within the Dam end of the lake system, as all of the nutrients that are released from the sediment during the dewatering process are being returned into the lake system by the Dewatering Plant. It is expected that there conditions will subside following the completion of the dredging operations and a stabilization of the nutrient loads within the system.

4: WATER QUALITY MONITORING: Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map that follows:

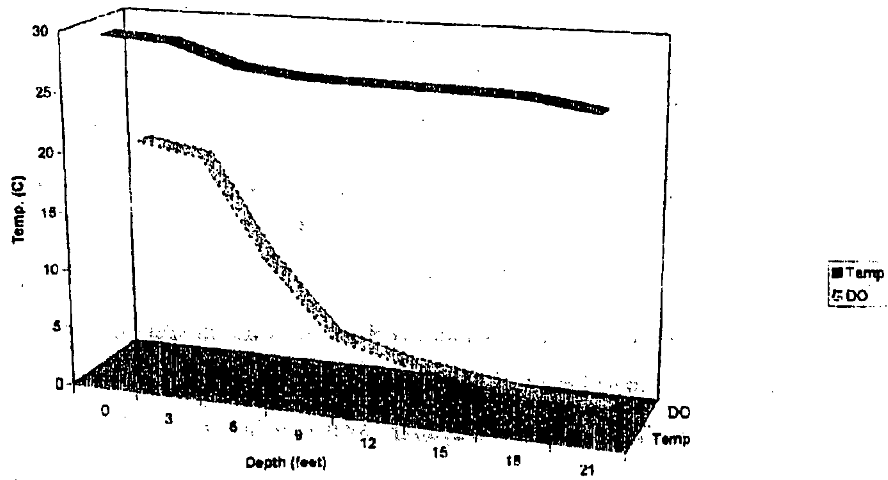


The water quality results for the parameters monitored on July 30th are presented in a new graph and table format as follows for each site:

CLEAN LAKES, INC.

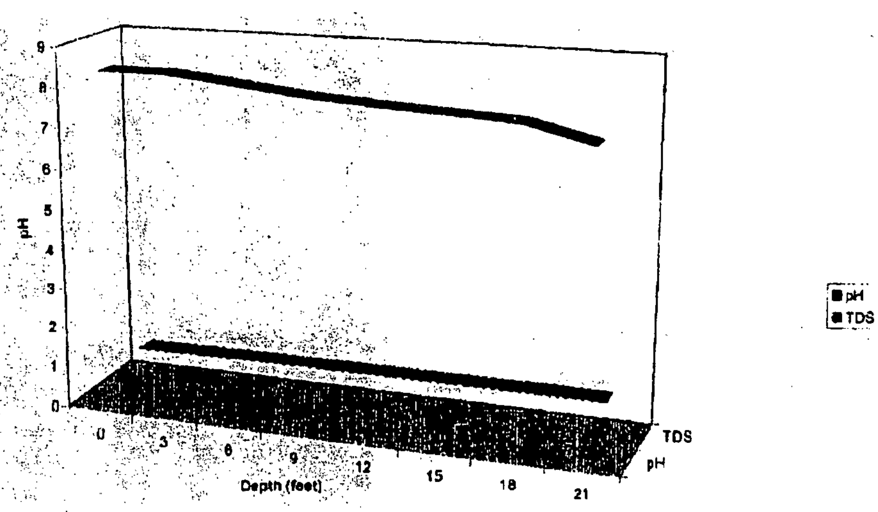
Site Dam

Westlake Lake Water Quality Data
Site: Dam
07/30/03



	0	3	6	9	12	15	18	21
Temp	29.68	29.2	27.45	26.84	26.71	26.61	26.41	25.6
DO	18.43	18.4	9.81	3.66	2.06	1.17	0.42	0.37

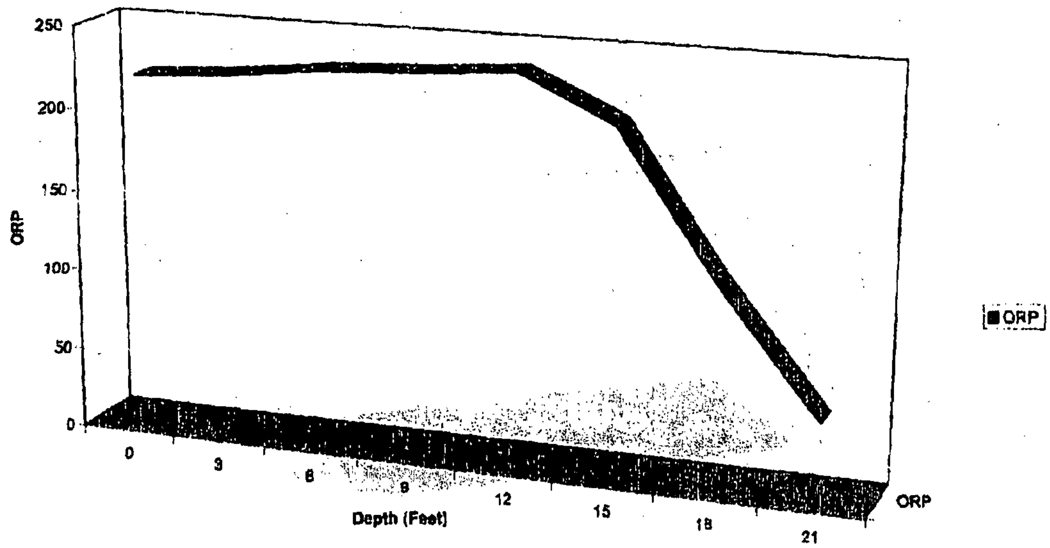
Westlake Lake
Site: Dam
07/30/03



	0	3	6	9	12	15	18	21
pH	8.39	8.4	8.22	8.05	7.94	7.86	7.77	7.38
TDS	0.825	0.832	0.847	0.85	0.85	0.853	0.858	0.856

CLEAN LAKES, INC.

Westlake Lake - Water Quality Data
Site: Dam
07/30/03



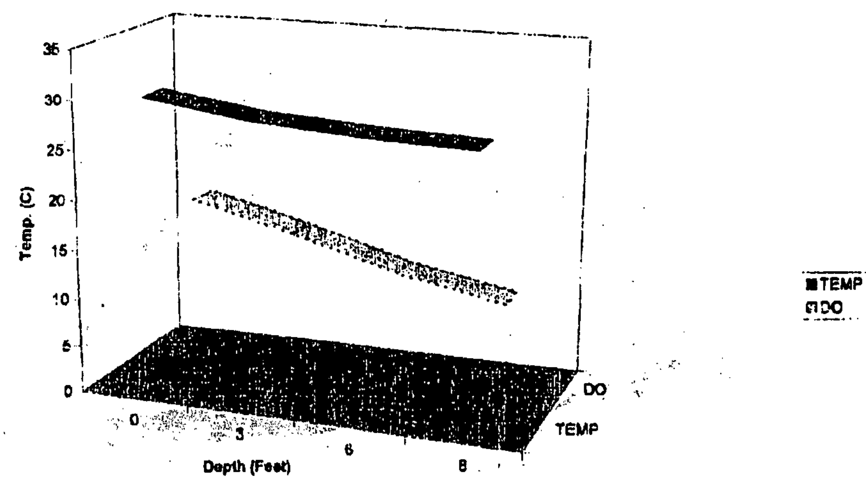
	0	3	6	9	12	15	18	21
ORP	218.5	222.4	229.2	232	238.4	210.3	123.3	48.8

Secchi Disk Reading: 1.3 foot
Copper: 0.02 mg/l
Ammonia as N: 0.45 mg/l
Nitrate as N: 0.05 mg/l
Phosphate: 0.10 mg/l
Observations: Dense blue green algae growth throughout the Dam end of the lake system.

CLEAN LAKES, INC.

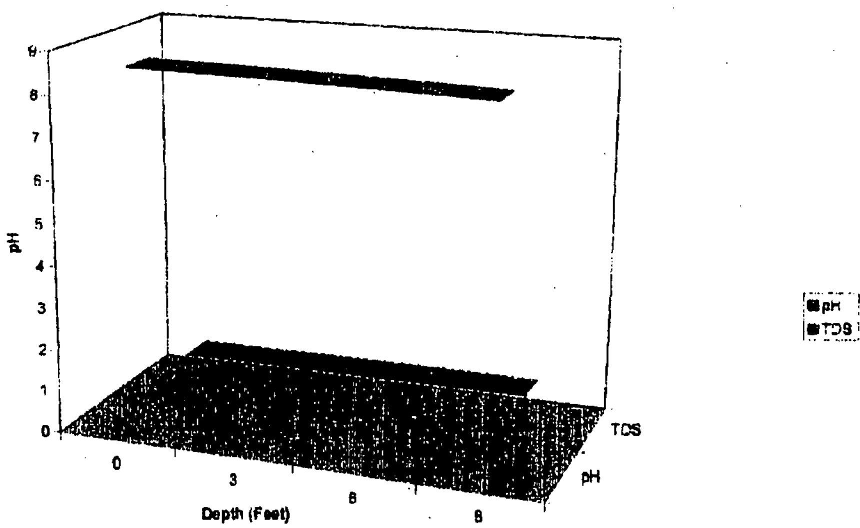
Site F-4

Westlake Lake Water Quality Data
Site: Finger 4
7/30/03



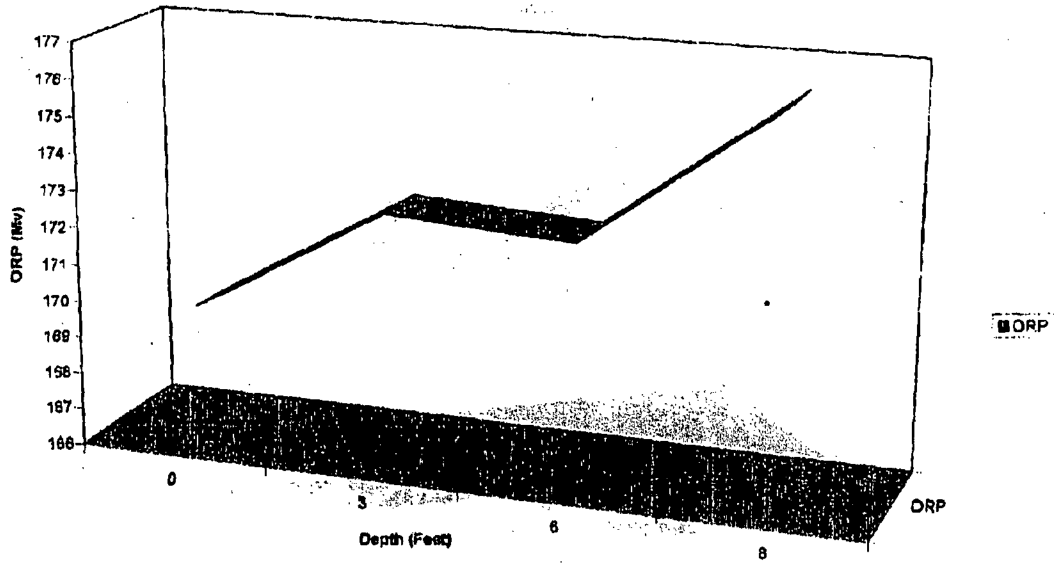
	0	3	6	8
TEMP	30.1	28.4	27.72	27.37
DO	16.9	14.3	11.35	9.2

Westlake Lake Water Quality Data
Site: Finger 4
07/30/03



	0	3	0	6
pH	8.59	8.54	8.48	8.4
TDS	0.834	0.836	0.837	0.839

CLEAN LAKES, INC.



	0	3	6	8
ORP	169.7	172.7	172.4	176.3

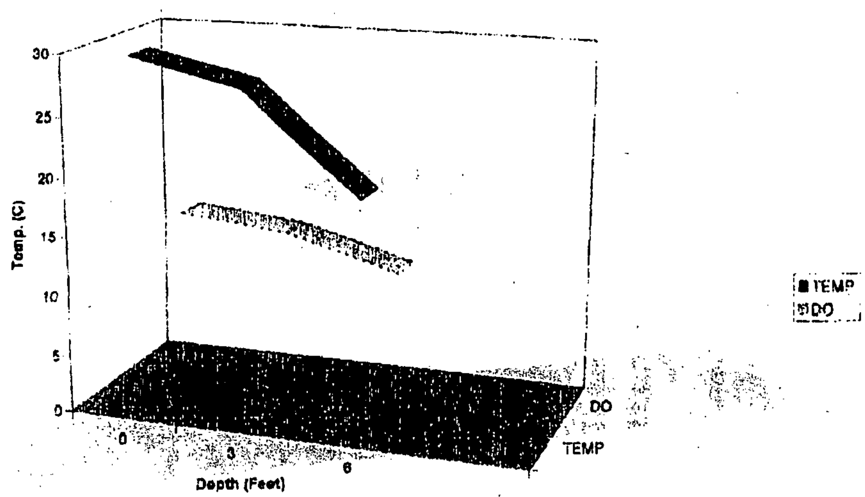
Secchi Disk Reading: 1.5 foot

Observations: Dense planktonic algae growth at the end of the finger.

CLEAN LAKES, INC.

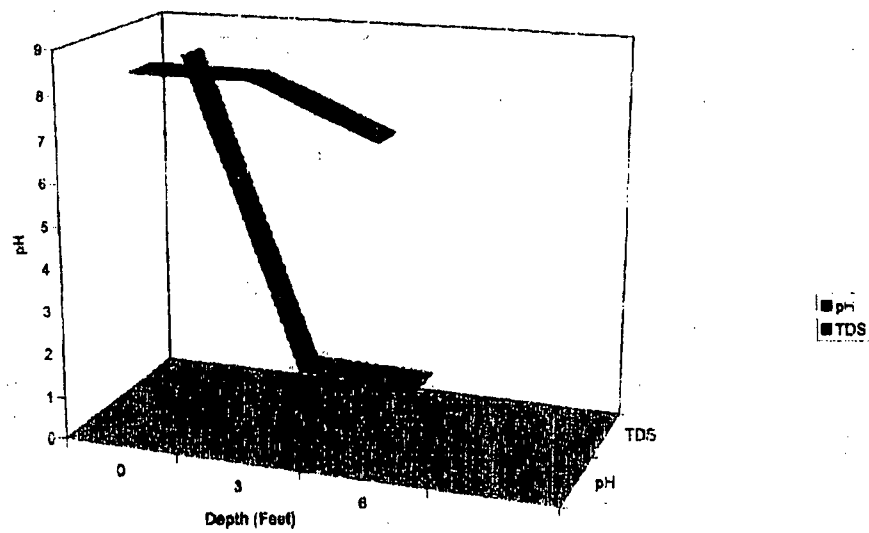
Site F-7

Westlake Lake Water Quality Data
Site: Finger 7
7/30/03



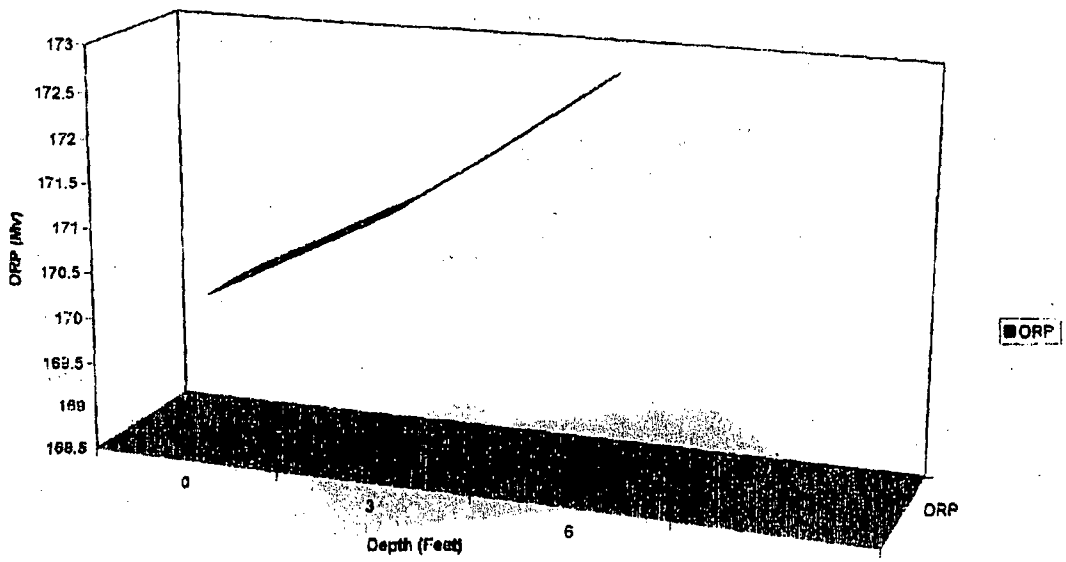
	0	3	6
TEMP	29.65	27.55	19.52
DO	14.32	13.26	10.6

Westlake Lake Water Quality Data
Site: Finger 7
07/30/03



	0	3	6
pH	8.46	8.45	7.3
TDS	8.32	0.832	0.77

CLEAN LAKES, INC.



	0	3	6
ORP	170.2	171.3	172.8

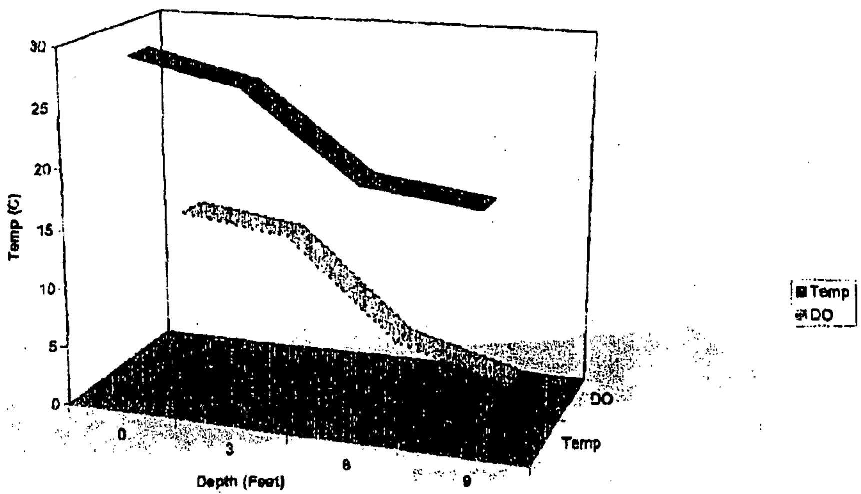
Secchi Disk Reading: 1.7 foot

Observations: Dense blue green algae growth at the end of the finger.

CLEAN LAKES, INC.

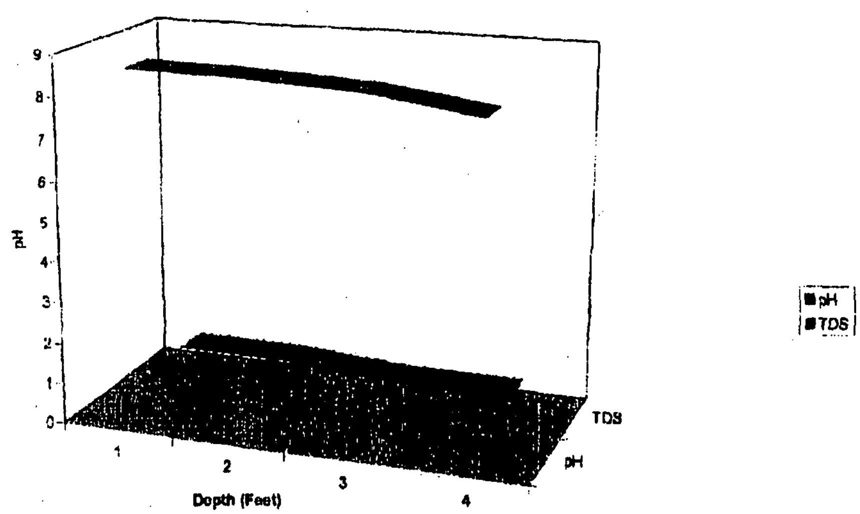
Site F-9

Westlake ake Water Quality Data
Site: Finger 9
07/30/03



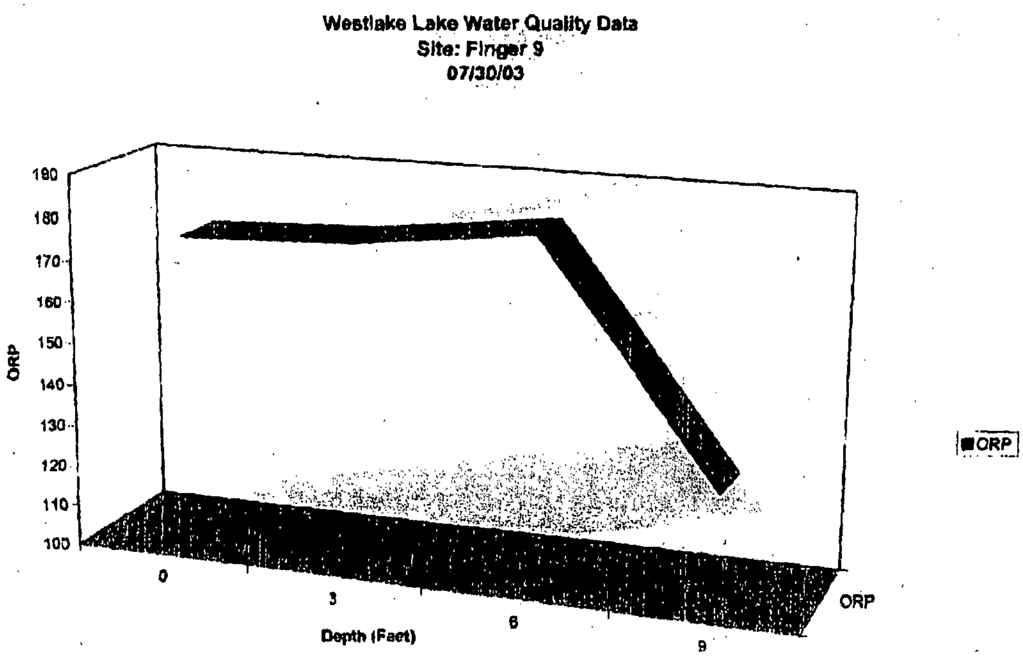
	0	3	6	9
Temp	29.05	27.06	19.92	18.75
DO	13.58	12.35	3.85	1.23

Westlake Lake Water Quality Data
Site: Finger 9
07/30/03



	1	2	3	4
pH	8.62	8.58	8.42	8.04
TDS	0.841	0.838	0.625	0.611

CLEAN LAKES, INC.



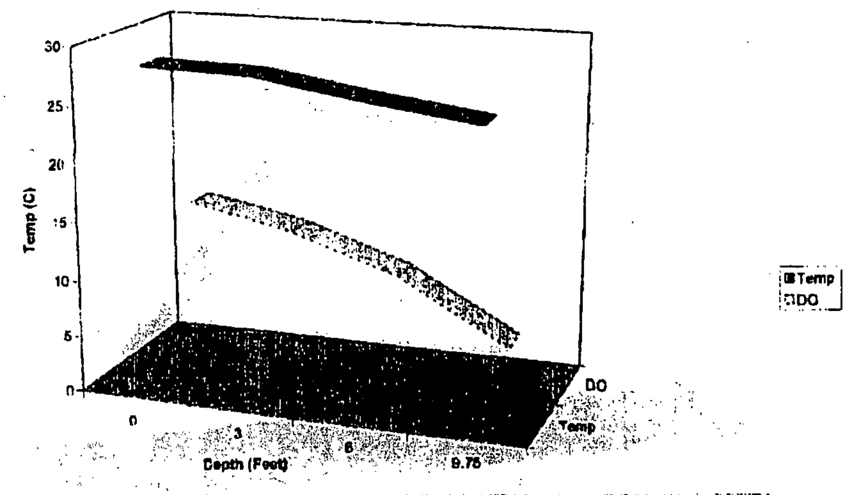
	0	3	6	9
ORP	174.9	176.7	181.7	126

Secchi Disk Reading: 2.4 foot
Ammonia as N: 0.21 mg/l
Nitrate as N: 0.05 mg/l
Phosphate: 0.10 mg/l
Observations: Inlet area looks good.

CLEAN LAKES, INC.

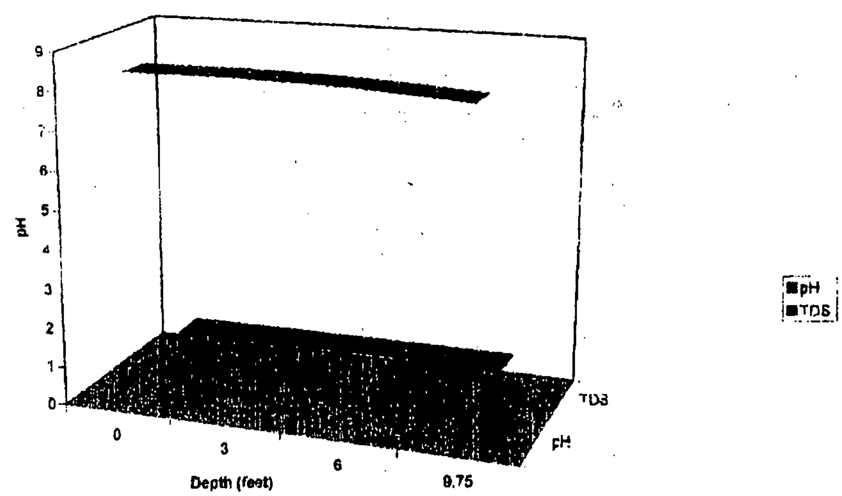
Site M1

Westlake Lake Water Quality Data
Site: M1
07/30/03



	0	3	6	9.75
Temp	28.16	27.8	26.4	25.14
DO	13.96	12.07	9.04	3.48

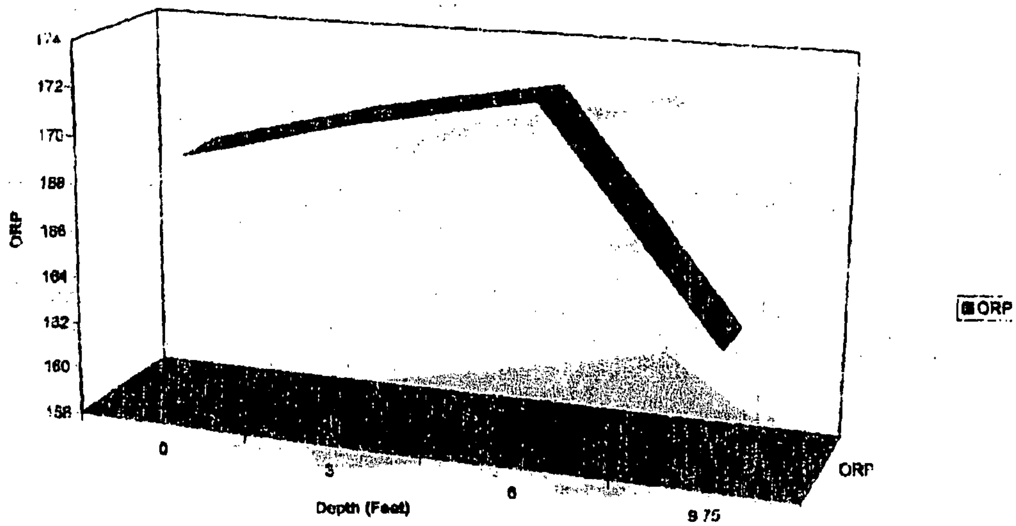
Westlake Lake Water Quality Data
Site: M1
07/30/03



	0	3	6	9.75
pH	8.46	8.47	8.4	8.21
TDS	0.837	0.841	0.845	0.817

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: M1
07/30/03



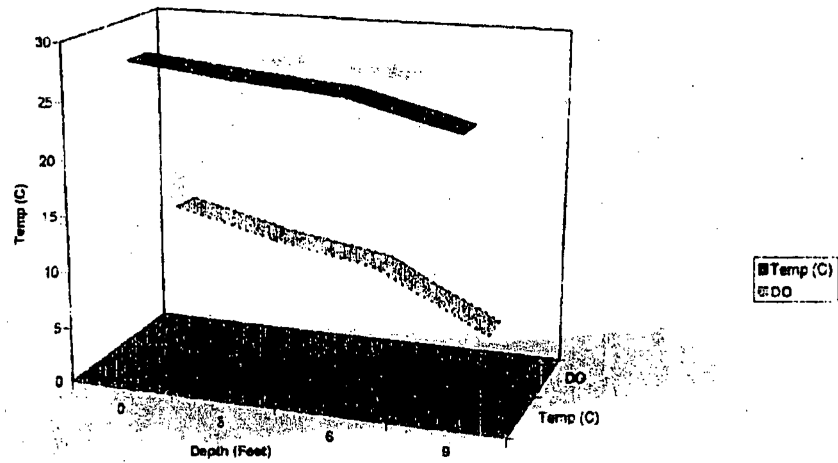
	0	3	6	9.75
ORP	169	170.9	172.3	163

Secchi Disk Reading: 3.0 foot
Observations: Some algae growth around shoreline areas looks good.

CLEAN LAKES, INC.

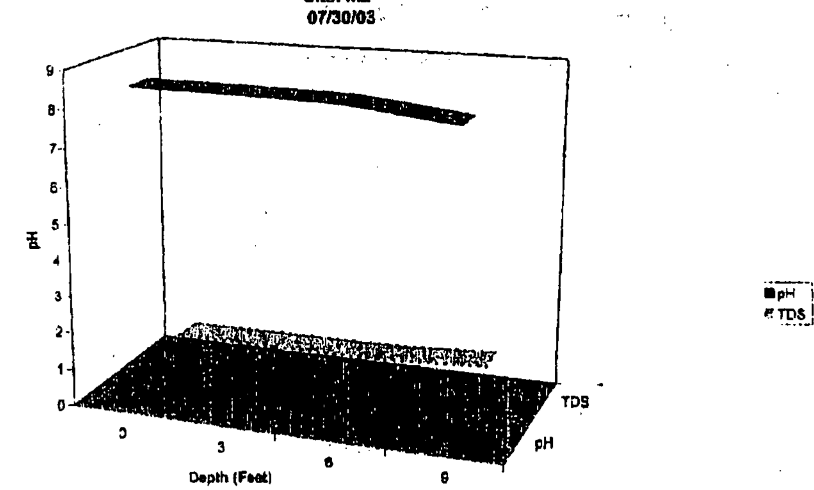
Site M-2

Westlake Lake Water Quality Data
Site: M2
07/30/03



	0	3	6	9
Temp (C)	28.18	27.25	26.55	24.2
DO	13.1	10.64	9.04	4.01

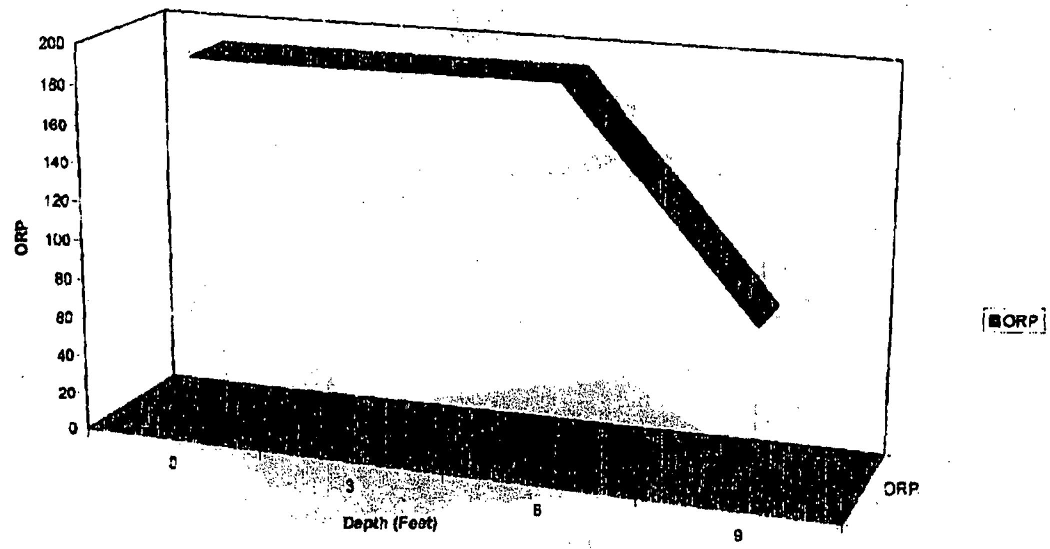
Westlake Lake Water Quality Data
Site: M2
07/30/03



	0	3	6	9
pH	8.52	8.5	8.45	8.15
TDS	0.85	0.854	0.857	1.032

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: M2
07/30/03



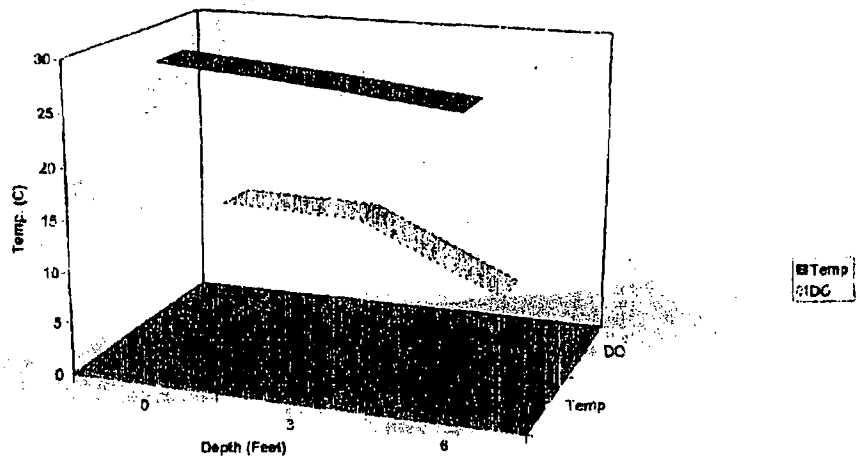
	0	3	6	9
ORP	191.8	192	192.8	62

Secchi Disk Reading: 2.6 foot
Observations: The area looks good.

CLEAN LAKES, INC.

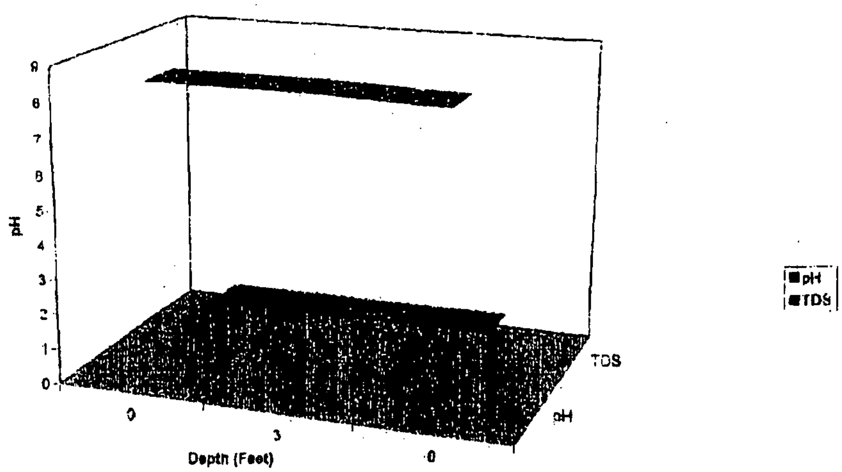
Site M-6

Westlake Lake Water Quality Data
Site: M-6
07/30/07



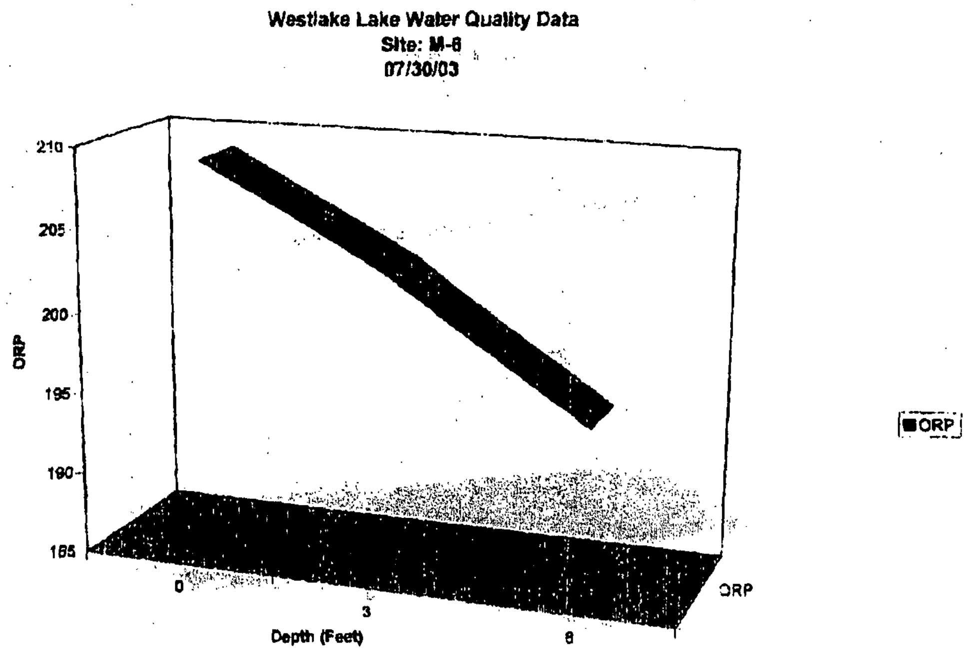
	0	3	6
Temp	29.37	28.25	26.84
DO	12.37	12.01	5.5

Westlake Lake Water Quality Data
Site: M-6
07/30/03



	0	3	6
pH	8.5	8.52	8.39
TDS	0.846	0.848	0.849

CLEAN LAKES, INC.



