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Advancing the Science of Assessment, Management and Rehabilitation of our Aquatic Natural Resources!

2004 Bone Lake Aquatic Plant Survey
Technical Report and Restoration Plan

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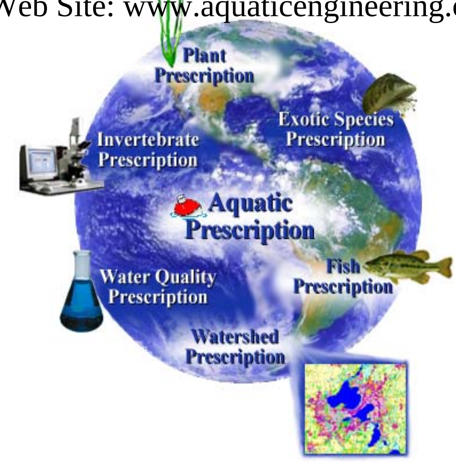

2004 Bone Lake Aquatic Plant Survey
Technical Report and Restoration Plan

February 2005

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In cooperation with the Wisconsin Department of Natural Resources and the Polk County Land and Water Resources Department

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Executive Summary

During the summer of 2004, Aquatic Engineering, Inc. *(AEI)* biologists assessed several key aspects of the Bone Lake ecosystem. Aquatic macrophytes, various water quality parameters, and macroinvertebrates were sampled. The sediment at each plant sampling site was characterized *(gravel, sand, mud, etc.)*. Sampling of all parameters was performed twice during the aquatic plant growing season in 2004. Additional water quality monitoring occurred monthly June through October.

The data gathered were analyzed and compared to accepted values for similar lakes in the region. Plant community data were used to update the baseline information available for Bone Lake, create an aquatic plant restoration plan, and provide information relevant to updating the LMP. It was found that Bone Lake has a plant community that changes from the spring to the summer. This change is, in part, due to Curly-leaf pondweed *(Potamogeton crispus, CLP)* which dominates the community in the spring, but dies off in the summer. During the summer die-off, excess nutrients are released from decomposing plant material, which are then used by algae and native aquatic plant species. Several key diversity indices show that Bone Lake is at or above the average for lakes in its region and in Wisconsin as a whole. However, when CLP is at its peak in early spring, the plant community is well below average with respect to its aquatic plant diversity.

The three most abundant plants, by site occurrence in the spring, were Curly-leaf pondweed, Flat stem pondweed, and Clasping leaf pondweed. The three most common species in the summer survey were naiad, wild celery, and coon's tail. The average density per sample site, 0.13 (on a 0 to5 scale), was the same for both the spring and summer surveys.

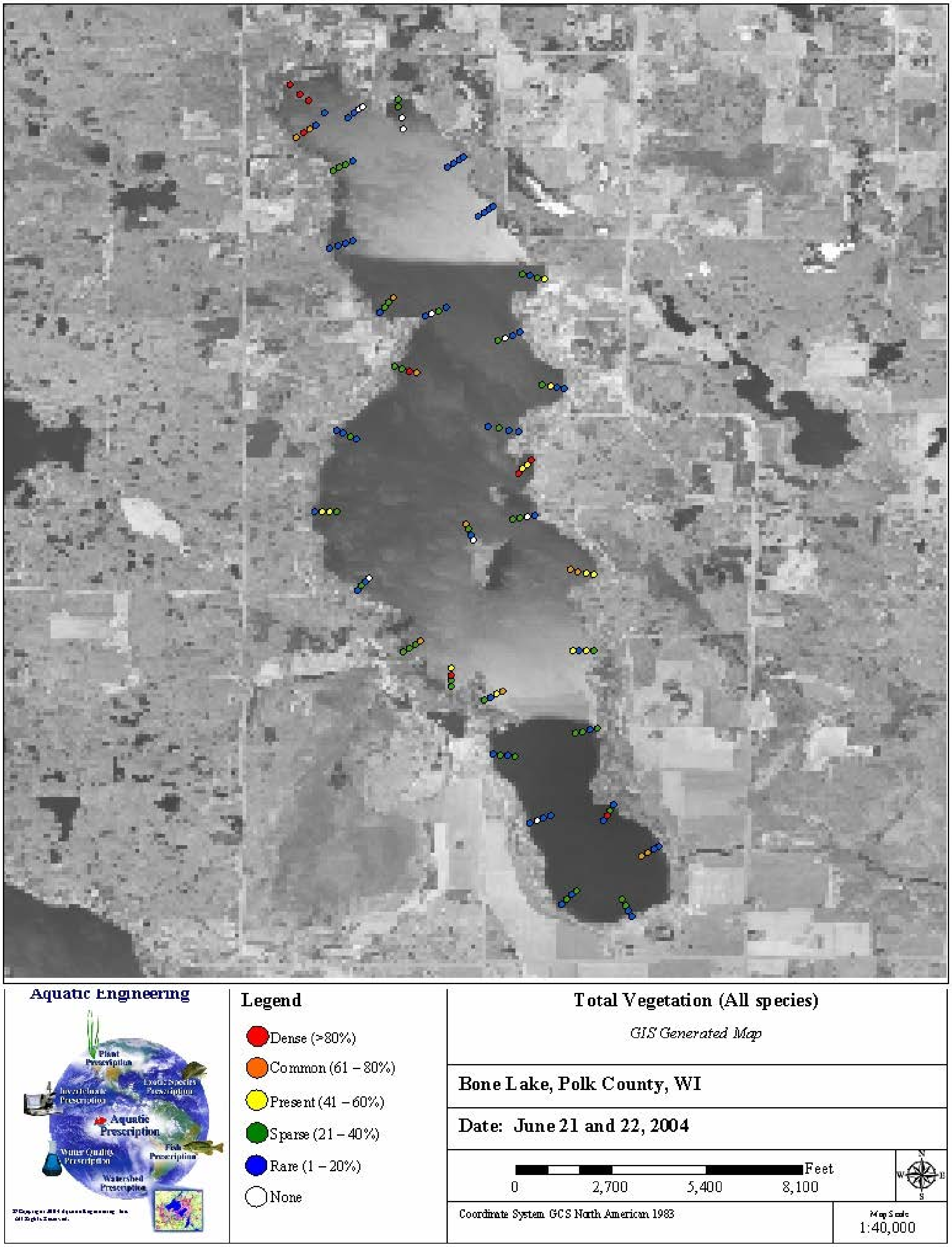

Figure E-1. Total Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Spring, 2004.

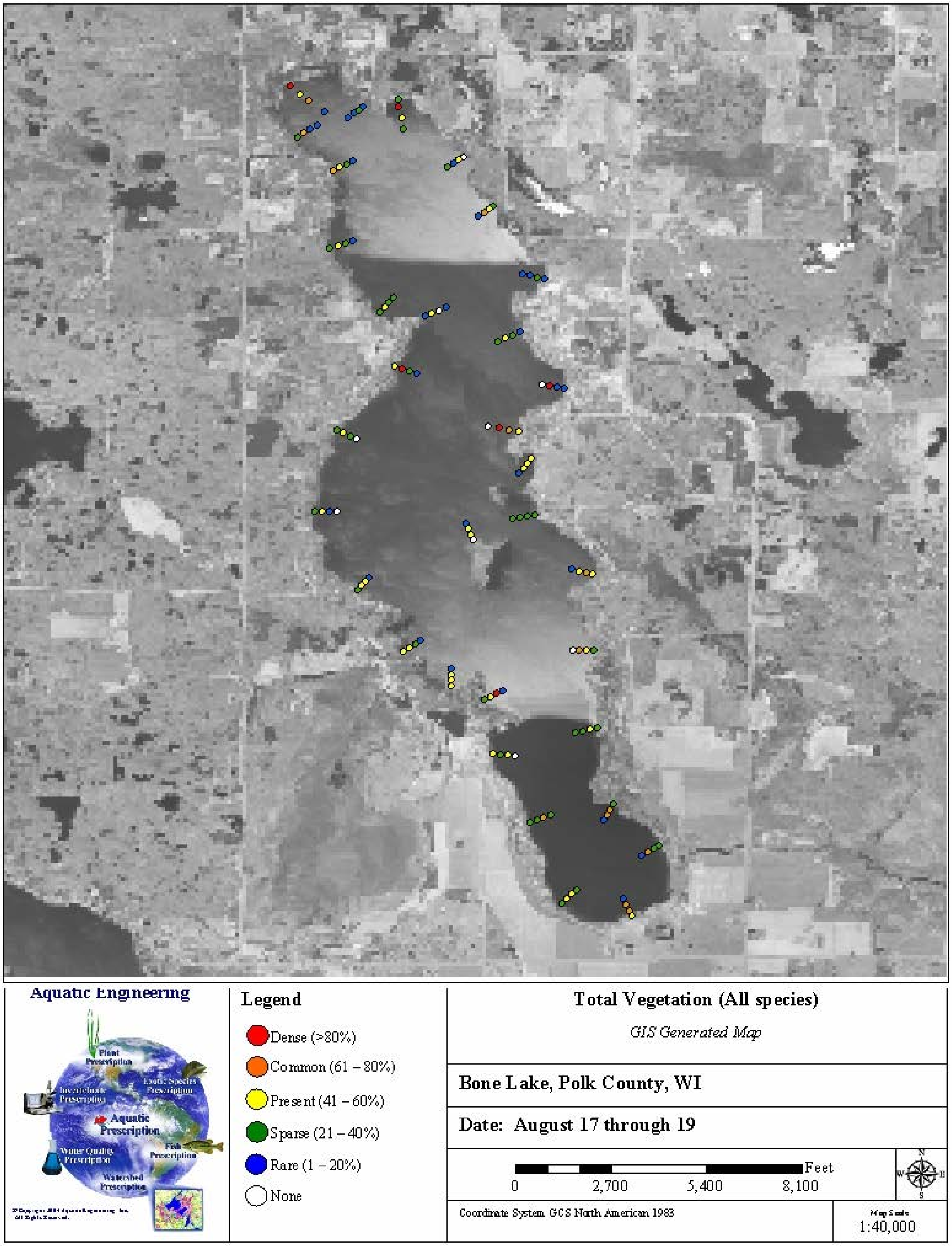

Figure E-2. Total Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Summer, 2004.

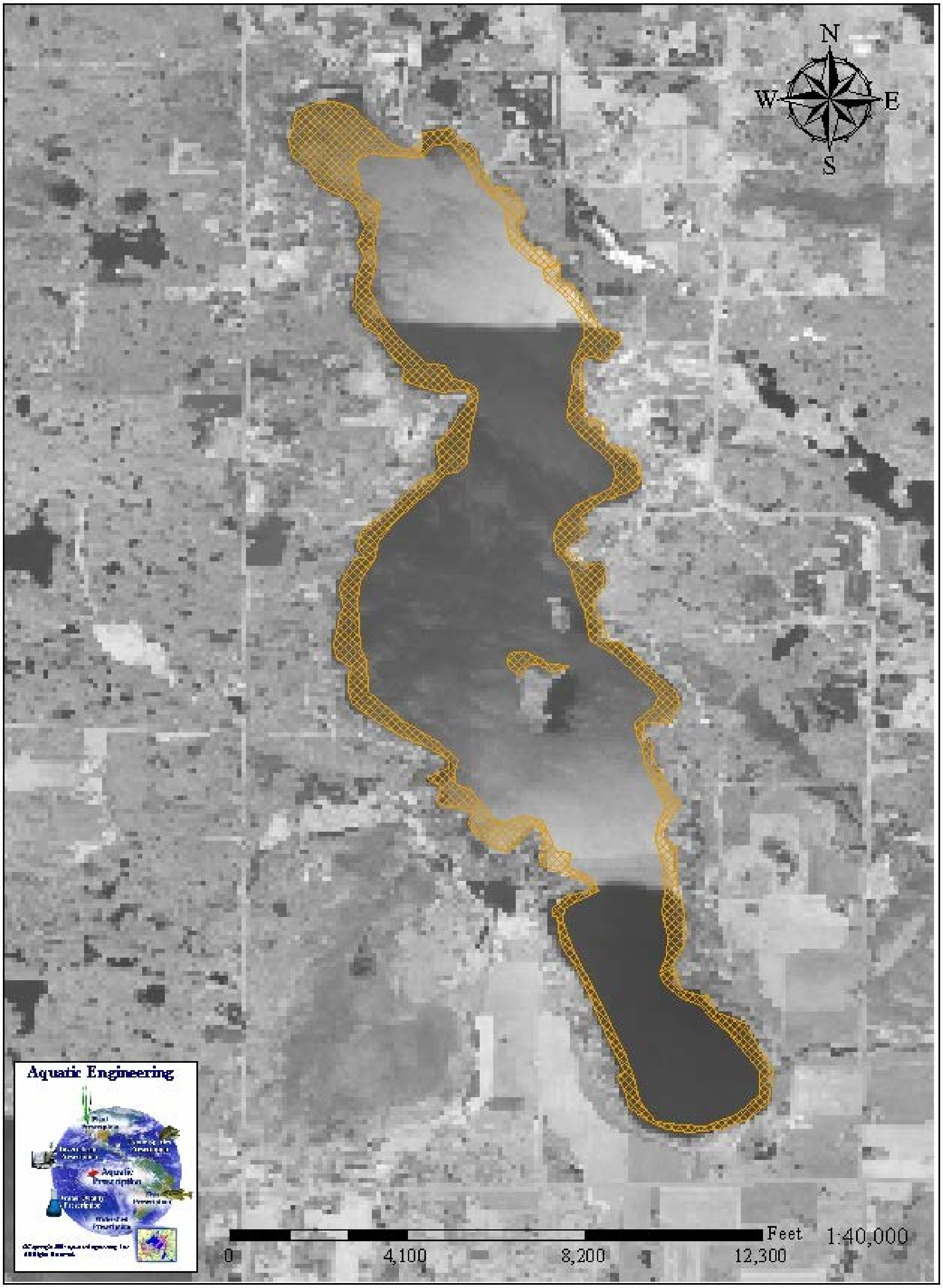

Figure E-3. Total Area of Submersed Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Spring, 2004.

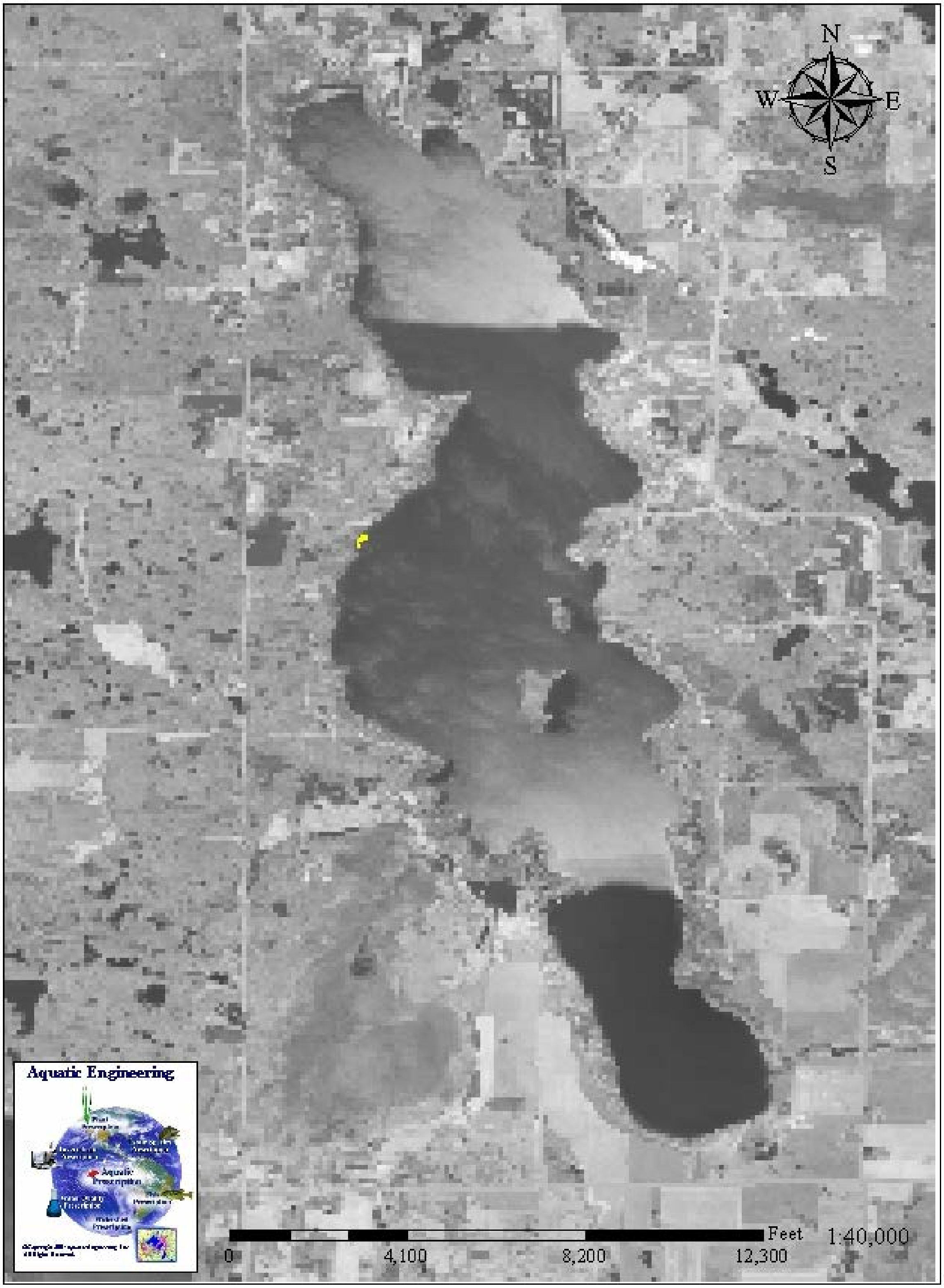

Figure E-4. Total Area of Emergent Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Spring, 2004.