	0	3	8
ORP	209	203	195

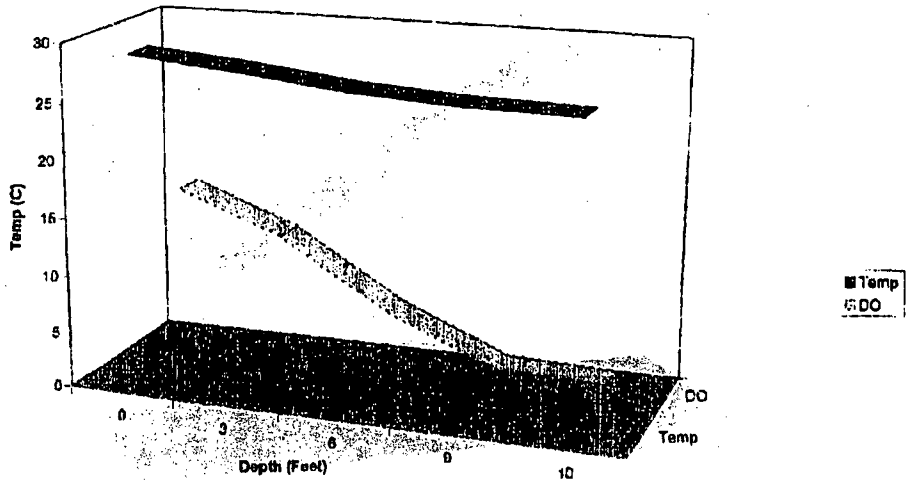
Secchi Disk Reading: 2.8 foot.

Observations: Some planktonic algae growth at end of finger, otherwise looked good.

CLEAN LAKES, INC.

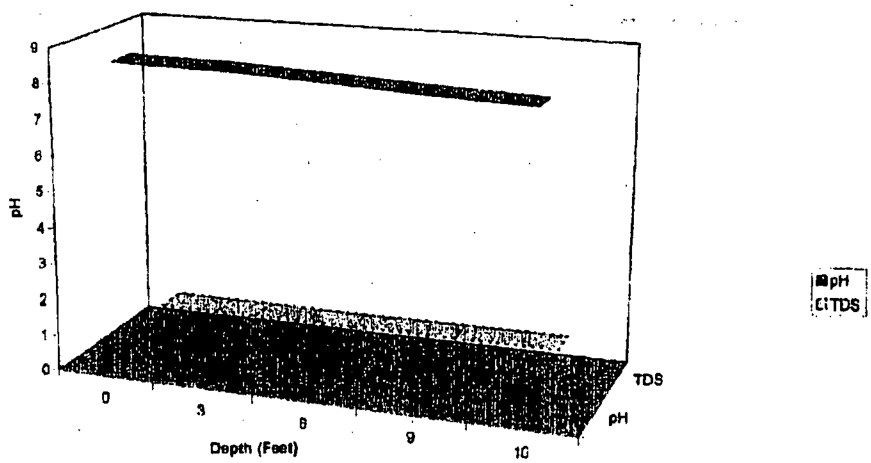
Site M-3

Westlake Lake Water Quality Data
Site: M-3
07/30/03



	0	3	6	9	10
Temp	28.9	28.11	27	26.6	26.44
DO	14.94	11.36	5.64	1.45	1.1

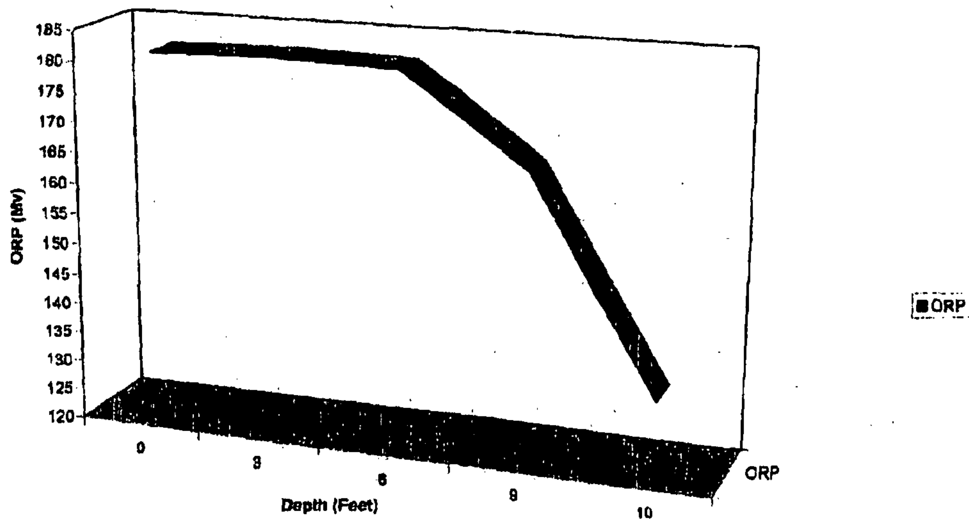
Westlake Lake Water Quality Data
Site: M-3
7/30/03



	0	3	6	9	10
pH	8.57	8.53	8.39	8.24	8.14
TDS	0.832	0.844	0.85	0.862	0.887

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: M-3
07/30/03



	0	3	6	9	10
■ORP	181	181.5	181	163.1	131.8

Secchi Disk Reading: 2.6 foot
Observations: Some planktonic algae growth throughout the area.

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Nutrient samples were collected and sent to the lab for analysis. Nutrient analysis data has not been provided by the lab, report next month.

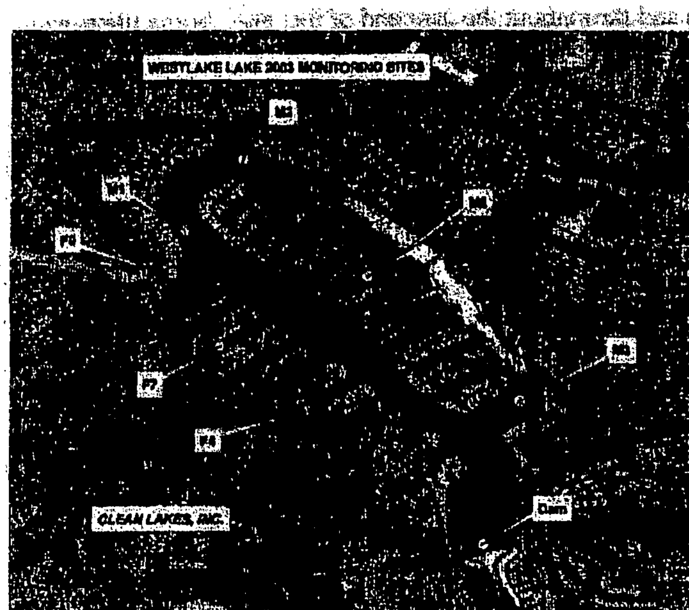
END OF REPORT

CLEAN LAKES, INC.

August 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

September 2003

CLEAN LAKES, INC.

1: AUGUST INSPECTION AND MONITORING SCHEDULE: The schedule for August 2003 called for three (3) inspections. Inspections were carried out on August 13th and 14th, August 21st, August 27th and 28th as follows:

- August 13 & 14th, 2003: Moorhouse and Flores performed an inspection of the lake system. There were heavy growths of planktonic algae at the end of some of the fingers and throughout the dam end of the lake. Some filamentous algae present, not in nuisance proportions. Approximately 40 acres of the lake system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 72.5 gallons of Cutrine-Plus was used. 48 gallons of Cygnet Select Dye was added to the lake system on the morning of August 14, 2003.

- August 21, 2003: Jay Kasheta performed an inspection of the lake system. The lake was a bit green planktonic algae) toward the dam end of the system and at some of the finger ends. Some minor growths of submerged aquatic plants were found growing in Finger 7 and 13, as well as in patches around the north shore (total area approximately 1/4th of an acre).

- August 27 and 28, 2003: Kasheta and Flores performed an inspection of the lake system and the monthly water quality monitoring was performed. Planktonic and minor growths of filamentous algae were growing at the end of some of the fingers and the dam end of the lake system. The submerged aquatic plant growth had expanded and was spot treated with a tank mix of Aquathol K (5 gallons), Cutrine Plus (5 gallons) and Reward (5 gallons). A midget (aquatic insect like a mosquito) problem developed within the lake system during the previous week (see midge information sent via e-mail). The shoreline areas of the lake system (approximately 26 acres) were treated with the larvicide Altosid @ 5 pounds per acre for the control of the midge larva. Approximately 37.5 acres of the lake system was treated with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total

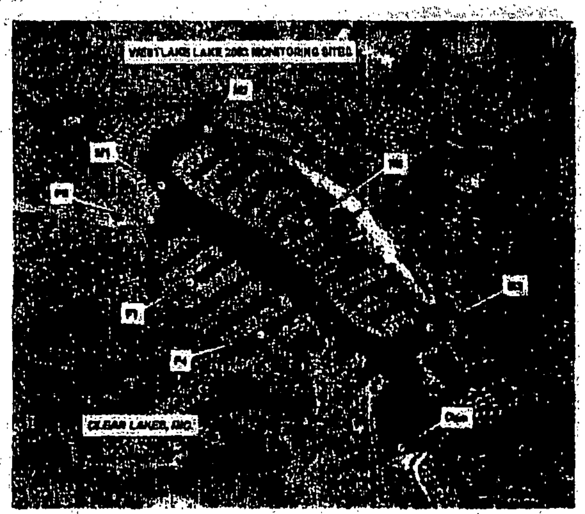
CLEAN LAKES, INC.

of 67.5 gallons of Cutrine-Plus was used. 20 gallons of Cygnet Select Dye were added to the lake system to support light suppression.

2: SEPTEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for September 2003 calls for three (3) inspections.

3: AUGUST GENERAL OBSERVATIONS: The lake system experienced excessive growths of planktonic algae during the month as well as a late month Midge problem. As the planktonic algae problems were most severe at the dam end of the lake, as well as at the ends of the majority of the fingers, these problems can most likely be attributed to high nutrient levels in and around the dredge discharge pipe as well as a lack of circulation at the finger ends. It has been reported that Midget problems have surfaced in past years, but not to the severity as was experienced in late August. The larvicide treatment will help to control midge larva production that will in turn lower the population of adults. The larvicide will stay active in the water for approximately 30 days. Some minor re-growth of submerged aquatic vegetation is occurring within the lake system, but it is anticipated that growths will not reach nuisance proportions this season.

4: WATER QUALITY MONITORING: Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map that follows:

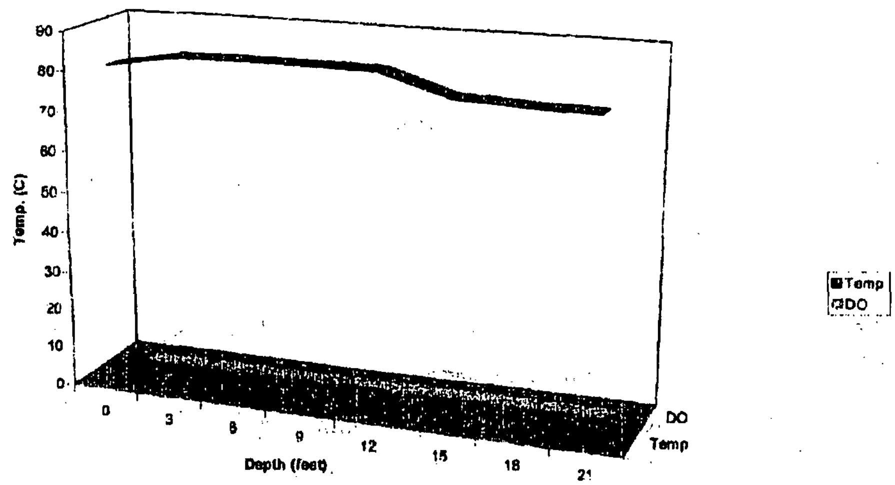


The water quality results for the parameters monitored on August 27th are presented in a graph and table format as follows for each site:

CLEAN LAKES, INC.

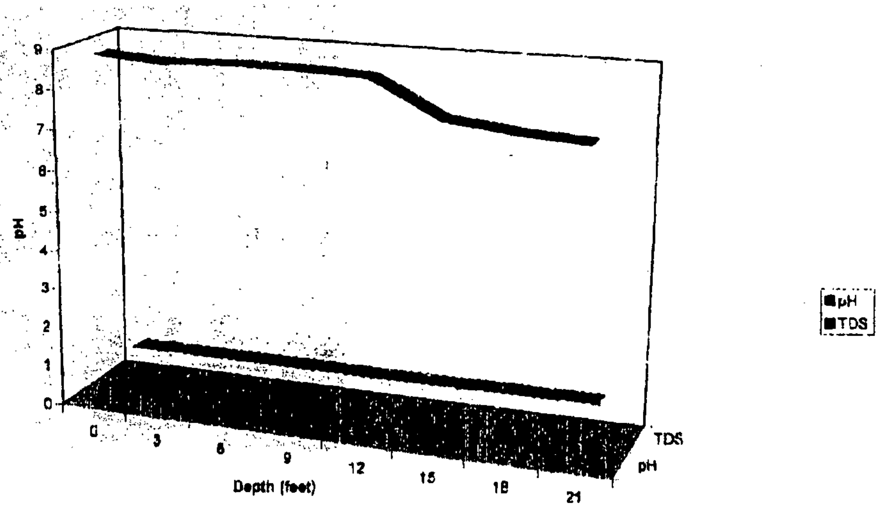
Site Dam

Westlake Lake Water Quality Data
Site: Dam
08/27/03



	0	3	6	9	12	15	18	21
Temp	81.2	84.21	84.39	84.42	84.27	79.19	78.29	77.96
DO	0	0	0	0	0	0	0	0

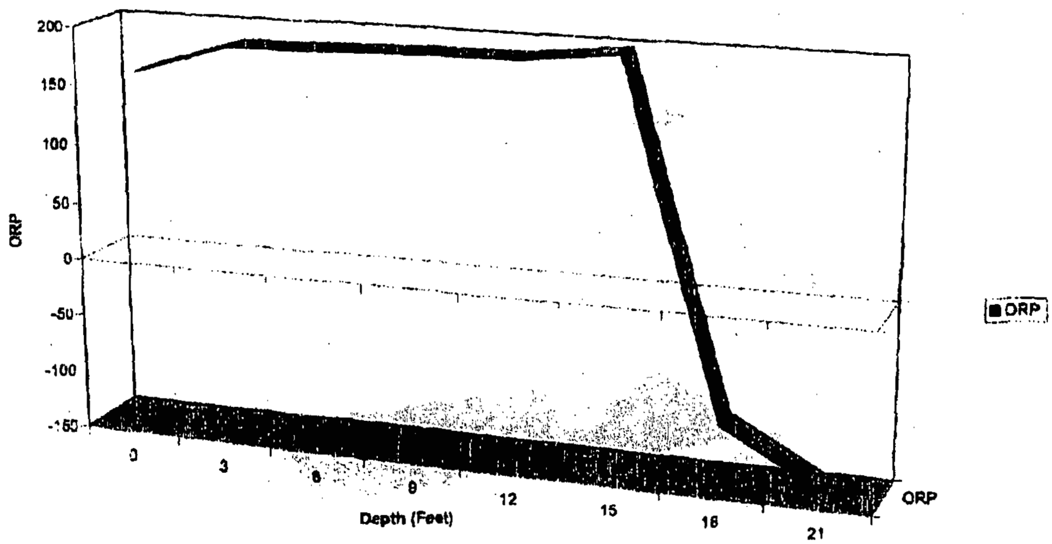
Westlake Lake
Site: Dam
08/27/03



	0	3	6	9	12	15	18	21
pH	8.67	8.74	8.81	8.8	8.74	7.84	7.04	7.54
TDS	0.879	0.85	0.853	0.85	0.85	0.861	0.86	0.861

CLEAN LAKES, INC.

Westlake Lake - Water Quality Data
Site: Dam
08/27/03



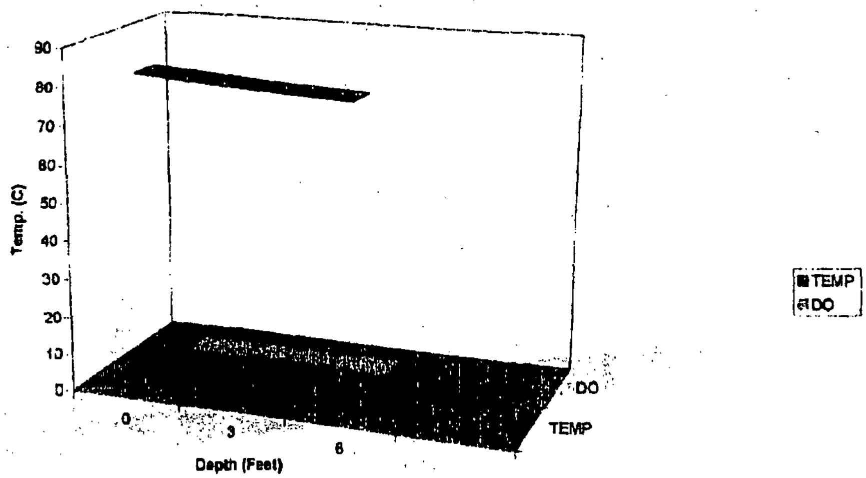
	0	3	6	9	12	15	18	21
■ORP	159	186	187	189	190	189	-98	-144

Secchi Disk Reading: 1.5 foot
Copper: Results not back from the lab
Ammonia as N: Results not back from the lab
Nitrate as N: Results not back from the lab
Phosphate: Results not back from the lab
Observations: Dense blue green algae growth throughout the Dam end of the lake system.

CLEAN LAKES, INC.

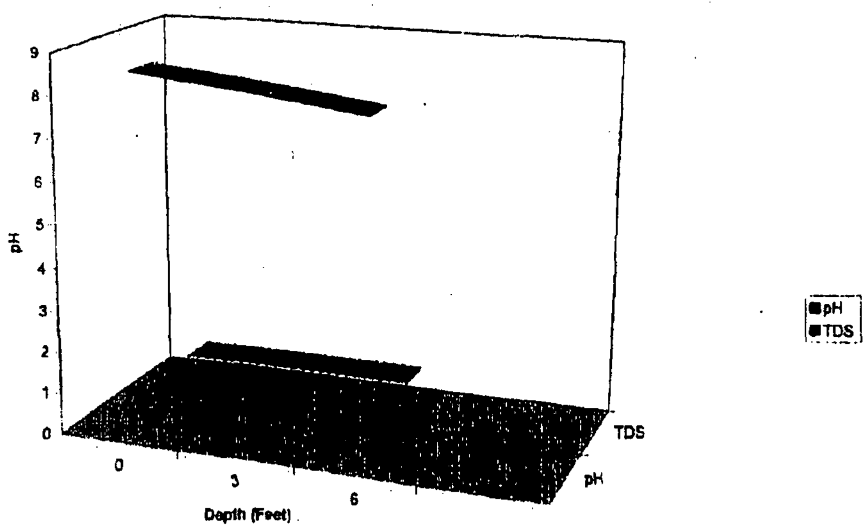
Site F-4

Westlake Lake Water Quality Data
Site: Finger 4
08/27/03



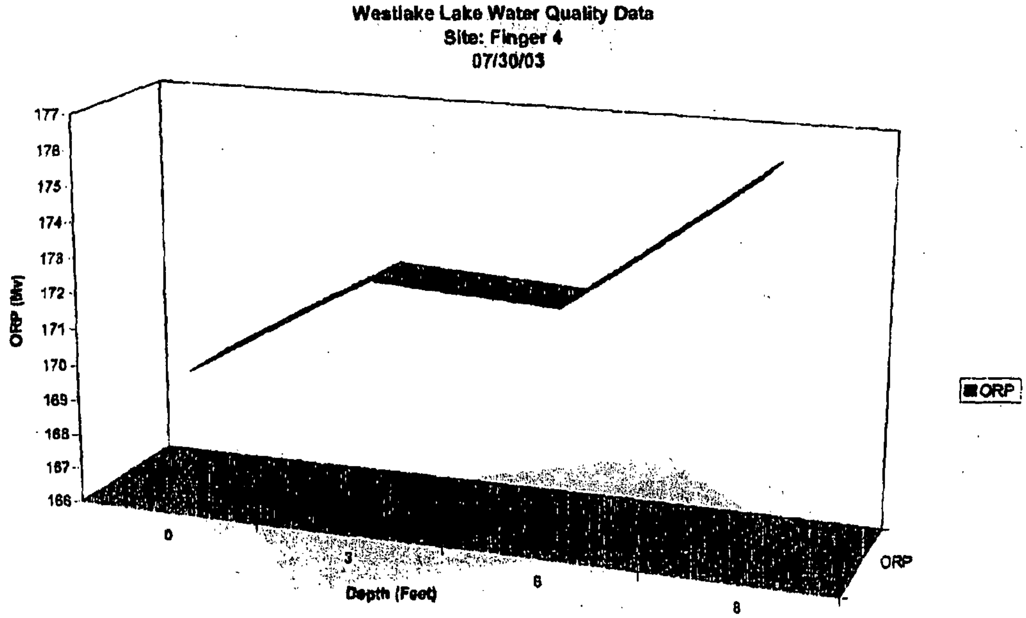
	0	3	6
TEMP	83.24	80 87	79.55
DO	0	0	0

Westlake Lake Water Quality Data
Site: Finger 4
08/27/03



	0	3	6	
pH	8 52	8.21	7.9	
TDS	0.854	0.855	0.859	

CLEAN LAKES, INC.



	0	3	6	8
ORP	169.7	172.7	172.4	176.3

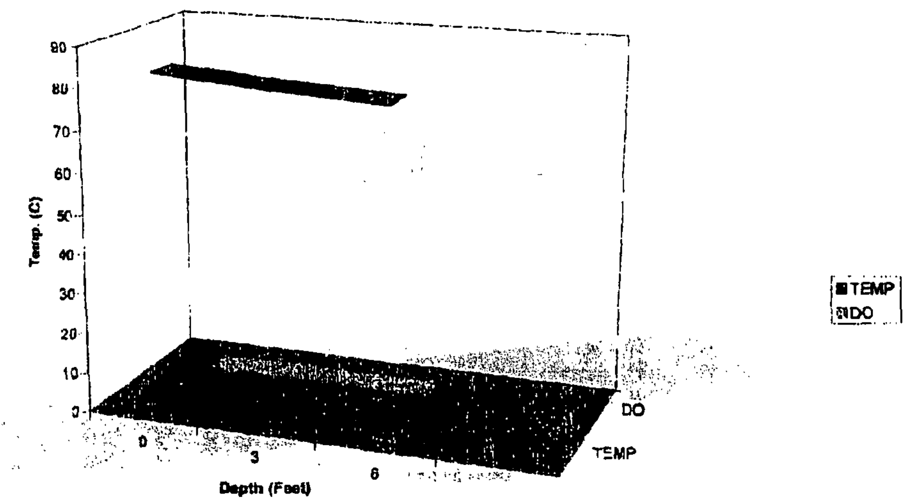
Secchi Disk Reading: 2 foot

Observations: Dense planktonic algae growth at the end of the finger.

Site F-7

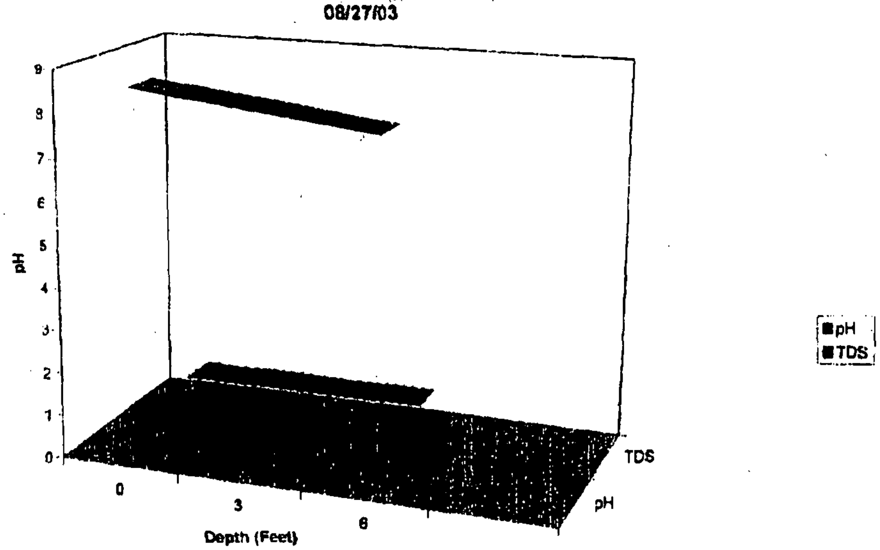
CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: Finger 7
08/27/03

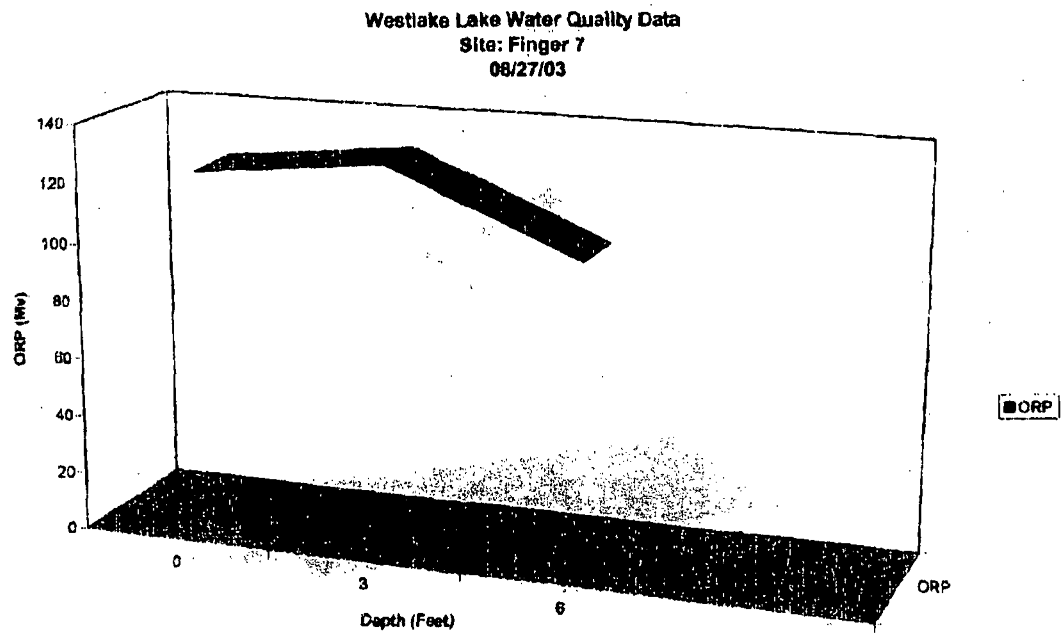


	0	3	6
TEMP	83.24	80.87	79.65
DO	0	0	0

Westlake Lake Water Quality Data
Site: Finger 7
08/27/03



	0	3	6
pH	8.52	8.21	7.9
TDS	0.854	0.855	0.859



	0	3	6	
ORP	123	130	103	

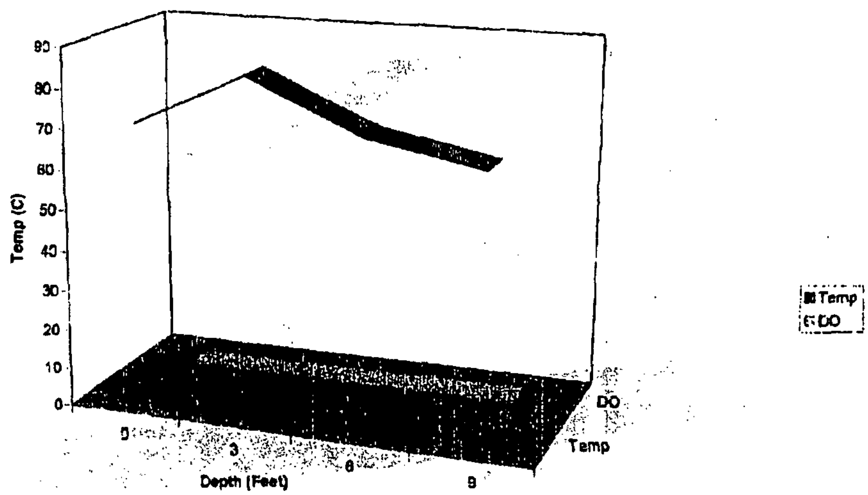
Secchi Disk Reading: 3 foot

Observations: Some submerged aquatic plant growth growing alone the shoreline, algae not bad.

CLEAN LAKES, INC.

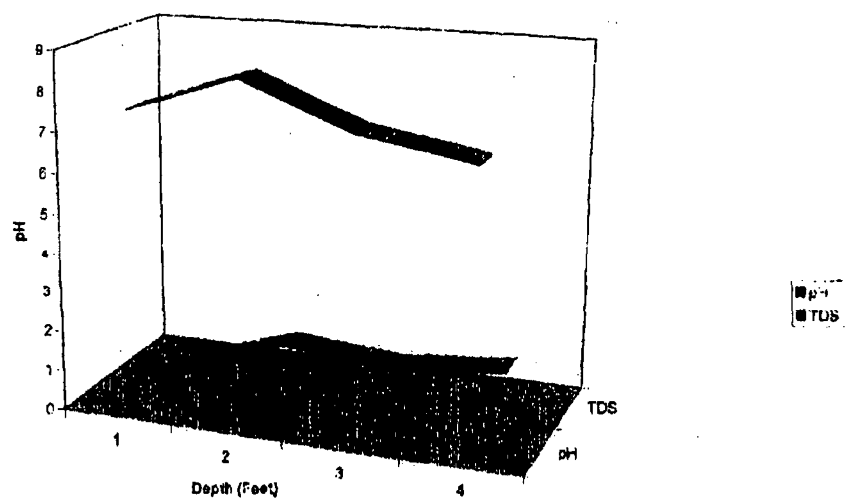
Site F-9

Westlake ake Water Quality Data
Site: Finger 9
08/27/03



	0	3	6	9
Temp	70.49	84.27	71.52	66.24
DO	0	0	0	0

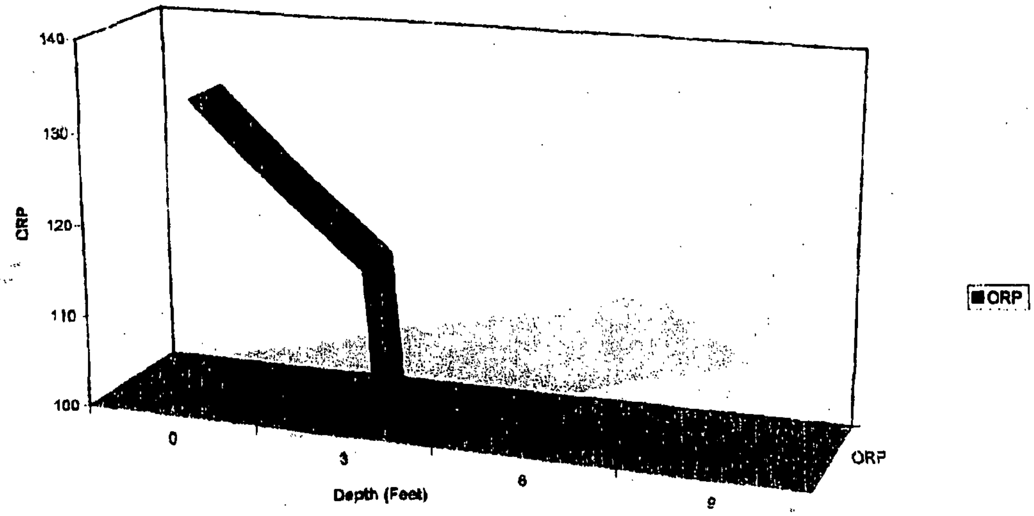
Westlake Lake Water Quality Data
Site: Finger 9
08/27/03



	1	2	3	4
pH	7.48	8.45	7.33	6.64
TDS	0	0.365	0.618	0.888

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: Finger 9
08/27/03



	0	3	6	9
ORP	133	118	-106	-127

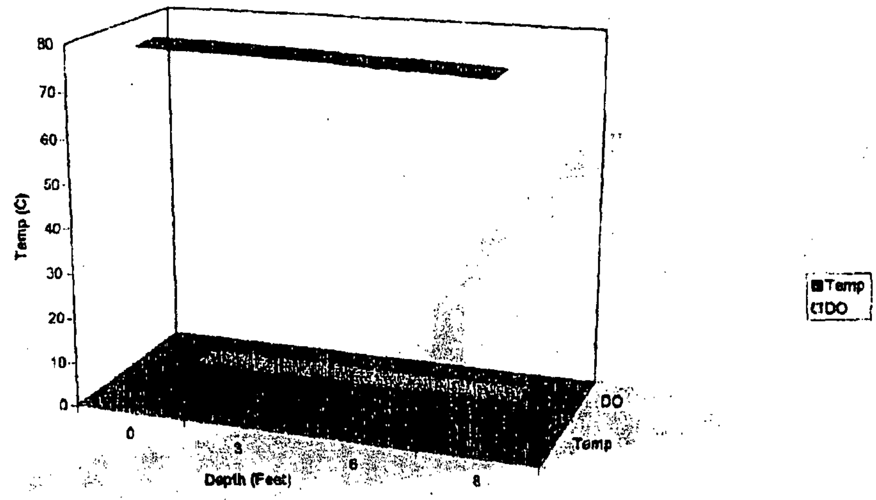
Secchi Disk Reading: 3 foot

Ammonia as N:	Results from the lab not received as of report date
Nitrate as N:	
Phosphate:	
Observations:	Inlet area looks good, clarity improving

CLEAN LAKES, INC.

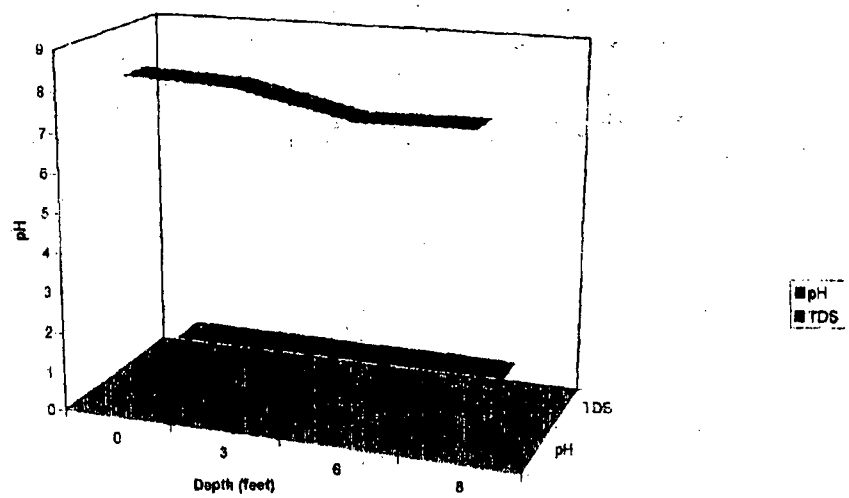
Site M1

Westlake Lake Water Quality Data
Site: M1
08/27/03



	0	3	6	8
Temp	78.05	78.65	77.81	76.95
DO	0	0	0	0

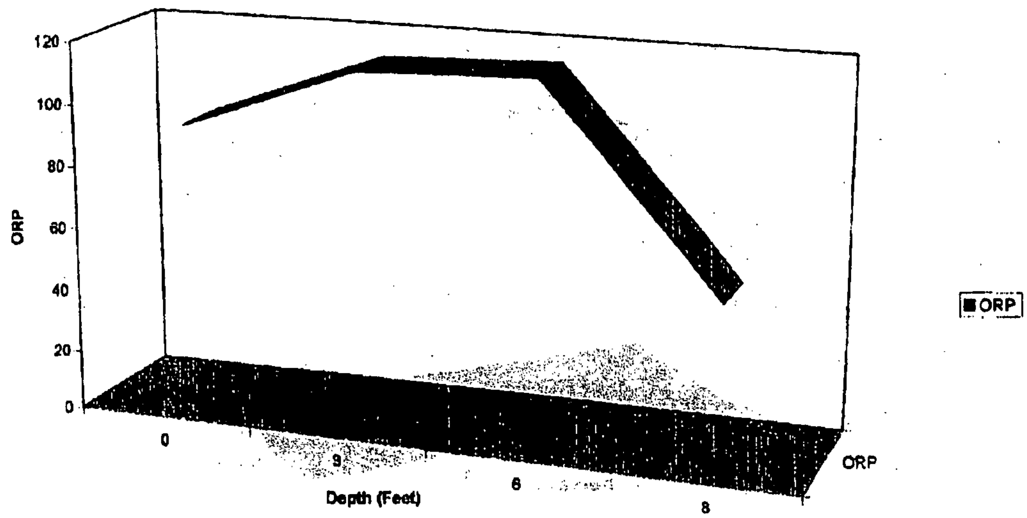
Westlake Lake Water Quality Data
Site: M1
08/27/03



	0	3	6	8
pH	8.34	8.22	7.65	7.69
TDS	0.857	0.858	0.857	0.837

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: M1
08/27/03



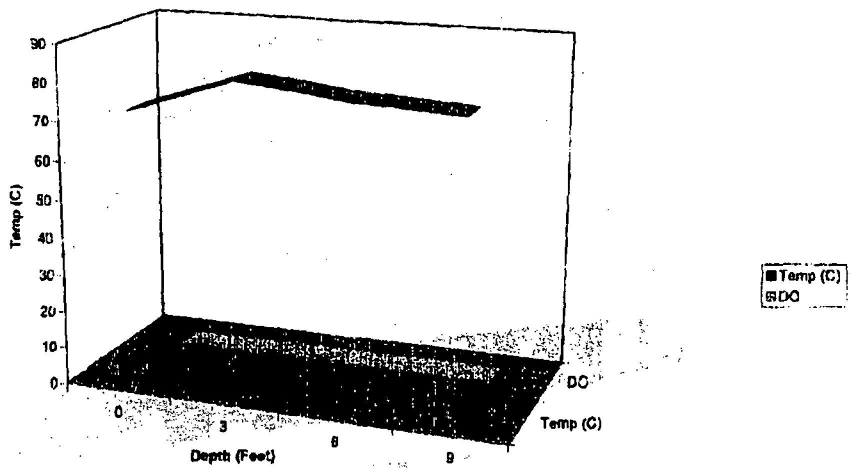
	0	3	6	8
ORP	92	113	115	51

Secchi Disk Reading: 3.0 foot
Observations: Some algae growth around shoreline areas looks good, Chara growth along Westwind shoreline.

CLEAN LAKES, INC.

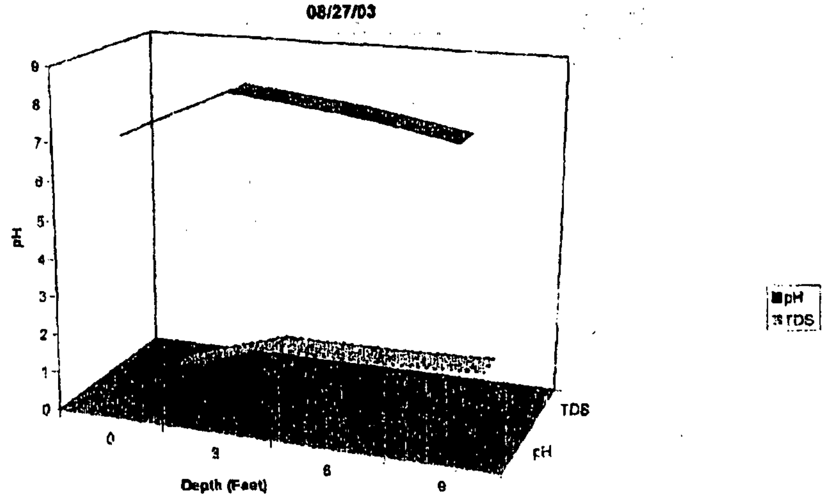
Site M-2

Westlake Lake Water Quality Data
Site: M2
08/27/03



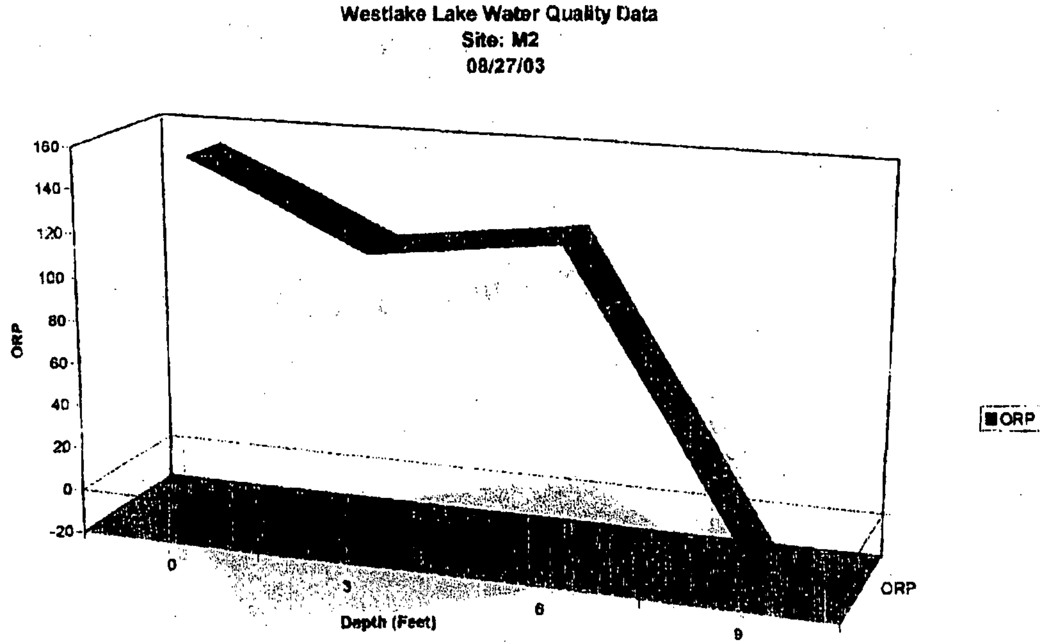
	0	3	6	9
Temp (C)	71.94	81.78	78.01	76.95
DO	0	0	0	0

Westlake Lake Water Quality Data
Site: M2
08/27/03



	0	3	6	9
pH	7.11	8.45	8.12	7.8
TDS	0.003	0.871	0.87	0.974

CLEAN LAKES, INC.



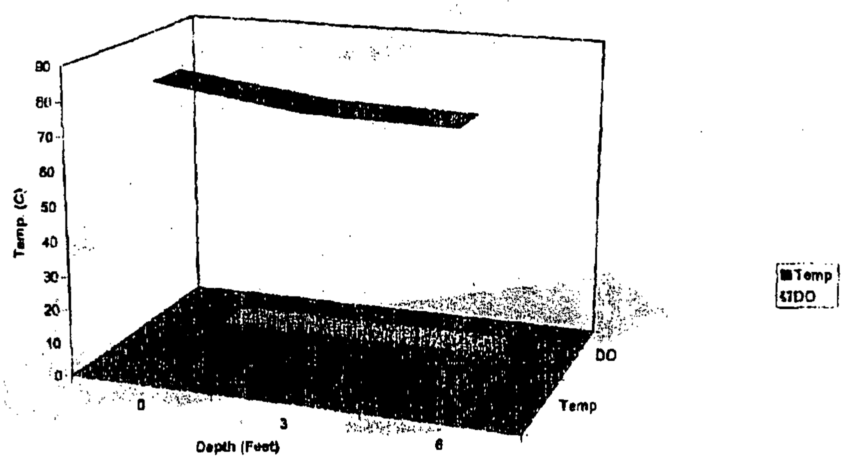
	0	3	6	9
ORP	153	115	126	-10

Secchi Disk Reading: 3.0 foot
Observations: The area looks good.

CLEAN LAKES, INC.

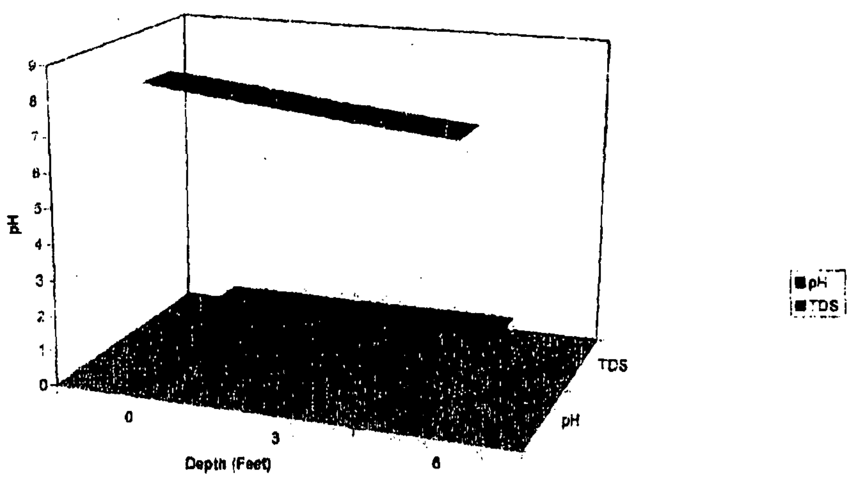
Site M-6

Westlake Lake Water Quality Data
Site: M-6
08/27/03



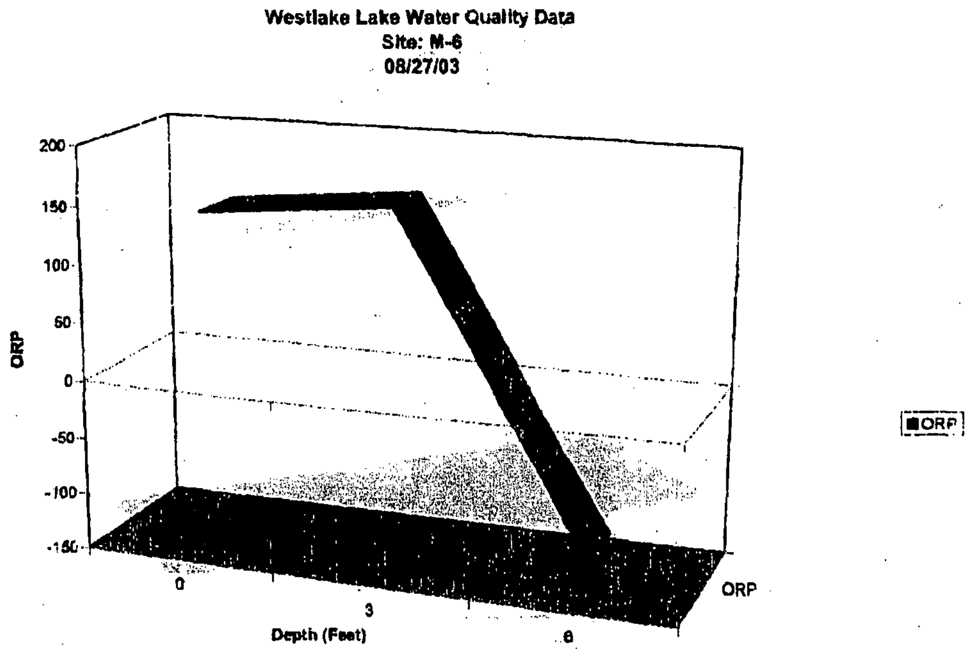
	0	3	6
Temp	84.77	79.29	76.21
DO	0	0	0

Westlake Lake Water Quality Data
Site: M-6
08/27/03



	0	3	6
pH	8.41	7.66	7.54
TDS	0.885	0.866	0.88

CLEAN LAKES, INC.



	0	3	6
ORP	142	157	-125

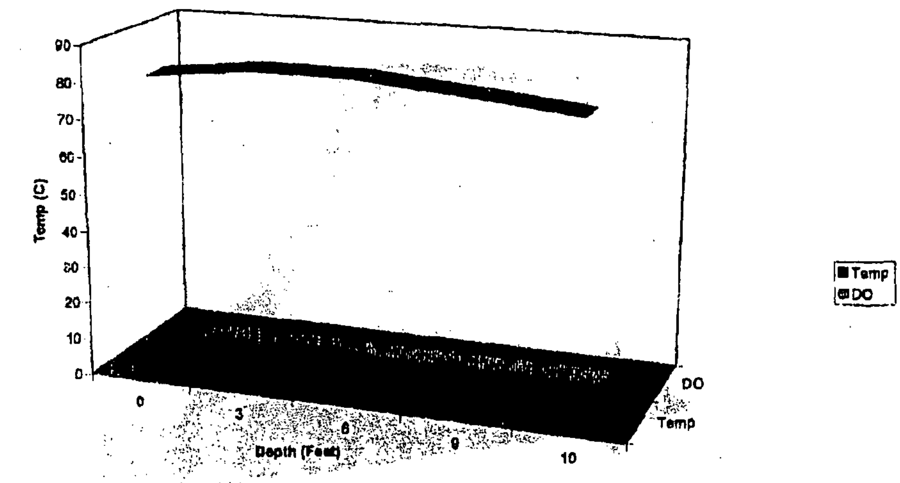
Secchi Disk Reading: 3.0 foot

Observations: Some planktonic algae growth at end of finger, otherwise looked good.

CLEAN LAKES, INC.

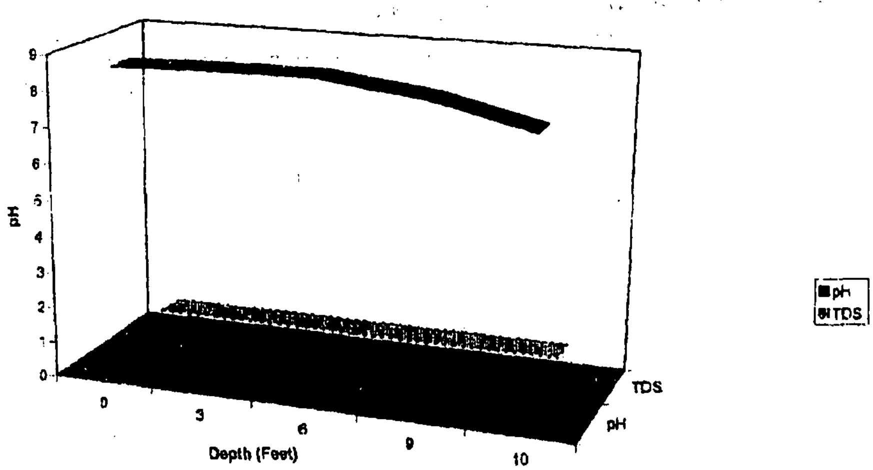
Site M-3

Westlake Lake Water Quality Data
Site: M-3
08/27/03



	0	3	6	9	10
Temp	81.36	84.37	84.17	81.57	76.61
DO	0	0	0	0	0

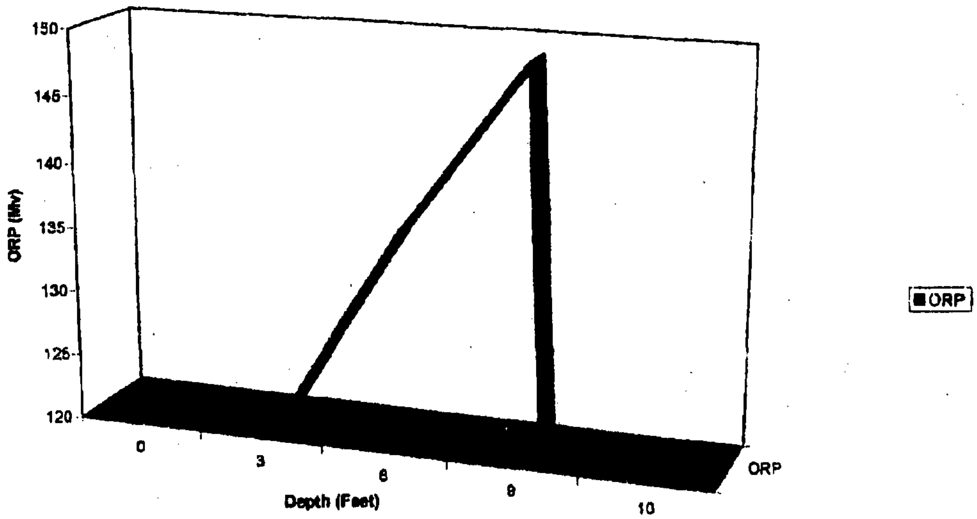
Westlake Lake Water Quality Data
Site: M-3
08/27/03



	0	3	6	9	10
pH	8.61	8.68	8.69	8.34	7.69
TDS	0.881	0.861	0.861	0.863	0.882

CLEAN LAKES, INC.

Westlake Lake Water Quality Data
Site: M-3
08/27/03



	0	3	6	9	10
■ORP	84	120	136	149	-91

Secchi Disk Reading: 2.0 foot
Observations: Planktonic algae growth throughout the area.

<u>Sampling Methods:</u> Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Nutrient samples were collected and sent to the lab for analysis. Nutrient analysis data has not been provided by the lab, report next month. The dissolved oxygen (DO) readings for the month were all substantially above normal and above what would be found in saturated water, so they have not been reported due to an expected error in the sampling equipment.

END OF REPORT

CLEAN LAKES, INC.

September 2003
AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE

Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

October 2003

1: SEPTEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for September 2003 called for three (3) inspections. Inspections were carried out on September 5th, September 10th and 11th, September 18th, and September 25th as follows:

- September 5th, 2003: McNabb and DuVarney performed an inspection of the lake system. There were bottom growths of filamentous algae present along the lakes shoreline, and approximately ¼ acre of submerged aquatic plants growing along some of the shoreline areas. The algae growth was scheduled for treatment the following week.
- September 10 & 11, 2003: Moorhouse and Eric performed an inspection of the lake system and treated approximately 35 acres of the lake system with Cutrine-Plus algaecide @ 1.8 gallons per surface acre for the control of algae. A total of 63 gallons of Cutrine-Plus was used.

  An algae sample was collected from the bottom of one of the boats for analysis. Lab results provided the following:

  > The larger filaments of the filamentous algae are Cladophora, while the fine filaments are Oedogonium. Both are members of the Chorophyta, or green algae.

  David DuVarney had received several complaints regarding algae growth on the boat hulls around the lake system. The algae found growing on the boat hulls is a filamentous algae as outlined above. The algae on the boat hulls should die off as the water temperatures decrease this fall.

- September 18th, 2003: Moorhouse and Lombardo performed an inspection of the lake system and treated the entire lake systems shoreline areas for the control of filamentous algae. Approximately 60 acres was treated with Copper Sulfate @ 1 ppm for the control of algae.

- September 25, 2003: McNabb and Lombardo performed an inspection of the lake system and the monthly water quality monitoring was performed. The lake system looked good and the nuisance growths of filamentous algae that were found growing alone the shoreline areas was controlled through the algaecide treatments performed earlier in the month. Minor growths of submerged aquatic vegetation was still found along various shoreline areas of the system, and were spot treated with Aquathol K (12 gallons), Cutrine Plus (5 gallons) and Hydrothol (4.5 gallons). There were a few midges found in isolated parts of the lake system in non nuisance proportions, so it would appear that this problem has been controlled for the season.

2: OCTOBER INSPECTION AND MONITORING SCHEDULE: The schedule for October 2003 calls for one (1) inspection.

3: SEPTEMBER GENERAL OBSERVATIONS: The lake system experienced excessive growths of filamentous algae during the first half of the month and submerged aquatic plant growth became a problem in some of the shoreline areas of the system.

- Water clarity within the system had increased an average of 3 foot since August, primarily as a result of planktonic algae reductions within the system. Clarity ranged from 3.5 foot at sampling site M1 to 6 foot in Finger 7.

- Dissolved oxygen levels were within the Malibu Creek Watershed Basin Plan limits of 5 mg/l within the surface waters of the lake system with the exception of the sampling sites at the Dam, F4, F7, and M6 where surface water D.O. levels were in the 3.35 mg/l to the 5.06 range.

- The phosphate sample reading of 0.21 mg/l at the Dam and 0.10 at the Inlet, F9 sampling site were above and at the Malibu Creek Watershed Basin Plan summer limit of 0.10 mg/l.

- The Nitrate as N sample reading of 0.05 mg/l at the Dam and Site F9 was within the Malibu Creek Watershed Basin Plan summer limit of 1.0 mg/l for lakes.

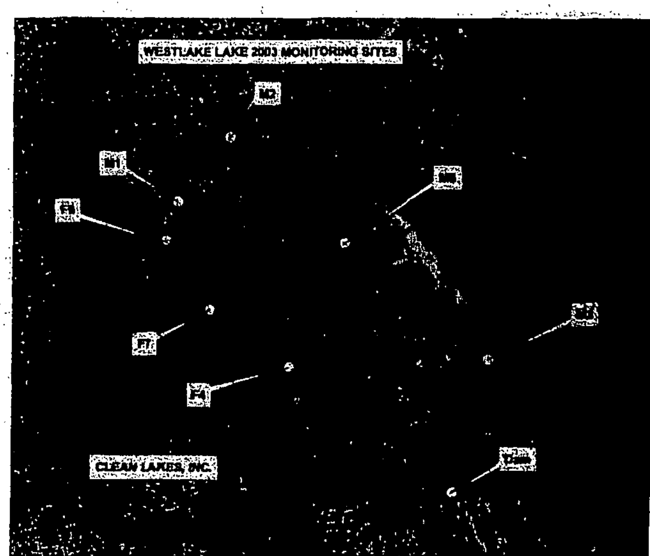
- The Ammonia as N sample reading of 0.34 mg/l at the Dam and 0.05 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan limits for Westlake Lake of 1.5 mg/l.

- The Chlorophyll *a* sample reading of (results not reported from the lab as of October 13, 2003) mg/l was _____the Malibu Creek Watershed Basin Plan limits for Lakes of 0.1 ug/l.

- There was some bank stabilization work being conducted in one of the fingers during the inspection on September 25, 2003. A boom was setup to keep the cement from entering the lake system within the work areas. The pH was tested within and outside of the work areas with a resulting pH of 9.51 within the work area boom, and 8.35 outside of the boom. With the pH reading collected, the boom seemed to be acting as a good barrier to prevent the line in the cement from entering the lake system.

4: WATER QUALITY MONITORING:

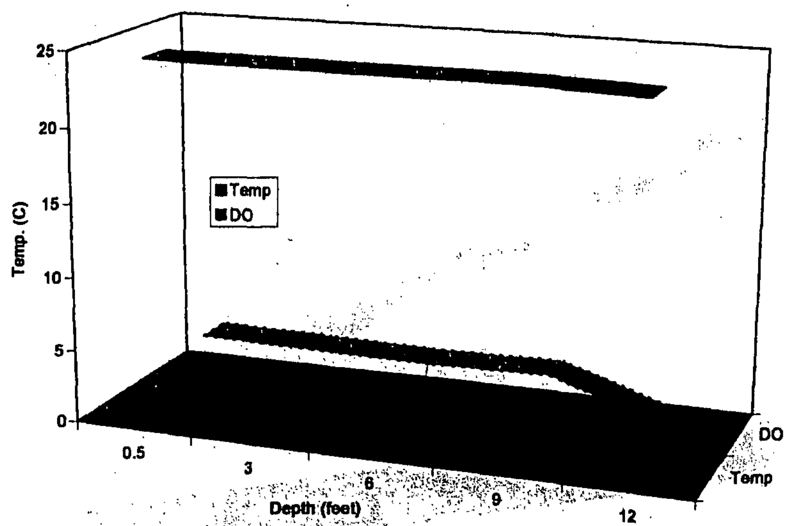
Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map at right:



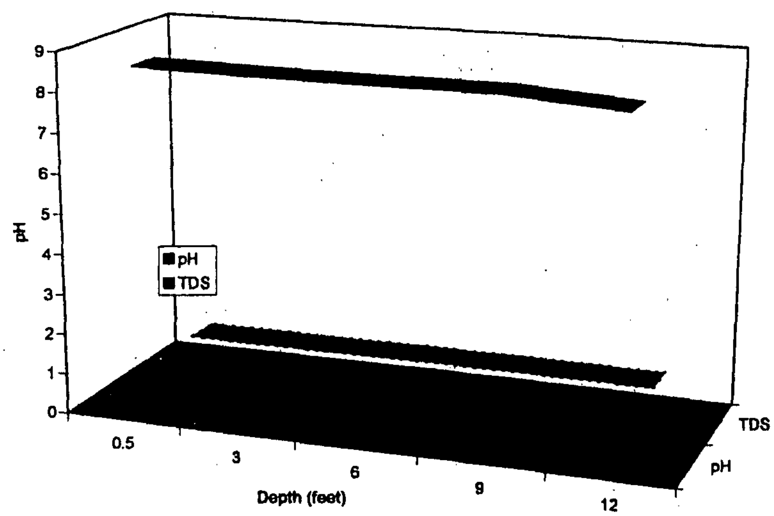
The water quality results for the parameters monitored on September 25th are presented in a graph and table format as follows for each site:

Site Dam

Westlake Lake Water Quality Data
Site: Dam
9/25/03

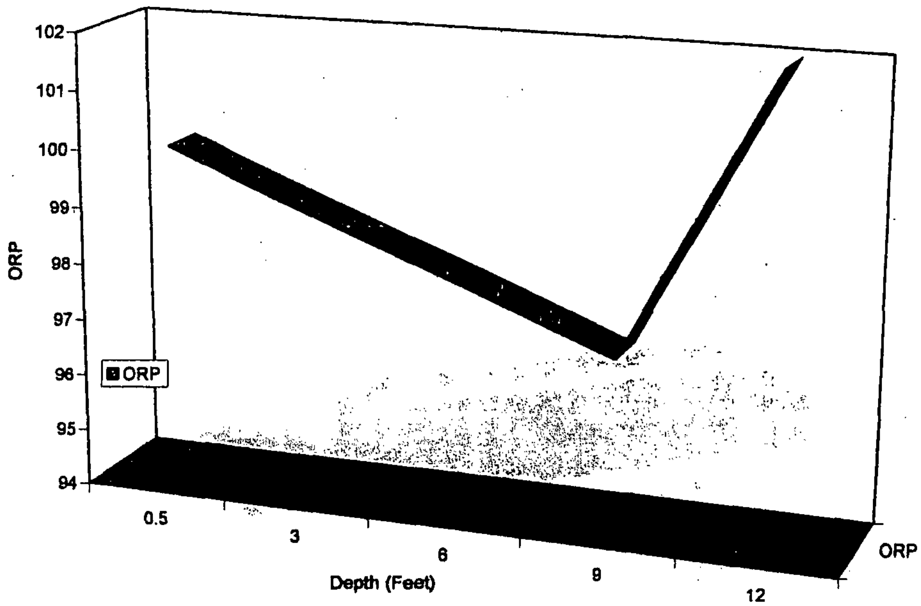


	0.5	3	6	9	12
Temp	24.4	24.4	24.39	24.4	24.21
DO	3.35	3.24	3.08	3.19	0.53



	0.5	3	6	9	12
pH	8.6	8.56	8.53	8.52	8.32
TDS	0.942	0.941	0.941	0.941	0.942

Westlake Lake - Water Quality Data
Site: Dam
9/25/03

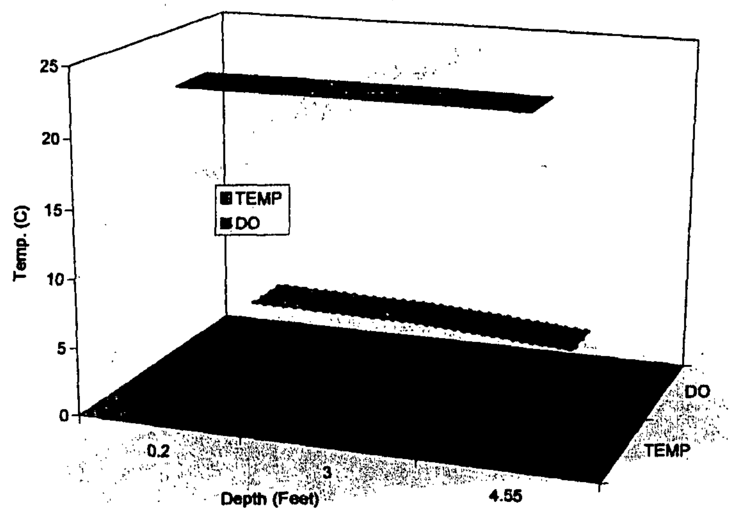


	0.5	3	6	9	12
ORP	100	99	98	97	102

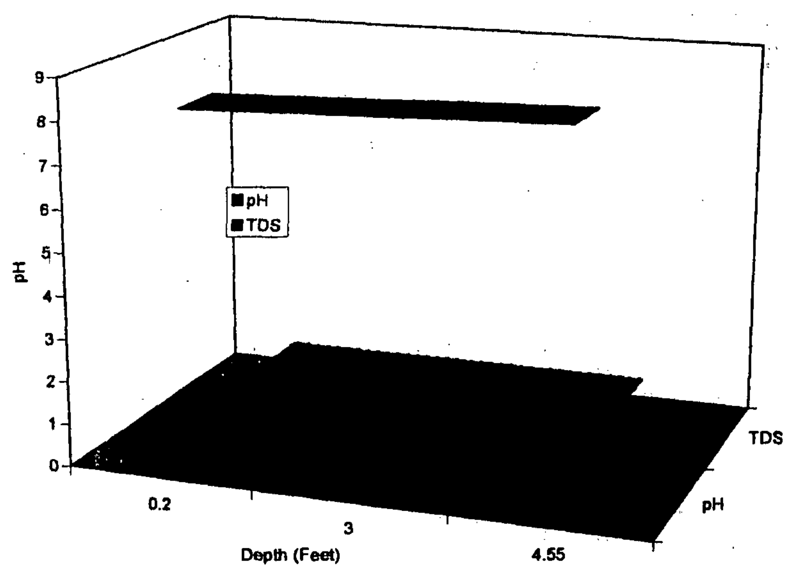
Secchi Disk Reading: 5 foot
Copper: 0.03 mg/l
Ammonia as N: 0.34 mg/l
Nitrate as N: 0.05 mg/l
Phosphate: 0.21 mg/l
Observations: Look good, clarity and color good, low DO at surface to bottom.

Site F-4

Westlake Lake Water Quality Data
Site: Finger 4
9/25/03

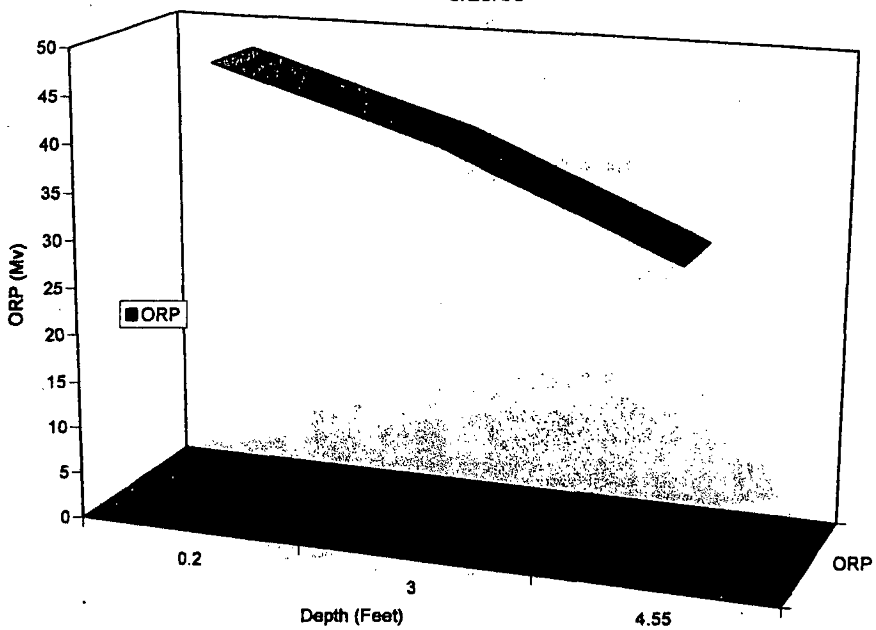


	0.2	3	4.55
TEMP	23.4	23.42	23.38
DO	4.27	4.08	3.28



	0.2	3	4.55
pH	8.21	8.35	8.47
TDS	0.932	0.931	0.927

Westlake Lake Water Quality Data
Site: Finger 4
9/25/03



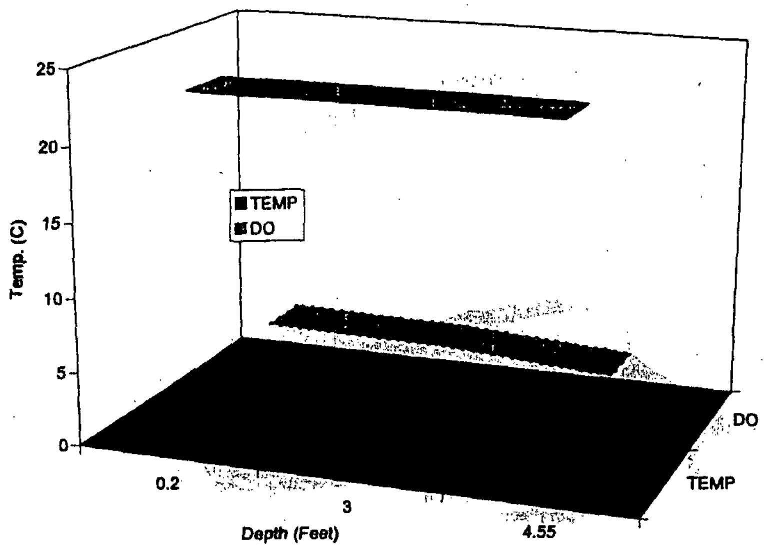
	0.2	3	4.55
■ORP	48	41	31

Secchi Disk Reading: 5 foot

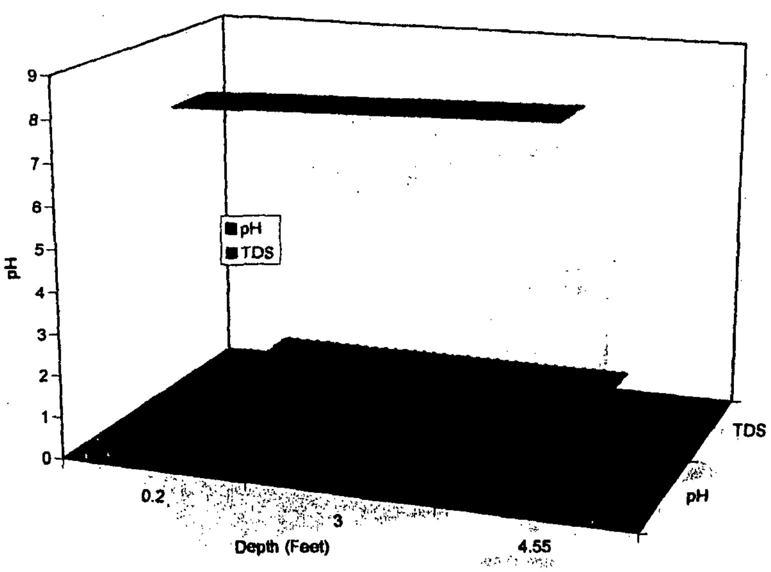
Observations: Some spotty submerged aquatic plant growth, low DO levels, looked good.