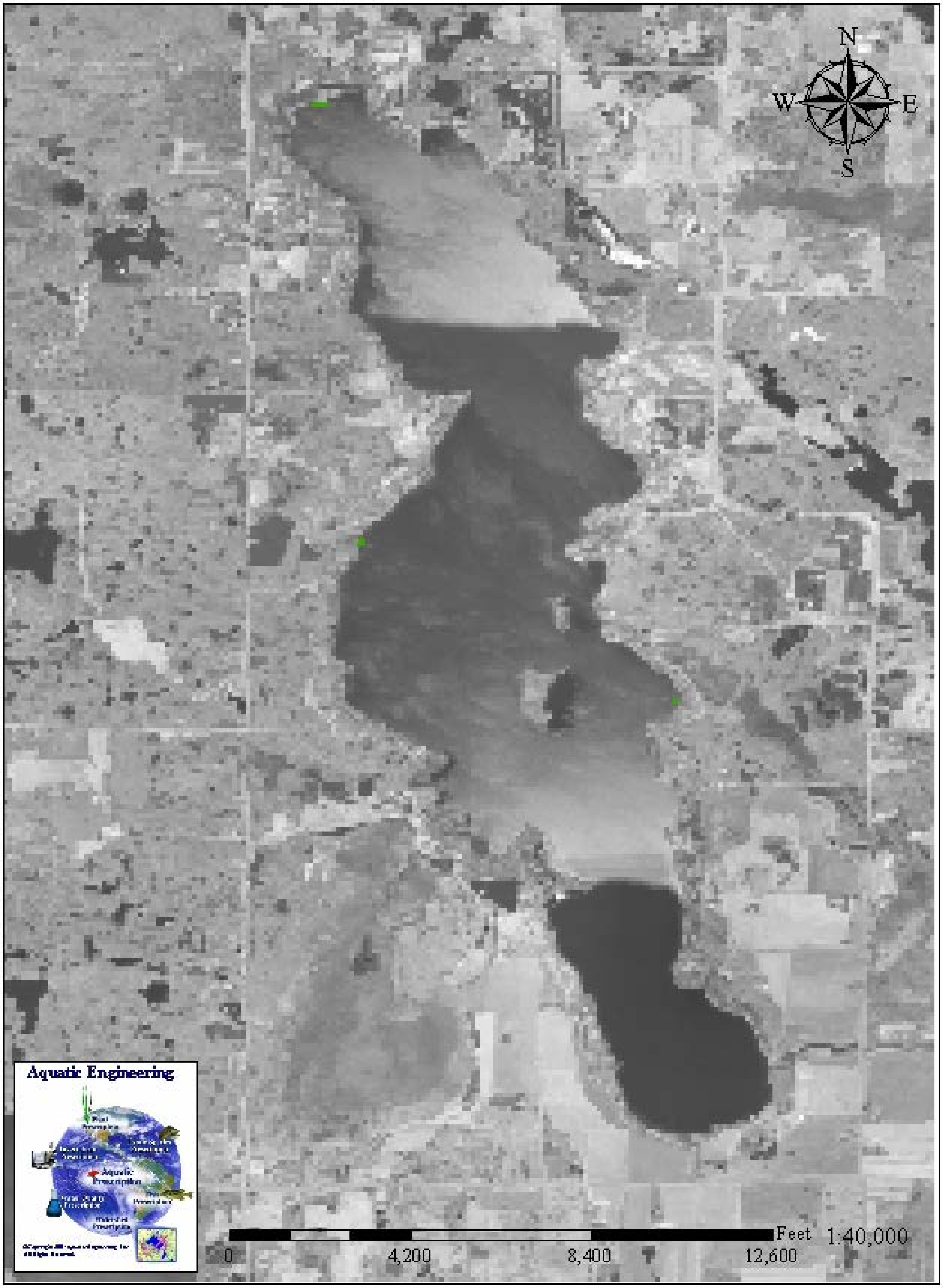

Figure E-5. Total Area of Floating Leaf Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Spring, 2004.

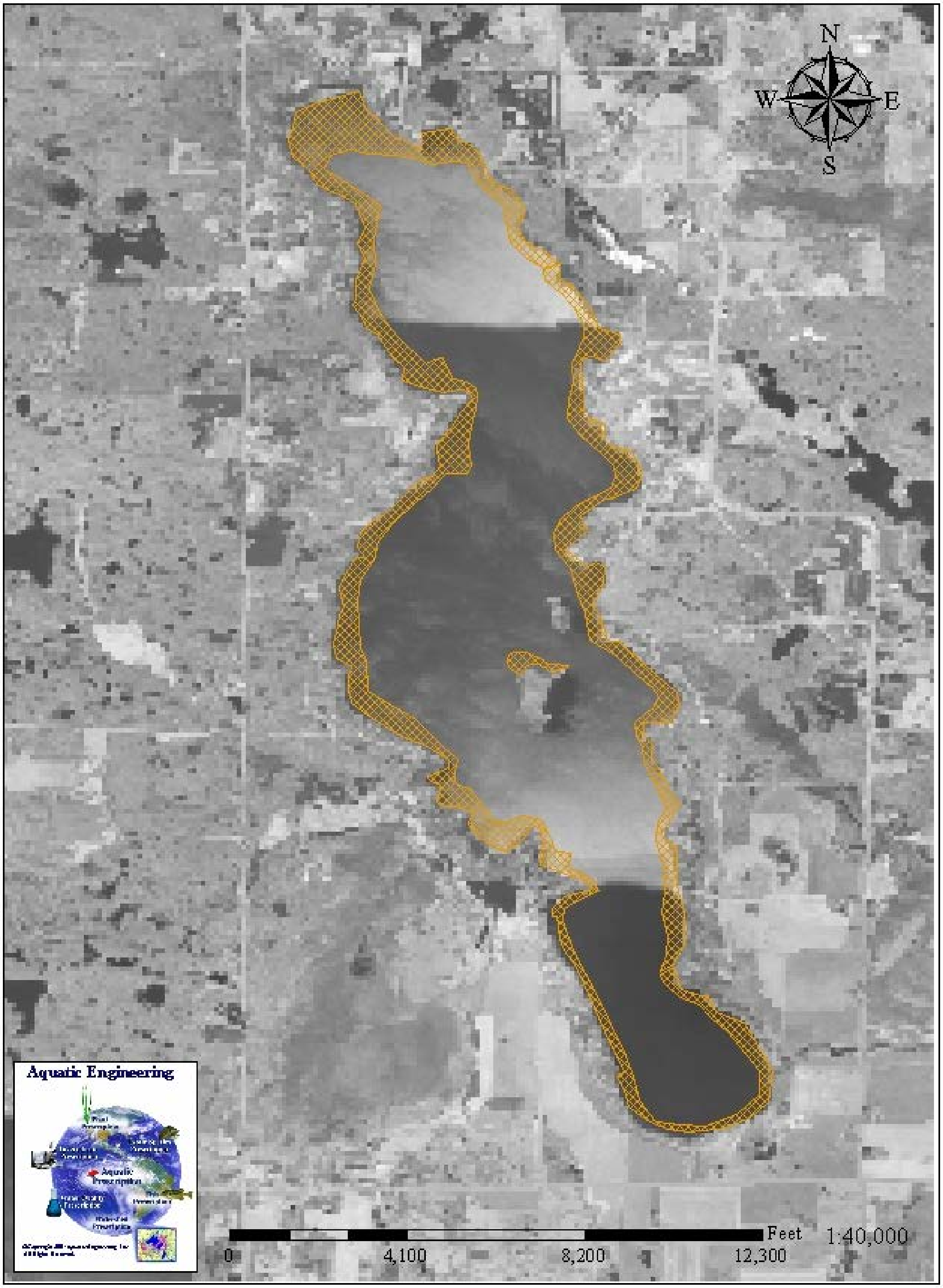

Figure E-6. Total Area of Submersed Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Summer, 2004.

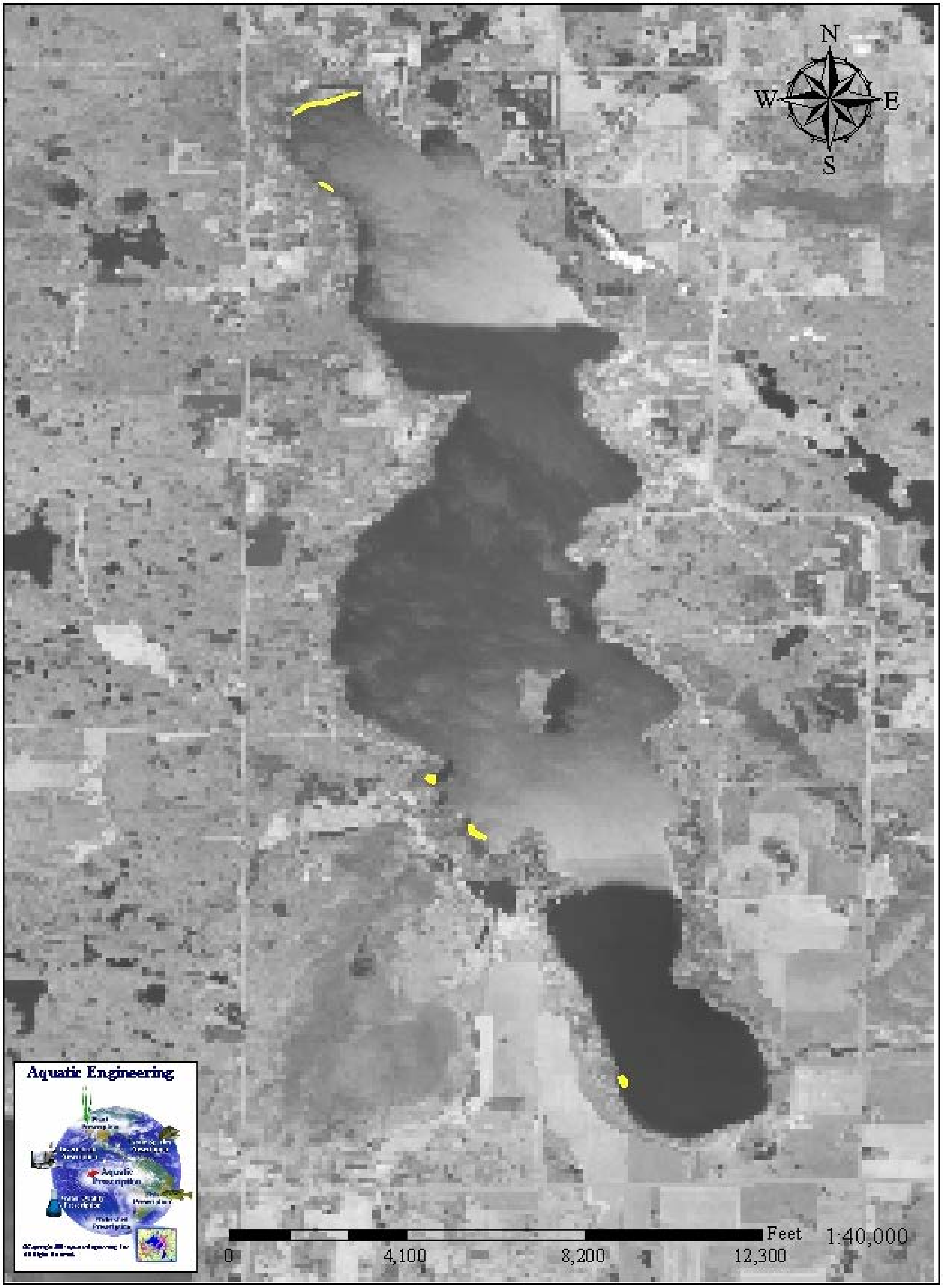

Figure E-7. Total Area of Emergent Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Summer, 2004.

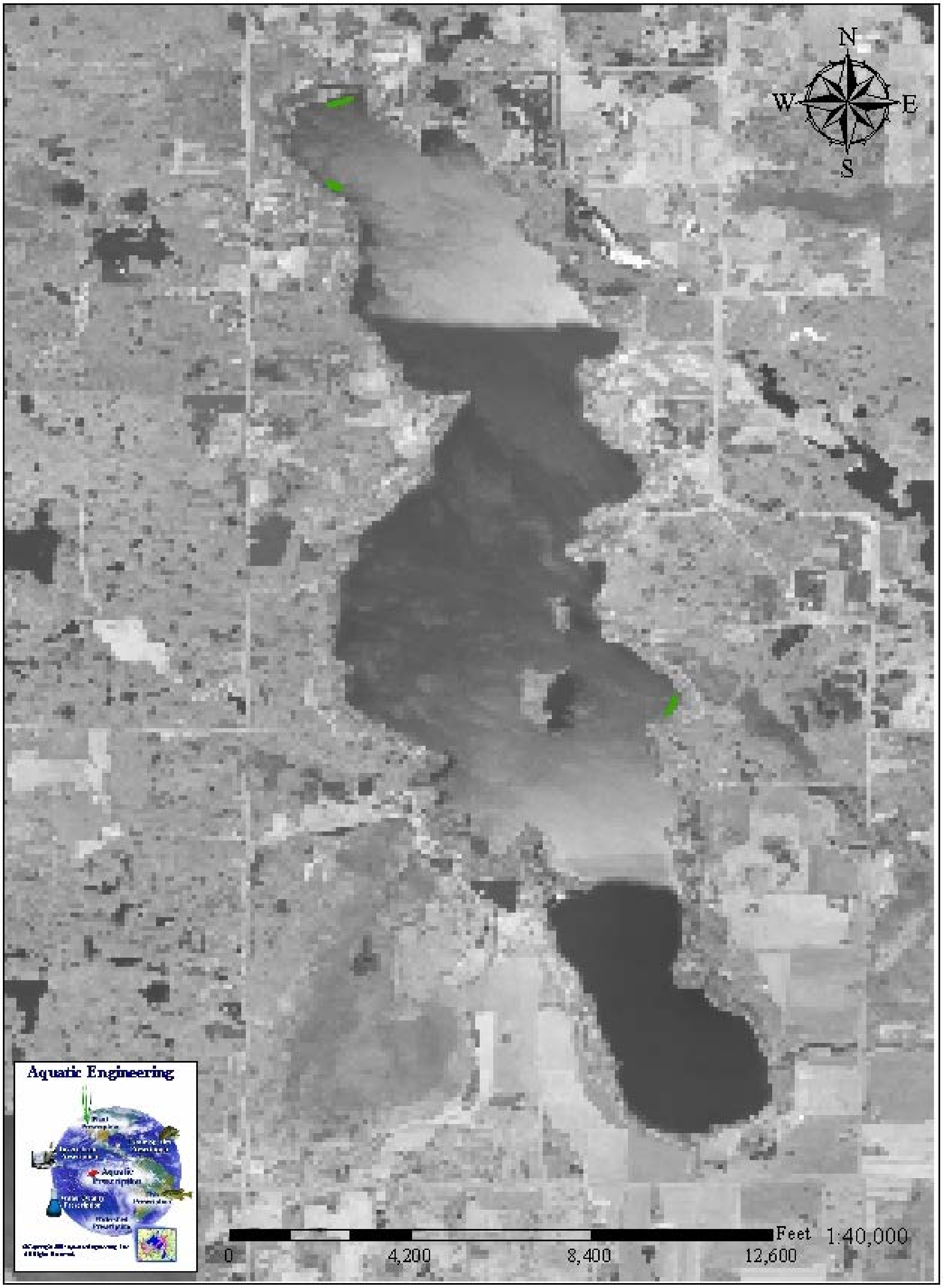

Figure E-8. Total Area of Floating Leaf Vegetation Map within Bone Lake *(Polk County, Wisconsin)* Summer, 2004.

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1.0 Introduction

Bone Lake (WDNR Water Body Identification Code #2628100) is a 1,781-acre drainage lake with a mean depth of 23 feet and a maximum depth of 43 feet, located in Polk County, Wisconsin. Four inflows are located in the sub-watersheds. The outflow is the Fox Creek, which flows into the Apple River. The Bone Lake watershed is part of the Upper Apple River watershed in the Saint Croix River Basin, which was designated as a priority for non-point source pollution control by the Saint Croix Water Quality Management Plan (WDNR 1994) and included in the Polk County Land and Water Resource Plan (Bursik 2001).

The Bone Lake Management District (BLMD) was formed in 1975 to address issues of dense algal blooms and extensive weed beds. The District immediately sought help from the Office of Inland Lake Renewal, which conducted a survey of Bone Lake from 1977 to 1978. The results of the survey were presented to the District in 1980 and concluded that Bone Lake is eutrophic and that algae and macrophyte problems stemmed from elevated phosphorous levels. Recommendations listed in the report included an alum treatment to reduce the amount of phosphorous internally cycled and reduce macrophyte harvesting in certain areas.