Site F-7

Westlake Lake Water Quality Data
Site: Finger 7
9/25/03

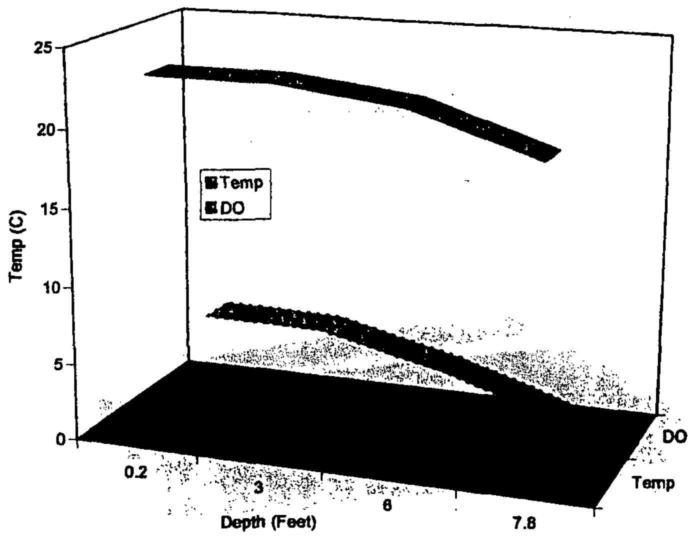


	0.2	3	4.55
TEMP	23.4	23.42	23.36
DO	4.27	4.06	3.26

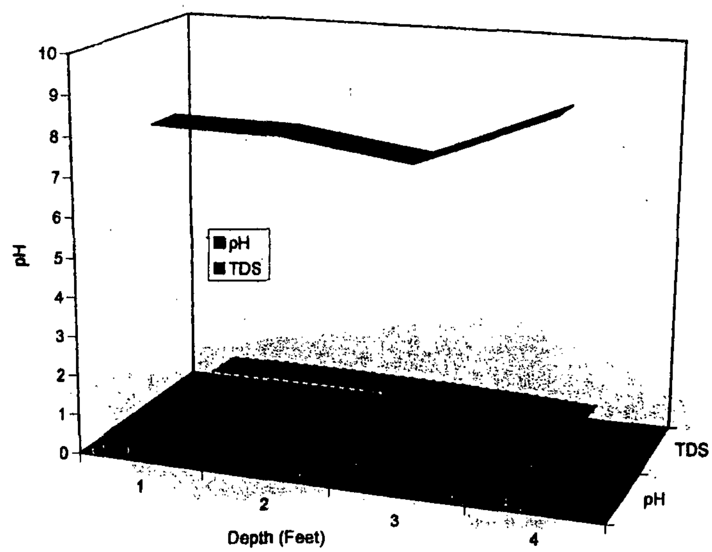


	0.2	3	4.55
pH	8.21	8.35	8.47
TDS	0.932	0.931	0.927

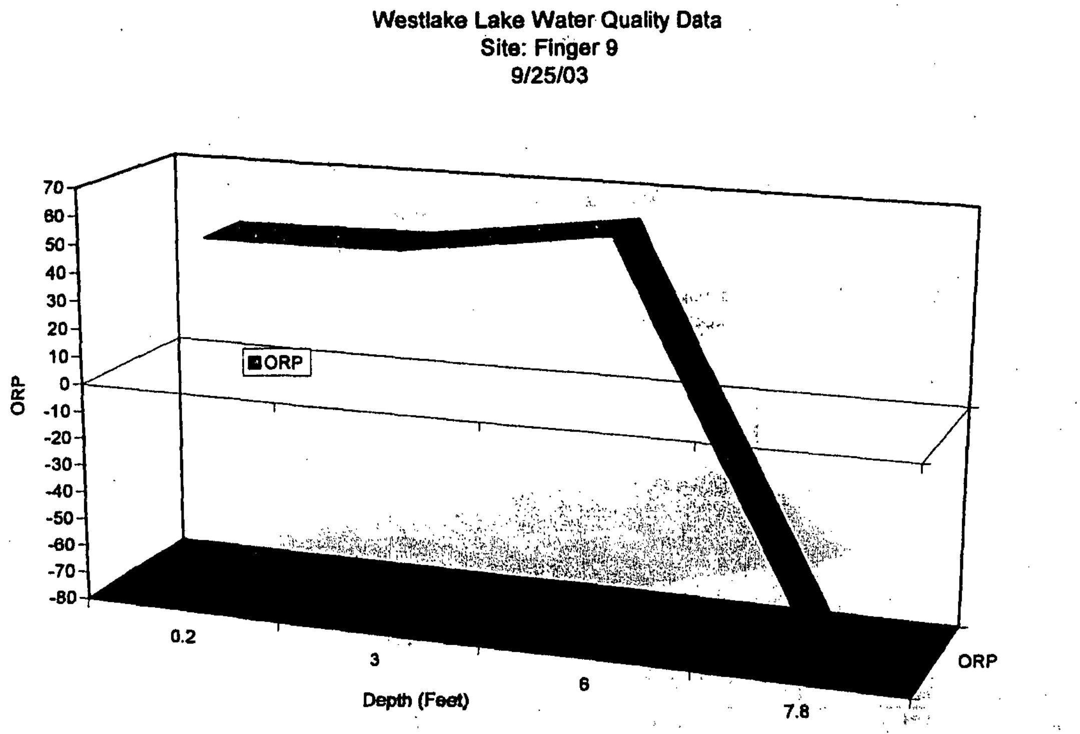
Site F-9



	0.2	3	6	7.8
Temp	23.19	23.17	22.29	19.68
DO	5.43	5.26	3.36	0.73



	1	2	3	4
pH	8.22	8.17	7.76	9.1
TDS	0.926	0.926	0.879	0.741

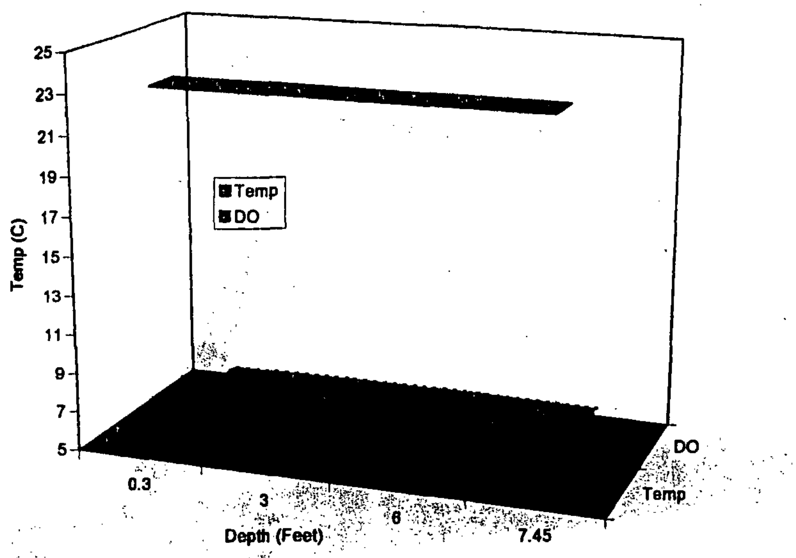


	0.2	3	6	7.8
ORP	51	52	62	-76

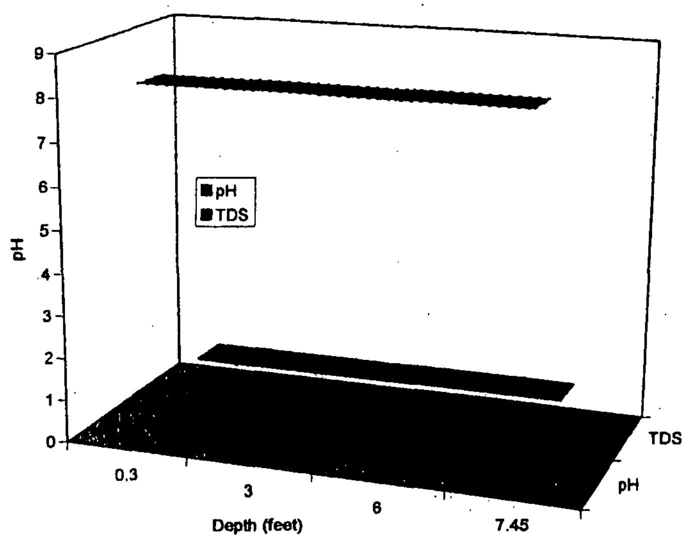
Secchi Disk Reading: 5 foot
Ammonia as N: 0.05 mg/l
Nitrate as N: 0.05 mg/l
Phosphate: 0.10 mg/l
Observations: Look good, clarity and color good, low DO at surface to bottom.

Site M1

Westlake Lake Water Quality Data
Site: M1
9/25/03

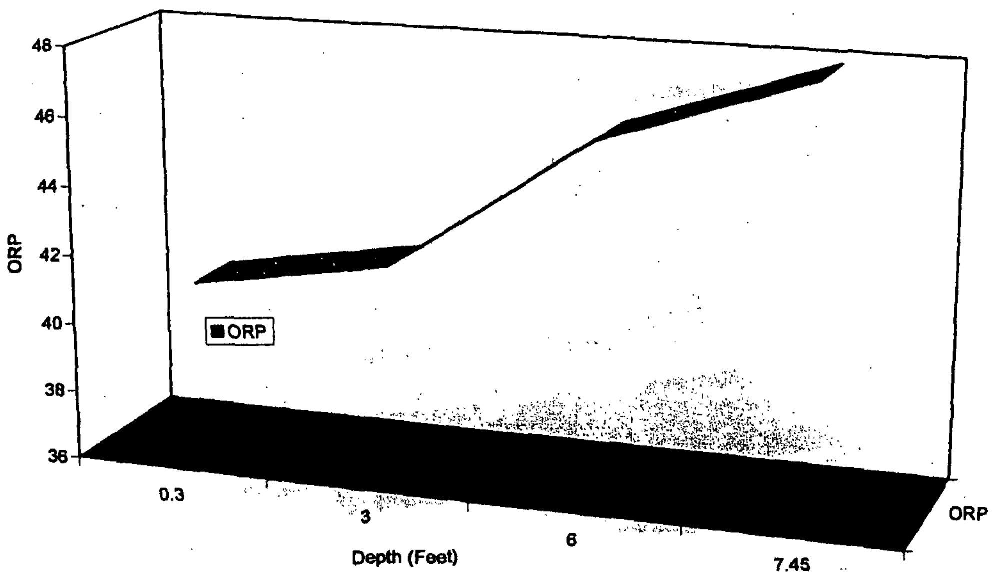


	0.3	3	6	7.45
Temp	23.24	23.23	23.21	23.21
DO	6.19	6.26	6.24	6.17



	0.3	3	6	7.45
pH	8.27	8.28	8.27	8.27
TDS	0.938	0.937	0.936	0.936

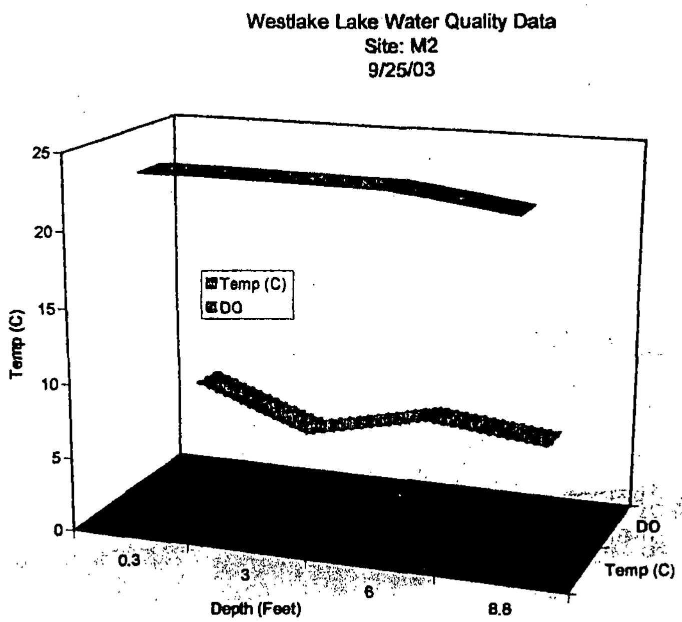
Westlake Lake Water Quality Data
Site: M1
9/25/03



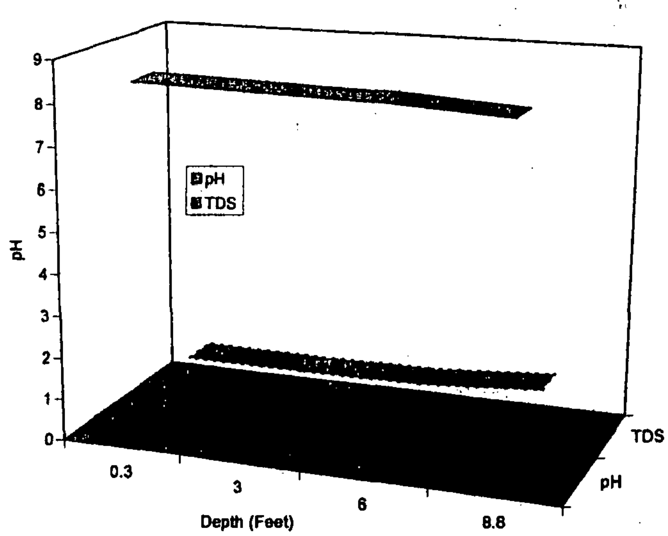
	0.3	3	6	7.45
ORP	41	42	46	48

Secchi Disk Reading: 4.5 foot
Observations: Looks good, Chara growth along Westwind shoreline.

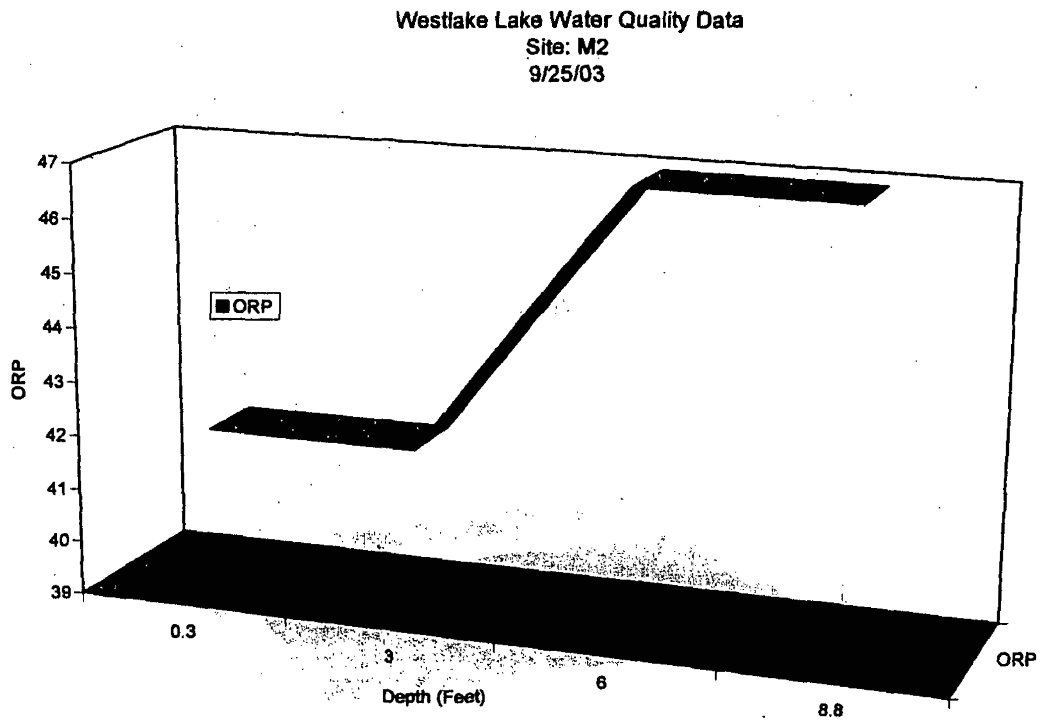
Site M-2



	0.3	3	6	8.8
Temp (C)	23.58	23.57	23.52	22.51
DO	7.47	4.68	6.45	5.56



	0.3	3	6	8.8
pH	8.43	8.39	8.35	8.2
TDS	0.949	0.948	0.951	1.16

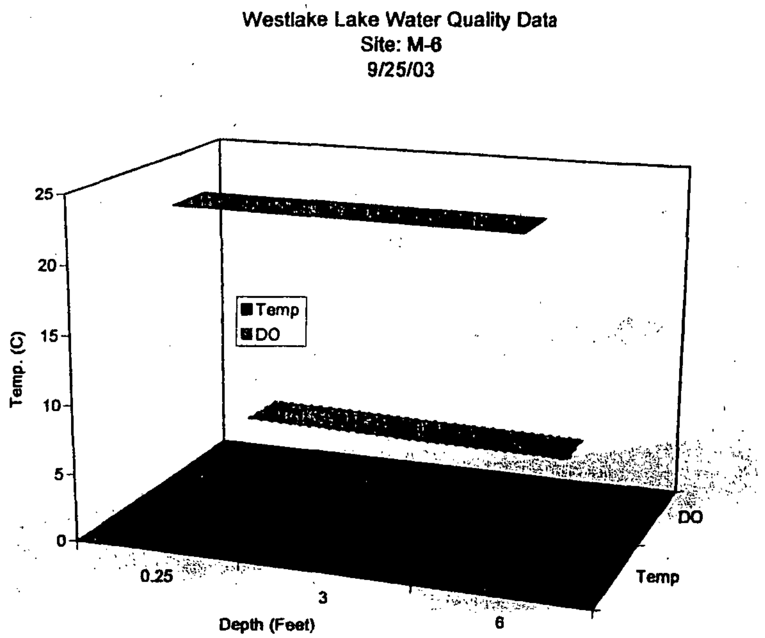


	0.3	3	6	8.8
ORP	42	42	47	47

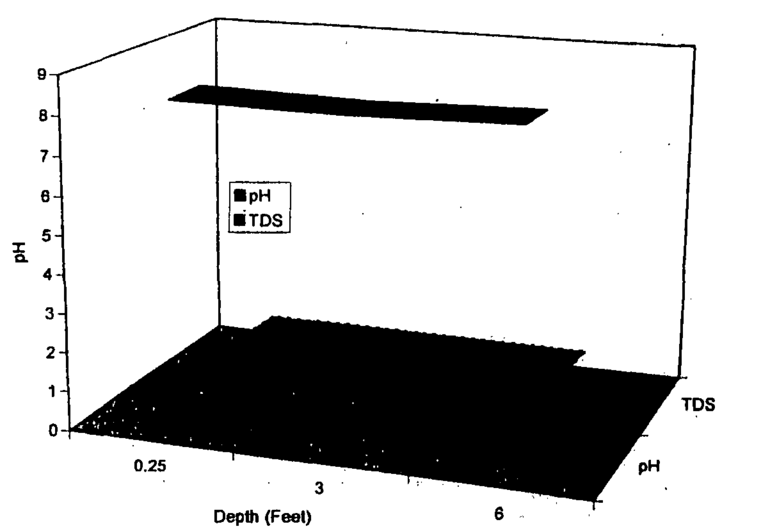
Secchi Disk Reading: 3.5 foot

Observations: The area looked good.

Site M-6



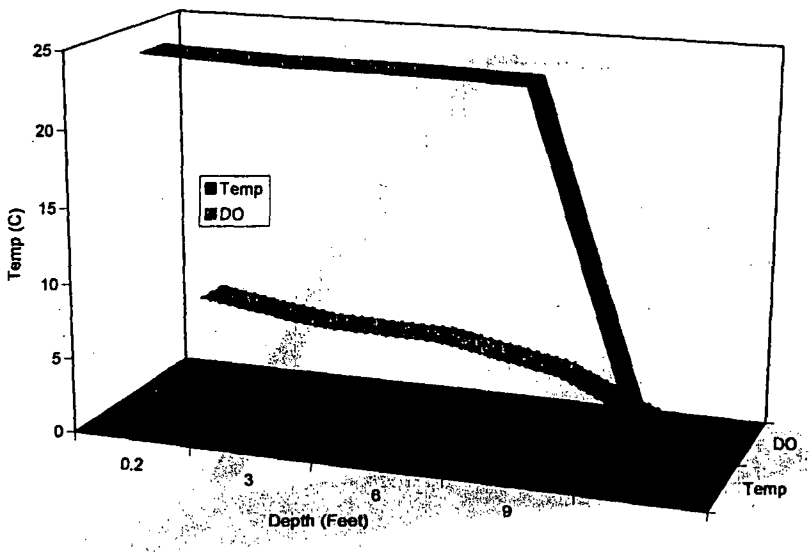
	0.25	3	6
Temp	23.92	23.8	23.74
DO	5.06	4.77	4.6



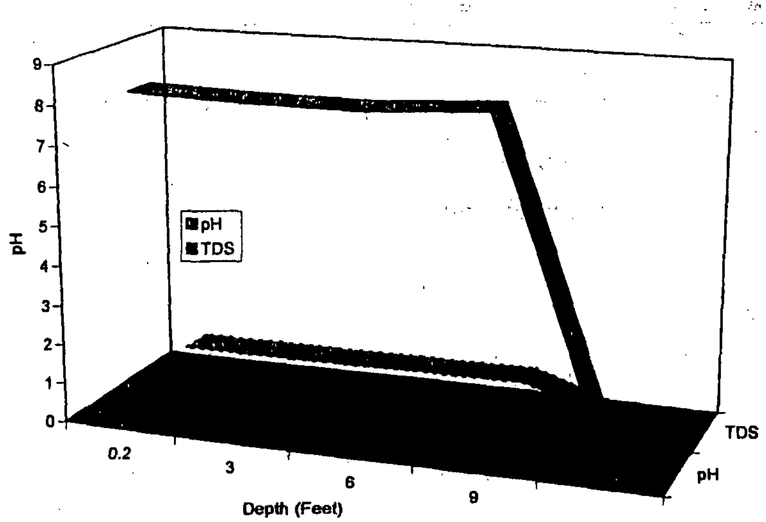
	0.25	3	6
pH	8.3	8.23	8.34
TDS	0.944	0.943	0.942

Site M-3

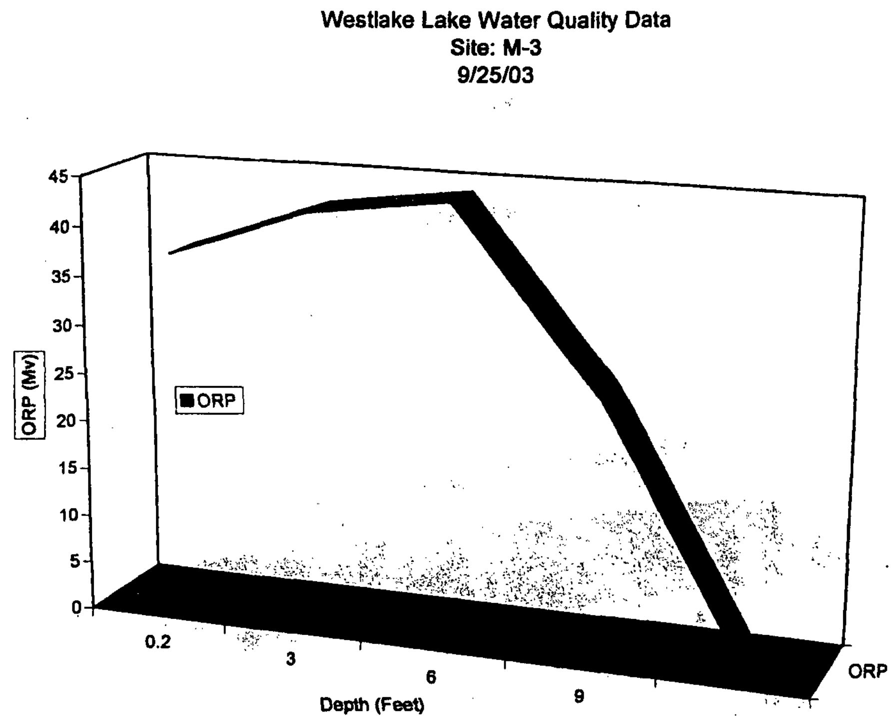
Westlake Lake Water Quality Data
Site: M-3
9/25/03



	0.2	3	6	9	
Temp	24.71	24.47	24.45	24.27	0
DO	6.56	5.35	5.12	3.58	0



	0.2	3	6	9	
pH	8.29	8.23	8.22	8.4	0
TDS	0.939	0.938	0.938	0.944	0



	0.2	3	6	9	
ORP	37	42	44	26	0

Secchi Disk Reading: 5.5 foot
Observations: Area looked good.

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 15-meter probe cable. Nutrient samples were collected and sent to the lab for analysis.

END OF REPORT

CLEAN LAKES, INC.

October 2003

AQUATIC VEGETATION MANAGEMENT PLAN MONTHLY REPORT

For

WESTLAKE

Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

November 2003

1: OCTOBER INSPECTION AND MONITORING SCHEDULE: The schedule for October 2003 called for one (1) inspection. The inspection was carried out on October 25, 2003 as follows:

- October 24th, 2003: Lombardo and Kasheta performed an inspection of the lake system. The lake system looked good when the inspection began, and minor growths of planktonic algae began to bloom as the day progressed. D.O. levels were normal at the Dam when the inspection began, and increased to above normal levels as the day progressed, and as the algae bloom intensified. Surface scum of fine bubbles was noticed in some of the monitoring sites, and is speculated that the increase in algae productivity resulted in an increase in D.O. levels within the system.

2: NOVEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for November 2003 calls for one (1) inspection.

3: OCTOBER GENERAL OBSERVATIONS: The lake system was in pretty good shape during the month with minor planktonic algae blooms at some of the finger ends, and a few reports of midge problems. Neither the algae nor the midges created nuisance conditions during the month, and as such no treatments were required.

- Water clarity within the system averaged 2 foot, primarily as a result of planktonic algae within the system. Clarity ranged from 4.0 foot at the Dam to 1.6 foot within Finder 4.

- Dissolved oxygen levels were above the Malibu Creek Watershed Basin Plan limits of 5 mg/l within the surface waters of the lake system.

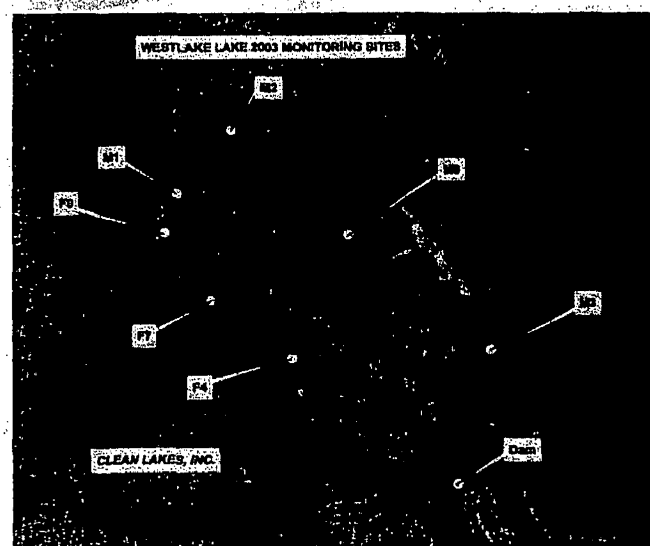
- The phosphate sample reading of 0.10 mg/l at the Dam and 0.10 at the Inlet, F9 sampling site were at the Malibu Creek Watershed Basin Plan summer limit of 0.10 mg/l.

- The Nitrate as N sample reading of 0.11 mg/l at the Dam and 0.05 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan summer limit of 1.0 mg/l for lakes.

- The Ammonia as N sample reading of 0.23 mg/l at the Dam and 0.03 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan limits for Westlake Lake of 1.5 mg/l.

- The Chlorophyll *a* sample reading of (results not reported from the lab as of November 7, 2003) mg/l was _____the Malibu Creek Watershed Basin Plan limits for Lakes of 0.1 ug/l.

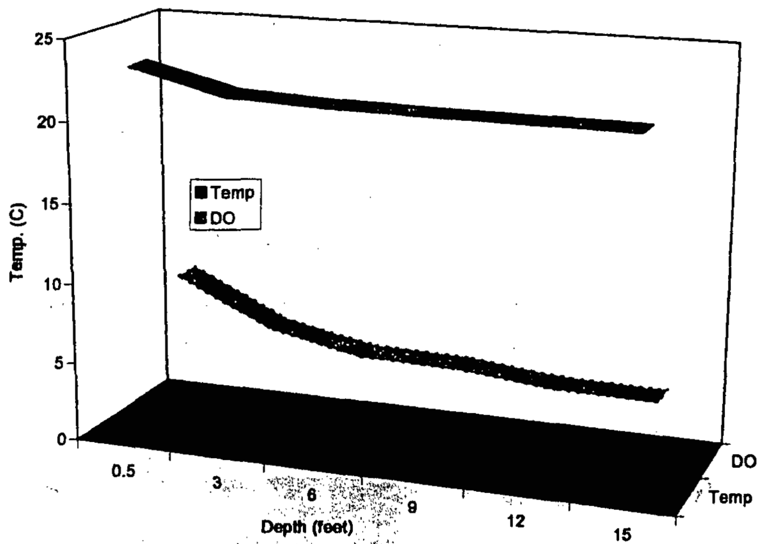
4: WATER QUALITY MONITORING:
Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map at right:



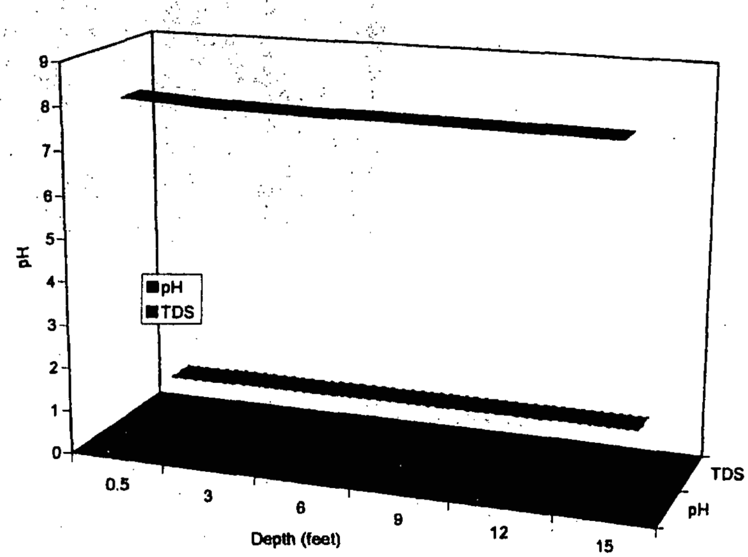
The water quality results for the parameters monitored on October 24th are presented in a graph and table format as follows for each site:

Site Dam

Westlake Lake Water Quality Data
Site: Dam
10/24/03

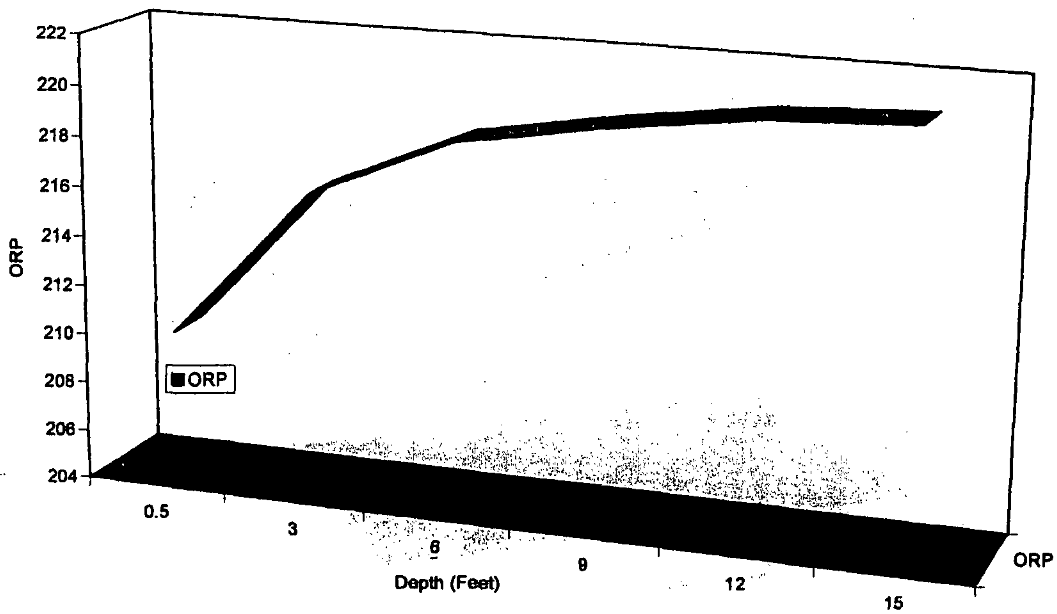


	0.5	3	6	9	12	15
Temp	23.23	21.82	21.61	21.52	21.51	21.48
DO	8.67	5.79	4.59	4.48	3.84	3.78



	0.5	3	6	9	12	15
pH	8.16	8.05	8.01	8	7.97	7.96
TDS	1.016	1.016	1.014	1.014	1.014	1.014

Westlake Lake - Water Quality Data
Site: Dam
10/24/03

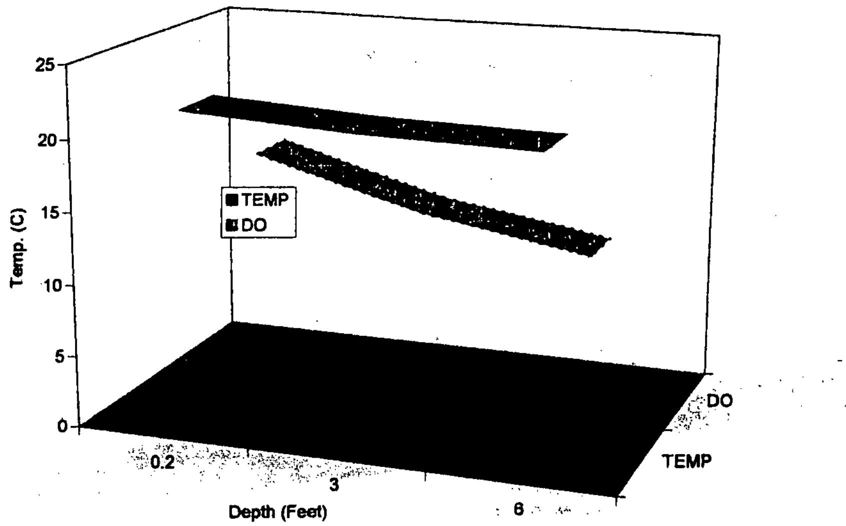


	0.5	3	6	9	12	15
■ORP	209.9	216.1	218.6	219.6	220.4	220.7

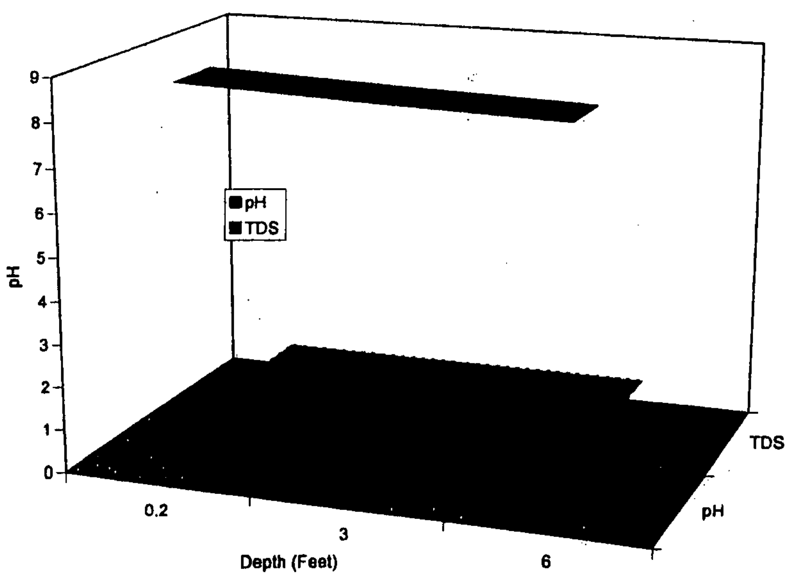
Secchi Disk Reading: 4 foot
Copper: 0.02 mg/l
Ammonia as N: 0.23 mg/l
Nitrate as N: 0.11 mg/l
Phosphate: 0.10 mg/l
Observations: Look good, clarity and color good.