The Bone Lake Management District has continued to be proactive in managing the lake. From 1988 to 1989, the WDNR surveyed Bone Lake and designated 11 sensitive areas of the lake that were critical to supporting fish and wildlife. Since 1998, a volunteer from the District has collected water clarity data as outlined by the WDNR self-help monitoring program.

In 1997, the District contracted Barr Engineering to conduct a lake survey and write a Lake Management Plan. Their activities were reported in three phases. The Lake Management plan was written as part of the third phase of the repot. The LMP suggestions reinforced the recommendation for an alum application and suggested creating ordinances for storm water, septic systems, and shore land development. The District and Polk County have since followed through on creating ordinances for storm water, septic systems, and shore land development but have chosen not to perform an alum application. The LMP also recommended continued self-help Secchi depth monitoring and water quality measurements for total phosphorous and chlorophyll a from the North and South basins every third year.

In 2003, the District contracted The Limnological Institute (TLI) to write a grant for WDNR funding to conduct a macrophyte survey and update the Lake Management Plan. With this grant, TLI, AEI, and Polk County were contracted for technical guidance and ecological field services. Concurrent with the aquatic plant surveys, a second grant was awarded for the evaluation of water quality. The results of water quality monitoring are included in a separate report. This report is a summary of the aquatic plant assessment activities that took place during 2004, which were partially funded by monies awarded through the WDNR Lake Planning and Protection Grant program.

As part of the grant, TLI outlined the activities necessary to perform an adequate macrophyte survey. AEI and Polk County also suggested water quality monitoring and macroinvertebrate sampling. Invertebrates have been monitored for decades to assess ecosystem health because they respond to a myriad of environmental conditions, including habitat complexity and water chemistry. The findings of the macroinvertebrate survey provide baseline data of community composition and can be used as an indicator of water quality and habitat conservation.

Water quality parameters, such as phosphorous concentrations, were used to classify nutrient levels in the water, determine trophic status, and determine localized effects of monotypic stands of Curly-leaf pondweed on water quality.

Deliverables listed in the grant and covered in this report include:

- Quantitative aquatic plant community assessment
- Qualitative aquatic plant community assessment
- Water quality assessment at plant sampling sites
- Sediment characterization at plant sampling sites
- Delineated monotypic Curly-leaf pondweed beds

- Macroinvertebrate community assessment
- Update of the current Aquatic Plant Management Plan
- Assessment of riparian land use

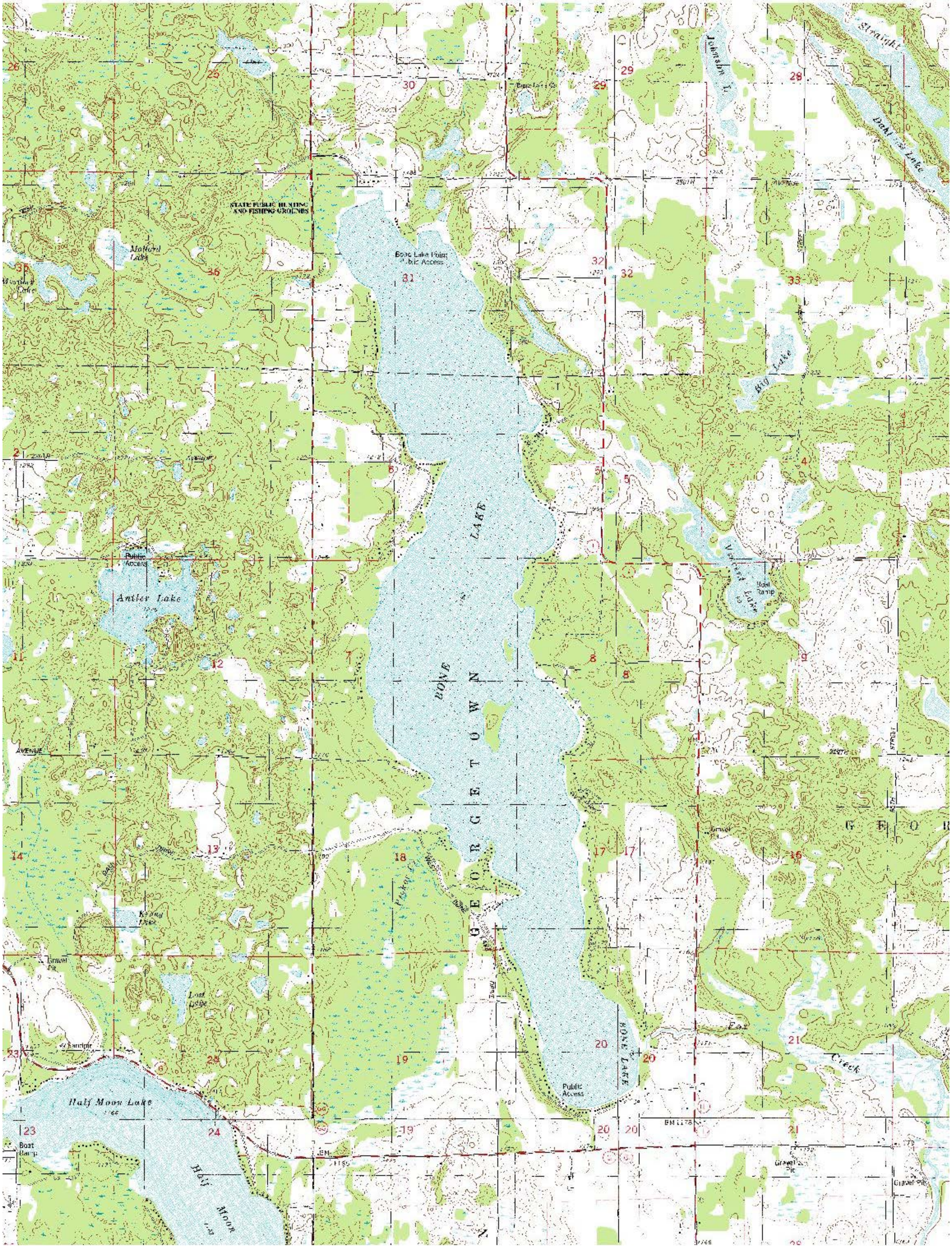


Figure 1. Bone Lake Topographic Map, T35N R16E Sec. 5,6,7,8,18,20,31,32 *(Polk County, Wisconsin)..*

2.1 Aquatic Plant Distribution within Lakes

Aquatic plants grow in areas of lakes, ponds, and other impoundments called the *littoral zone*, which is the area between dry land and open water. The area of the littoral zone can vary greatly from lake to lake, but is generally considered the area where the water depth is less than 15 feet and rooted aquatic plants can be found. This definition is a general guideline and the 15-foot depth can increase with clear, calm water and decrease with cloudy, disturbed water. Open water is considered any area greater than 15 feet or where rooted aquatic vegetation does not grow.

The littoral zone is the area where most of the lake's "productivity" takes place. Abundant light and suitable sediment provide prime habitat for plants and algae, and photosynthesis from these provide the energy source for all other life forms in the lake.

Because of this, the littoral zone is the most biologically active area of a lake. Open water areas are also biologically productive in lakes where littoral habitat is available. Planktonic algae and zooplankton migrate to open water where photosynthetically-active radiation (PAR) penetrates the water.

2.2 Types of Aquatic Plants

There are four major categories of aquatic plants.

Algae can be found in all areas of a lake where sunlight penetrates. They have no true roots or leaves and can be single- or multi-celled. Planktonic algae are free-floating microscopic organisms that can be found anywhere light penetrates the water. Blooms of planktonic algae give a lake the "pea soup" look. Filamentous algae are only found in the littoral zone because it first forms at or near the bottom of the lake. As these organisms reproduce, they form tangled mats that eventually trap gasses released during photosynthesis and float to the water surface, where they create an unpleasant odor while they decay.

Submersed macrophytes are true plants, having true stems and leaves that grow entirely underwater. These plants have a wide range of morphologies and are able to grow in all areas of the littoral zone. Although they grow entirely underwater, some produce flowers or seed heads that can stick out of the water completely. These plants can form dense beds or be scattered intermittently throughout the lake. They can grow close to the bottom or form long arrangements of stems that create surface mats.

Floating-leaved plants are often found rooted in the littoral zone where the lake surface is relatively protected from wave action caused by wind or boats. The leaves and flowers of these plants are found floating at the water surface. Water lilies are good examples of floating-leaved plants.

Emergent plants such as cattails have roots that are submersed, but their stems and leaves grow above the water surface. These plants are found in the shallow areas of the littoral zone and in wetlands and are the link between land and water. Emergent plants provide cover and food for wildlife and help protect shorelines from wave action.

2.3 Value of Aquatic Plants

***Serve as a food source* –** Aquatic plants provide a source of food for insects, snails, and freshwater shrimp. Some fish also eat aquatic plants directly.

***Provide shelter/habitat* –**Plants provide a place for fish to escape from sunlight and predators. They also provide an attachment point for certain insect larvae, and many fish species use vegetated areas of the lake for spawning.

***Stabilize shoreline and sediment* –** Plant roots secure the sediments of a lake and keep them from being stirred by wave action. Plants also protect the shoreline from wave action created by wind and boats and from the erosion caused by those waves.

***Improve water quality* –** Some plants absorb and break down harmful pollutants in the water. Plants also bind nutrients and make them unavailable to algae. The physical structure of plants filters surface runoff from shorelines keeping pollutants out of the water.

Improve aesthetics **–** Many plants produce beautiful flowers, leaves, and seeds that enhance the natural beauty of the lake. Shoreline vegetation also reduces noise pollution and offers privacy.

Increase economic value **–** Because aquatic plants fuel the aquatic ecosystem, they are responsible for the tourism value of the resource. Lakes with healthy plant communities generally have healthy fish and wildlife populations, which draw recreationalists interested in fishing, boating, camping, and hunting. Improved water quality and shoreline aesthetics also raises the value of lakeshore property. The Wisconsin DNR deems aquatic plants an asset to a lake and regulates their protection under NR 107 and NR 109.

3.0 Review of Existing Data

3.1 Aquatic Macrophytes

Aquatic macrophytes occur throughout the littoral zone of Bone Lake. Previous surveys indicate that the maximum rooting depth is around 9 feet deep, with an average maximum rooting depth of around 7 feet (1997 Bone Lake Management Plan). Though the data provide some general information regarding the aquatic macrophyte community, the number of samples is not sufficient to draw conclusions regarding the entire lake macrophyte community. In addition, the report does not make the macrophyte survey data available; there is no record of how much, if any, curly-leaf pondweed was found. A survey performed by AEI in 2003 documented a total of 57.7 acres of topped-out Curly-leaf pondweed at the water's surface.

3.2 Fishery

Select fishery stocking data is available for approximately the past 35 years. These data only refer to muskellunge stocking efforts and do not cover other game fish or panfish species. The muskellunge population is in good condition. Stocking efforts and size/bag limits imposed in the last 10 years have increased the average size and number of muskellunge in Bone Lake. A study published in 1999 correlated the average muskellunge size in Bone Lake to the size limit increases from 30.0 inches to 40.0 inches. The average length of muskellunge during that time increased from 31.3 inches in 1964 to 36.0 inches in 1995 *(Cornelius and Margenau 1999)*. Adult muskellunge *(≥ 30.0 inches)* abundance in Bone Lake increased nearly five-fold during the study and reached an abundance of 0.99 fish per acre. Abundance of larger *(≥ 38.0 inches)* muskellunge increased 269% following minimum length increases between 1982 and 1995 *(Cornelius and Margenau 1999)*.

The WDNR is planning another tag and recapture survey for 2005-2006. In addition to the muskellunge survey, a survey to include all fish species is being planned for 2006. That survey will incorporate a nighttime electrofishing method where all fish captured will be identified, measured, and aged. The WDNR is hoping to be able to estimate the bass and northern pike populations from the results of that survey.

3.3 Macroinvertebrates

There is no existing data regarding the macroinvertebrate community in Bone Lake.

4.0 Methods

4.1 Macrophyte Surveys

Biological assessments provide insight into the ecological integrity—how far an ecosystem deviates from a natural, pristine state (Gerristen 1998). These plant surveys specifically meet the recommendations of the Polk County Land and Water Resources Plan (2001) which recommends the monitoring, prevention, and control of exotic plants and animals.

Qualitative and quantitative aquatic plant surveys were conducted once in the spring and again in the summer of 2004. The quantitative surveys applied a transect-and-rake method, while the qualitative surveys were visual and occurred in all areas of the lake. Global positioning system (GPS) integrated with geographical information system (GIS) technology were used to identify transects, record sample sites, and map monotypic stands of Curly-leaf pondweed.

4.1.1 Qualitative Surveys

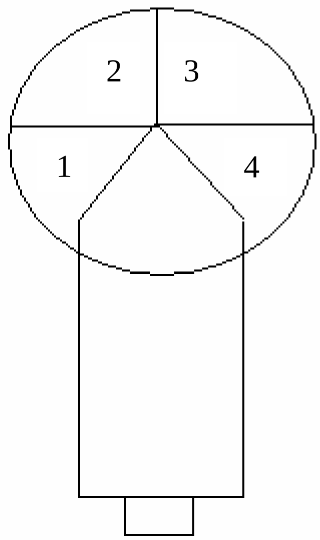
Prior to conducting the quantitative aquatic macrophyte survey, ecologists toured the lake, collecting and recording all species found. Whole plants were collected, including flowers and seeds if available. Herbarium samples were bagged and stored on ice until they were returned to the lab, where they were cleaned, mounted, labeled and laminated. These samples will be given to the Bone Lake District.

4.1.2 Quantitative Surveys

A variation on a rake coverage technique (Deppe and Lathrop 1992, Jessen and Lound 1962) was used to sample macrophytes, as outlined below:

- Thirty-three transects were sampled along the shoreline. Samples were collected from shallow (0-1.5 ft), intermediate (1.5-5.0 ft), near-deep (5-10 ft) and deep (10 ft maximum rooting depth) areas.

- Each sample point consisted of a circle around the bow of the boat, 8.0 feet in diameter that was divided into quadrants as shown below. A two-headed, weighted rake was extended from the boat to the furthest extent of each quadrant and then dragged along the bottom and then retrieved to collect plants.



- GPS coordinates were collected at each sample point to accurately record each location.
- A plant density rating was given for each species on a scale from 0-5, depending on the percent of the rake head covered by that species.

Table 1. Percent Rake Coverage

Rake Coverage (% of rake head covered by a species)	Density Rating
81-100%	5
61-80%	4
41-60%	3
21-40%	2
1-20%	1
No Plants Recovered	0
Present but not Collected	P

4.2 Water Quality at Plant Survey Sites

Secchi depth readings were recorded during the survey at the mid-lake site. Dissolved oxygen, pH, and temperature were collected with a YSI SONDE probe at each aquatic plant sampling point. The probe was submersed to elbow depth in the majority of sites and to half the total depth for shallower water. The probe was left in the water until readings stabilized, and the readings were transcribed to field data sheets (Appendix B).

4.3 Substrate at Plant Survey Sites

An Eckman dredge was used to collect sediment from each aquatic plant sampling site. The sediment was categorized into types based on general characteristics (rock, gravel, sand, mud, or detritus.). When the substrates sampled were a mix of types, the most common type in the sample grab was recorded. When sediment appeared to be an even mix of two or more sediment types, the type with the largest particle size was recorded (*e.g.*, an equal mix of sand and gravel was recorded as "gravel"). Depth to the bottom was measured using a surveyor's staff for sites less than 16 feet deep and a boat-mounted Eagle® depth finder for sites greater than 16 feet (Appendix B).

4.4 Riparian Land Use Assessment at Plant Survey Sites

The riparian survey occurred where each aquatic plant survey transect intersected with the shoreline. The immediate shoreline (50 feet wide and 30 feet from the water) was surveyed using the following characteristics as guidelines:

Table 2. Riparian Shoreline Classification.

Natural	Wooded
	Native herbaceous
	Shrubs
	Emergent Aquatic Plants
	Wetland
Disturbed	Cultivated lawn
	Hard Structures *(decks, walkways, etc.)*
	Modified shoreline *(beach, rip-rap, etc.)*

Each assessed area was categorized in one of the above eight sub-categories, which fall into either the "natural" or "disturbed" general categories. Areas where buffer strips were present were noted, but the size of the buffer was not measured.

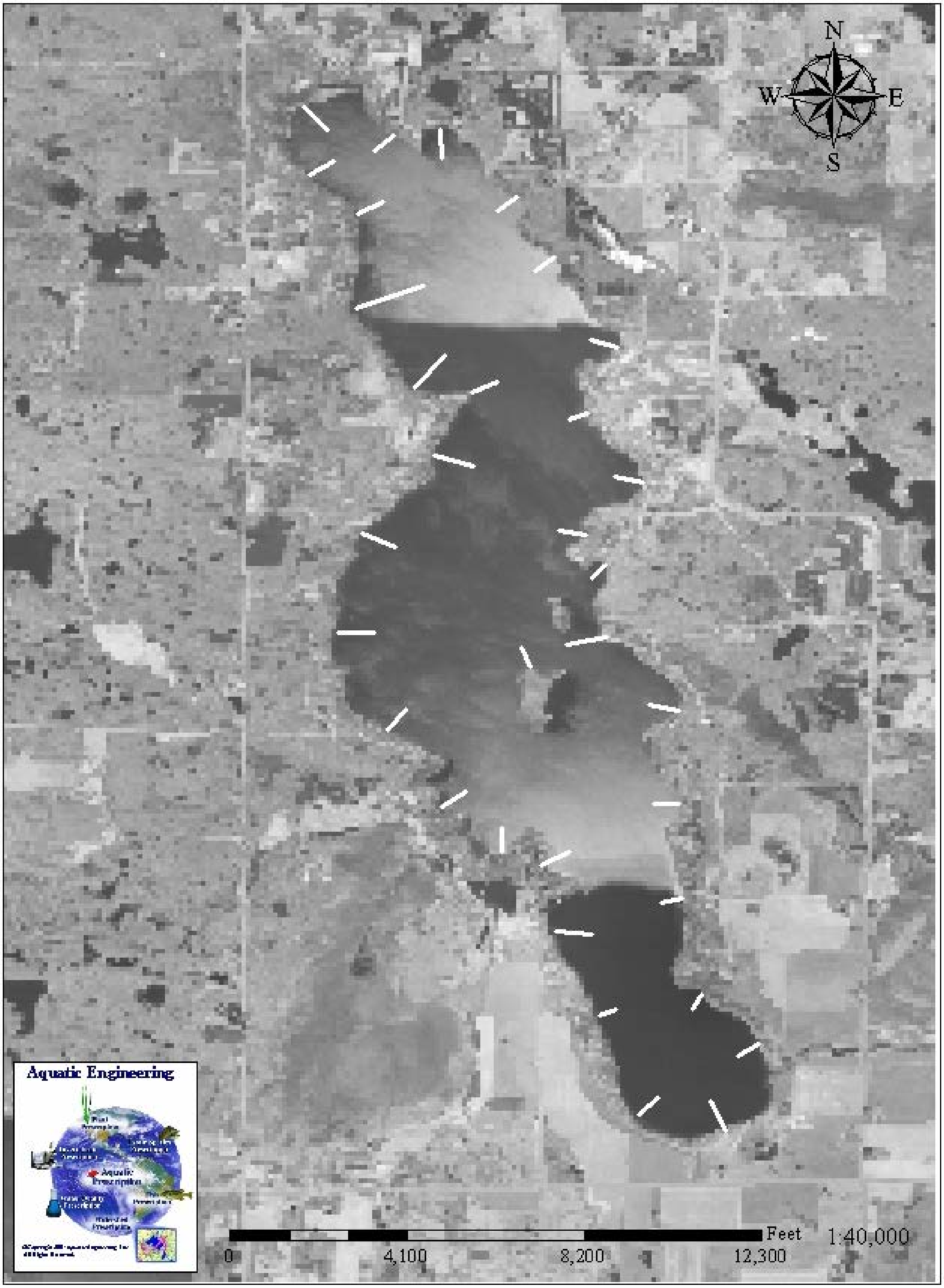


Figure 2. Location of transects for quantitative macrophyte survey of Bone Lake *(Polk County, Wisconsin)* in 2004.

4.5 Macroinvertebrate Sampling

Aquatic macroinvertebrates were collected from June 28 to 30 and again on August 31st. *Potamogeton crispus* (Curly-leaf pondweed, CLP) was just starting to die and decompose during the first sampling period due to the late spring warm-up. This was our first target period. The second sampling period was designed to take place when there was a native plant community present and late season larval invertebrates were mature enough to be easily identified. A total of nine benthic samples were collected along a gradient from the shallow to deep littoral zones. Each site was sampled using a D-frame kick net at four 15-second intervals to eliminate backwash in the nets. After each interval the nets were dragged 180° through any standing vegetation. This was done until all four sweeps were completed or 3785 ml *(1 gal)* of organic mater was collected. The samples were placed in gallon jars and brought back to the lab.

Once in the lab each sample was placed in a 5 % ethanol solution for 24 hours. This relaxes the sample and avoids any unnecessary damage that can make individuals difficult to identify. Next, the samples where placed in a 95% ethanol solution for preservation, with glycerol used as a wetting agent. Each sample was sorted to the lowest possible taxonomic level in mosquito larval trays under magnification of a dissecting or compound microscope.

There is evidence that dense, monotypic plant beds have a negative impact on the density and diversity of aquatic insects (Sloey, Schenck, and Narf 1997), which in turn can negatively affect organisms higher on the food chain (especially fish). Therefore, three different conditions will be sampled (monotypic CLP stands, moderate CLP invasion, and native dominated stands). Physical and chemical parameters will be monitored at each site (*i.e.*, substrate and % DO). The biotic metric used to quantify the macroinvertebrates was indicator groups at the population level. (*e.g.*, ETO richness and abundance, and *Diptera*). At the community level, richness was calculated along with the Shannon-Wiener diversity index. The Shannon-Wiener Index uses the equation:

$$H = -\sum_{i=1}^{s} (p_i)(\log_2 p_i).$$

where H = Shannon-Wiener Diversity, $\sum$ = sum of species, s = the number of species, p_i = the proportion of individuals of the total sample belonging to species i calculated as ni/N for each ith species with ni being the number in species i, and N being the total number of individuals in the sample (Barbour et al. 1987).

Figure 3. Location of macroinvertebrate sampling sites for Bone Lake, Polk County, WI in 2004.

4.6 Water Quality Sampling

Laboratory Analysis

Two sample sites were established at opposite ends of the lake; one site was selected in the North basin, at the deep hole, and one in the South basin, just south of the island *(Refer to the 2004 "Bone Lake Water Quality Report")*. Water samples were collected by representatives of Polk Co. using a 6-foot integrated surface sampling device and were sent to the Water and Environmental Analysis Laboratory *(WEAL)* located at UW – Stevens Point. The samples were analyzed for reactive phosphorus, total phosphorus, total Kjeldahl nitrogen (TKN), and chlorophyll a. Samples were collected weekly in June and July, and monthly until fall turnover. Parameters measured during laboratory analysis are: total phosphorus, soluble reactive phosphorus, chlorophyll-a, pH, total Kjeldahl nitrogen, nitrate + nitrite, ammonia, alkalinity, total hardness, chloride, and total suspended solids. Water quality monitoring is a specific recommendation of the Polk County Land and Water Resource Plan *(p. 22)*.

On-Site Water Quality Measurements

Depth profiles were collected weekly at the two mid-basin sampling sites during the summer sampling period (June and July) and once per month until the fall turnover event. Data points were collected at 1 meter intervals throughout the water column for dissolved oxygen, conductivity, and temperature with a water quality probe.

4.7 Phytoplankton and Zooplankton Samples

Phytoplankton and zooplankton samples were collected in August and September at both lake water quality monitoring stations. Phytoplankton were collected with the same surface integrated sampling device used to collect water samples. The device was lowered 1 foot below the water surface effectively sampling the water from 1-foot-deep to 7-feet-deep. Samples were kept on ice and sent to WSLOH for analysis. Zooplankton were sampled using a vertical tow net with a 66-micron mesh size. The net was lowered to the metalimnion or to just above the sediment, depending on site conditions, and pulled to the surface. See the 2004 Bone Lake Water Quality report (AEI 2005) for specific activities related to plankton monitoring.

5.0 Results

5.1 Overview of Macrophyte Surveys

Aquatic plant surveys completed in late spring and late summer of 2004 produced data yielding a greater understanding of the composition and distribution of the existing aquatic plant community, determined the extent of the CLP infestation, and provided data to be used to evaluate possible future management efforts. Fifteen total species were identified during the two macrophyte surveys; 12 individual plant taxa were identified in the spring and 14 in the summer. The only plant unique to the spring survey was Water buttercup. Plant taxa unique to the summer survey were Water stargrass, White-water lily, and Yellow-water lily.

Aquatic vegetation found in the survey can be broken down into four major categories.

Algae **–** Filamentous and planktonic algae were not documented in either survey. For more information, refer to the 2004 Bone Lake Water Quality Technical Report.

Submersed vegetation **–** Submersed macrophytes made up 100% of the plant coverage sampled in the spring and 99% of the plant coverage sampled during the summer survey.

Floating leaf vegetation **–** Floating leaf plants made up 0 and 1% of the coverage for the spring and summer surveys, respectively.

Emergent plants **–** No emergent plants were sampled during either quantitative survey. Several areas of the lake were mapped during the qualitative survey where emergent vegetation occurred adjacent to transects.

Table 3. Plant taxa identified during 2004 aquatic plant surveys. Bone Lake *(Polk County, Wisconsin)*.

Species Number	Scientific Name	Plant Common Name	Frequency of occurrence	
			June	August
1	*Potamogeton richardsonii*	Clasping leaf pondweed	35%	27%
2	*Elodea Canadensis*	Common waterweed	1%	2%
3	*Ceratophyllum demersum*	Coon's Tail	23%	45%
4	*Potamogeton crispus*	Curly-leaf pondweed	69%	14%
5	*Potamogeton zosteriformis*	Flat-stemmed pondweed	23%	40%
6	*Potamogeton amplifolius*	Large leaf pondweed	18%	19%
7	*Potamogeton strictifolius*	Narrow leaf pondweed	7%	24%
8	*Najas* sp.	Niad	5%	49%
9	*Myriophyllum sibiricum*	Northern milfoil	15%	27%
10	*Potamogeton gramineus*	Variable-leaved pondweed	1%	20%
11	*Ranunculus longirostris*	Water buttercup	1%	0%
12	*Zosterella dubia*	Water stargrass	0%	2%
13	*Nymphaea odorata*	White-water lily	0%	2%
14	*Vallisneria americana*	Wild Celery	5%	47%
15	*Nuphar advena*	Yellow-water lily	0%	4%

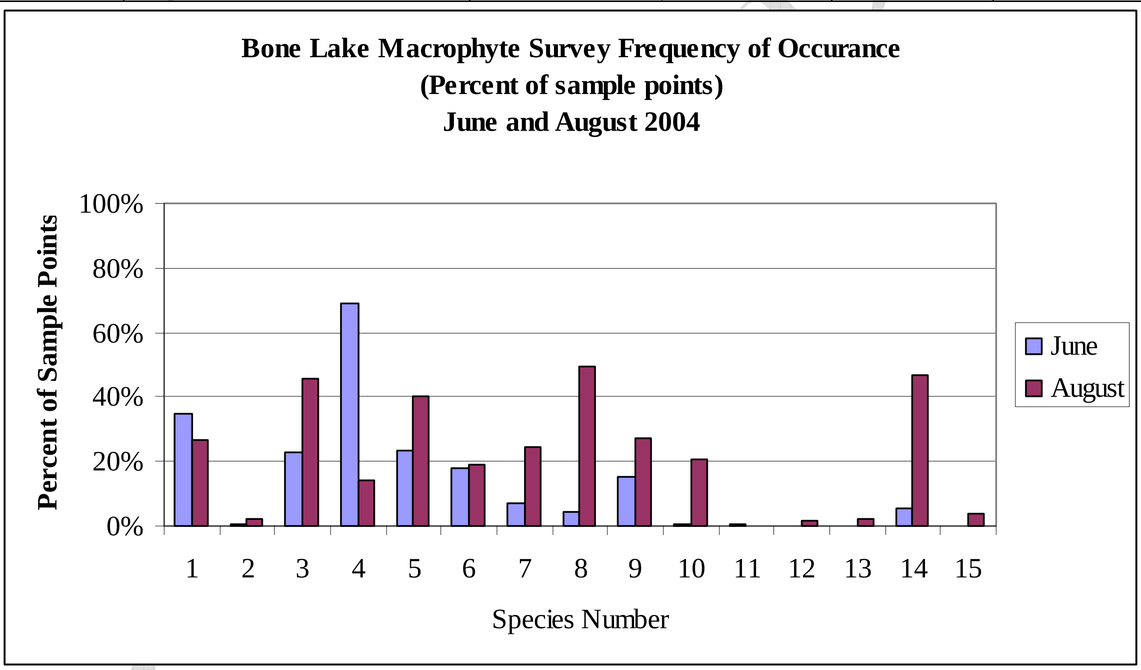


Figure 6. Bone Lake macrophyte frequency of occurrence as a percent of sample points during June and August surveys of Bone Lake *(Polk County, Wisconsin)* 2004.

5.2.1 Quantitative Macrophyte Surveys

Each plant species found during the qualitative survey was also sampled during the quantitative survey, yielding a total of 12 unique plant species in the spring and 14 in the summer. The average density per sample site (0.13 on a 0 to 5.0 scale) was the same for both surveys. The maximum rooting depth found during either survey was 16 feet 11 inches and was located at transect number 24. Only Curly-leaf pondweed was found rooted at this depth.

The Floristic Quality Assessment (I), calculated: $I = ((\sum C_i) \div N) \sqrt{N})$, was performed for the species found in Bone Lake in 2004. A total of 14 unique native species (N) had an average coefficient of conservatism (C) of 6.21. The I value for Bone Lake in 2004 was 23.25.

Simpson's diversity index (D_S) can be calculated using the following formula:

$$D_S = [1 - \sum (\text{species relative frequency}^i)^2] \times 100$$

i = the number of sampling points in which an individual species is present divided by the total number of sampling points equal to or less than the maximum rooting depth.

The D_S values for Bone Lake were 81.2 in spring and 89.1 in summer. The value represents the percent chance that any two randomly selected individuals will belong to different species. This version of the Simpson's index is directly related to diversity where 100 is the maximum value attainable, though rarely reached.

The Shannon index (H) measures the uncertainty the taxon of a randomly-chosen individual can be predicted (Shannon and Weaver 1949). Diverse communities will have a high value for the Shannon index. This index is sensitive to the presence of rare species and widely used to analyze biological communities. The calculation for the Shannon index is:

$$H = \sum -p_i \log_2 p_i$$

where p_i is the relative proportion of taxon i. The H value can be compared to the H_{max} value, which is a measure of the maximum diversity possible given the taxa pool of the community. It is calculated as:

$H_{max} = \log_2 P$

where P is the total number of taxa present. The ratio of H/H_{max} provides an estimate of how close a community approaches its theoretical maximum diversity. Ideally, a climax plant community will approach H_{max}, but will rarely achieve it.

In 2004, the Shannon index for Bone Lake was 3.37 with an H_{max} of 3.80. The H/H_{max} ratio is 0.89, which suggests a good amount of diversity in the plant community.

The Aquatic Macrophyte Community Index (AMCI) is based on seven characteristics of aquatic plant communities called metrics. The scoring system for metrics is based on characteristics of reference or undisturbed plant communities. A lake can score from zero to 70, where 70 reflects an ideal plant community (Nichols, Weber, and Shaw1995). The metrics used in the AMCI are: the maximum rooting depth, percent littoral zone vegetated, Simpson's index, total taxa, relative frequency of submersed taxa, relative frequency of exotic species, and the relative frequency of sensitive species. A score for each metric is assigned, and the individual scores are summed for the overall score. The AMCI values for Bone Lake were 44 in the spring and 51 in summer.

5.2.2 Invasive Species Assessment

The spring survey found CLP at 91 sample points (69% of sites sampled). The average CLP coverage per occurrence was 1.3 (roughly 26% coverage) with 15 points having nuisance conditions (generally considered any site with CLP coverage at or above 60%). The summer survey found CLP at 19 different points (72 fewer sites than the spring survey). Only 14% of points sampled had CLP, as opposed to 69% during the previous survey. The average coverage of CLP per occurrence was 0.4 (approximately 8% coverage), with zero points having nuisance conditions.

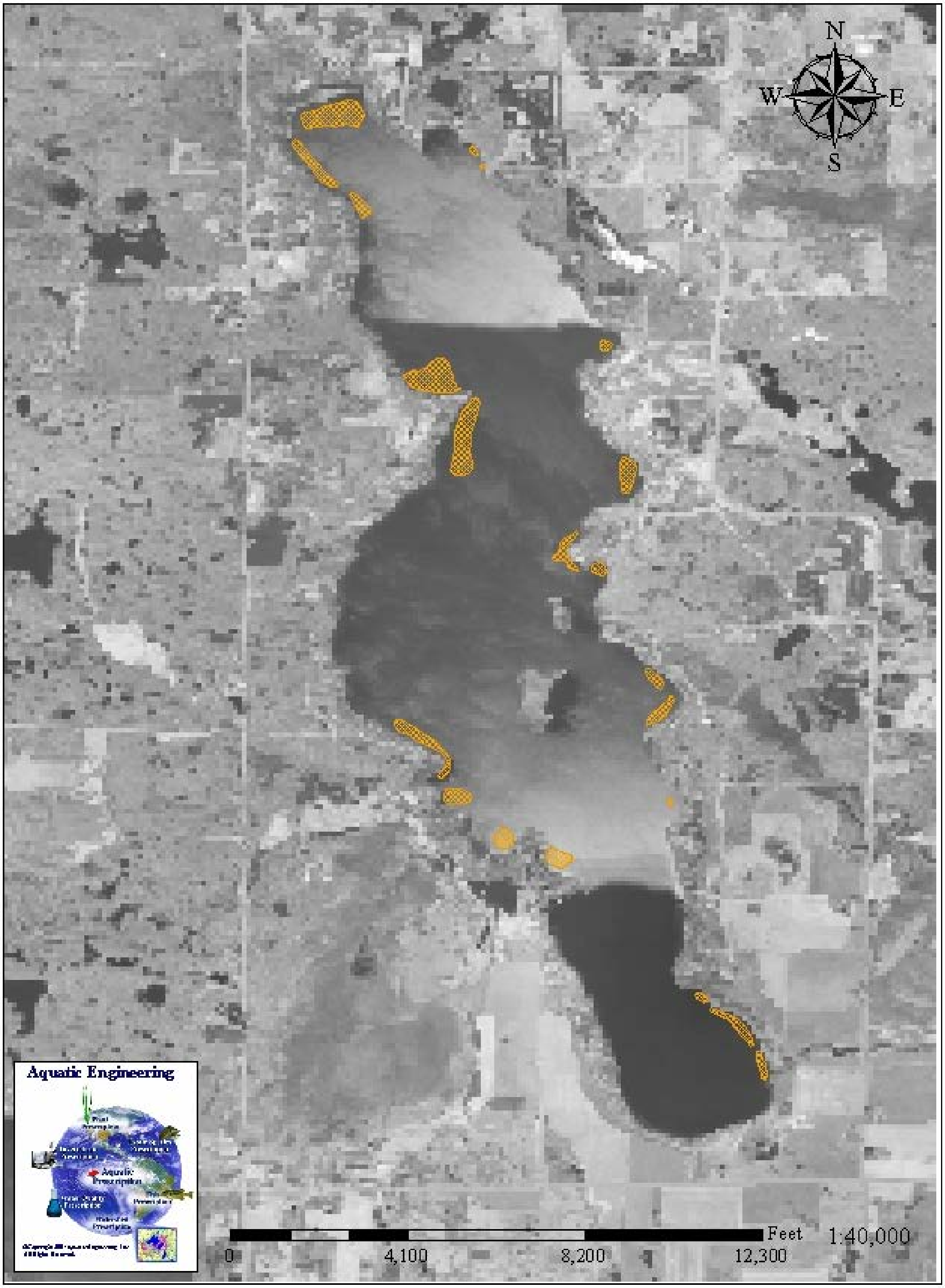


Figure 7. Curly-leaf pondweed distribution within Bone Lake *(Polk County, Wisconsin)*. Areas show the combined distribution of CLP from 2003 and 2004 surveys.