Site F-4

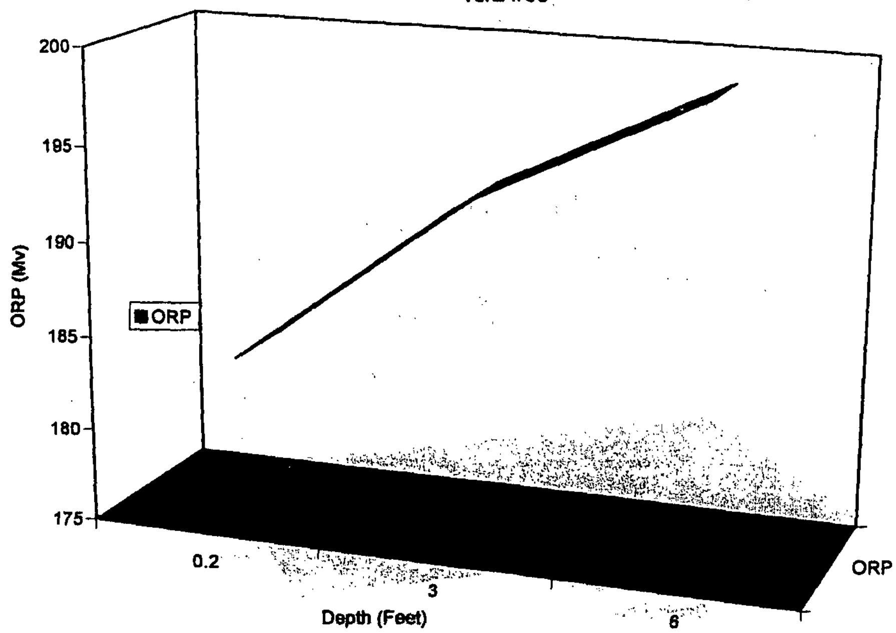
Westlake Lake Water Quality Data
Site: Finger 4
10/24/03



	0.2	3	6
TEMP	21.72	21.09	20.84
DO	16.03	12.65	10.58



	0.2	3	6
pH	8.8	8.64	8.51
TDS	0.995	1.002	1.006



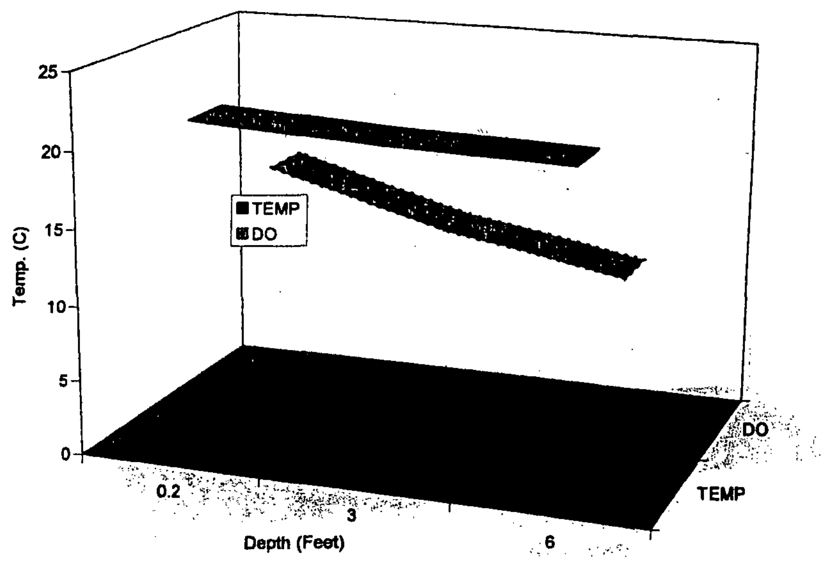
	0.2	3	6
ORP	183.5	192.8	198.8

Secchi Disk Reading: 1.6 foot

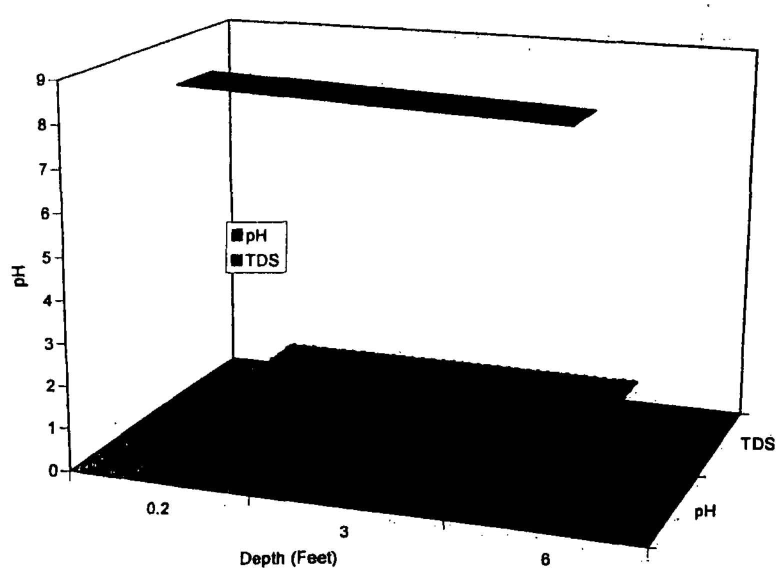
Observations: Minor planktonic algae, shoreline repairs in progress, floating debris, high DO levels.

Site F-7

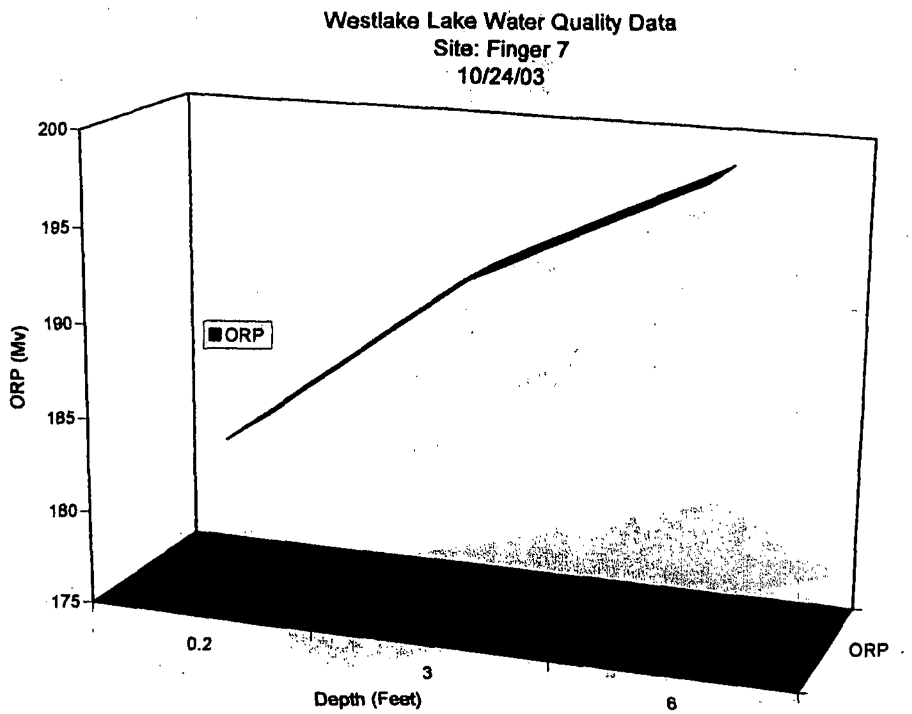
Westlake Lake Water Quality Data
Site: Finger 7
10/24/03



	0.2	3	6
TEMP	21.72	21.09	20.84
DO	16.03	12.65	10.58



	0.2	3	6
pH	8.8	8.64	8.51
TDS	0.995	1.002	1.006

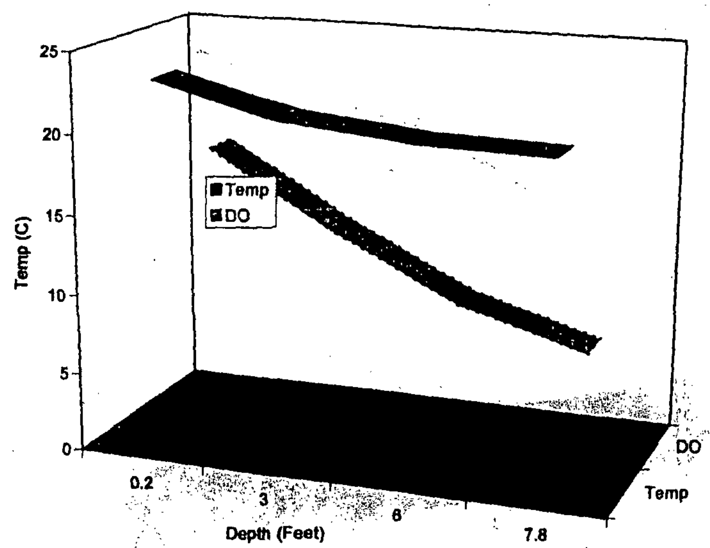


	0.2	3	6
ORP	183.5	192.8	198.8

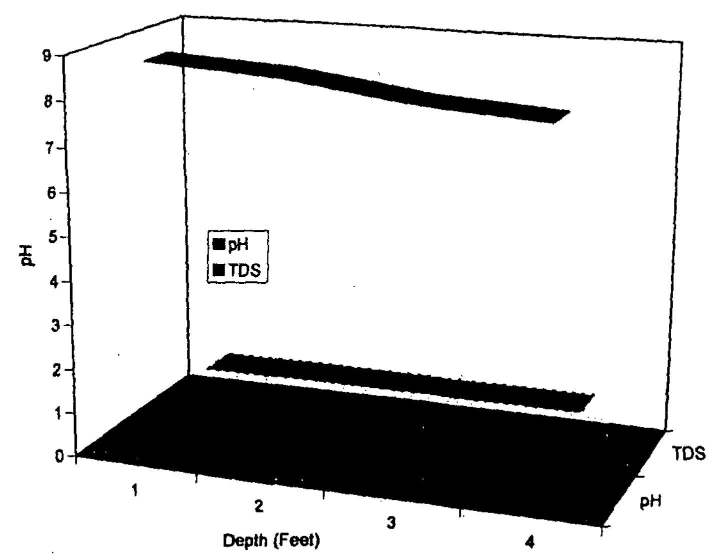
Secchi Disk Reading: 2 foot

Observations: Minor planktonic algae present, looked good, high DO levels.

Site F-9

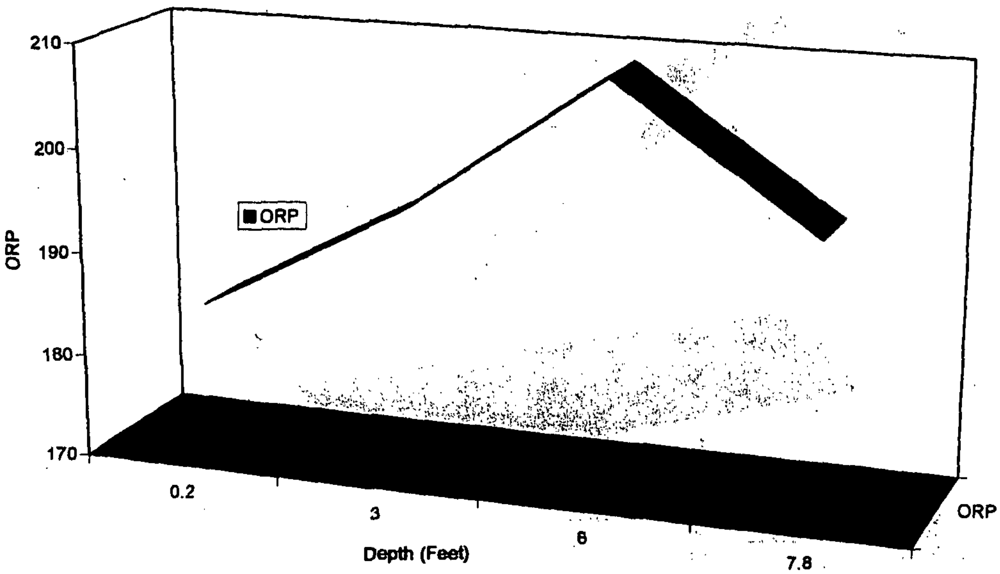


	0.2	3	6	7.8
Temp	23.17	21.24	20.5	20.35
DO	17.32	12.55	8.53	6.19



	1	2	3	4
pH	8.83	8.65	8.27	8.09
TDS	1.001	1.002	0.978	0.977

Westlake Lake Water Quality Data
Site: Finger 9
10/24/03

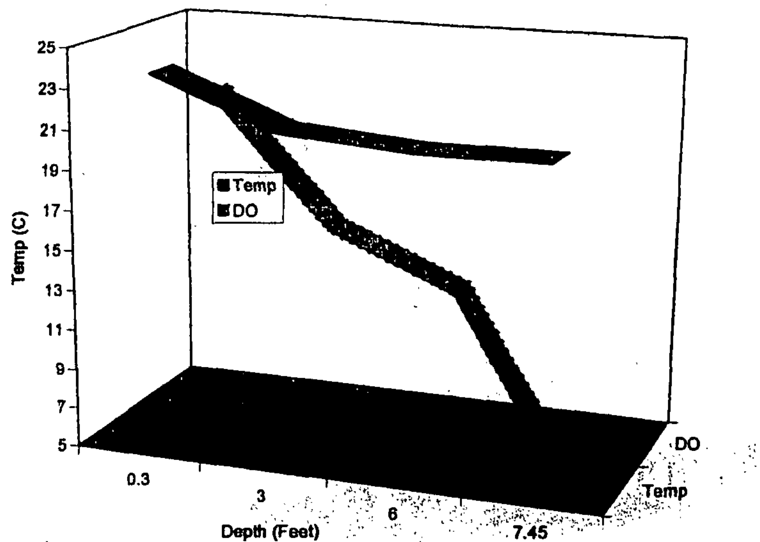


	0.2	3	6	7.8
■ORP	184.3	194.9	209	195.7

Secchi Disk Reading: 3 foot
Ammonia as N: 0.03 mg/l
Nitrate as N: 0.05 mg/l
Phosphate: 0.10 mg/l
Observations: Look good, clarity and color good, high DO at surface to bottom.

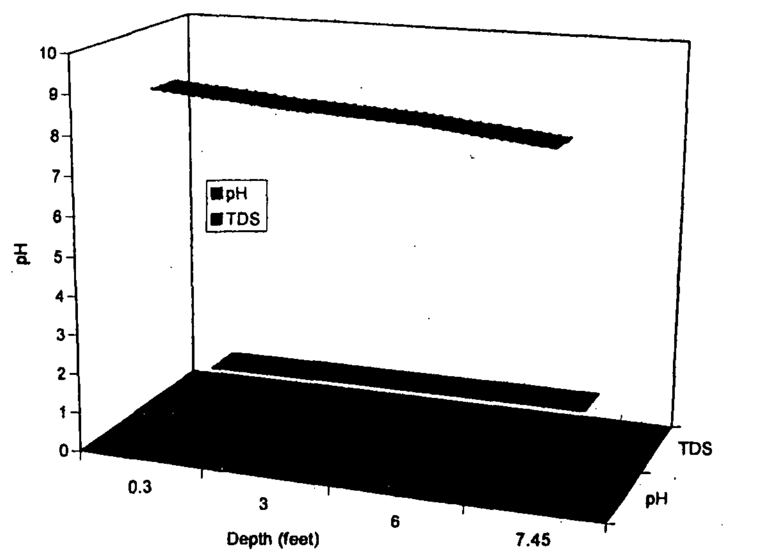
Site M1

Westlake Lake Water Quality Data
Site: M1
10/24/03



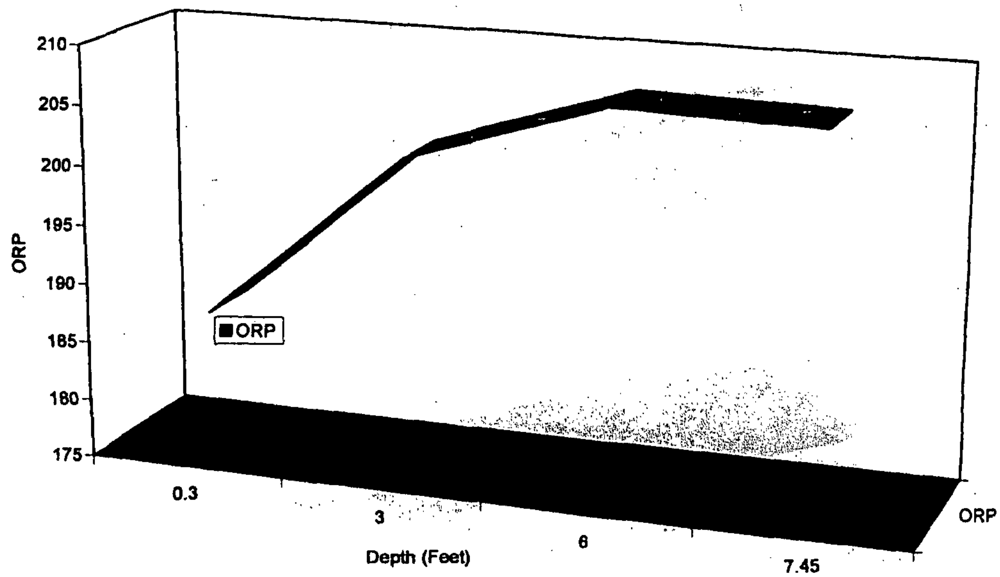
	0.3	3	6	7.45
Temp	23.65	21.22	20.74	20.79
DO	21.55	14.75	12.06	1.44

Westlake Lake Water Quality Data
Site: M1
10/24/03



	0.3	3	6	7.45
pH	9.07	8.81	8.67	8.35
TDS	0.996	1.011	1.019	1.015

Westlake Lake Water Quality Data
Site: M1
10/24/03

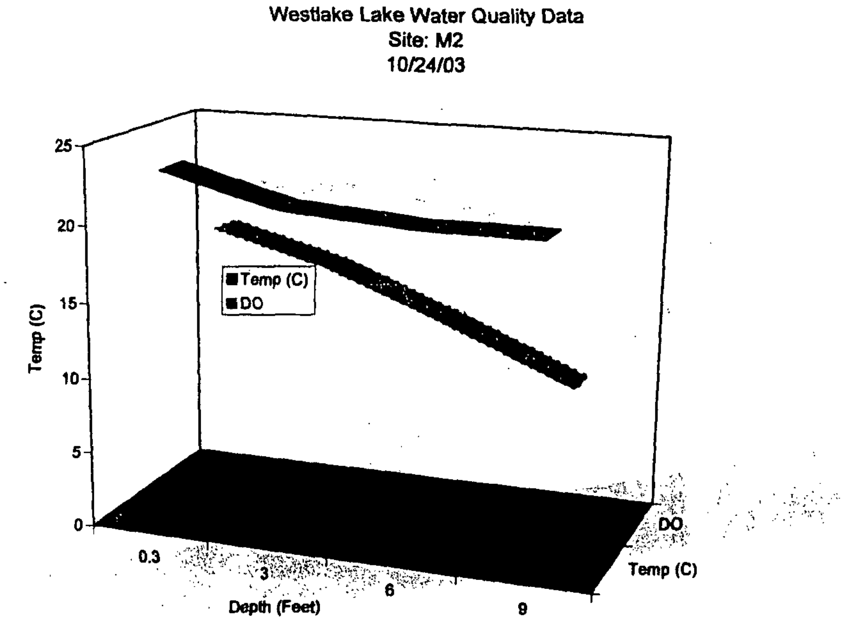


	0.3	3	6	7.45
■ORP	187	201.5	206.9	206.5

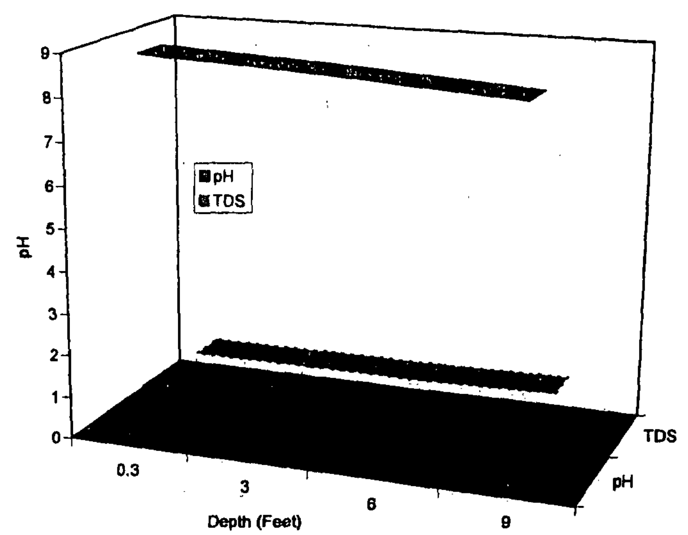
Secchi Disk Reading: 2.0 foot

Observations: Minor planktonic and filamentous algae growth along shoreline areas, high DO.

Site M-2

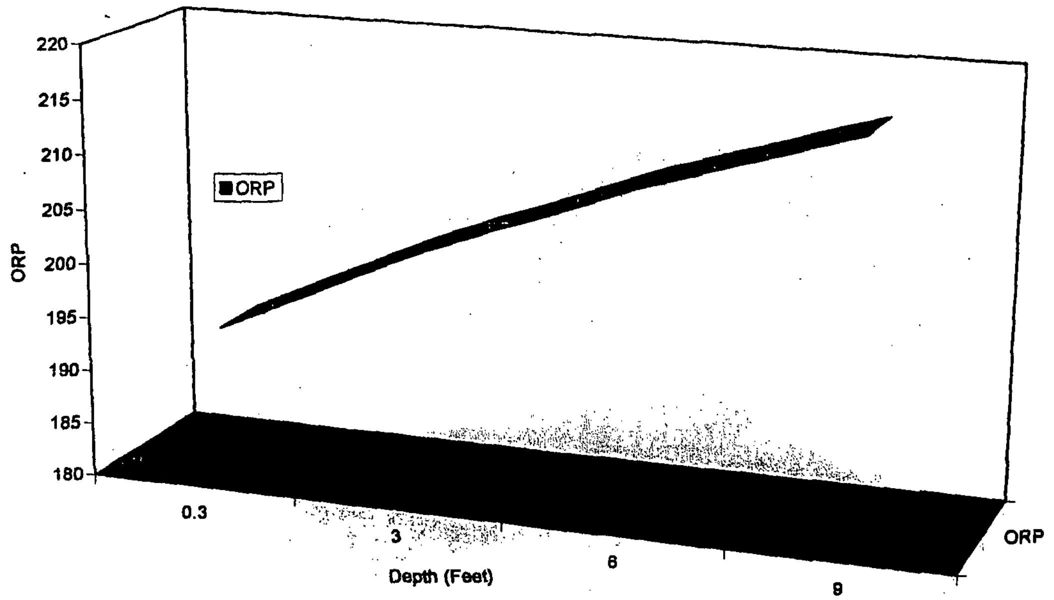


	0.3	3	6	9
Temp (C)	23.4	21.45	20.88	20.83
DO	18	15.94	12.75	9.27



	0.3	3	6	9
pH	8.94	8.82	8.66	8.48
TDS	1.022	1.02	1.026	1.072

Westlake Lake Water Quality Data
Site: M2
10/24/03

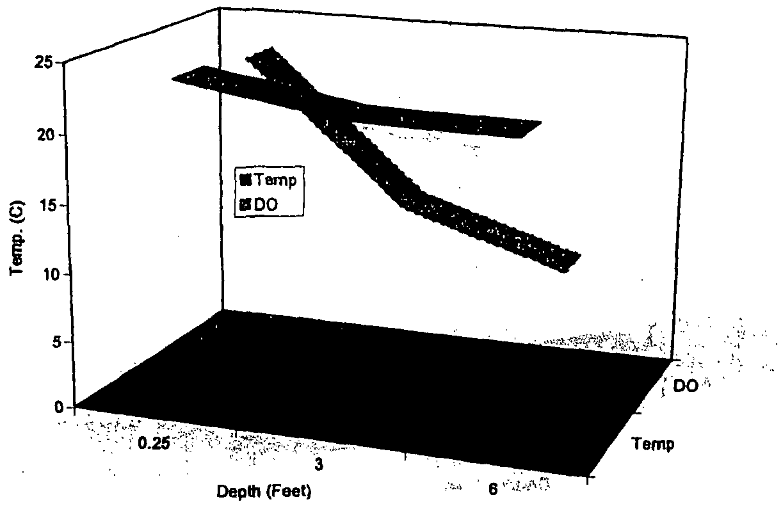


	0.3	3	6	9
ORP	193.4	202.2	209.7	215.8

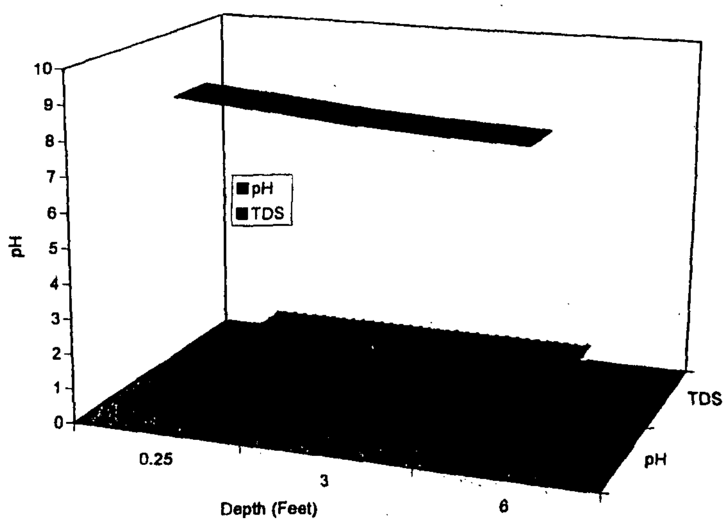
Secchi Disk Reading: 2.0 foot
Observations: The area looked good.

Site M-6

Westlake Lake Water Quality Data
Site: M-6
10/24/03

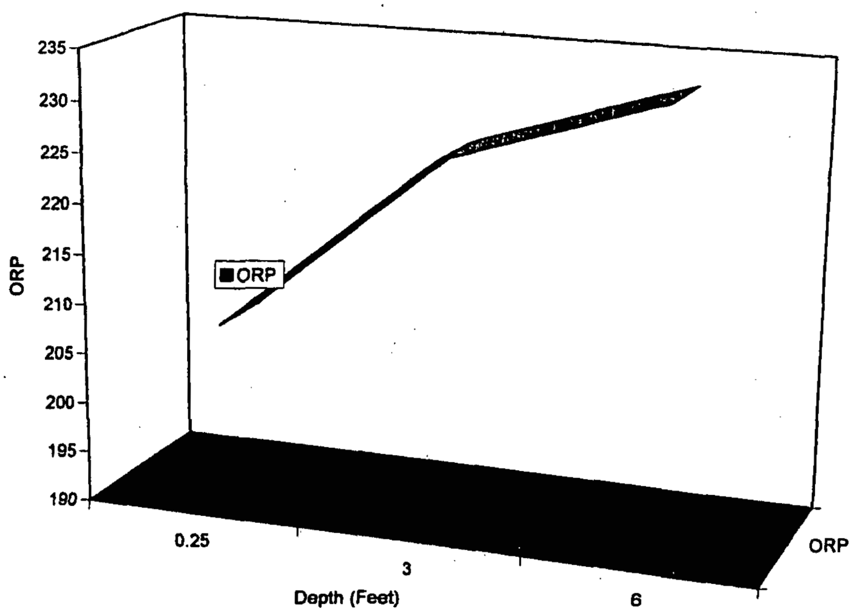


	0.25	3	6
Temp	23.64	21.7	21.52
DO	22.89	12.86	8.83



	0.25	3	6
pH	9.13	8.72	8.53
TDS	0.994	1.006	1.015

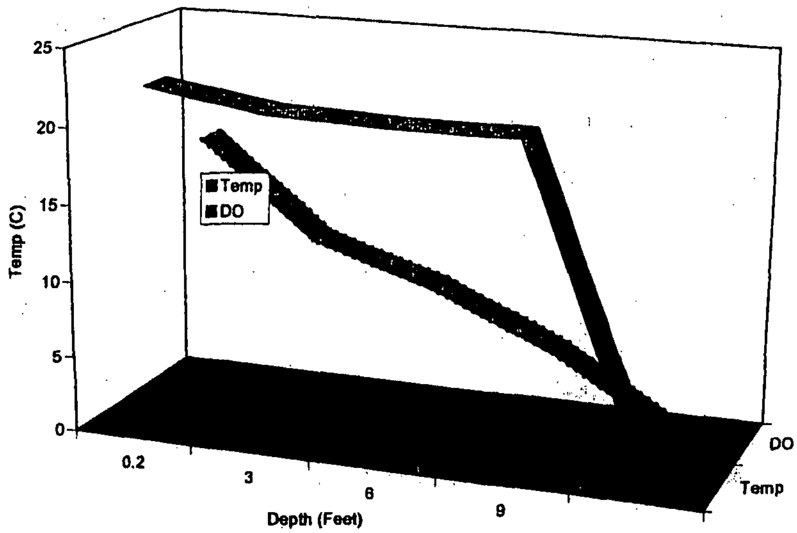
Westlake Lake Water Quality Data
Site: M-6
10/24/03



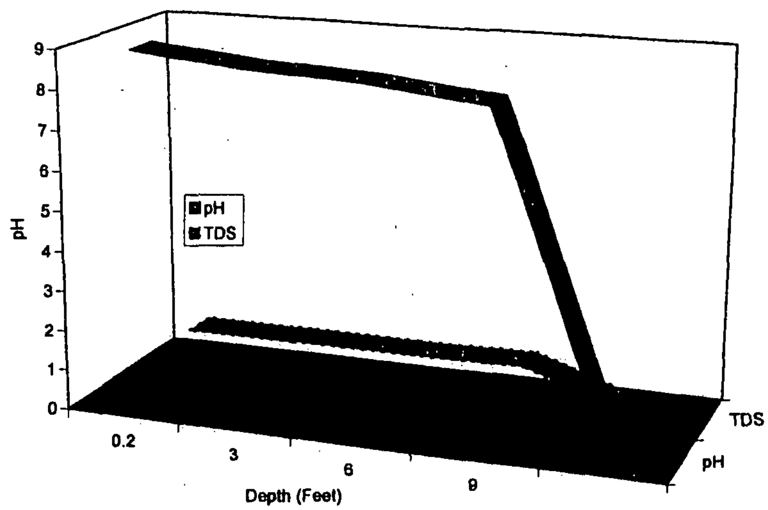
	0.25	3	6
ORP	207.3	225.5	232.6

Secchi Disk Reading: 2.0 foot
Observations: Minor planktonic algae growth present.

Westlake Lake Water Quality Data
Site: M-3
10/24/03

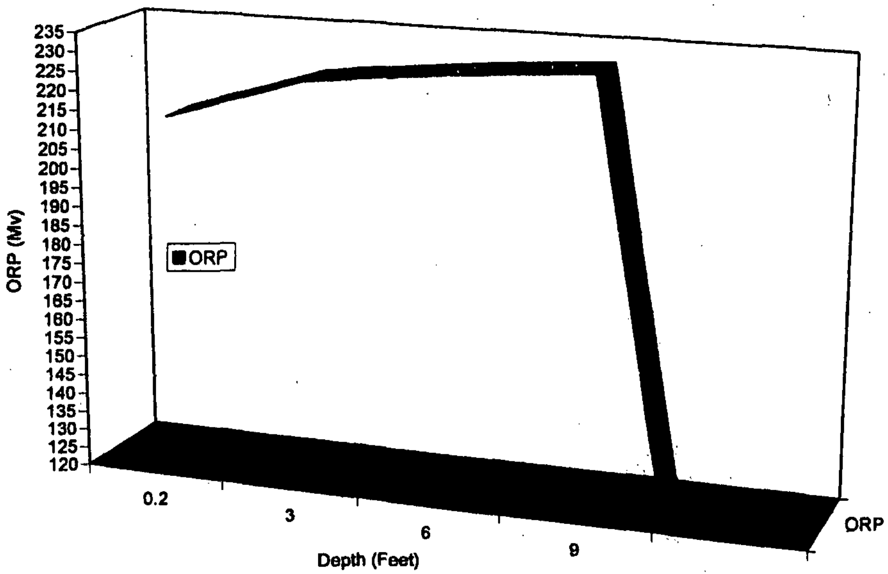


	0.2	3	6	9	
Temp	22.45	21.28	21.06	21.1	0
DO	17.43	11.21	8.71	5.04	0



	0.2	3	6	9	
pH	8.93	8.65	8.52	8.18	0
TDS	1.006	1.012	1.013	1.01	0

Westlake Lake Water Quality Data
Site: M-3
10/24/03



	0.2	3	6	9	
ORP	212.7	224.1	228.1	230.8	0

Secchi Disk Reading: 2.0 foot
Observations: Minor planktonic algae growth present.

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 10-meter probe cable. Nutrient as well as herbicide residue samples were collected and sent to the lab for analysis.

END OF REPORT

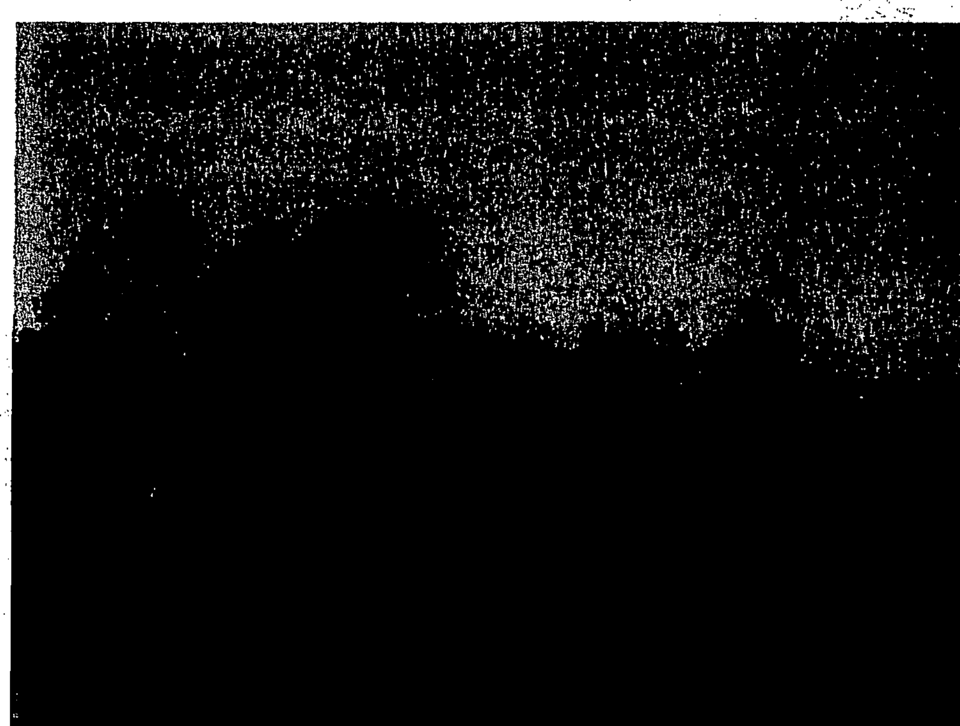
CLEAN LAKES, INC.

November 2003

AQUATIC VEGETATION MANAGEMENT PLAN
MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

December 2003

1: NOVEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for November 2003 called for one (1) inspection. The inspection was carried out on November 26, 2003 as follows:

- November 26, 2003: Lombardo performed an inspection of the lake system. The lake system looked good with no aquatic vegetation present. The lake water was a bit turbid and was a forest green color. One landscaper was noticed blowing yard clippings toward the lake from one of the homeowner's backyards, an issue that may want to be addressed in a future newsletter.

2: DECEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for December 2003 calls for one (1) inspection.

3: NOVEMBER GENERAL OBSERVATIONS: The lake system was good shape during the month. Neither the algae nor the midges created nuisance conditions during the month, and as such no treatments were required.

- Water clarity within the system averaged 3.0 foot. Clarity ranged from 4.5 foot at the Dam to a low of 2.5 foot within Site M6.