5.3 Substrate at Plant Survey Sites

The substrates encountered in 2004 were sand (51 sites), rock (48 sites), mud (20 sites), gravel (12 sites), and detritus (organic, one site).

5.4 Riparian Land use Assessment at Plant Survey Sites

From the riparian land use assessment, we see that the majority of the immediate shoreline of Bone Lake is in a "disturbed" condition.

Table 4. Riparian land use coverage for Bone Lake *(Polk County, Wisconsin)* in 2004.

	# of Sites	**% of Sites**
Natural	**7**	21%
Wooded	4	
Emergent[1]	2	
Wetland	3	
Disturbed	**26**	79%
Lawn	26	
Buffer Strip[2]	9	

5.5 Macroinvertebrate Community

Following macroinvertebrate identification, specimens were compared with a comparative statistics package (Table 5). Variation between sites was not statistically significant, as illustrated by overlapping box-whisker plots (Fig. 6). The species richness and the species diversity (Figs. 7 & 8) also show similarities between sites, indicating there is not a statistically-significant difference in invertebrate communities in Bone Lake given the different aquatic plant communities. An analysis of variance (ANOVA) was applied to all sites and the total richness of each site. ANOVA is a very common form of hypothesis testing. The null hypothesis was that all the sites were essentially the same, and the data did not disprove this hypothesis.

[1] Emergent plants occurred at 2 of the 3 wetland sites and were not separate occurrences.
[2] Buffer strips were documented at sites where cultivated lawns were present but did not directly boarder the shoreline.

Table 5. Comparative statistics of Bone Lake Invertebrate Samples. SD = standard deviation, SE = standard error, CI = confidence interval, and IQR = inter-quartile range.

INVERTS - TOTAL by Site	n	Mean	SD	SE	95% CI of Mean	Median	IQR	95% CI of Median
T-1 Near Shore	11	7.545	15.2142	4.5873	-2.676to 17.767	1.000	5.500	1.000to 11.000
T-1 2'	23	10.913	27.1677	5.6649	-0.835to 22.661	4.000	5.000	2.000to 7.000
T-1 4'	21	25.619	59.5008	12.9841	-1.465to 52.703	6.000	5.000	3.000to 8.000
T-2 Near Shore	18	21.889	70.2934	16.5683	-13.067to 56.845	3.000	3.000	2.000to 5.000
T-2 2'	15	17.733	38.8265	10.0250	-3.768to 39.235	4.000	4.000	3.000to 8.000
T-2 4'	14	23.000	55.2407	14.7637	-8.895to 54.895	3.500	9.000	2.000to 18.000
T-3 Near Shore	19	8.158	12.3480	2.8328	2.206to 14.109	2.000	8.000	1.000to 11.000
T-3 2'	12	25.000	45.1281	13.0274	-3.673to 53.673	3.000	19.750	2.000to 24.000
T-3 4'	9	18.889	44.9345	14.9782	-15.651to 53.429	1.000	8.000	1.000to 15.000
T-1 Near Shore A	5	46.600	101.9647	45.6000	-80.006to 173.206	1.000	0.000	-to -
T-1 2' A	5	25.200	32.8740	14.7017	-15.618to 66.018	2.000	55.000	-to -
T-1 4' A	7	3.857	3.3381	1.2617	0.770to 6.944	3.000	2.000	1.000to 11.000
T-2 Near Shore A	6	5.833	8.1833	3.3408	-2.755to 14.421	2.500	3.500	1.000to 22.000
T-2 2' A	8	6.000	7.2506	2.5635	-0.062to 12.062	3.000	7.750	1.000to 22.000
T-2 4' A	7	6.286	12.2436	4.6276	-5.038to 17.609	2.000	1.500	1.000to 34.000
T-3 Near Shore A	9	5.778	10.3051	3.4350	-2.143to 13.699	2.000	3.000	1.000to 5.000
T-3 2' A	11	10.818	25.6936	7.7469	-6.443to 28.079	3.000	3.500	1.000to 8.000
T-3 4' A	9	13.000	13.2098	4.4033	2.846to 23.154	8.000	18.000	1.000to 21.000

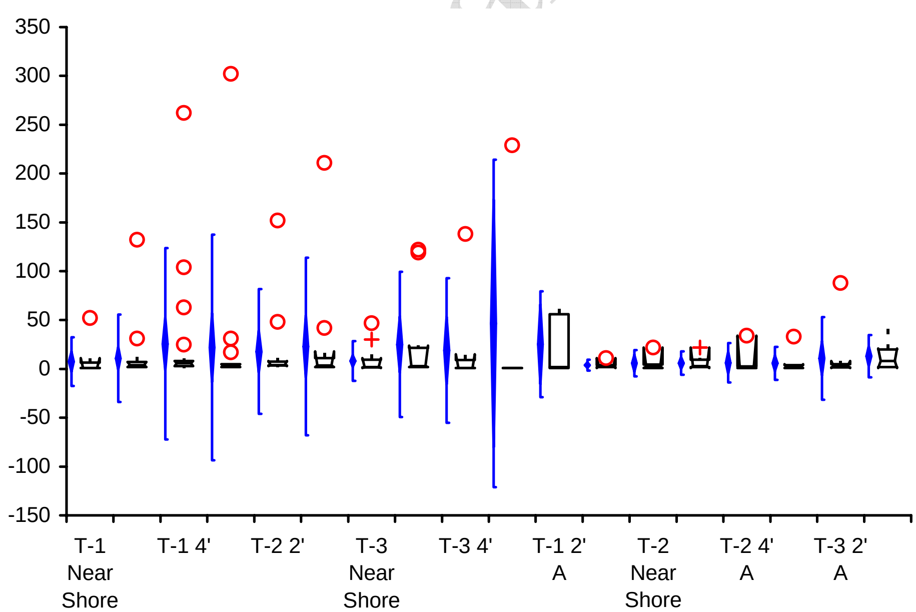


Figure 8. Comparative statistics of Bone Lake macroinvertebrates. A designates an August sample. Red dots are far outliers (3 IQR); red crosses are close outliers.

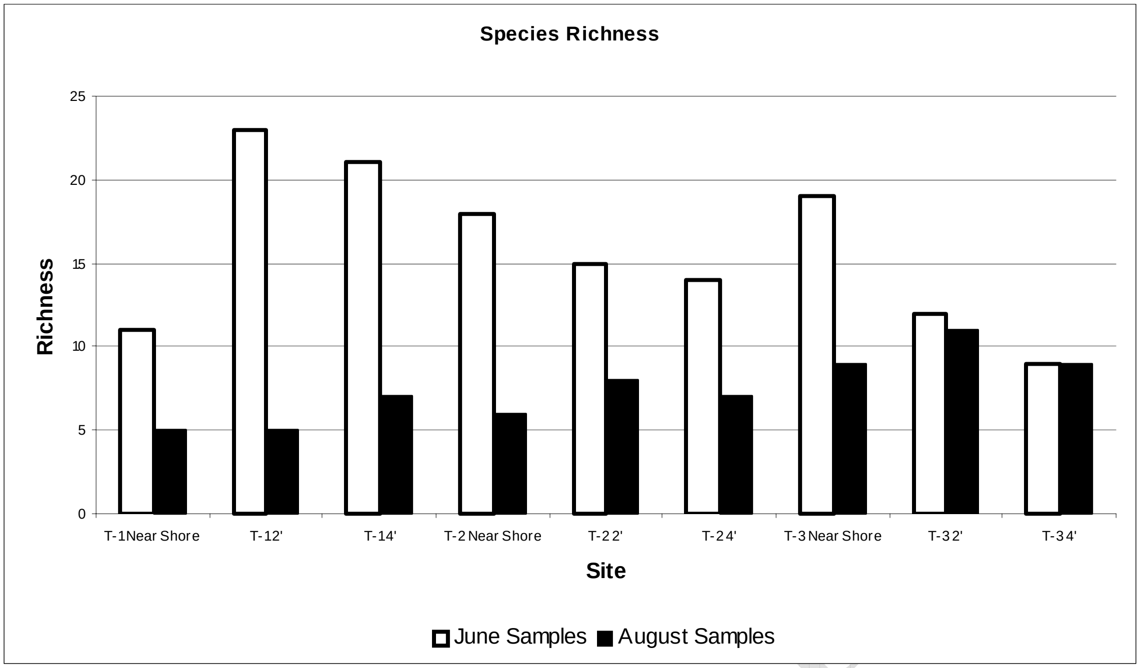


Figure 9. Species richness June vs. August samples

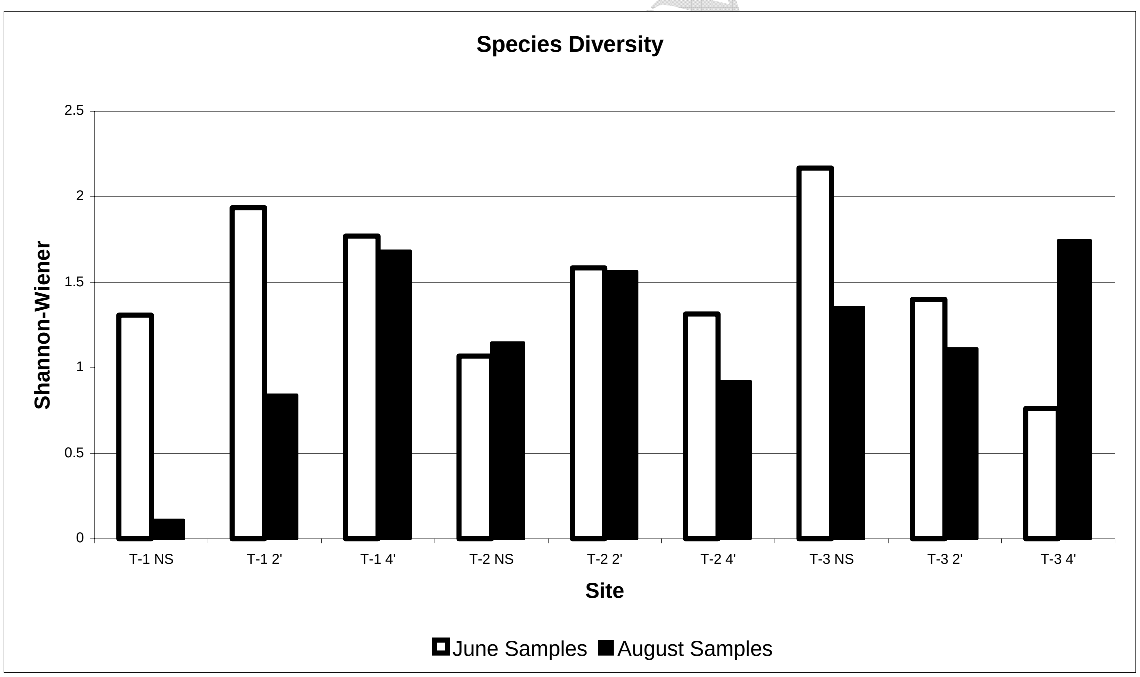


Figure 10. Species diversity June vs. August samples

5.6 Water Quality

Bone Lake is a phosphorus-driven lake that slightly stratifies thermally in the summer and mixes in the spring and fall. None of the parameters measured in 2004 revealed any abnormalities.

Total phosphorus *(TP)* was reported for both the North and South basins. The average TP for the North basin was 24.4 µg/L with a maximum of 35.0 µg/L and a minimum of 13.0µg/L. The average for the South basin was 21.4 µg/L with a maximum of 34.0 µg/L and a minimum of 9.0 µg/L. The TSI_{TP}[3] values for the North and South basins are 50.2 and 48.3, respectively. Because phosphorus is cycled so rapidly through biota, soluble reactive phosphorus *(SRP)* concentrations as low as 5.0 µg/L are enough to maintain eutrophic or highly productive conditions in lake systems *(Tippecanoe Environmental Lake and Watershed Foundation 2005)*. The average SRP for Bone Lake in 2004 was 16.3 µg/L.

Chlorophyll a *(Chl a)* was reported for the North and South basins. The average Chl a for the North basin was 10.1 µg/L with a maximum of 17.6 µg/L and a minimum of 5.4 µg/L. The average Chl a for the South basin was 5.8 µg/L with a maximum of 10.0 µg/L and a minimum of <1.0 µg/L. The TSI_{chl} values for the North and South basins are 53.3 and 47.8, respectively.

Secchi disk readings were collected at each sample point weekly in June and July and monthly August through October. The average Secchi reading for the North basin was 9.1 ft with a maximum of 16.5ft and a minimum of 5.0 ft recorded on October 27th and August 9th, 2004, respectively. The average reading for the South basin was 9.5 ft with a maximum reading of 17.0 ft and a minimum of 6.5 ft recorded on October 27th and September 8th, 2004, respectively. The TSI_S for the North and South basins are 45.3 and 44.8, respectively.

Nitrogen, like phosphorus, is an essential macronutrient needed for plant and algal production. TKN measures organic nitrogen plus ammonium. Most lakes, however, are phosphorus limited and attempts to reduce lake nitrogen levels may have little effect on algal biomass *(Holdren 2001)*. The average TKN for Bone Lake in 2004 was 487 µg/L and supports the fact that Bone Lake is phosphorus limited.

[3] See the 2004 Bone Lake Water Quality Report for information and calculations regarding TSI values.

In 2004, Bone Lake formed a thermocline in both basins of the lake. The thermocline in the South basin was, however, more distinct than the thermocline formed in the North basin. Neither thermocline was particularly strong in 2004. The fetch *(open area of the lake easily affected by wind action, usually measured from shoreline to shoreline)* of Bone Lake allows for plenty of mixing action caused by wind and waves which, in turn, evenly mixes nutrients throughout the water column.

Conductivity is a measure of the electrical conductivity of the water. It reflects the amount of dissolved ions in the water. The ions can originate from various sources including road salt to respiratory byproducts of plants and algae. The conductivity of Bone Lake was 181 µs/cm in 2004, which is typical of lakes in the region.

5.7 Phytoplankton and Zooplankton

Sixteen algal species belonging to five unique divisions were found during the phytoplankton sampling. Organisms belonging to the Copepod and Rotifer groups were most abundant throughout the sampling period. The results for phytoplankton and zooplankton are discussed in the 2004 "Bone Lake Water Quality Report".

5.8 Fishery Assessment

The fishery of Bone Lake is in good condition with regard to the muskellunge population. There is insufficient data to assess the population of any other species. Reports from fishermen state that bass, crappie, and perch populations are also doing well.

6.0 Discussion

6.1 Qualitative Aquatic Plant Surveys

During the qualitative plant surveys in 2004, ecologists found very little emergent and floating leaf aquatic plants in Bone Lake. The littoral zone of the lake contained mostly CLP in the spring and had a well-balanced mix of native pondweeds, Naiad, Coon's tail, and Wild celery in the summer. Although no emergent plants were sampled as part of the quantitative survey, many areas adjacent to the sample transects contained emergent plants. There were two sensitive species found; Narrow leaf pondweed (*Potamogeton strictifolius*) and Yellow water lily (*Nuphar advena*). There has been no study conducted that describes whether this is a high or low number of sensitive species for the state or region.

6.2 Quantitative Aquatic Plant Surveys

The Shannon Diversity Index value for Bone Lake indicates that the aquatic plant community in Bone Lake is approaching an ideal community. The Simpson's Index value for the fall survey is above average compared to other Wisconsin lakes (Nichols, Weber, and Shaw 1995). This value reflects the even distribution of plant species.

The Floristic Quality Assessment (I) value is above the mean value for both the North Central Hardwoods region (20.9) and the state (22.2). This is a good indication for Bone Lake, because both the regional and state averages include lakes that are not impacted by exotic species. The most degraded lakes would fall into the lower quartile range in both categories. The total number of native species found in Bone Lake is exactly the average for the region and is just above the state mean of 13. The Aquatic Macrophyte Community Index value for Bone Lake is average compared to the Wisconsin state-wide average (51.0) and the regional average (52.0 ± 4.0) for lakes (Nichols, Weber, and Shaw 1995). However, our data show that due to the increased abundance of CLP in the spring, the AMCI value is only 44.0 early in the year. The AMCI values have not been compared by lake type, and there is insufficient data to say whether these values are high or low for drainage lakes, which are generally more "impacted" than seepage lakes due to generally larger watersheds. In general, the data indicate that the aquatic plant community of Bone Lake is healthy and is average for both the state and region.

6.3 Water Quality at Plant Survey Sites

The water quality sampling performed at the aquatic plant sampling sites did not reveal any abnormalities. The water chemistry from point to point was relatively constant, and monotypic beds of CLP did not seem to affect any of the parameters measured. The parameters measured at the plant survey sites are not likely to change from site to site unless measured in a dense, monotypic CLP bed during die-off and decomposition. Since the plant surveys were performed before and after the seasonal die-off of CLP, no water quality abnormalities were expected.

6.4 Substrate at Plant Survey Sites

The most commonly occurring sediments in the littoral zone of Bone Lake are sand and rock. Submersed rock piles and most shorelines contain a mixture of cobble and sand. Some aquatic plants prefer one sediment type over others and are able to compete better than plants less suited to that particular substrate. In sandy areas, one will typically find more pondweeds, Niad, and Wild celery, which were the most common plants found in Bone Lake in 2004. Areas that contained softer substrates were dominated by CLP in the spring and Coon's tail in the summer. Softer sediment types *(mud and organic)* along shoreline areas are also ideal for floating-leaf and emergent vegetation. The lack of these types of sediments in Bone Lake helps explain the low relative abundance of emergent and floating-leaf plants.

6.5 Riparian Land use Assessment at Plant Survey Sites

Cultivated lawn was the most common type of shoreline coverage (79%), which generally causes nutrient and sediment problems for lakes. Typical symptoms would include excessive plant growth and algal blooms. Algal blooms can occur in two varieties: filamentous algal blooms and planktonic algal blooms. While both types can create problems for lake patrons, filamentous algae can form dense floating mats that decay and cause noxious odors. This type of algae tends to cause nuisance conditions more easily than planktonic algae. Planktonic algae cause the "pea soup" affect in lakes where the water itself seems to turn green. Nine of the 26 sites that had cultivated lawns also contained a buffer strip that separated the lawn from the water. This type of riparian management is ideal for those property owners who wish to have a cultivated lawn but want to prevent excessive nutrients and sediments from entering the lake. Though the theoretical width of effective buffer strips is debated, it is agreed that any buffer width is better than no buffer at all. The WIDNR suggests that the state mandated 35-foot buffer may be insufficient to fully protect against erosion and nutrient loading, even when most vegetation is intact *(WDNR 1999)*. Having intact shoreline vegetation also helps protect against the invasion of exotics.

6.6 Macroinvertebrate Community

Although the statistical analysis did not show a significant difference in species diversity among vegetation coverage types, the samples still differed some. The August samples tended to be less rich and less diverse. One reason may be that taking a sample in late August was too early, and many generations were not hatched or mature enough to be collected. Secondly, there could have been such a decline in the oxygen levels during the CLP decay that many species simply died off and produced no second generation.

The most likely scenario is that many of the second-generation species being collected were not mature enough (*i.e.*, they were in an egg form or in their first instar). A majority of the species found were in the collector and gatherer functional feeding groups, which precedes their adult form. Typically these groups have a higher tolerance to pollution and low oxygen levels. This may have led to a less diverse sample in the August period.

The low diversity and richness of the lake can be explained by the high abundance of collectors and gatherers, which is an indication of the amount of food available to these organisms. A majority of the allochthonous material coming into the lake was fine organic matter (versus coarse organic matter) that is probably not efficiently processed. Bone Lake is a homogeneous lake with little in the way of shoreline structure (abundance of mixing, highly disturbed). If Bone Lake were less residential and had more wooded lots and grasslands, the invertebrate study would have a different result. A higher input of leaves and other coarse organic material would shift the functional feeding ecology to a higher number of shredders and scrapers. The nutrients in the coarse material would also be better processed and less available for algae in the water column.

The macroinvertebrate community in lakes is very important in the food web as well as for biogeochemical processing of nutrients. Because Bone Lake had a low diversity rating, improvements in the lake and surrounding watershed would be seen in a change in the macroinvertebrate community.

6.7 Water Quality

The TSI values for Bone Lake in 2004 show that Bone Lake is a slightly eutrophic to mesotrophic lake. Water clarity data support the mesotrophic status, while chlorophyll and total phosphorus support a slightly eutrophic status. Bone Lake has qualities expected of each status, which occur seasonally. In the spring and fall, phosphorus and chlorophyll levels are down and Secchi depth is high; this is expected for a mesotrophic lake. As the season progresses and algae bloom, the lake displays characteristics one would expect to find in a eutrophic body of water. As part of a future monitoring strategy, the TSI values can be calculated and compared from year to year and will indicate whether the eutrophication process is increasing, decreasing, or remaining constant. Sudden changes could be due to land use changes in the watershed and should be investigated.

6.8 Fishery

The fishery data does not provide a good overview of the entire fishery. Much of the effort put into managing the fishery of Bone Lake centers on the muskellunge population. Although muskellunge fishing is popular and an important economic resource to the local community, surveys designed to enumerate artificially stocked fish do not tell the true condition of the fishery. The efforts planned for 2006, which include a survey for all fish species, should shed light no the true condition of the fishery.

7.0 Review of Management Options

7.1 Overview

The following sub-sections provide management strategies that are commonly used to manage eutrophic effects (increased plants and algae and decreased water clarity) on lakes. The purpose of this section is to provide a general introduction to popular management strategies for future reference and consideration. Methods described are derived from *Managing Lakes and Reservoirs* prepared by the North American Lake Management Society. Practices that are relevant to Bone Lake are described in more detail in the following sections.

7.2 Aquatic Macrophytes

Mechanical weed harvesting could be used to remove the upper portion of rooted vegetation. Weed harvesters are low-draft barges that cut and remove vegetation growing at or near the water surface. A harvester can operate at a rate of 0.2 to 0.6 acres per hour depending on the equipment. Once cut, the plants are moved via conveyer to a holding area on the barge itself until they can be unloaded via a second conveyer at the shore. Plants are transported away from the lake to a compost site or a landfill. The physical removal of plant material means that the nutrients trapped in the plants are also removed from the lake ecosystem.

Harvesting is most effective to remove plants in three to six feet of water growing in dense beds. Harvesting can be used to open navigational channels, remove weedy obstructions from highly-used recreational areas, or to produce relief for fish in weed-choked areas of a lake.

Drawbacks include the cost, loss of fish fry, disruption of plant community, and possible dislodging of sediments. If nutrients are brought into the system (*i.e.,* from sediments), an increase of algae may result.

Manual weed harvesting is a scaled-down method of mechanical harvesting. In manual weed harvesting, weeds are uprooted completely or simply cut close to the sediment using a variety of equipment types, from drag lines and garden rakes to specially designed weed cutters. This method is the most species-specific mechanical method of plant removal, since an individual can physically see which plants are going to be removed and which will be missed. This method, however, is also the most labor-intensive means of controlling plants, and its feasibility is directly affected by the available labor force. This method is most applicable to individual property owners that wish to maintain clear areas for swimming, fishing, and for boat access to their dock. Also, since many times plants are not removed from the root, repeated efforts are needed to maintain the benefits. Wisconsin statutes NR 107 and NR 109 should be reviewed to learn what is permitted before attempting.

Sediment screens range from fiberglass or plastic mesh screens to simply sand or gravel and are placed on the existing sediment and plants to block light and suppress growth. While the synthetic barriers make better screens, they are the most difficult to install and maintain. The screens must be installed early in the year and securely anchored to the sediment to prevent them from being disturbed. The screens must be removed and cleaned periodically to prevent sediment from building up on top of them. Benthic barriers are disruptive to benthic fauna and can increase turbidity when accumulated sediments are removed.

Sand and gravel is a more natural means of suppressing aquatic vegetation and is less expensive, but it also requires maintenance on an annual basis and is less effective.

Water level manipulation, commonly referred to as “draw-down”, is a useful way to control nuisance vegetation that occurs in the shallow regions of a lake. This method is typically applied in the fall and over winter. Cold, dry conditions are best for a draw-down event because the frozen sediments will kill most of the seed bank and compress soft sediments. Both of these conditions prevent plant growth in the following spring when the water level is brought back up to normal conditions. This method severely impacts recreational uses while the water level is lowered and has the potential to trap fish and other wildlife in shallow areas that may not become completely dry, but do freeze from top to bottom over the winter.

Drawing the water level down in the summer has an opposite effect on plant growth. Lowering the water level generally increases the wetland area, and the littoral zone of the lake becomes larger. This provides more habitat for plants to become established.

This is a low-labor option, but it can become expensive if power is generated at the dam. The power company may be entitled to compensation for loss of power generated during the draw-down.

Raising the water level in the summer can also suppress aquatic vegetation by limiting the amount of light penetrating to the bottom, thereby making the littoral zone smaller.

Dredging sediments and plants is usually only performed when an increase in depth is a required part of the management outcome. If the depth is increased sufficiently, light penetration is limited in the dredged area and plant growth is suppressed. Dredging an entire lake bed is very rarely performed. Dredging small areas for boat access and other recreational uses is a cheaper and more applicable compromise.

Chemical control of aquatic plants and algae is often used in areas where vegetation has created nuisance conditions. Herbicides and algaecides are used to control a wide variety of plant and algae species. Some herbicides are very specific for which plants they will control. Others control a wide variety of vegetation. In some cases, the precision and concentration of herbicide applied will also determine which species are controlled.

Chemical applications are designed to control vegetation which is already present and rarely address the underlying nutrient problem associated with nuisance plants and algae. They are sometimes the only economically feasible method for creating recreational relief. Recent advances in technologies have made chemical control a more favorable tool for managing exotic species selectively while restoring native habitats.

Biomanipulation refers to altering a food web in order to obtain a desired end result. In the case of controlling algae, a "top-down" approach is taken. Promoting top-level predator fish like muskellunge, walleye, largemouth bass, and northern pike naturally reduces the panfish population. Panfish typically graze on zooplankton *(algae eaters)*. When zooplankton reach higher numbers, more algae is consumed and the water clarity is increased. This method has not been effective on highly eutrophic lakes. Conditions in the lake must be set for the top predators to survive.

7.3 Water Quality

Land acquisition refers to the setting aside of land within the watershed that will be allowed to develop naturally. Land can be purchased, donated, or signed into easement. The Wisconsin DNR has purchased thousands of acres of lake shoreline over the past several years.

Public education and participation can change the way people view their aquatic ecosystems and ultimately change their behaviors. Many lake districts begin their public education campaigns at boat launches where various signs inform the public about current topics ranging from fish and plants to water quality. The Wisconsin DNR solicits public involvement through a program called "Self-help Monitoring" which promotes individual and group efforts for monitoring various aspects of the lake. Simple water clarity data gathered with a Secchi disk provides valuable data for monitoring conditions within the lake.

Watershed restoration involves returning disturbed land to a pre-disturbance condition. Examples of this would be restoring a grazed grassland to a prairie or woodland. In general, current land use is discontinued in favor of historical conditions. Activities that incorporate best management practices *(BMPs)* into the landscape can also be considered restorative activities. On a smaller scale, individual riparian property owners can allow their property immediately adjacent to the lake to grow naturally, creating what is commonly referred to as shoreline buffers.

8.0 Bone Lake Macrophyte Restoration Plan

A complete aquatic macrophyte restoration plan follows a series of steps. A plan should organize labor and resources for a clearly defined mission and outline a way to measure success. The steps to completing a restoration plan are:

- Define the problem
- Define the goals
- Review available techniques
- Decide which techniques are applicable
- Review the costs and benefits of each applicable technique
- Select the techniques to be implemented
- Decide how the selected techniques will be implemented
- Outline a method for tracking progress
- Decide how future problems be addressed
- List quantitative and temporal milestones for defining success

8.1 Definition of the problem

The main aquatic macrophyte problem facing Bone Lake is Curly-leaf pondweed. In addition to the presence of CLP, certain areas of Bone Lake experience nuisance levels that impede many aspects of lake recreation. In 2004, a survey conducted by AEI showed CLP was present at 69% of the sites (ninety-one sites) sampled and averaged approximately 26% of the rake coverage at the sites it was found. CLP accounted for more than 60% of the rake coverage at 15 of those sites. Those 15 sites are prime examples of CLP beds that need to be managed over the next five years.

8.2 Definition of the goals

The goals of the Macrophyte Restoration Plan are to 1) annually reduce the relative coverage of CLP in designated management zones by 80%, 2) reduce CLP frequency of occurrence to 5% after five years of managing the CLP population, and 3) increase native plant diversity and/or density for floating leaf and emergent species.

8.3 Review of available techniques

All of the techniques described in Section 7 are available to Bone Lake District with the exception of water level control. Some of the techniques are not commonly permitted by the WDNR and should be considered less viable options. Water quality improvement options such as land acquisition and watershed restoration are also appropriate options but can vary greatly in cost and benefit depending on the scope of the activities.

8.4 Which techniques are applicable

Mechanical harvesting and chemical control are the two most applicable techniques for controlling existing CLP populations in Bone Lake. Individuals may consider manual removal of CLP from around their property; however, this is not likely to result in the scale of control that is needed to noticeably improve conditions within Bone Lake.

Public education and participation are key components to this management plan; without public participation, the goals and objectives are not likely to be realized. Public awareness of watershed and lake issues has increased dramatically in the last decade. The general public is in a place where their individual efforts can make a big difference in how their resources are managed.

Land acquisition is typically not a realistic activity for the Lake District alone. Townships, counties, and state government should be included in plans for land acquisition. The Wisconsin DNR and various not-for-profit land conservancy organizations are sources for cost-sharing if land acquisition is feasible. Watershed BMPs already in place include storm water and septic system ordinances. Zoning and building regulations can help maintain water quality and should be strictly enforced.

8.5 Review of the costs and benefits of each applicable technique

	Benefits	Drawbacks	Applicable	Recommended	Costs[4]	Longevity
Mechanical Harvesting	Removes plants and nutrients	Small areas controlled	Yes	Conditionally	$200,000 equipment and $200-600 per acre	1-3 Weeks
	Immediate relief	Can not reach shallow areas				
	No use restrictions	Not species selective				
	No potentially harmful chemicals	Promotes growth of opportunistic plants				
Manual Harvesting	Species specific	Labor intensive	Yes	Conditionally	$100-? per acre	1-3 Weeks
	Shallow areas affected	Very small areas controlled				
	No chemicals	Slow				
	Removes plants and nutrients	Correct plant ID required				
Sediment Screens	Little negative impact to whole lake	Harms benthic invertebrates	Yes	No	$20,000-50,000 per acre	Months to Years
	No chemicals	Difficult to install				
	Site specific control	Permit required				
	Reversible	Expensive				
Water Level Manipulation	Controls plants in shallows	Restricts recreational use during	No	No	$1,000-2,000 per acre	1-2 Years
	2 years of control	Perfect weather conditions required				
	Sediment compaction	Disrupts wildlife				
	Inexpensive (maybe)	Expensive (maybe)				
Dredging	Improves navigation	Very expensive	Yes	No	$20,000-80,000 per acre	Depends on sedimentation rate
	Removes plants and nutrients	Releases toxic contaminants				
		Destroys habitat				
		Increases turbidity				
Chemical Control	Quick relief	Repeat treatments required	Yes	Yes	$1,000-2,000 per acre	Months to Years
	Species specific	Does not remove nutrients				
	2 months of relief	Promotes aggressive species				
	Cost effective	Can increase algal blooms				
Biomanipulation	Long lasting	Hard to start	?	No	?	?
	Self sustaining	Alters habitat				
	No chemicals	May have negative impacts on habitat				
	Improves water quality	Can be irreversible				
	Improves fishery					

[4] Cost range per acre treated without consideration of longevity of effects *(Holdren et al. 2001)*

8.6 Selection of techniques to be implemented

After reviewing the applicable management techniques, herbicide applications and mechanical harvesting are the two recommended strategies for managing current CLP populations within Bone Lake. Herbicide applications are recommended unconditionally to begin immediately in the spring of 2005. Mechanical harvesting is recommended, conditionally, with the following stipulations:

- Harvesting must occur before turions are produced
- Harvesting should occur only in areas where plant beds are monotypic for CLP
- Harvesting equipment should not be rented or brought in from other bodies of water

Considering the above stipulations, only the northern area of Bone Lake would benefit from mechanical harvesting, and the cost-benefit ratio does not currently make this a good option.

Public education and participation should also be increased. There are many ways to present information to the public that cover a wide variety of audiences and have varying degrees of cost. Land acquisition and land use ordinances are more costly and involved processes. These would be major undertakings requiring several parties working cooperatively to complete.