- Dissolved oxygen levels were above the Malibu Creek Watershed Basin Plan minimum limits of 5 mg/l within the surface waters of the lake system.

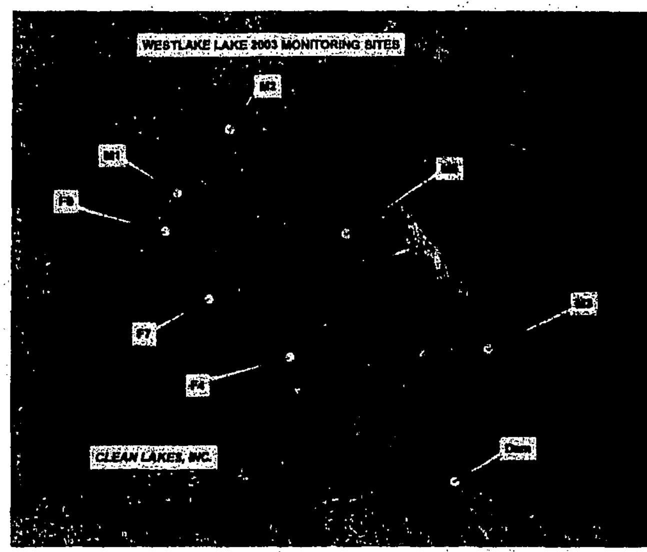
- The phosphate sample reading of 0.13 mg/l at the Dam and 0.11 at the Inlet F9 sampling site. There are no set winter P targets applied during the winter months within the Malibu Creek Watershed Basin Plan.

- The Nitrate as N sample reading of 0.13 mg/l at the Dam and 0.07 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan winter limit of 8.0 mg/l for lakes.

- The Ammonia as N sample reading of 0.34 mg/l at the Dam and 0.40 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan limits for Westlake Lake of 1.5 mg/l.

- The Chlorophyll *a* sample reading of 5 ug/L at the Dam and 9 at Site F9 were within the Malibu Creek Watershed Basin Plan limits for Lakes of 10 ug/L.

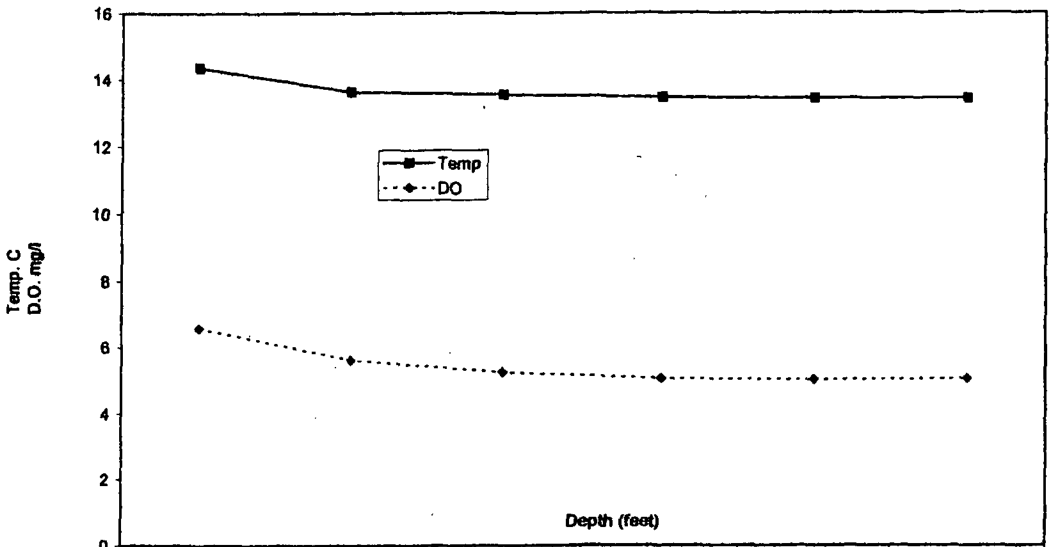
4: WATER QUALITY MONITORING:
Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map at right:



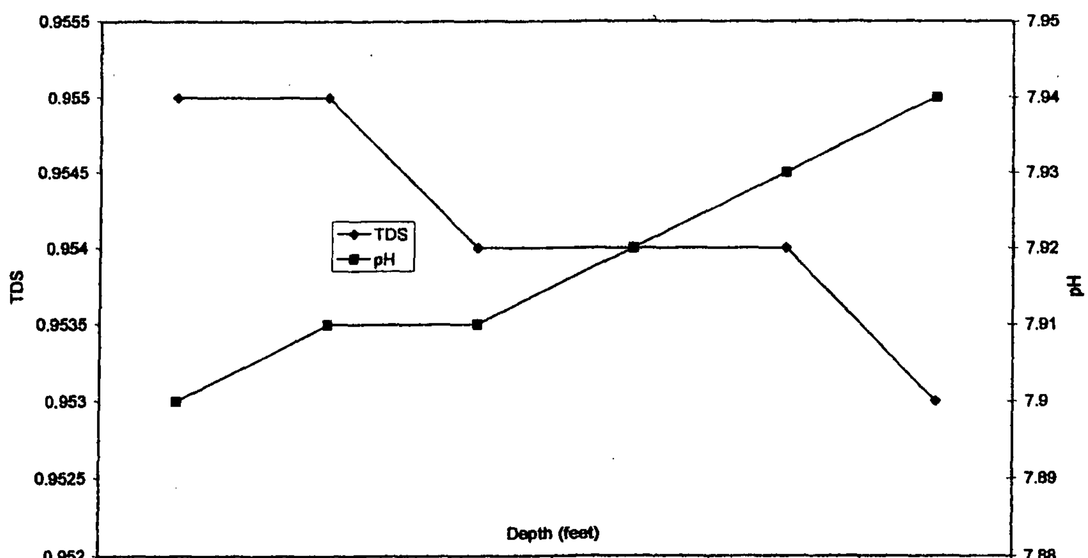
The water quality results for the parameters monitored on November 26th are presented in a graph and table format as follows for each site:

Site Dam

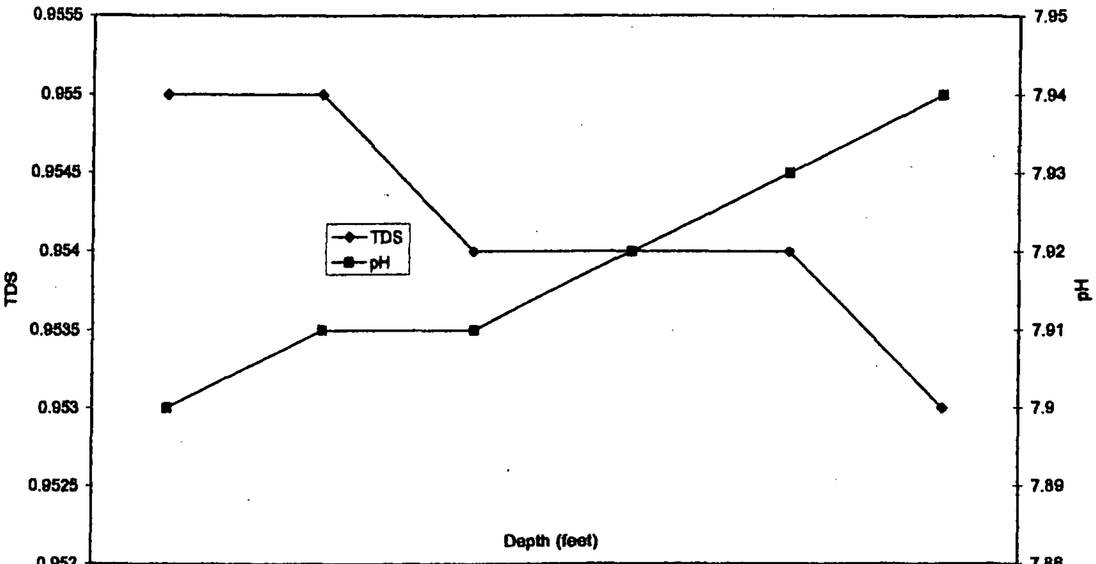
Westlake Lake Water Quality Data
Site: Dam
11/26/03



	0.5	3	6	9	12	15
Temp	14.35	13.64	13.55	13.46	13.43	13.42
DO	6.56	5.61	5.25	5.05	5.01	5.04



	0.5	3	6	9	12	15
TDS	0.955	0.955	0.954	0.954	0.954	0.953
pH	7.9	7.91	7.91	7.92	7.93	7.94

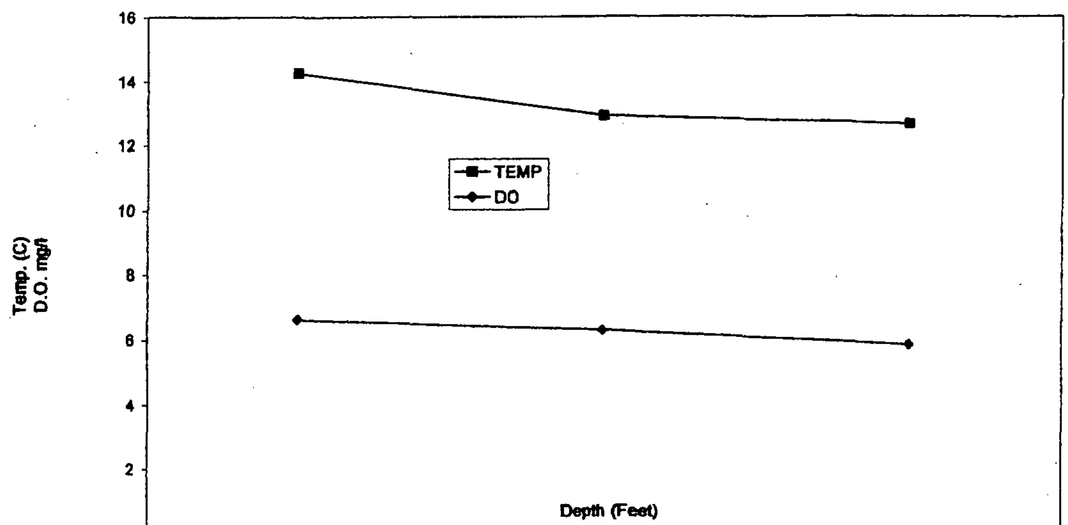


	0.5	3	6	9	12	15
TDS	0.955	0.955	0.954	0.954	0.954	0.953
pH	7.9	7.91	7.91	7.92	7.93	7.94

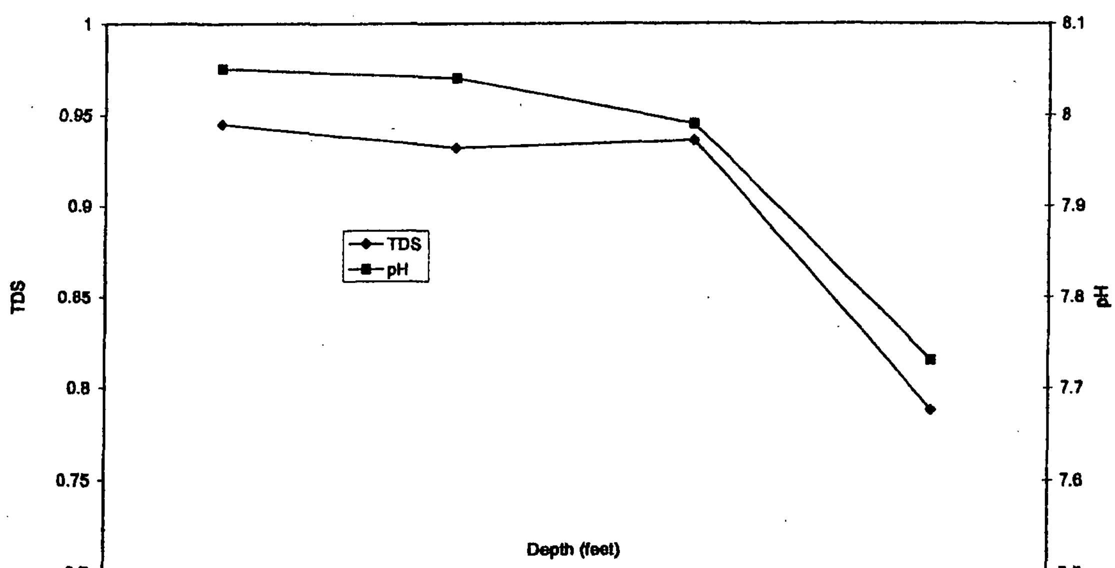
Secchi Disk Reading: 4.5 foot
Copper: Not sampled
Ammonia as N: 0.34 mg/l
Nitrate as N: 0.13 mg/l
Phosphate: 0.13 mg/l
Observations: Look good, clarity and color good.

Site F-4

Westlake Lake Water Quality Data
Site: Finger 4
11/26/03

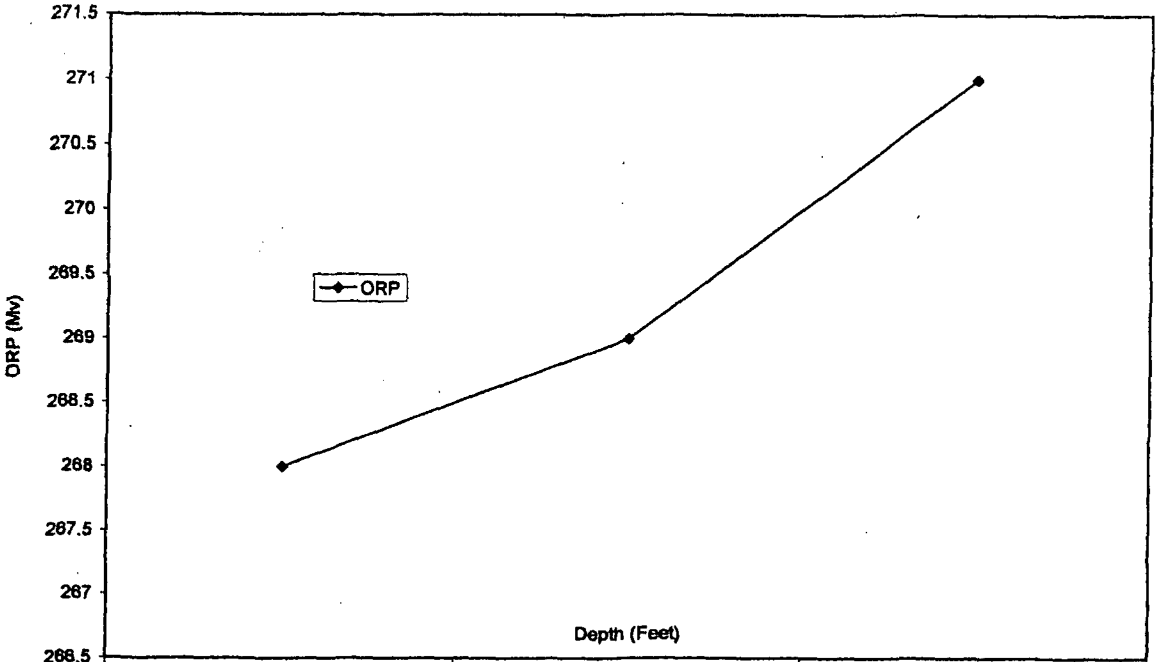


	0.2	3	6
TEMP	14.26	12.93	12.67
DO	6.63	6.29	5.82



	0.2	3	6	7.4
TDS	0.945	0.932	0.936	0.788
pH	8.05	8.04	7.99	7.73

Westlake Lake Water Quality Data
Site: Finger 4
11/26/03

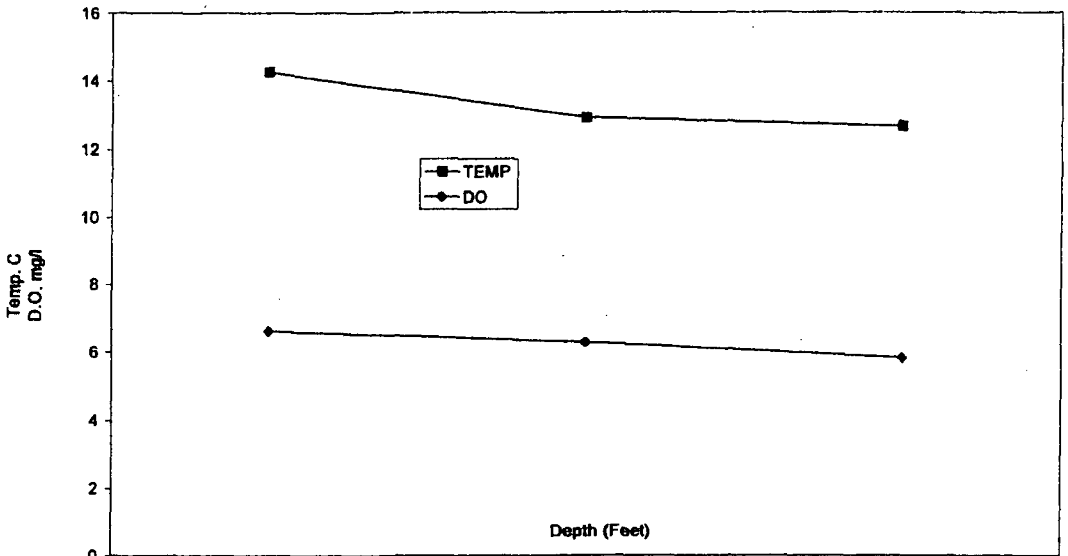


	0.2	3	6
ORP	268	269	271

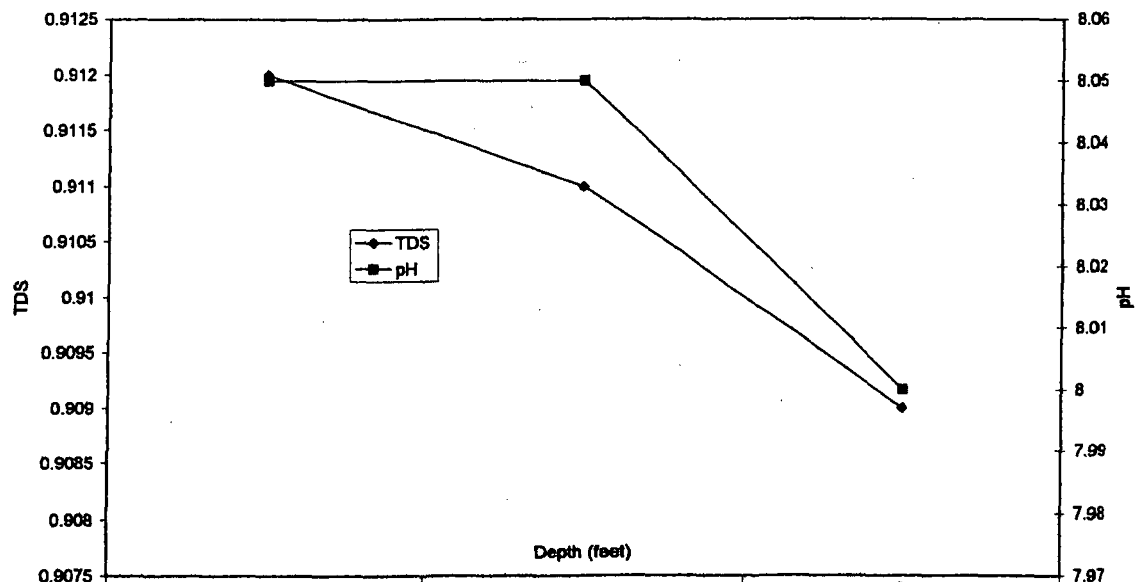
Secchi Disk Reading: 3.0 foot
Observations: Area looked good.

Site F-7

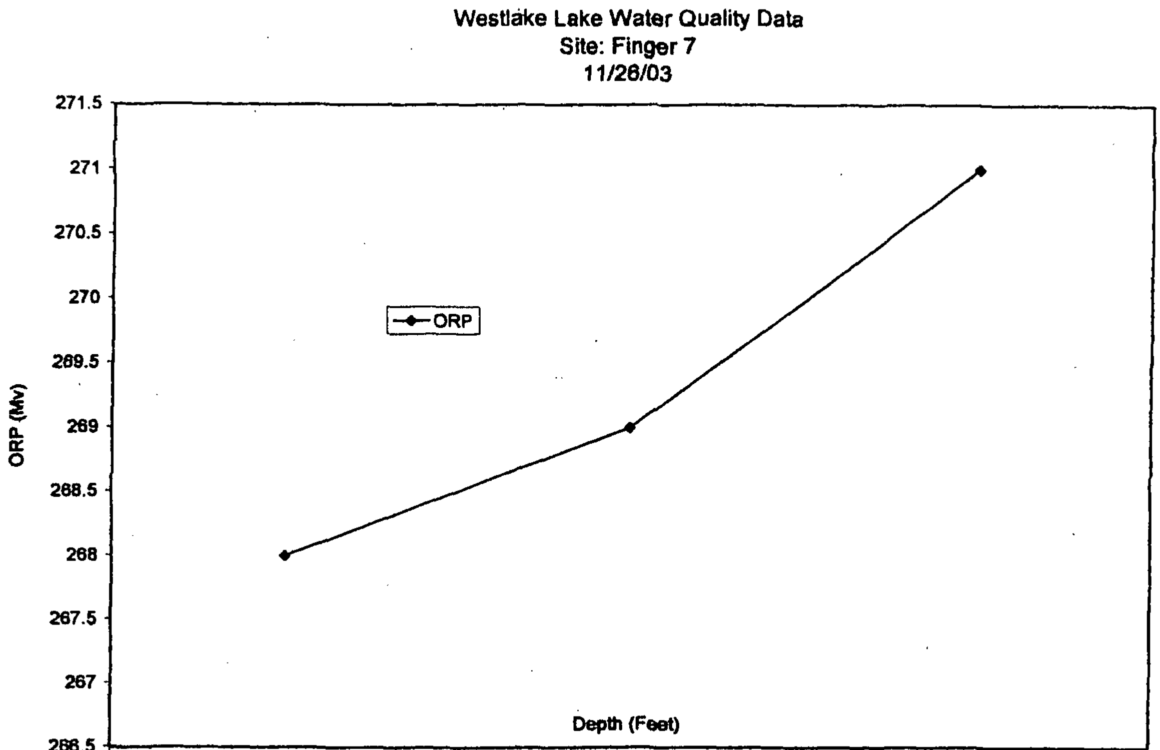
Westlake Lake Water Quality Data
Site: Finger 7
11/26/03



	0.2	3	6
TEMP	14.26	12.93	12.67
DO	6.63	6.29	5.82



	0.2	3	6
TDS	0.912	0.911	0.909
pH	8.05	8.05	8

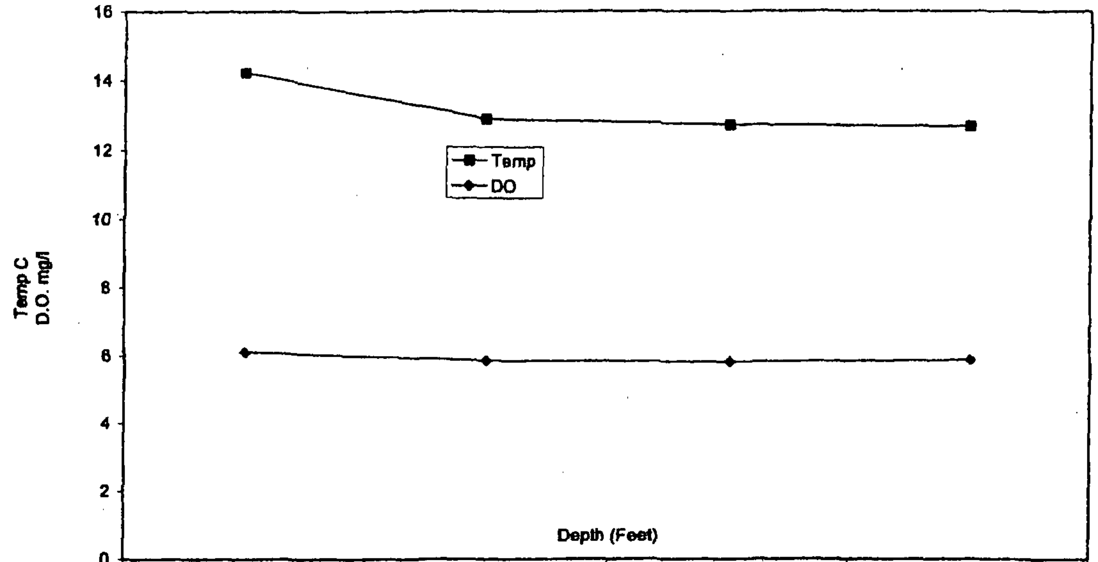


	0.2	3	6
ORP	268	269	271

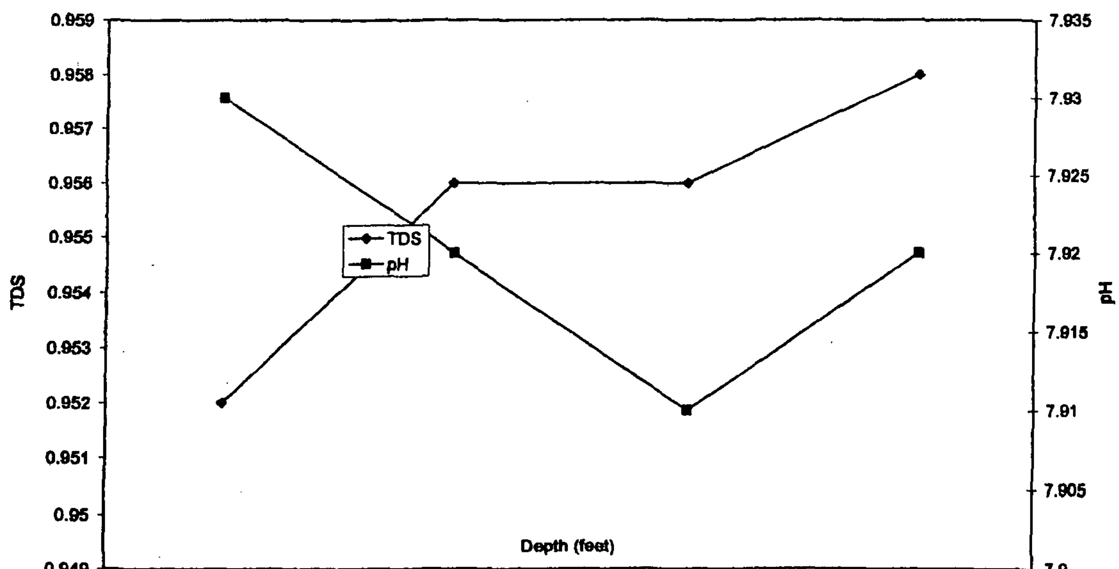
Secchi Disk Reading: 3.0 foot
Observations: The area looked good.

Site F-9

Westlake Lake Water Quality Data
Site: Finger 9
11/26/03

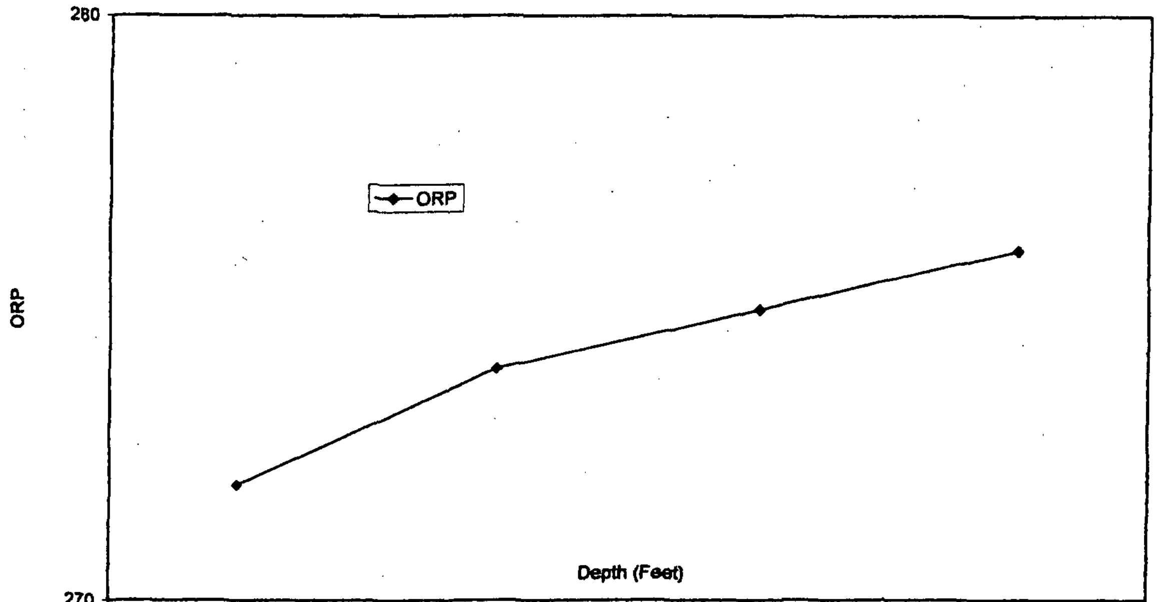


	0.2	3	6	7.8
Temp	14.24	12.88	12.71	12.67
DO	6.12	5.86	5.82	5.87



	0.2	3	6	7.8
TDS	0.952	0.956	0.956	0.958
pH	7.93	7.92	7.91	7.92

Westlake Lake Water Quality Data
Site: Finger 9
11/26/03

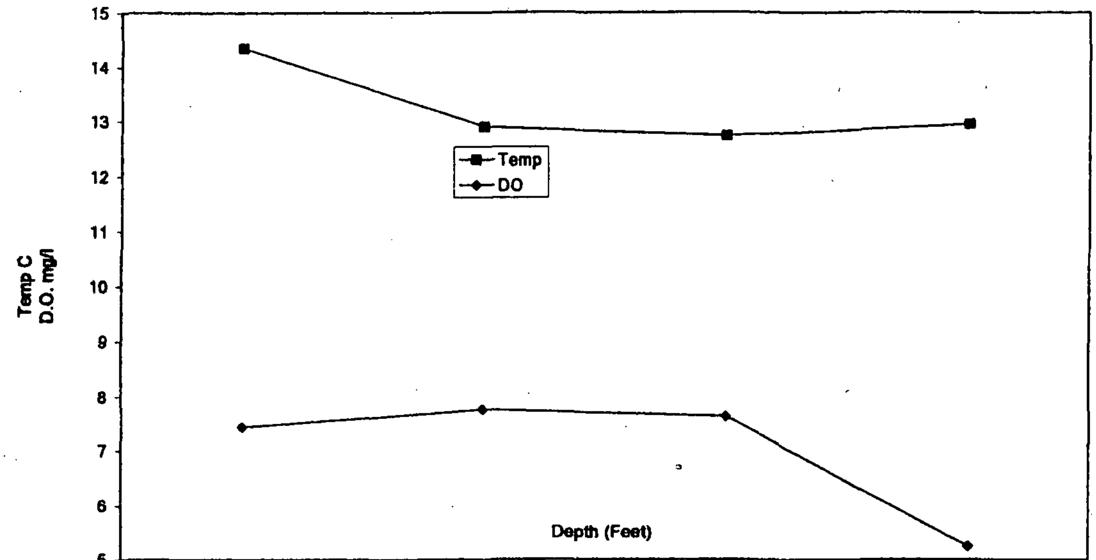


	0.2	3	6	7.8
ORP	272	274	275	276

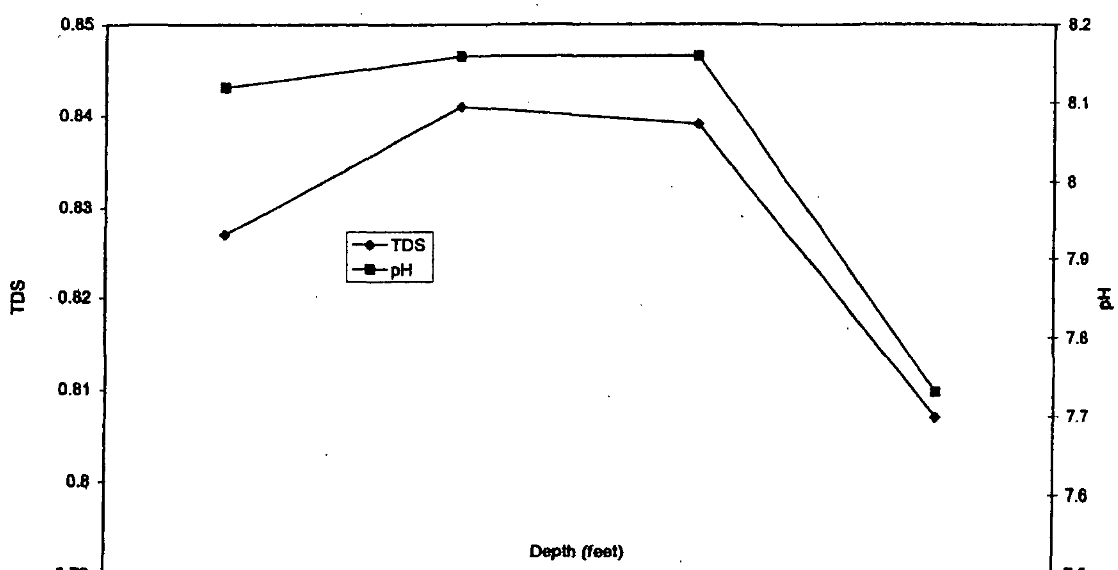
Secchi Disk Reading: 4.0 foot
Ammonia as N: 0.40 mg/l
Nitrate as N: 0.07 mg/l
Phosphate: 0.11 mg/l
Observations: Look good, clarity and color good.