8.7 How the selected techniques will be implemented

The Bone Lake Management District should work with local townships and Polk County to prepare or update zoning regulations, create a public education campaign, and acquire/restore watershed property to minimize urban and agricultural developmental impacts. An expanding population and changes in agricultural land usage are inevitable. The best method for minimizing future impacts on the watershed is to prepare in advance a plan that protects the integrity of Bone Lake while accommodating necessary changes.

Public education and participation has been an ongoing effort for some residents of Bone Lake. Self-help Secchi depth monitoring should continue. Any public participation should be welcomed and encouraged. The District may want to consider creating a position on the board that would be responsible for spearheading a public education and participation campaign.

Annual monitoring and herbicide applications

It is recommended that all herbicide applications are performed using licensed companies performing precision pesticide application methods and technology to ensure precise and accurate application of herbicides within the lake. Herbicide applications should include four minimum steps.

The first step is a pre-treatment survey of the entire lake (Fig. E-3), mapping of proposed management areas, and quantitative aquatic plant surveys in those areas. Plant survey sites should be spaced evenly throughout the proposed management area at one site per surface acre or a minimum of five sites per area.

The second should be the herbicide application. For CLP, an annual low-dose Aquathol-K injection treatment (1.0 – 1.5 ppm) in the early spring when the water temperature is between 50 and 58 degrees F is recommended by the U.S. Army Corps of Engineers. The USACE has performed its own scientific studies that show the low-dose application will control CLP and inhibit turion production while not harming native vegetation. The application should be completed with a precision GPS guided system capable of accurately performing the treatment in specified areas (Fig. 11).

The third step should include a post-application aquatic vegetation survey and treatment assessment. During this step, a survey identical to the survey performed pre-application, is completed approximately 30 days after the initial application of Aquathol-K. The quantitative data can be used to objectively estimate the effectiveness of the treatment. If the treatment does not deliver the desired results, subsequent applications may be required until the desired results are reached.

The fourth step is a review of all plant surveys and treatments for that year. The application firm should be able to deliver a report that details the restoration practices and the success of each as derived from the quantitative plant surveys. Maps and GPS data generated during the plant surveys should be included with this report. This report should be used annually to update and amend the BLMD – Aquatic Plant Restoration Plan as necessary.

Concurrent with herbicide applications, Secchi depth readings and water quality monitoring should be performed by lake volunteers. If performed correctly, herbicide applications should have no negative impacts on water clarity or quality as it pertains to nutrient loading.

5th Year Monitoring and Aquatic Plant Plan Update

A whole-lake survey should be conducted every fifth season to quantitatively assess the macrophyte community. A transect survey, as performed in 2004, is ideal for Bone Lake and should be the model for surveys repeated in the future. It is imperative to use GPS coordinates to mark current sample locations and to locate past sample points so that results can be accurately compared from year to year.

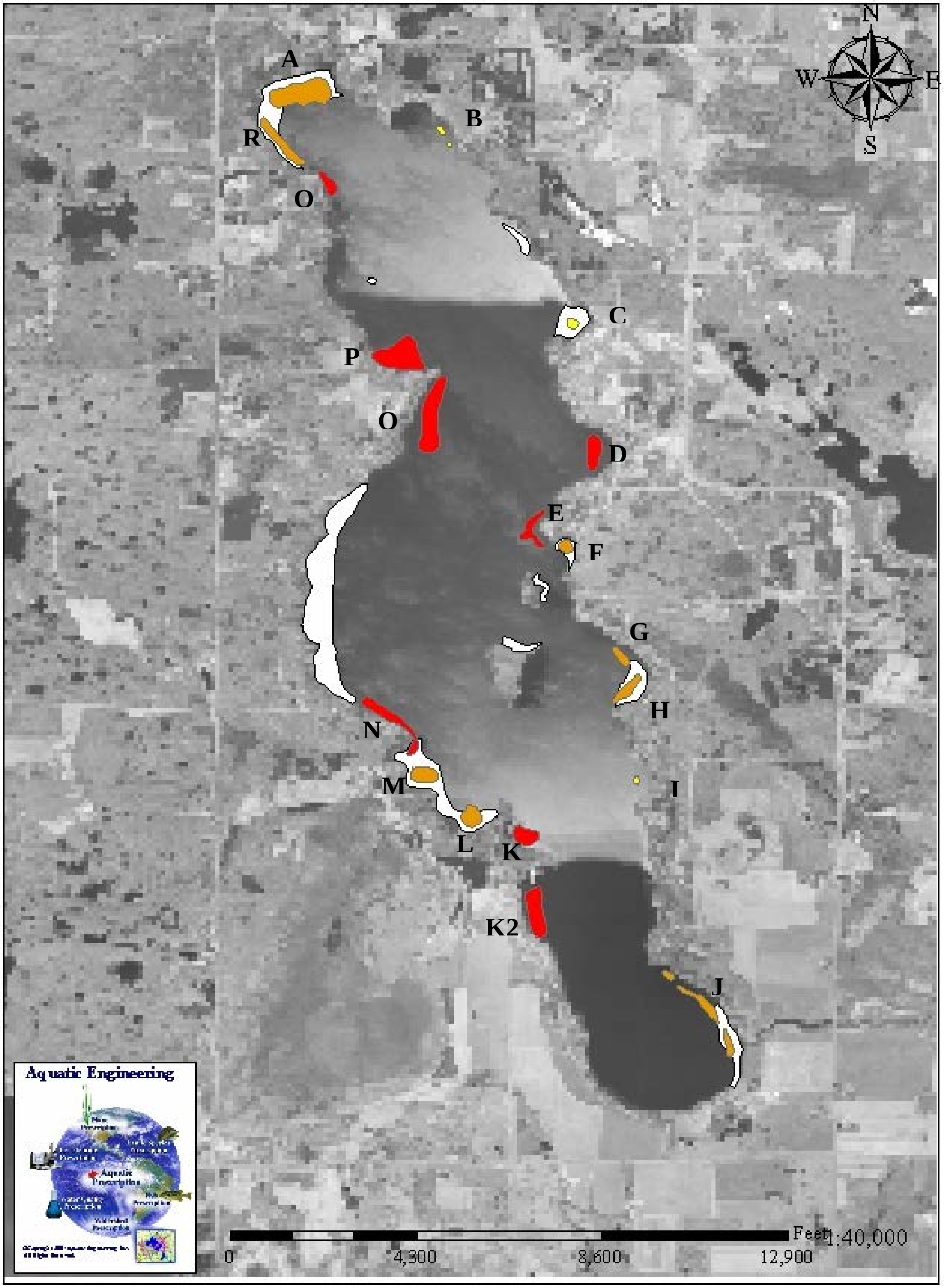


Figure 11. Curly-leaf pondweed recommended restoration areas within Bone Lake *(Polk County, Wisconsin)* 2004. WDNR designated sensitive areas are white.

Table 6. Estimated Annual Restoration Costs of Herbicide treatments and monitoring those management zones *(Per acre per prioritized area)*

Priority	Area	Size (acres)	Average depth (ft)	Cost per Treatment
Primary	D	3.8	7	$3,800-7,600
	E	3.2	5	$3,200-6,400
	K	3.2	7	$3,200-6,400
	K2	3.0	5	$3,000-6,000
	N	5.3	8	$5,300-10,600
	O	10.6	8	$10,600-21,200
	P	10.2	7	$10,200-20,400
	Q	2.0	7	$2,000-4,000
	TOTAL	***41.3***	***TOTAL***	***$41,300-82,600***
Secondary	A	10.7	5	$10,700-21,400
	F	1.3	5	$1,300-2,600
	G	1.5	7	$1,500-3,000
	H	2.5	8	$2,500-5,000
	J	5.1	5	$5,100-10,200
	L	2.8	5	$2,800-5,600
	M	3.2	8	$3,200-6,400
	R	4.2	5	$4,200-8,400
	TOTAL	***31.3***	***TOTAL***	***$31,300-62,600***
Tertiary	C	0.8	5	$800-1,600
	B	0.6	7	$600-1,200
	I	0.3	7	$300-600
	TOTAL	***1.7***	***TOTAL***	***$1,700-3,400***

Annual Project Total $74,300-148,600

8.8 Outline of a method for tracking progress

There is no good way to pre-define the goals of land acquisition or soliciting volunteers to perform self-help monitoring. The method for tracking land acquisition progress would simply be keeping a running total of acres of protected land secured each year. For citizen participation, if the goal is to enlist two new self-help members per year, the method of tracking progress is simply to evaluate the number of volunteers each year. If the goal is not to increase the number of volunteers, but rather to increase the effort of soliciting volunteers, progress would be defined by the number of man-hours devoted to such activities, regardless of outcome.

The method for tracking the progress of CLP management occurs during the first and third step annually and during the whole-lake quantitative survey during the fifth year.

More specifically, the Simpson's Diversity Index, Shannon Diversity Index, FQI, and AMCI can be calculated each year for the surveyed sites within management zones and for the whole lake every five years. These values will provide an estimate on how the aquatic plant community is responding to the restoration efforts. Increased diversity is expected as monotypic stands of CLP are replaced by a variety of native aquatic vegetation. The FQI (a qualitative value) should remain constant or increase slightly as CLP is eliminated. If the FQI decreases, there is a possibility that native plants are being harmed by the herbicides as well. The AMCI should also increase as the frequency of exotic species decreases and the frequency of native species, especially those designated as sensitive species, increases.

8.9 How will future problems will be addressed

Future concerns should be addressed in a timely manner at regularly scheduled District meetings. Any urgent issues, such as pioneer invasive species stands or building/zoning violations, should be addressed immediately by contacting the authorizing District representative. The representatives have an obligation to call an emergency meeting if necessary. Any large-scale problems should be addressed in an update to the appropriate management plan.

8.10 Quantitative and temporal milestones for defining success

As discussed in the goals section (7.2), the annual goal for CLP management is to reduce CLP relative coverage by 80% in each management zone. The project five-year goal is to reduce the frequency of occurrence (as a percent of sites sampled) of CLP to 5% or less.

As part of the CLP management practices, in addition to watershed BMPs, land acquisition and self-help monitoring, a goal of increasing native plant diversity and density should be included in the management plan.

8.11 Bone Lake Aquatic Plant Restoration Plan

It is recommended that the Bone Lake District continue to monitor the aquatic macrophyte community qualitatively every year and quantitatively every five years. The purpose of qualitative surveys should be to monitor the locations of exotic species (currently CLP), locate and map areas where aquatic plants create nuisance conditions, and maintain a current inventory of aquatic species. The FQI could be calculated after each qualitative survey and can be compared to previous values. This assessment will give the District a strong record of baseline plant community data and can be used in the future to objectively determine an improvement or decline in the general "disturbance" of the lake ecosystem. Although the FQI is a quick indicator of disturbance, quantitative surveys should be used as the indicator of a changing plant community.

Quantitative surveys should occur every five years and should be performed concurrently with qualitative surveys. These surveys provide objective values with which the District can evaluate the condition of the aquatic plant community within the lake. Only the quantitative surveys should be used to determine if a shift in the aquatic plant community has occurred.

Exotic species can rapidly deteriorate a plant community and cause long-term and sometimes irreversible damage. Many aquatic communities in Wisconsin have been affected by Eurasian water milfoil (EWM) and CLP. Bone Lake currently has a CLP population that should be managed on an annual basis. Sensitive areas designated in 1988 and 1989 need to be re-evaluated by the DNR. For example, the area in the far North bay of the lake was designated as a sensitive area in 1989, citing that the area is dominated by emergent and floating leaf vegetation and has a good mix of native submersed vegetation. The assessment goes on to say that the protection of the native plant community will play an important role in diminishing invasions of exotic species. The area in question was dominated by CLP in the spring and contained mostly coontail in the summer. Emergent and floating leaf plants are only found close to shore.

Studies conducted by the U.S. Army Corps of Engineers have shown that the most effective treatment for CLP is early-season aquatic herbicide treatments. Since CLP is a cold water specialist, treating early in the spring has several benefits. Treatments in the spring can kill the CLP before it can produce turions (hard pinecone-like seed structures that become imbedded in the sediment and germinate in subsequent growing seasons) and can be applied selectively to kill CLP while not affecting the growth of native plants later in the spring. Treatments must occur over several years in order to deplete the turion seed bank sufficiently.

8.12 EWM Prevention Program

In addition to managing CLP, monitoring for EWM is recommended. Though not yet a significant problem in the region, many lake patrons travel from the Twin Cities and from parts of Wisconsin where EWM is a problem. Volunteer training is available through the DNR's Clean Boats/Clean Water program. Monitoring for EWM can be conducted by volunteers on a weekly basis. A network of District representatives with addresses and phone numbers should be available to each person monitoring the launches in case of an EWM occurrence. The contact information for the local DNR warden should also be provided to each volunteer monitor.

Detecting pioneer stands of EWM and eliminating them as soon as possible is essential in preventing widespread infestation. In the case of an EWM occurrence, the entire plant should be removed by a professional. The District should also have the area surrounding the affected boat launch treated with Reward at two gallons per surface acre. Similar preventative treatments performed on the first week after the fishing season opener and after the fourth of July weekend (and after any other high use days) have been implemented on other lakes and have been successful. The key to eliminating a pioneer stand of EWM is to kill or remove the entire stand without fragmenting the plants in the process. EWM easily spreads by fragmentation and would be impossible to eliminate by mechanical removal leaving herbicides as the best option.

8.13 Contingency Plan for Nuisance Native Vegetation

In addition to managing CLP and preventing a EWM infestation, a contingency plan addressing any current and future problems with nuisance native vegetation is recommended. For near-shore areas of high recreational use (around docks and piers) we recommend allowing a 50-foot corridor through nuisance native aquatic vegetation such as coon's tail, common waterweed, and northern milfoil. For areas with high value vegetation and areas designated as sensitive, we recommend a 30-foot corridor.

Management in these areas should be limited to hand removal or a site-specific herbicide management program.

Dense native vegetation is also commonly found in the northwest corner of the lake. Management options should be considered if native plants, such as Coon's tail, prevent adequate navigation and recreation in areas affecting property owners. In the event this problem develops, a 50-foot channel, 100 feet from shore, beginning at the first affected property and following the shoreline to the last affected property, should be treated with Reward at a rate of two gallons per surface acre two times annually. In addition, periodic travel corridors periodically off the shoreline channel may be required to meet recreation requirements for the residents and should also be given adequate consideration.

8.14 Water Quality Management

Water quality parameters such as Secchi depth, total phosphorus and chlorophyll a should be monitored on a regular basis. Recent studies suggest that CLP may play an important role in nutrient cycling and water quality as it decays in the summer. Though more research needs to be conducted to determine the exact affects of monotypic CLP beds on water quality, it is widely recognized that the release of phosphorus from CLP in the summer can fuel local algae blooms and disrupt the annual cycling of phosphorus. By managing CLP and promoting the establishment of native macrophytes in CLP beds, the seasonal release of phosphorus would be curbed; a more natural cycle would result in less intense algal blooms in the middle of summer.

More shoreline vegetation would reduce incoming nutrients, thereby abating excessive vegetation problems. This condition is attainable through riparian owner participation and would be part of the public education and participation campaign. Zoning and land use ordinances would play a similar role and would also result in improved water quality.

8.15 Fishery Management

Maintaining a healthy muskellunge fishery will be a result of good plant habitat. Muskie, pike, bass, and walleye help maintain good water clarity by consuming the fish that eat zooplankton. The past stocking efforts and size/bag limits imposed by the WDNR have helped maintain the fishery and should be continued in future management efforts. The WDNR is doing a good job of monitoring the muskellunge population of Bone Lake and has a good understanding of how the size limits affect abundance and occurrence of quality sized fish.

In addition to managing the muskellunge population through stocking efforts, healthy aquatic plant communities promote the establishment of healthy fisheries. Aquatic plants provide cover and foraging opportunities for fish of all species and sizes. Studies are currently being conducted to assess the affects of monotypic stands of CLP on macroinvertebrate communities. The sampling performed by AEI in 2004 also takes into account the distinct differences between monotypic CLP beds and well mixed areas of native plant species. The results indicate that macroinvertebrate communities are not impacted by monotypic CLP beds.