Site M1

Westlake Lake Water Quality Data
Site: M1
11/26/03

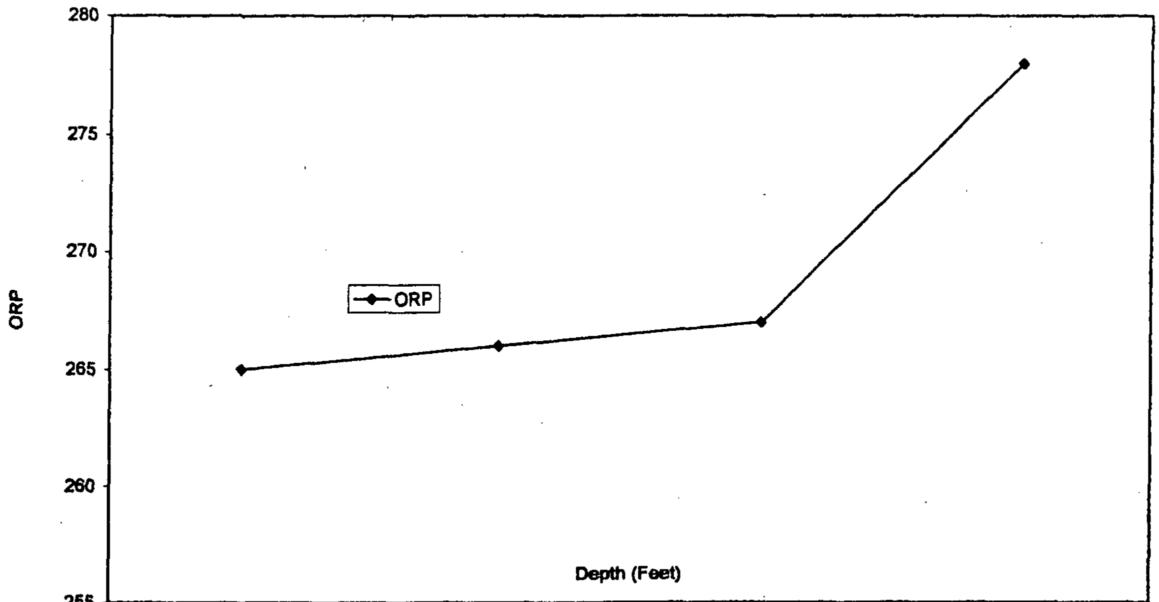


	0.3	3	6	7.45
Temp	14.35	12.9	12.74	12.95
DO	7.43	7.75	7.62	5.24



	0.3	3	6	7.45
TDS	0.827	0.841	0.839	0.807
pH	8.12	8.16	8.16	7.73

Westlake Lake Water Quality Data
Site: M1
11/26/03

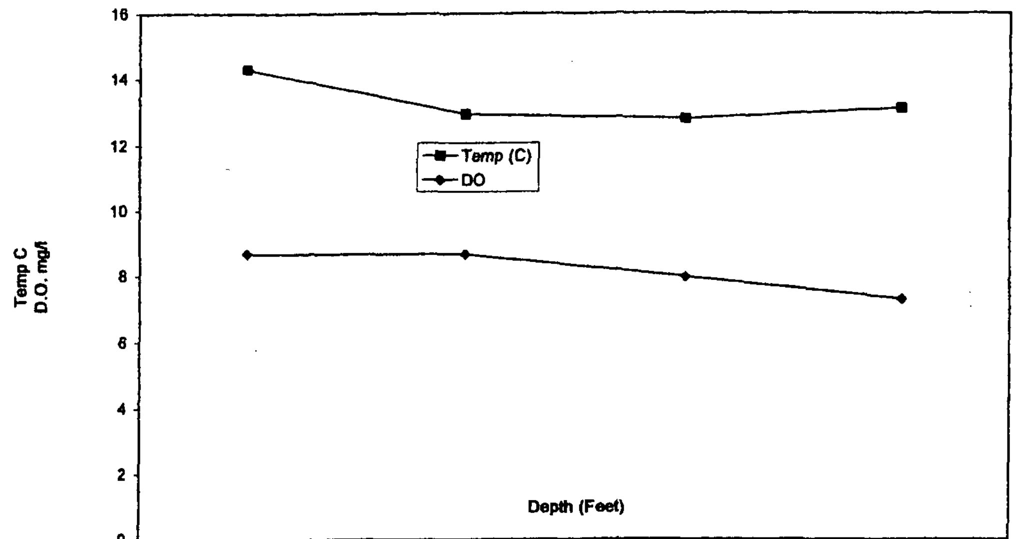


	0.3	3	6	7.45
ORP	265	266	267	278

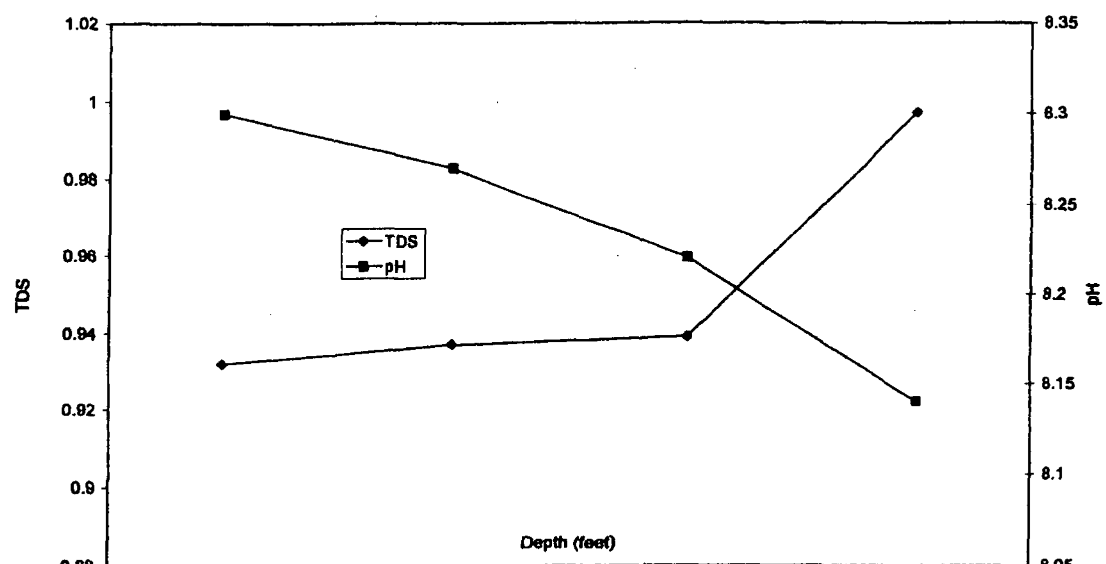
Secchi Disk Reading: 4.0 foot
Observations: The area looked good.

Site M-2

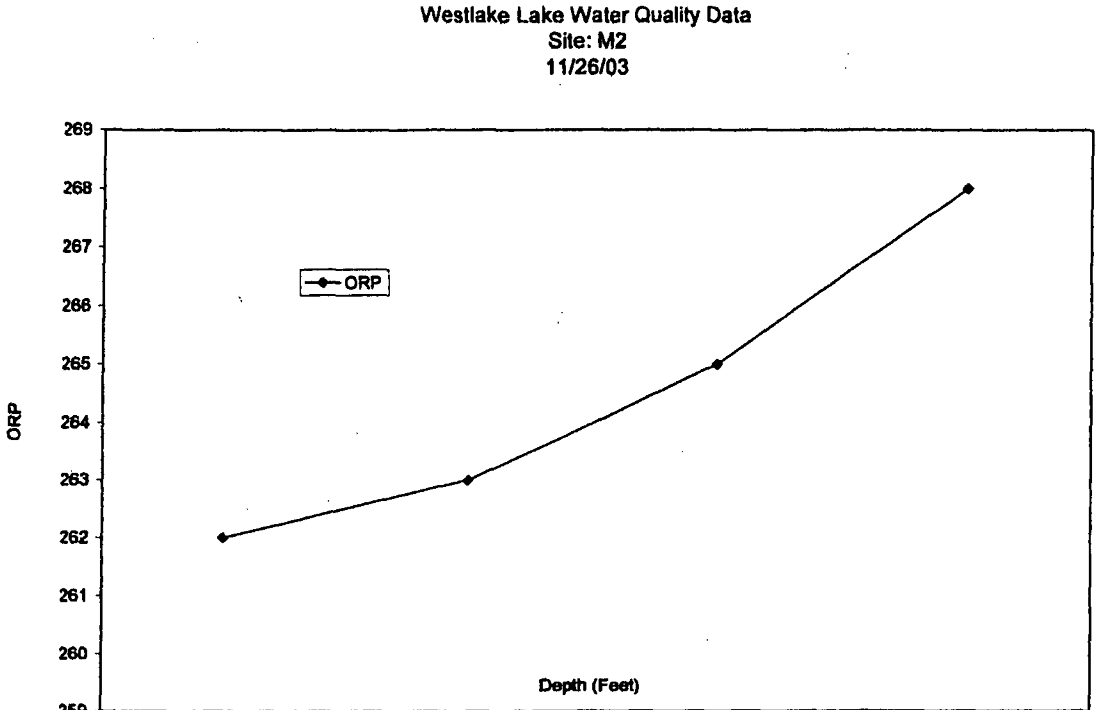
Westlake Lake Water Quality Data
Site: M2
11/26/03



	0.3	3	6	9
Temp (C)	14.29	12.93	12.78	13.1
DO	8.66	8.65	7.96	7.3



	0.3	3	6	9
TDS	0.932	0.937	0.939	0.997
pH	8.3	8.27	8.22	8.14

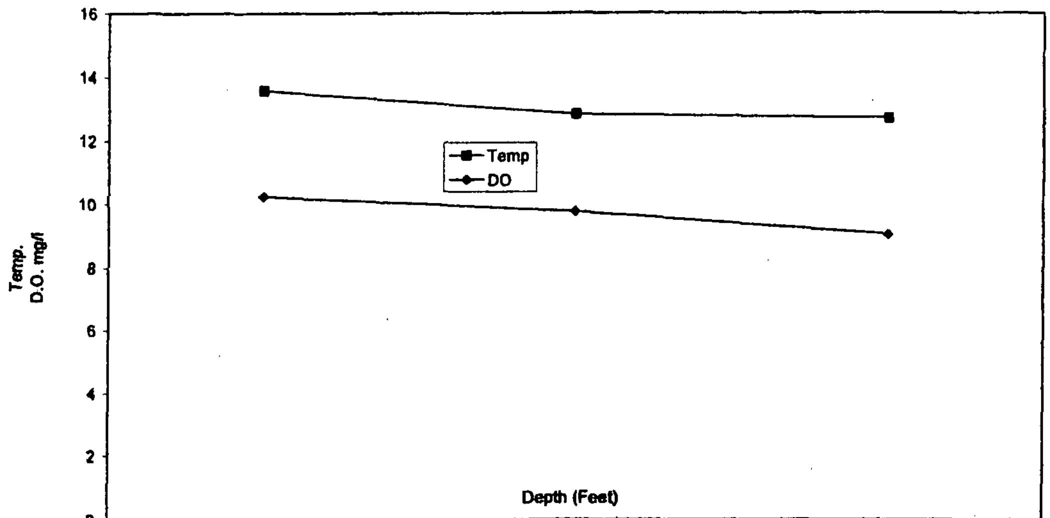


	0.3	3	6	9
ORP	262	263	265	268

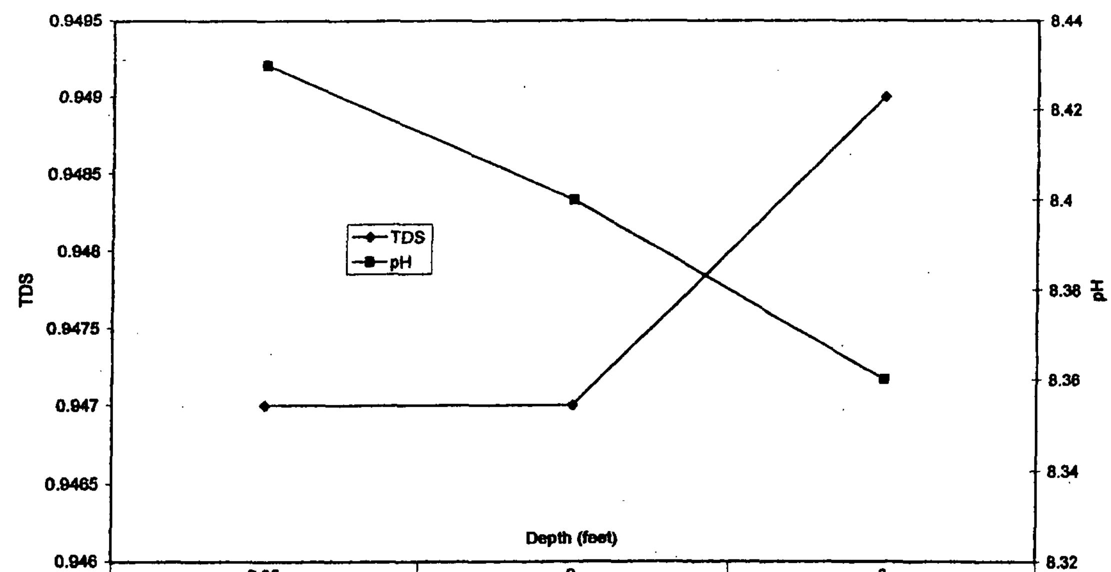
Secchi Disk Reading: 3.0 foot
Observations: The area looked good.

Site M-6

Westlake Lake Water Quality Data
Site: M-6
11/26/03

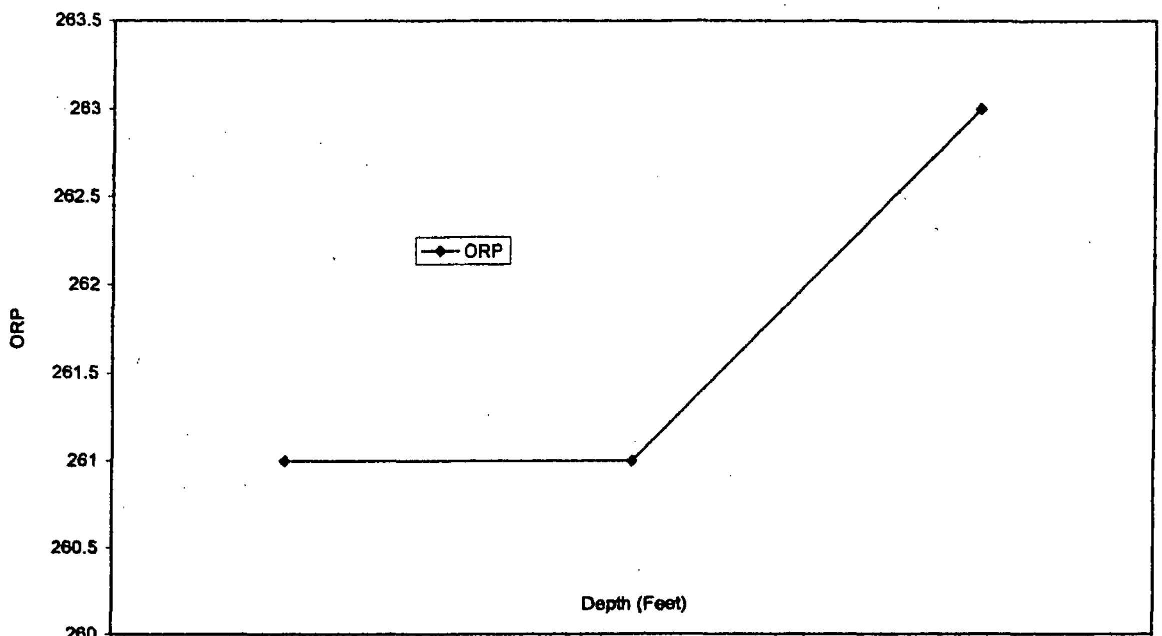


	0.25	3	6
Temp	13.56	12.84	12.72
DO	10.24	9.76	9.05



	0.25	3	6
TDS	0.947	0.947	0.949
pH	8.43	8.4	8.36

Westlake Lake Water Quality Data
Site: M-6
11/26/03

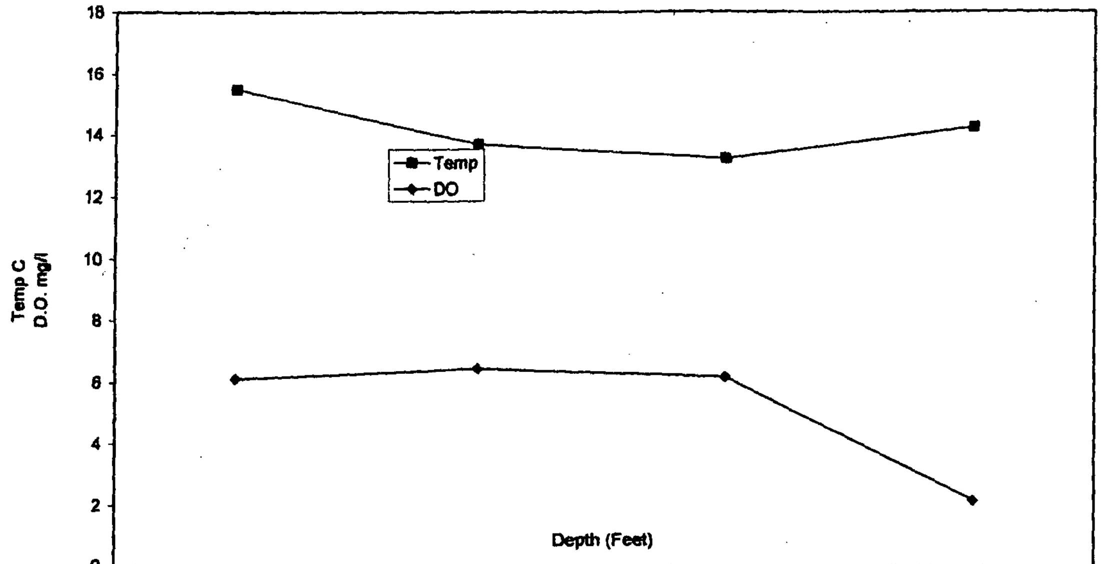


	0.25	3	6
ORP	261	261	263

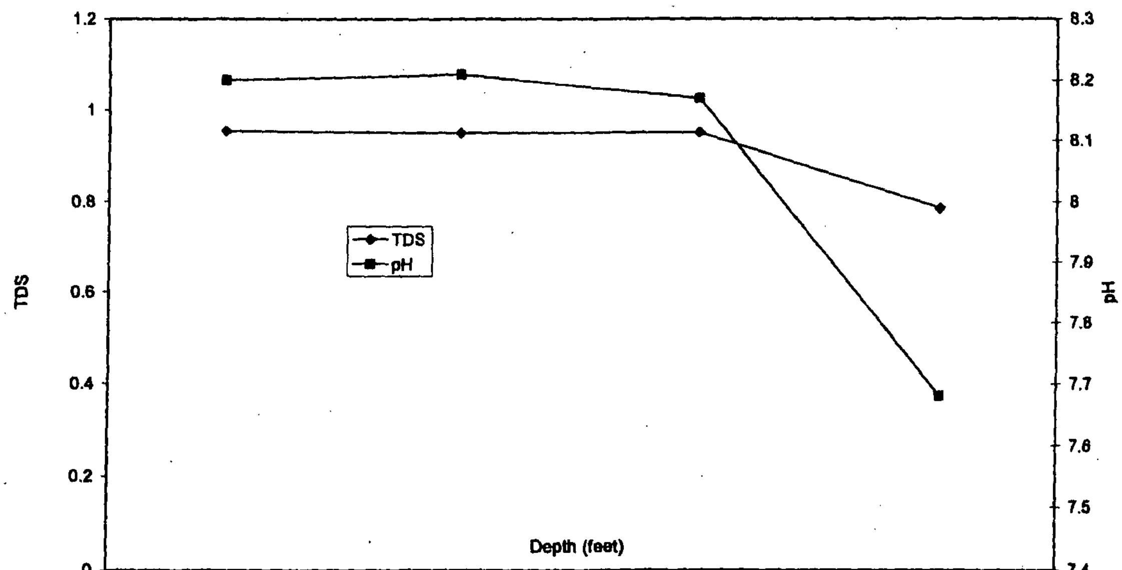
Secchi Disk Reading: 2.5 foot
Observations: Area looked good.

Site M-3

Westlake Lake Water Quality Data
Site: M-3
11/26/03

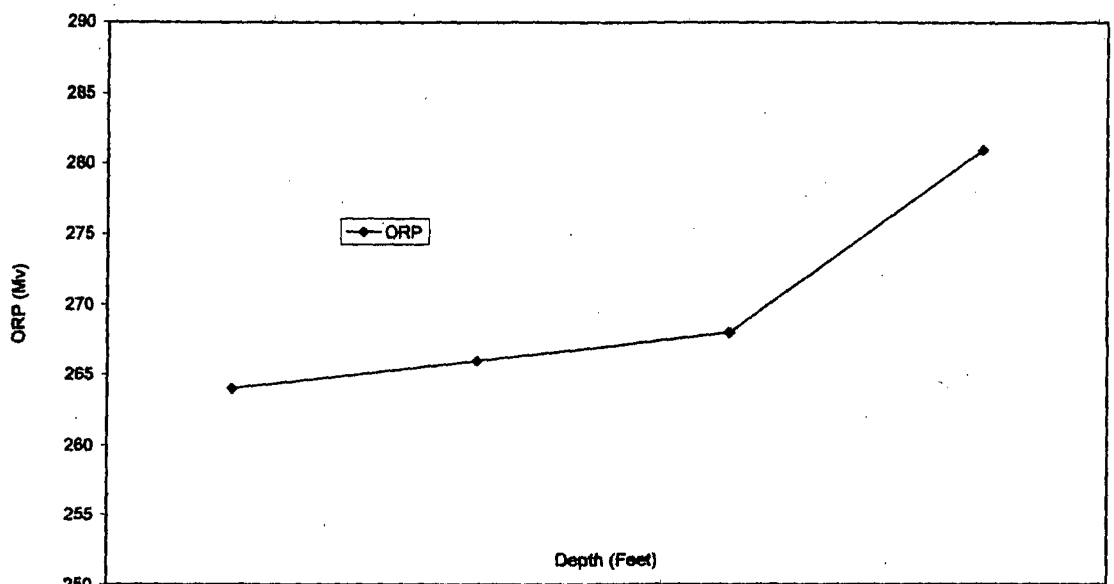


	0.2	3	6	9
Temp	15.5	13.71	13.24	14.27
DO	6.1	6.44	6.16	2.15



	0.2	3	6	9
TDS	0.954	0.95	0.951	0.786
pH	8.2	8.21	8.17	7.68

Westlake Lake Water Quality Data
Site: M-3
11/26/03



	0.2	3	6	9
ORP	264	266	268	281

Secchi Disk Reading: 2.0 foot
Observations: Minor planktonic algae growth present.

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 10-meter probe cable. Nutrient as well as herbicide residue samples were collected and sent to the lab for analysis.

END OF REPORT

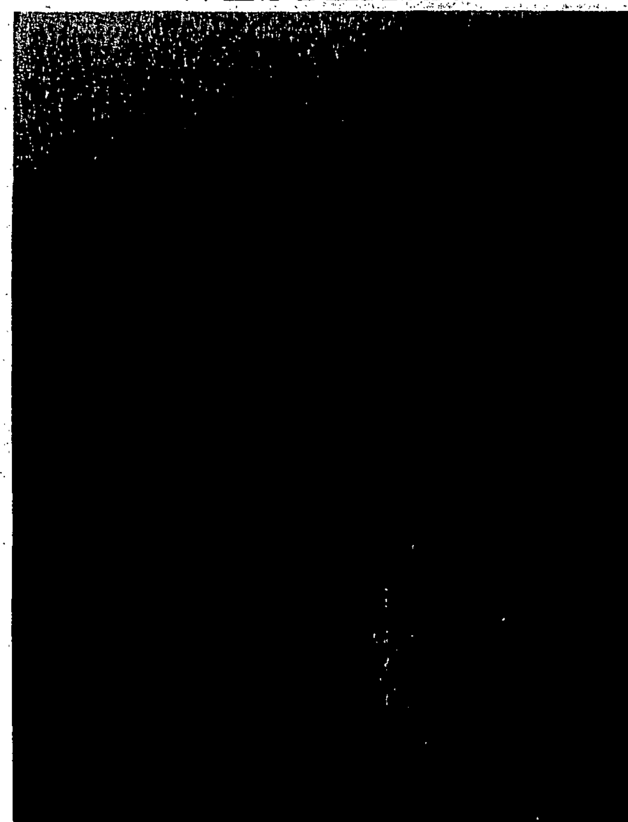
CLEAN LAKES, INC.

December 2003

AQUATIC VEGETATION MANAGEMENT PLAN MONTHLY REPORT

For

WESTLAKE



Prepared By

CLEAN LAKES, INC.
2150 Franklin Canyon Road
Martinez, California 94553
www.cleanlake.com

Prepared For

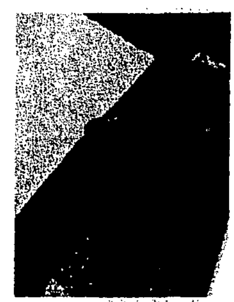
Westlake Lake Management Association
32353 W. Triunfo Canyon Road
Westlake Village, California 91361

December 2003

1: DECEMBER INSPECTION AND MONITORING SCHEDULE: The schedule for December 2003 called for one (1) inspection. The inspection was carried out on December 24, 2003 as follows:

- December 24, 2003: McNabb and Moorhouse performed an inspection of the lake system. The lake system looked good with no aquatic vegetation present. The lake water was a bit turbid though the color was good. A flock of pelicans was noted on shore at Finger 9 and the first large winter storm was moving into the area.

- In addition to the scheduled monitoring event, CLI staff were able to make an inspection of the lake system on December 25th & 26th, during and immediately following the first major storm event of the season to collect runoff water samples for analysis as well as to review conditions during the storm event.



A few of the pending Lake Management issues are as follows:

- NPDES Aquatic Pesticide Permit Issues: The 2004 NPDES Permit is currently moving through the State Water Quality Control Board process, and the coverage under the current Permit that expires on January 31, 2004 will be extended until the new Permit is issued.

- Aeration Fountain: Information was provided on Otterbine's Aeration Fountains for review for use in Westlake Bay.

- Midge Monitoring and Control Recommendations: Aquatic chironomine midges developed into nuisance pest levels within portions of the lake system in August 2003. Left uncontrolled, midge problems can

develop into large populations under the right conditions It is recommended that a regular population monitoring schedule be implemented followed by a larva treatment using VectoBac 12AS on a regular basis to prevent larvae from ever maturing

Aquatic midge monitoring would be carried out. Larvae populations would be sampled on the lake bottom with a Surber Sampler along fifty (50) foot transect lines at the Dam and at Fingers F4 and F9 on a weekly basis starting in April and continuing through September. Based on the number of larva present per square foot, a recommendation to treat would be made. Typically a density of 35 larvae per square foot indicates problem levels can be expected, and treatments would be implemented prior to levels reaching these densities. Treatments would be implemented using VectoBac 12AS, a biological larvicide control method that incorporates *Bacillus thuringiensis*, at the rate of 1.5 pints per surface acre, conducted by boat as required depending on monitoring results.

- The storm water runoff sample results will be provided upon receipt from the laboratory.

2: JANUARY INSPECTION AND MONITORING SCHEDULE: The schedule for January 2004 calls for one (1) inspection.

3: DECEMBER GENERAL OBSERVATIONS: The lake system was in good shape during the month.

- Water clarity within the system averaged 1.75 foot. Clarity ranged from 2.5 feet at the Dam to a low of 1.5 foot within Site M1, M2, M3, and F9.

- Dissolved oxygen levels were above the Malibu Creek Watershed Basin Plan minimum limits of 5 mg/l within the surface waters of the lake system.

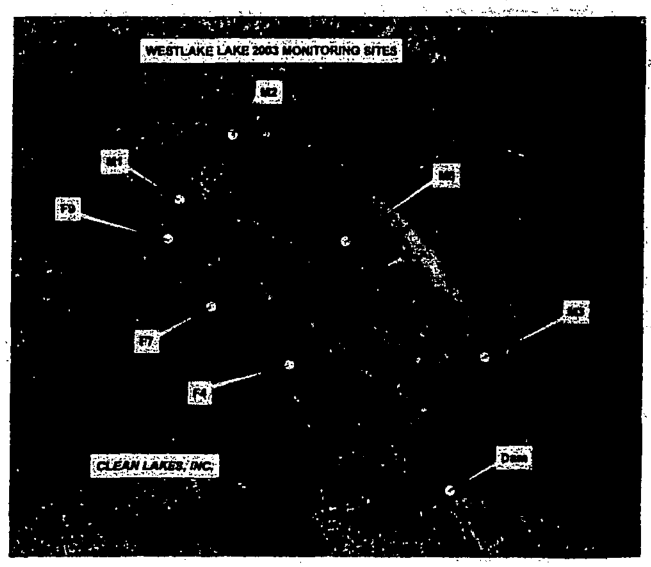
- The phosphate sample reading was 0.12 mg/l at the Dam and 0.06 mg/l at Site F9 sampling site. There are no set winter P targets applied during the winter months within the Malibu Creek Watershed Basin Plan.

- The Nitrate as N sample reading of 0.03 mg/l at the Dam and 0.03 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan winter limit of 8.0 mg/l for lakes.

- The Ammonia as N sample reading of 0.15 mg/l at the Dam and 0.08 mg/l at Site F9 were within the Malibu Creek Watershed Basin Plan limits for Westlake Lake of 1.5 mg/l.

- The November 2003 Chlorophyll *a* sample reading was 5 ug/L at the Dam and 9 ug/l at Site F9, and were within the Malibu Creek Watershed Basin Plan limits for Lakes of 10 ug/L.

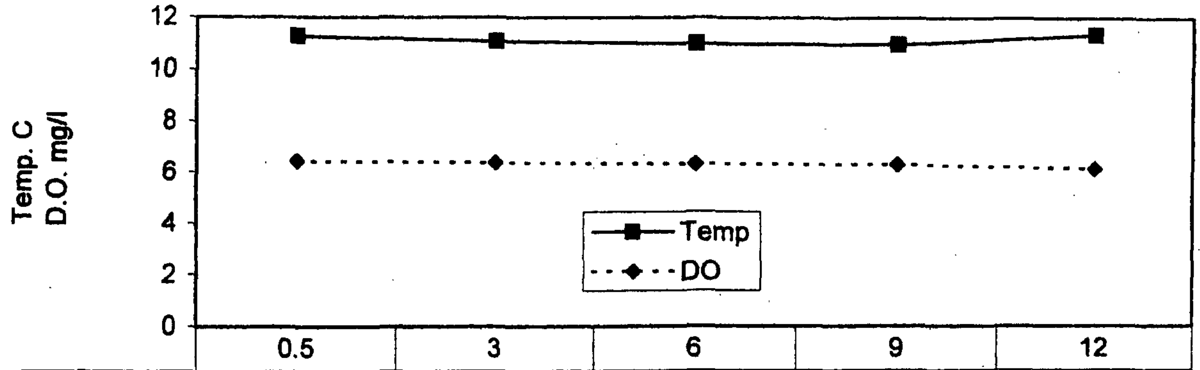
4: WATER QUALITY MONITORING:
Westlake Water Quality Analysis is conducted on a monthly basis at eight (8) existing monitoring sites per the map at right:



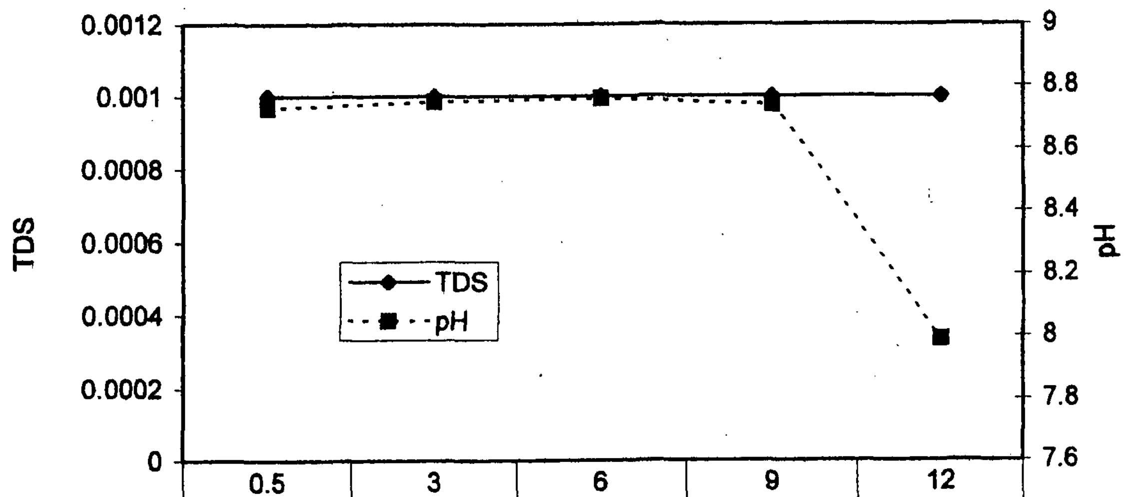
The water quality results for the parameters monitored on December 24th are presented in a graph and table format as follows for each site:

Site Dam

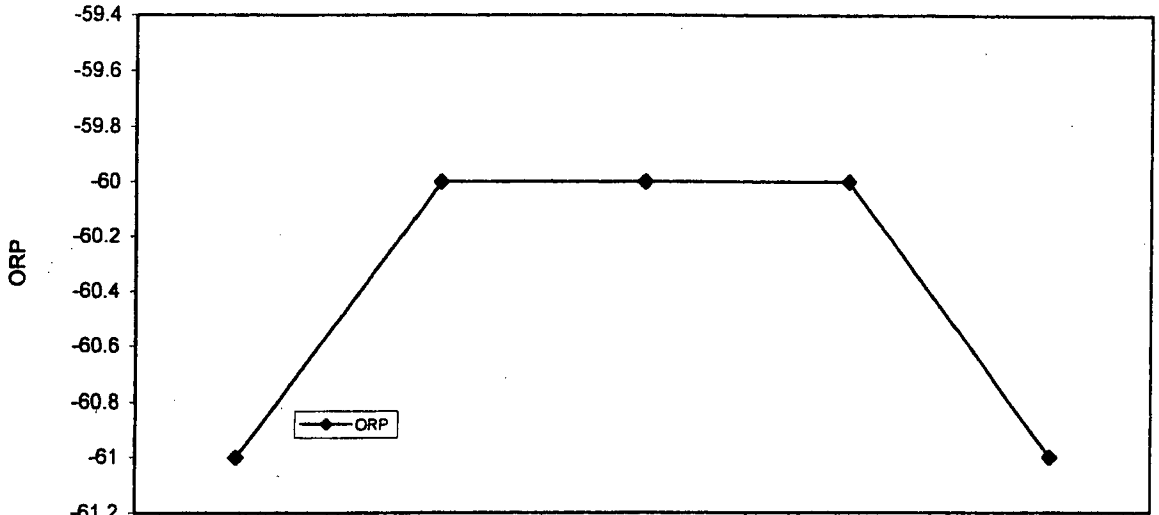
Westlake Lake Water Quality Data
Site: Dam
12/24/03



Depth (feet)	0.5	3	6	9	12
Temp	11.27	11.09	11	10.98	11.34
DO	6.44	6.37	6.33	6.31	6.14



Depth (Feet)	0.5	3	6	9	12
TDS	0.001	0.001	0.001	0.001	0.001
pH	8.73	8.75	8.76	8.74	7.99



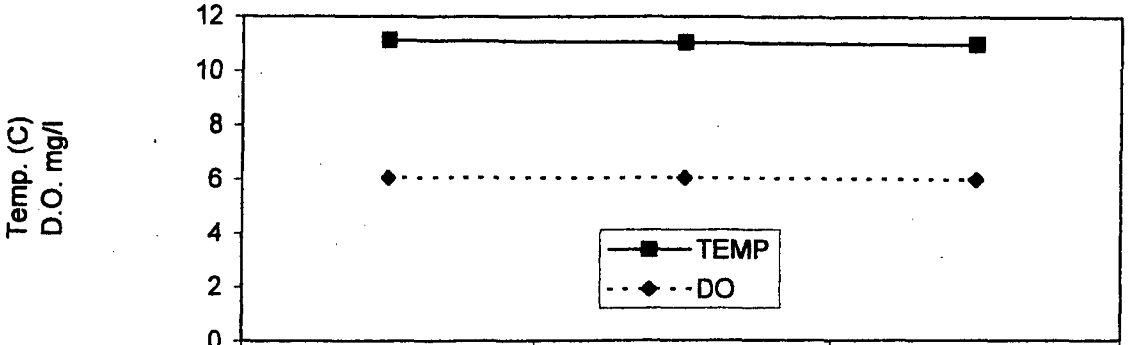
	0.5	3	6	9	12
ORP	-61	-60	-60	-60	-61

Depth (feet)

Secchi Disk Reading: 2.5 foot
Copper: Not sampled
Ammonia as N: 0.15 mg/l
Nitrate as N: 0.03 mg/l
Phosphate: 0.12 mg/l
Observations: Clarity and color good.

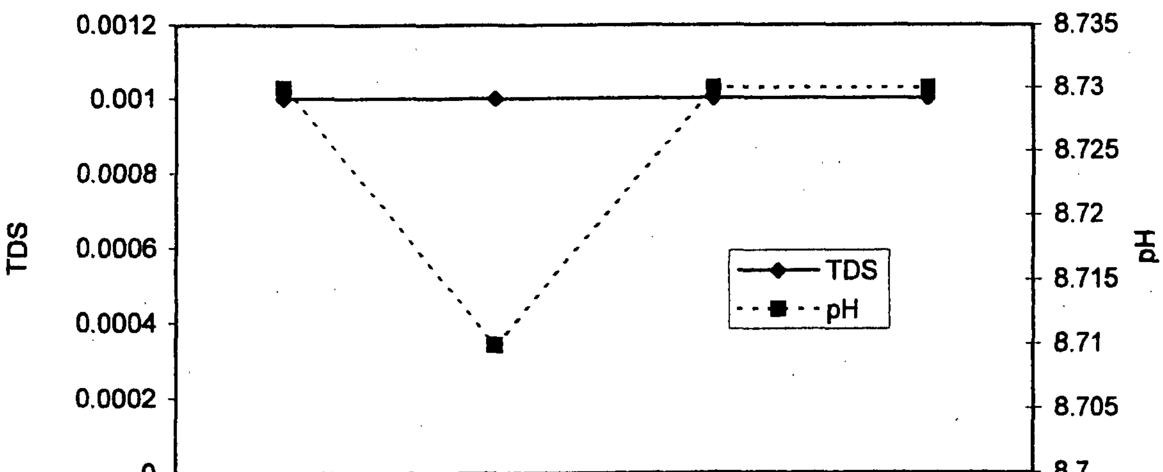
Site F-4

Westlake Lake Water Quality Data
Site: Finger 4
12/24/03



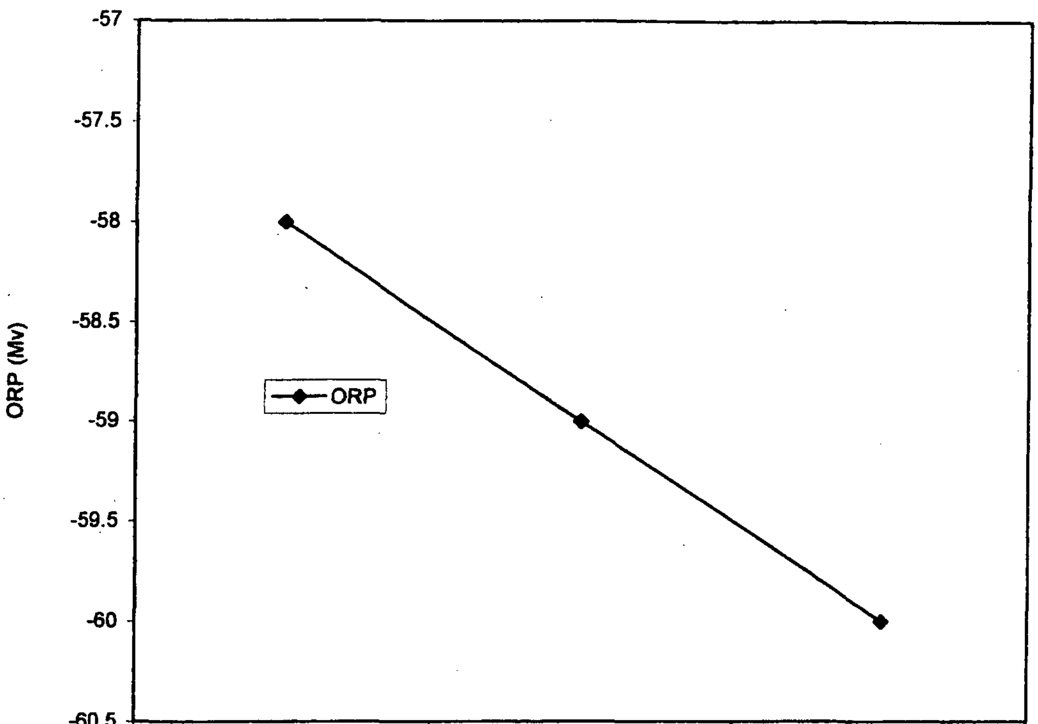
	0.2	3	6
TEMP	11.14	11.06	11
DO	6.07	6.05	6

Depth (Feet)



	0.2	3	6	8.2
TDS	0.001	0.001	0.001	0.001
pH	8.73	8.71	8.73	8.73

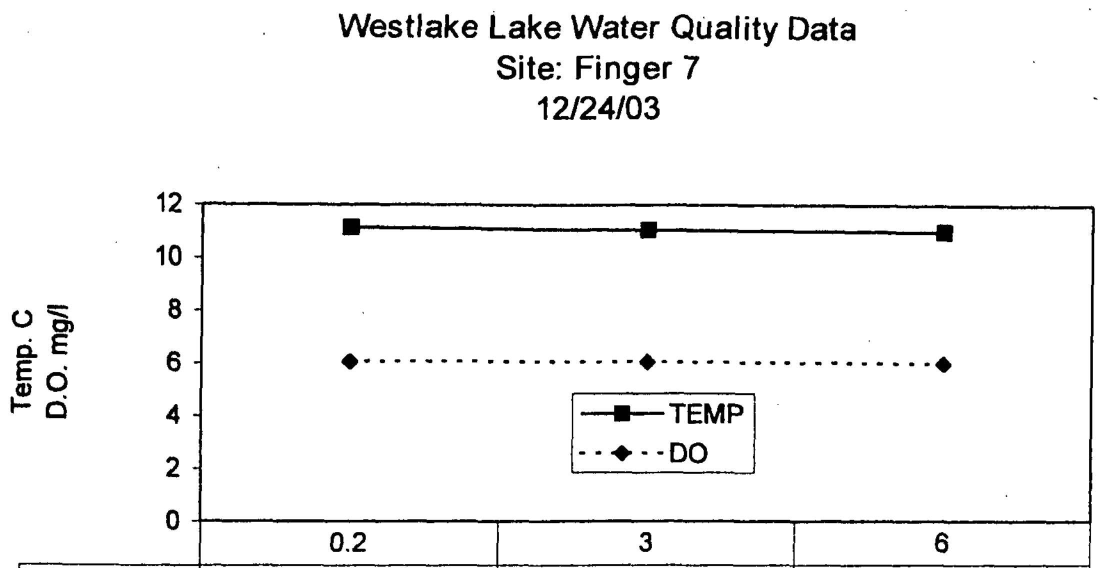
Depth (Feet)



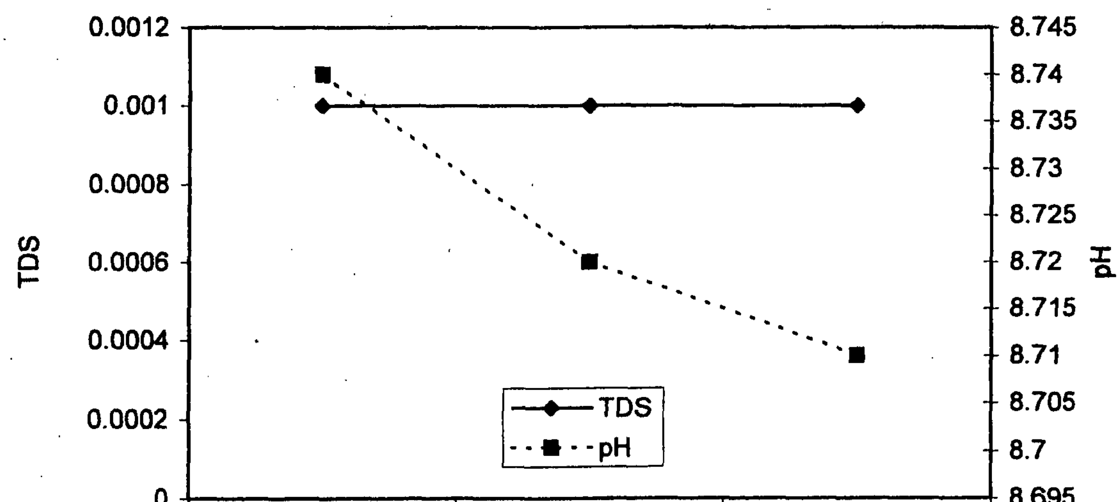
	0.2	3	6
ORP	-58	-59	-60

Secchi Disk Reading: **2.0 foot**
Observations: Area looked good.

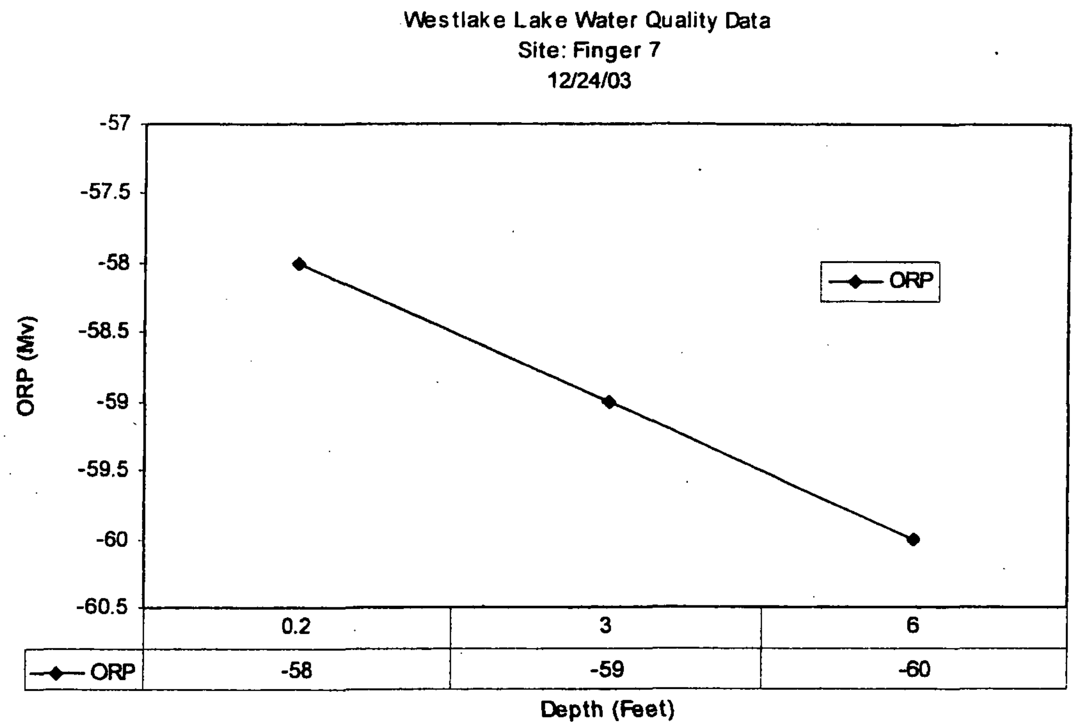
Site F-7



	0.2	3	6
TEMP	11.14	11.06	11
DO	6.07	6.05	6



	0.2	3	6
TDS	0.001	0.001	0.001
pH	8.74	8.72	8.71

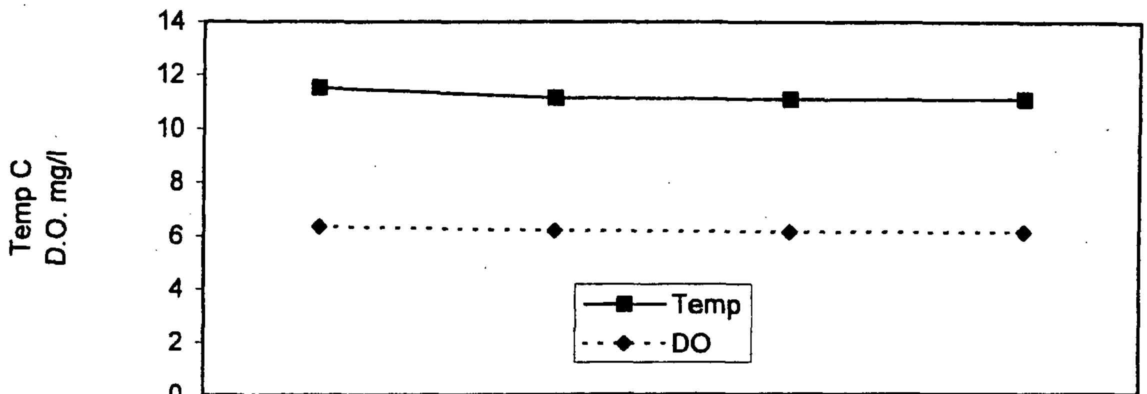


	0.2	3	6
ORP	-58	-59	-60

Secchi Disk Reading: 2.0 foot
Observations: The area looked good.

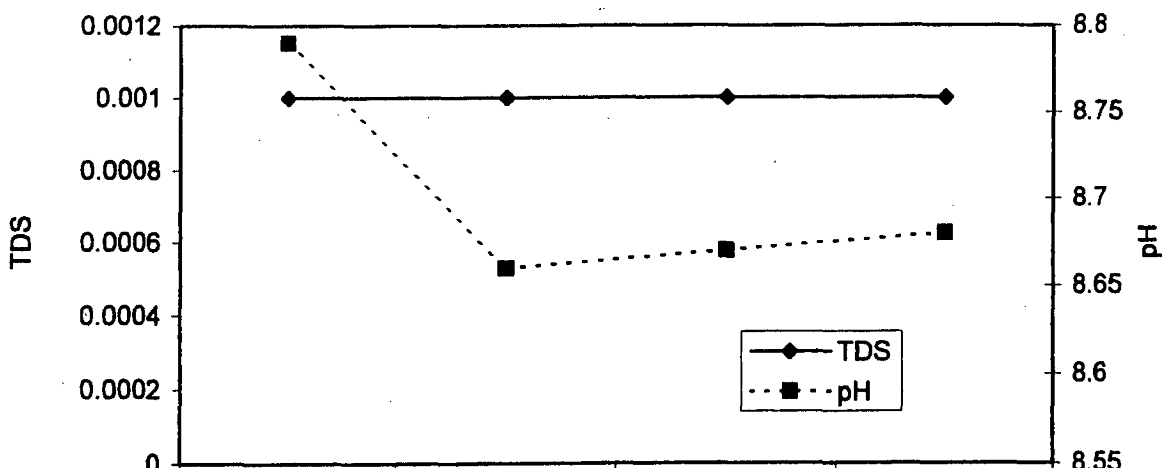
Site F-9

Westlake Lake Water Quality Data
Site: Finger 9
12/24/03



	0.2	3	6	8.2
Temp	11.52	11.15	11.09	11.1
DO	6.36	6.2	6.14	6.13

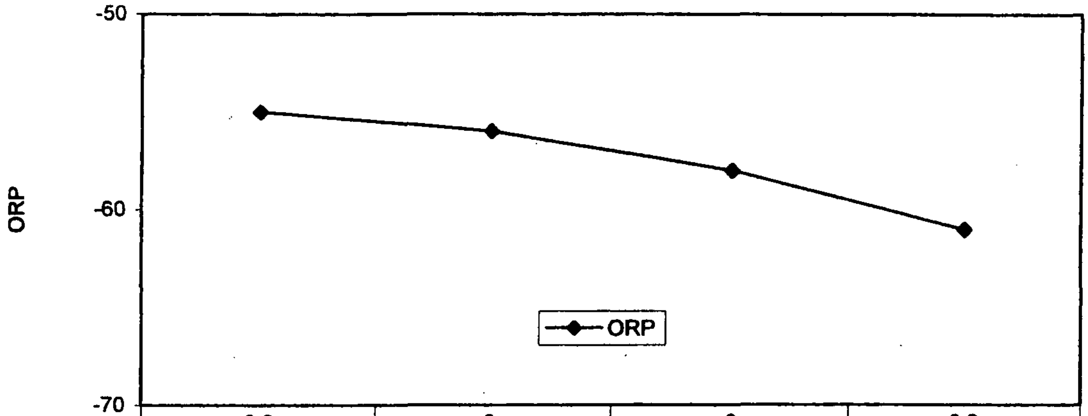
Depth (Feet)



	0.2	3	6	8.2
TDS	0.001	0.001	0.001	0.001
pH	8.79	8.66	8.67	8.68

Depth (Feet)

Westlake Lake Water Quality Data
Site: Finger 9
12/24/03



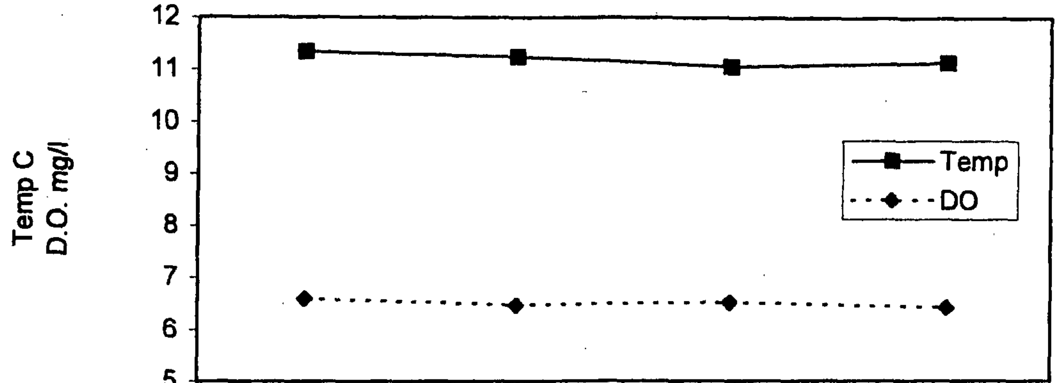
Depth (Feet)	0.2	3	6	8.2
ORP	-55	-56	-58	-61

Depth (Feet)

Secchi Disk Reading: 1.5 foot
Ammonia as N: 0.08 mg/l
Nitrate as N: 0.03 mg/l
Phosphate: 0.06 mg/l
Observations: Area looked good.

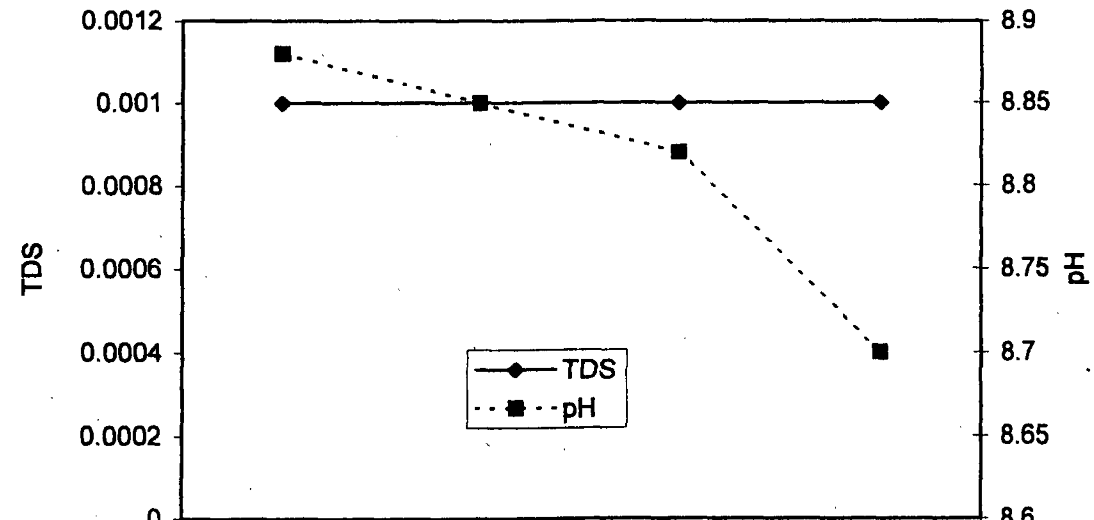
Site M1

Westlake Lake Water Quality Data
Site: M1
12/24/03



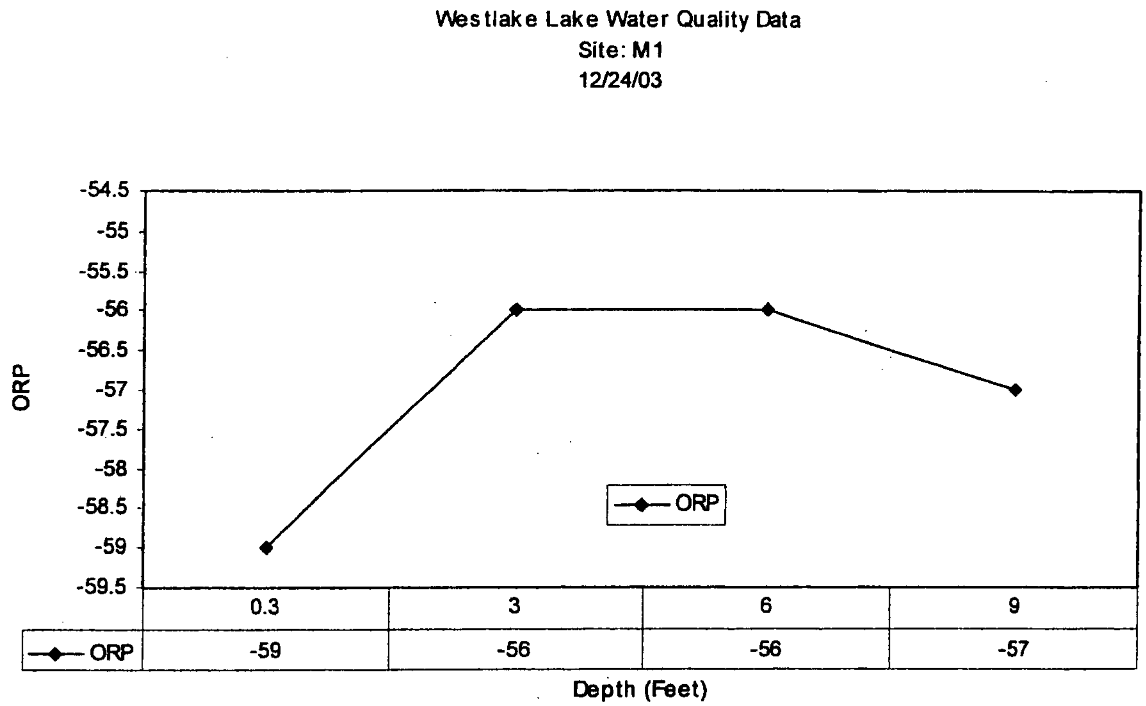
	0.3	3	6	9
Temp	11.34	11.25	11.06	11.15
DO	6.59	6.47	6.52	6.42

Depth (Feet)



	0.3	3	6	9
TDS	0.001	0.001	0.001	0.001
pH	8.88	8.85	8.82	8.7

Depth (Feet)

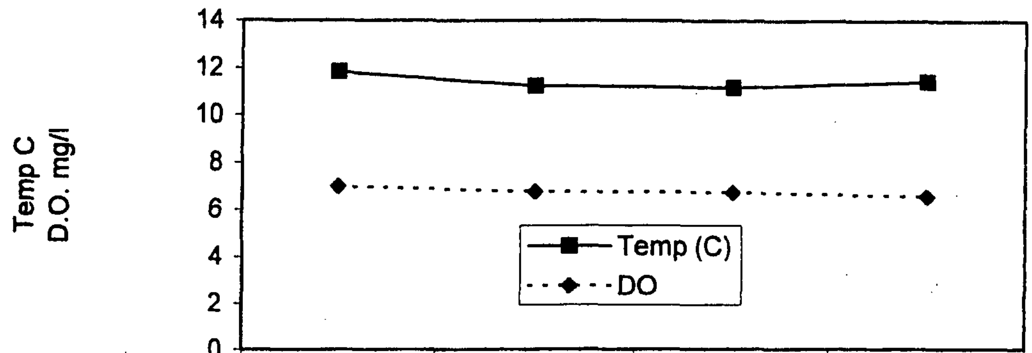


	0.3	3	6	9
ORP	-59	-56	-56	-57

Secchi Disk Reading: 1.5 foot
Observations: The area looked good.

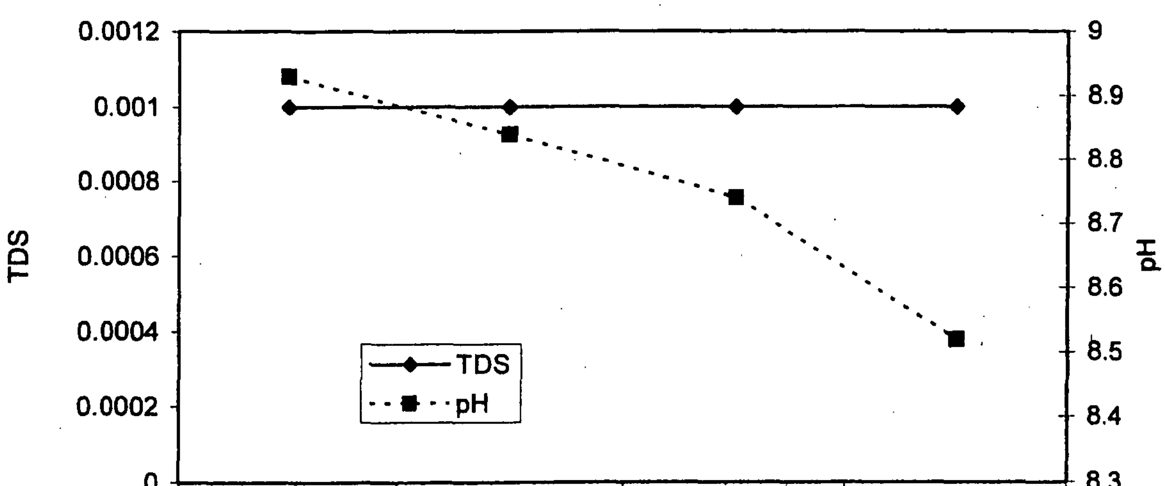
Site M-2

Westlake Lake Water Quality Data
Site: M2
12/24/03



	0.3	3	6	9
Temp (C)	11.84	11.24	11.17	11.43
DO	6.99	6.76	6.73	6.56

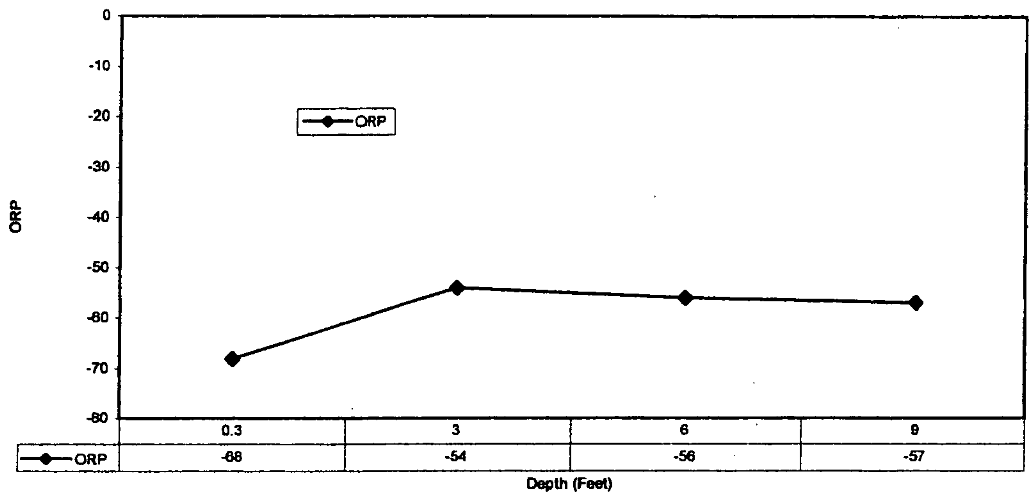
Depth (Feet)



	0.3	3	6	9
TDS	0.001	0.001	0.001	0.001
pH	8.93	8.84	8.74	8.52

Depth (Feet)

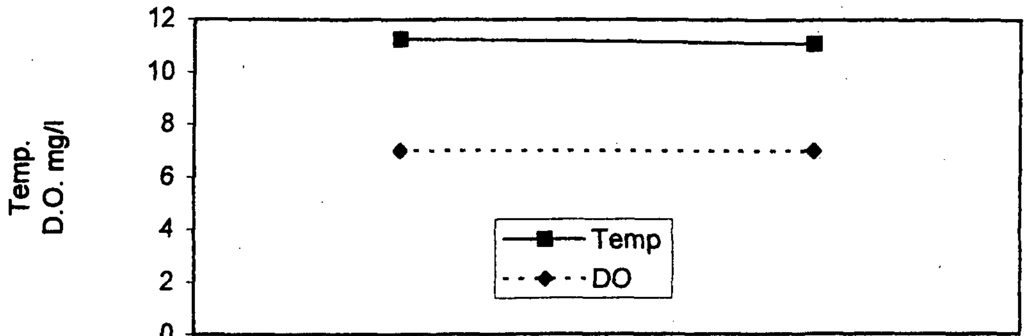
Westlake Lake Water Quality Data
Site: M2
12/24/03



Secchi Disk Reading: **1.5** foot
Observations: The area looked good.

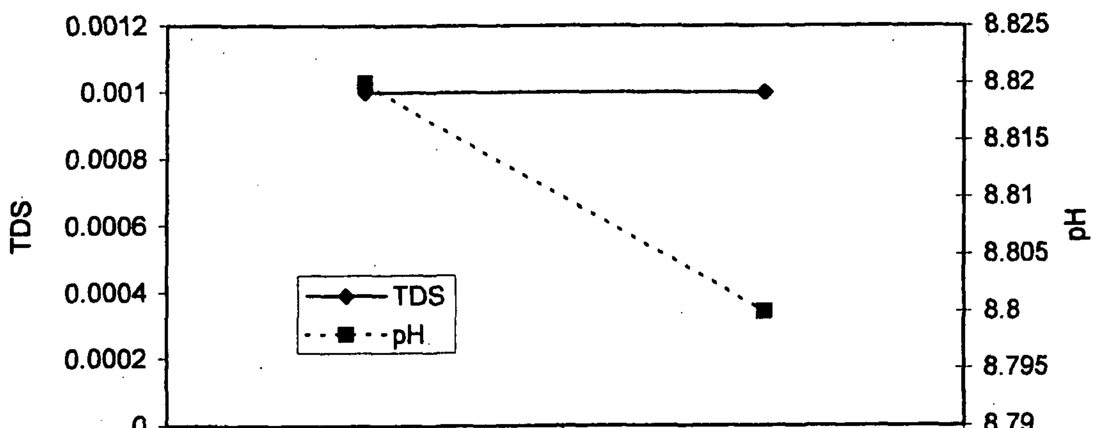
Site M-6

Westlake Lake Water Quality Data
Site: M-6
12/24/03



	0.25	3
Temp	11.25	11.1
DO	7.01	7

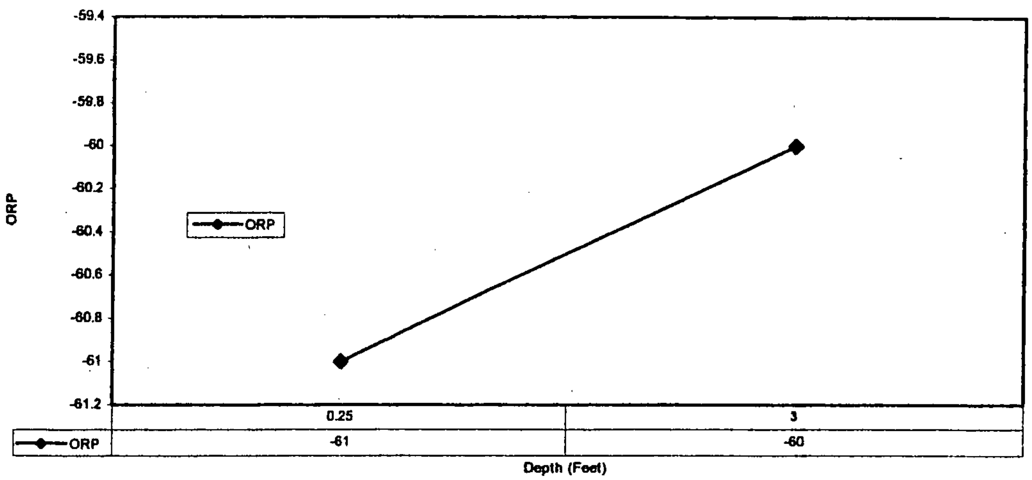
Depth (Feet)



	0.25	3
TDS	0.001	0.001
pH	8.82	8.8

Depth (Feet)

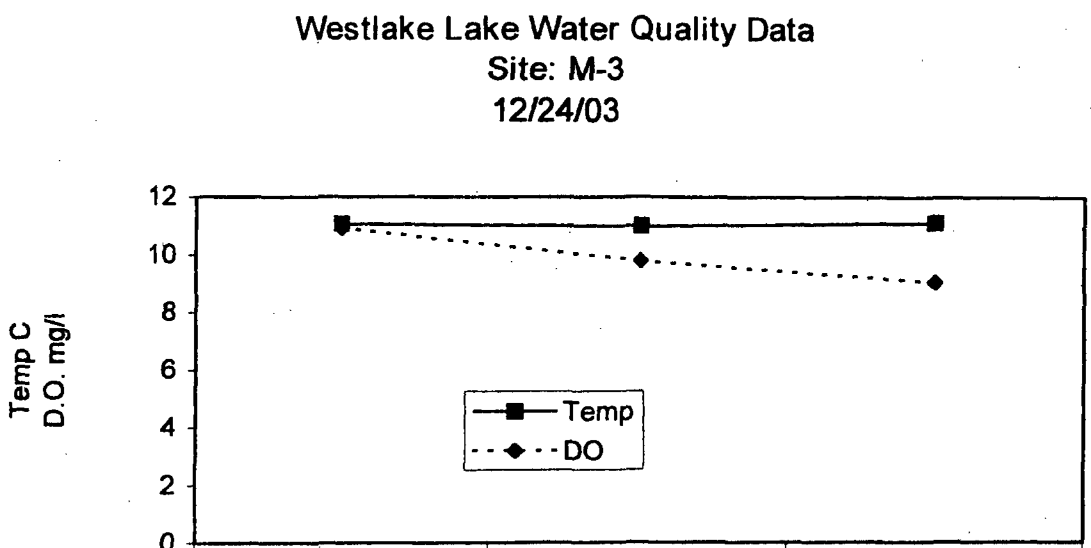
Westlake Lake Water Quality Data
Site: M-6
12/24/03



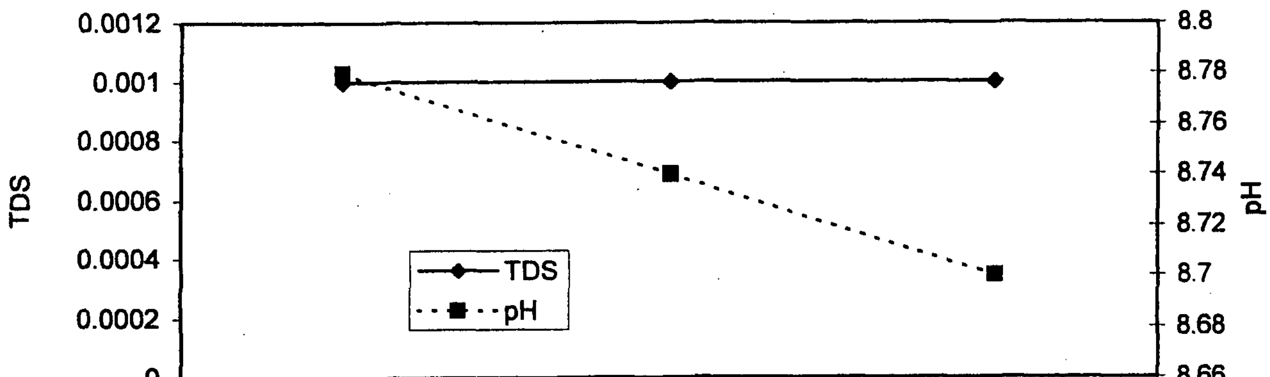
==

Secchi Disk Reading: 2.0 foot
Observations: Area looked good.

Site M-3

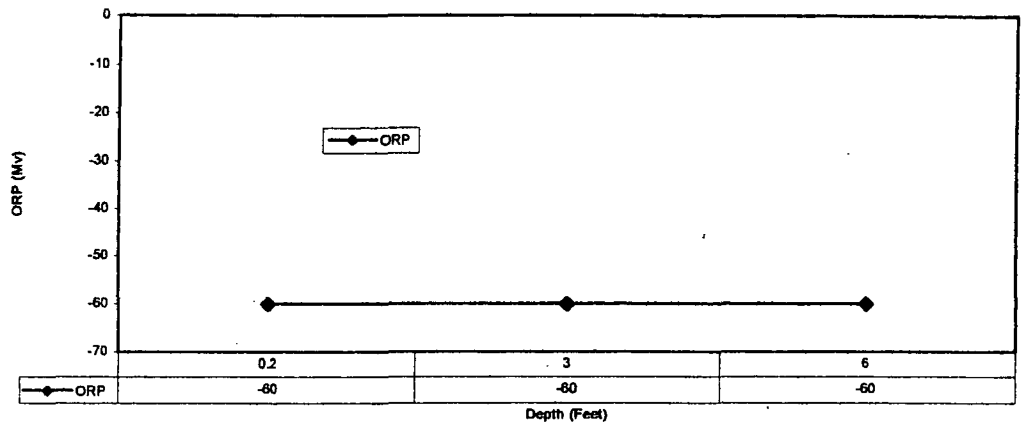


Depth (Feet)	0.2	3	6
Temp	11.08	11	11.12
DO	10.95	9.8	9.07



Depth (Feet)	0.2	3	6
TDS	0.001	0.001	0.001
pH	8.78	8.74	8.7

Westlake Lake Water Quality Data
Site: M-3
12/24/03



Secchi Disk Reading: 1.5 foot
Observations: Area looked good.

Sampling Methods: Field analysis for the parameters of Temperature, Dissolved Oxygen (DO), and pH were performed using an YSI Portable Multi-Parameter Meter with a 25-meter probe cable. Nutrient and Chlorophyll *a* samples were collected and sent to the lab for analysis.

END OF REPORT