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Transect 24
CLP (0.5-5.0)
Flat-stem (0.75)
Clasping leaf (0.25)
Coontail (0.75-2.25)
Northern milfoil (0.25)

Transect 10
CLP (1.5)
Clasping leaf (0.75)
Large leaf (1.25)

Transect 20
CLP (0.5-1.0)
Clasping leaf (0.25-0.5)
Large leaf (0.25-0.5)

Transect 25
CLP (0.75-4.75)
Flat-stem (0.25)
Coontail (0.25)
Northern milfoil (1.0)
Narrow leaf (1.0)

Transect 26
CLP (0.25)
Clasping leaf (0.25)

Transect 12
CLP (0.25-0.75)
Flat-stem (0.25)
Clasping leaf (0.25)
Large leaf (0.25)
Narrow leaf (0.25)

Transect 30
CLP (0.25-1.25)
Flat-stem (0.25)
Clasping leaf (0.5)
Narrow leaf (0.75)
Naiad sp. (0.25)

Transect 1
CLP (0.25-1.25)
Flat-stem ()
Clasping leaf (0.5)
Large leaf (0.75-1.0)
Coontail (0.25)
Wild Celery (0.5)
Northern milfoil (0.25)
Narrow leaf (0.25)

Transect 0
CLP (0.5)
Flat-stem (0.25)
Clasping leaf (0.25)
Large leaf (0.25)
Naiad sp. (0.25)

Transect3
CLP (0.25-1.0)
Clasping leaf (0.25)
Large leaf (0.25)
Coontail (0.25)

Transect 21
CLP (2.75)
Flat-stem (0.5)
Clasping leaf (0.25-0.75)
Large leaf (1.0)
Coontail (0.5-0.75)
Wild celery (0.25)
Northern milfoil (0.25)

Transect 11
CLP (0.25-1.25)
Flat-stem (0.25)
Clasping leaf (0.25-0.5)
Coontail (0.25-0.75)
Northern milfoil (0.25)

Transect 2
CLP (0.25-0.5)
Coontail (0.25)
Northern milfoil (0.25)
Narrow leaf (0.25)

Transect 23
CLP (0.25-1.0)
Flat-stem (0.5)
Clasping leaf (0.75)
Coontail (0.25)
Naiad sp. (0.25)

Transect 4
CLP (3.0-4.5)
Clasping leaf (0.25)
Narrow leaf (1.25)

Transect 14
CLP (0.5-5.0)
Flat-stem (0.75)
Clasping leaf (0.25)
Large leaf (0.5)
Coontail (0.75)
Common waterweed

Transect 22
CLP (0.25-0.5)
Flat-stem (0.25-0.5)
Clasping leaf (0.25-0.75)
Large leaf (0.25)
Coontail (0.75)
Narrow leaf (0.25)

Transect 5
CLP (0.5-1.0)
Flat-stem (1.0)
Clasping leaf (0.25)

Transect 6
CLP (1.0-2.0)
Flat-stem (0.25)
Clasping leaf (0.75)
Northern milfoil (0.5)
Water buttercup (0.25)

Transect 31
CLP (0.25-4.0)
Flat-stem (0.25)
Clasping leaf (0.25-0.5)
Large leaf (0.5)
Coontail (0.25)
Wild Celery (0.25)

Transect 27
CLP (0.25-0.75)
Large leaf (0.5)
Northern milfoil (0.75)

Transect 13
CLP (0.5-4.0)
Flat-stem (0.75-1.0)
Clasping leaf (0.5)
Coontail (0.25)
Wild Celery (0.75)
Northern milfoil (0.75)

Transect 7
CLP (0.25-3.5)
Flat-stem (0.25)
Clasping leaf (0.5-1.0)
Large leaf (1.0)
Coontail (0.25)
Northern milfoil (0.25)

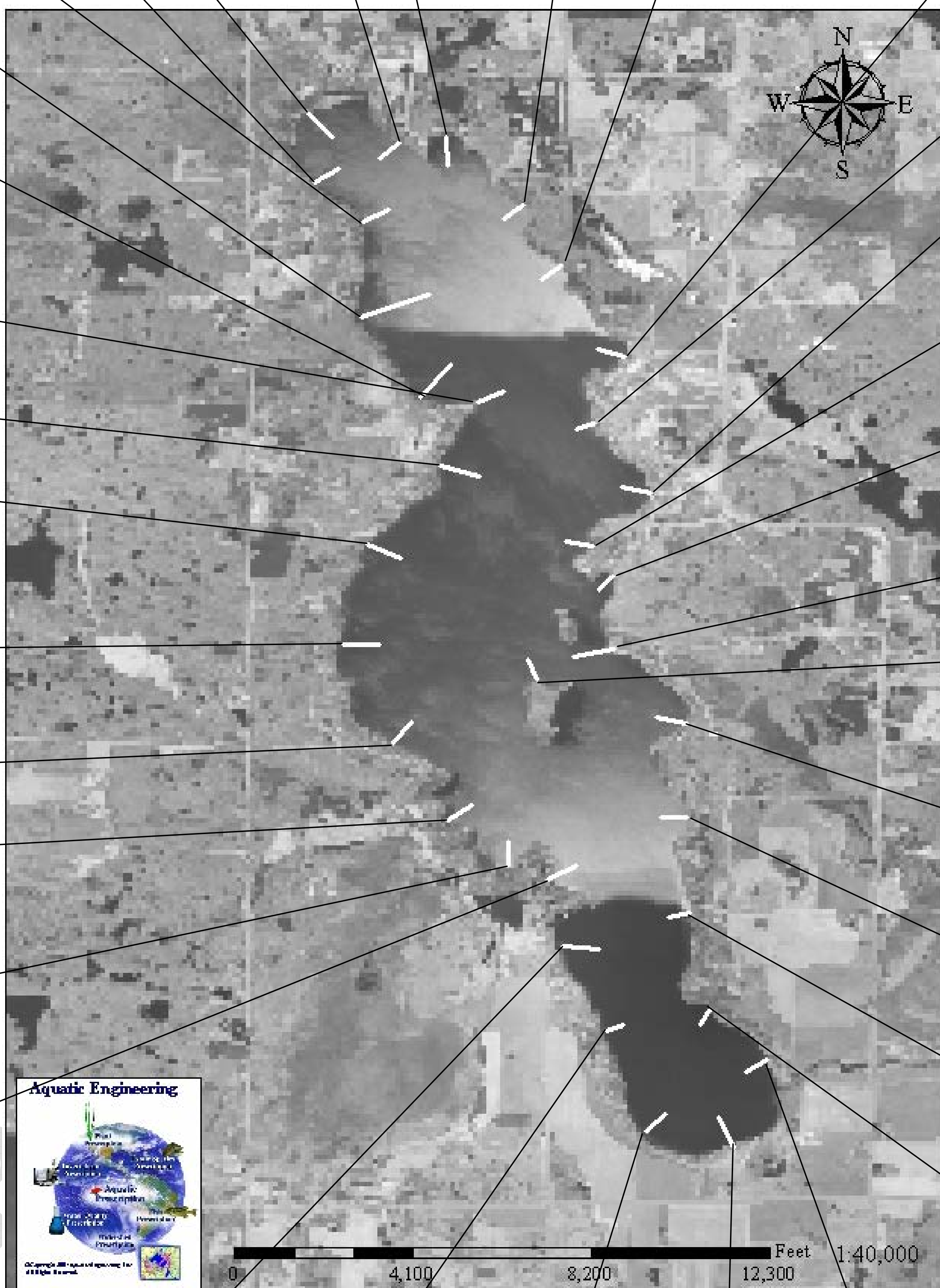
Transect 15
CLP (0.5-2.25)
Flat-stem (0.5)
Clasping leaf (0.25-0.5)
Coontail (0.25)
Wild Celery (0.75)
Northern milfoil (0.25)

Transect 16
CLP (0.75-4.0)
Clasping leaf (0.5)
Large leaf (0.5-7.5)
Coontail (0.25)
Wild celery (0.25)
Variable leaf (0.25)

Transect 9
CLP (0.25-1.0)
Flat-stem (0.75)
Clasping leaf (0.25-0.5)
Large leaf (0.75-1.0)
Coontail (0.25)
Northern milfoil (0.5)

Transect 28
CLP (0.5-2.5)
Flat-stem (0.5-1.0)
Clasping leaf (0.25-0.5)
Coontail (0.75)
Northern milfoil (0.75)

Transect 29
CLP (0.25-4.25)
Flat-stem (0.25-0.75)
Clasping leaf (1.0)
Northern milfoil (0.25)
Naiad sp. (0.25)



Transect 8
CLP (1.75)
Flat-stem (0.5)
Clasping leaf (0.5)
Large leaf (0.75)
Coontail (0.25)

Transect 32
CLP (0.25-0.5)
Flat-stem (0.25)
Narrow leaf (0.25)
Naiad sp. (0.25)

Transect 17
CLP (0.25-1.25)
Large leaf (1.0)
Narrow leaf (0.25)
Naiad sp. (0.25)

Transect 18
CLP (0.75-1.0)
Flat-stem (0.25-0.75)
Clasping leaf (0.25)
Coontail (0.25)
Naiad sp. (0.25)

Transect 19
CLP (0.25-3.75)
Flat-stem (0.75)
Clasping leaf (0.25-0.5)
Coontail (1.0)
Northern milfoil (0.75)

Figure 5. Macrophyte Species Distribution and Density Range for Bone Lake *(Polk County, Wisconsin)* Spring, 2004.

Transect 10
CLP (0.25)
Flat-stem (0.5-0.75)
Clasping leaf (0.25)
Large leaf ()
Coontail (0.25-2.0)
Wild celery (0.5-1.0)
Northern milfoil (0.25)
Narrow leaf (0.25-0.75)
Variable leaf ()
Naiad sp. (0.25-1.0)

Transect 26
Flat-stem (0.25)
Clasping leaf ()
Coontail (0.5)
Wild celery (0.25)
Variable leaf (1.0)
Naiad sp. (0.25)

Transect 20
CLP (0.25)
Flat-stem (0.25)
Large leaf (1.25)
Coontail (0.25-0.5)
Wild celery (0.25)
Narrow leaf (0.25)
Variable leaf (0.25)
Naiad sp. (0.25-1.0)

Transect 12
CLP (0.25-0.5)
Flat-stem (0.25-1.25)
Clasping leaf (0.25)
Coontail (0.25-0.5)
Wild celery (0.75)
Narrow leaf (0.25-0.75)
Niad sp. (0.75)

Transect 24
Flat-stem (0.75)
Clasping leaf (1.0-4.25)
Narrow leaf (0.25)
White lily (0.25)

Transect 25
Flat-stem (0.25)
Coontail (0.25-1.5)
Northern milfoil (0.25)
Yellow lily (0.25)
White lily (1.5)
Common water weed (0.25)

Transect 30
CLP (0.5)
Flat-stem (0.5-0.75)
Coontail (0.25-0.75)
Wild celery (0.5)
Northern milfoil (0.25)
Narrow leaf (0.25)
Niad sp. (0.25-3.25)
Common water weed (0.25)

Transect 0
Flat-stem (0.25-0.5)
Clasping leaf (0.25)
Large leaf (0.25)
Wild celery (0.5)
Northern milfoil (0.75)
Narrow leaf (0.5)
Variable leaf (0.25-0.75)
Niad sp. (0.25-0.75)

Transect 2
Flat-stem (0.25-0.5)
Coontail (0.25)
Wild celery (0.25)
Northern milfoil (0.75)
Narrow leaf (0.25)
Niad sp. (1.0)

Transect 21
Flat-stem (0.25-0.5)
Clasping leaf (0.5)
Large leaf (1.25)
Coontail (0.5-1.0)
Wild celery (0.25-0.75)
Northern milfoil ()
Narrow leaf (0.75)
Variable leaf (0.25)
Niad sp. (0.5-0.75)

Transect 4
Flat-stem (0.25-0.5)
Coontail (0.5-1.0)
Wild celery (0.75-1.0)
Northern milfoil (1.5)
Narrow leaf (0.25-0.5)
Niad sp. (0.25-1.0)

Transect 22
Flat-stem (0.25)
Large leaf (0.5)
Coontail (0.25)
Wild celery (0.5-0.75)
Northern milfoil (0.5)
Narrow leaf (0.5)
Variable leaf (0.25)
Niad sp. (0.5-1.0)

Transect 6
Flat-stem (0.75)
Large leaf (0.5)
Coontail (1.0)
Wild celery (0.25-0.5)
Northern milfoil (0.5)
Narrow leaf (0.25)
Niad sp. (1.25)

Transect 27
Flat-stem (0.25-0.5)
Clasping leaf (0.25)
Large leaf (0.75)
Coontail (0.25)
Wild celery (0.25-0.5)
Northern milfoil (0.5-1.0)
Variable leaf (0.25)
Niad sp. (0.25-1.0)

Transect 7
Flat-stem (0.25)
Clasping leaf (0.25-1.25)
Large leaf (1.0)
Coontail (0.25)
Wild celery (0.75-1.0)
Northern milfoil (0.25)
Narrow leaf (0.25)
Niad sp. (1.25)

Transect 16
CLP (0.25)
Flat-stem (0.5)
Clasping leaf (0.25)
Large leaf (0.75-1.0)
Coontail (0.5-2.25)
Wild celery (0.5)
Variable leaf (0.25)
Niad sp. (1.5)

Transect 28
Flat-stem (0.5-0.75)
Clasping leaf (0.5-0.75)
Coontail (0.25-1.25)
Wild celery (0.5)
Northern milfoil (0.25-1.5)
Niad sp. (0.5-0.75)

Transect 1
CLP (0.25)
Flat-stem (0.5)
Coontail (0.25-0.5)
Wild celery (0.25)
Narrow leaf (0.25-0.5)
Variable leaf (0.25)
Niad sp. (0.25)

Transect3
CLP (0.5)
Flat-stem (0.25-0.75)
Clasping leaf (0.25)
Wild celery (0.25-0.75)
Northern milfoil (0.25)
Variable leaf (0.25-0.5)
Niad sp. (0.25-1.0)

Transect 11
Flat-stem (0.25)
Coontail (0.25)
Wild celery (0.25)
Northern milfoil (0.25-4.0)
Narrow leaf (0.5)
Niad sp. (0.5)

Transect 23
CLP (0.5)
Flat-stem (0.5-2.0)
Clasping leaf (0.25-1.0)
Large leaf (0.5)
Coontail (0.25)
Wild celery (0.75)
Niad sp. (1.25-1.75)

Transect 14
Flat-stem (0.5)
Large leaf (0.75)
Coontail (0.25-1.75)
Wild celery (0.25)
Northern milfoil (0.5-0.75)
Naiad sp. (0.25-0.5)
Yellow lily (0.25-0.5)

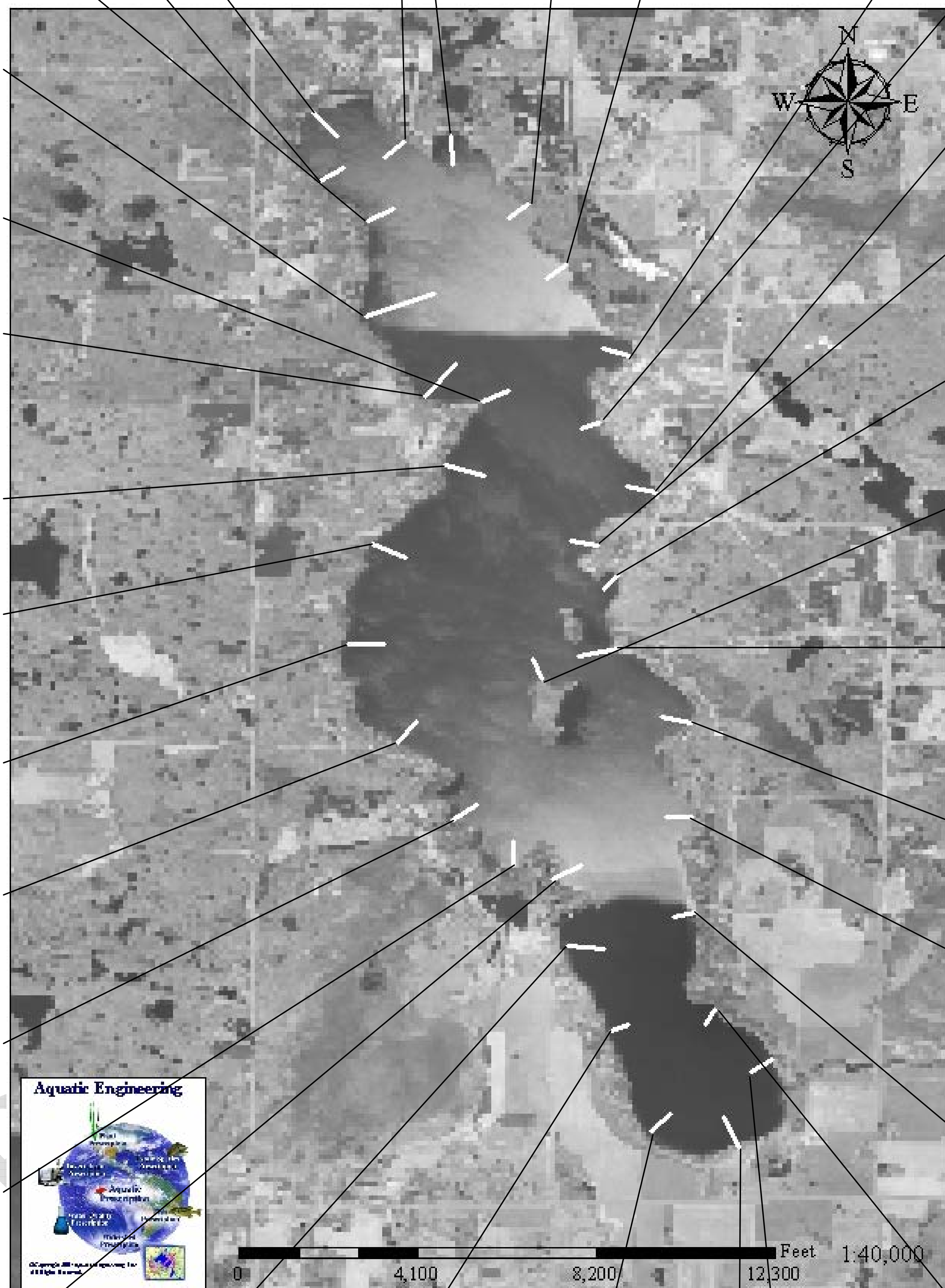
Transect 31
CLP (0.5)
Flat-stem (0.25)
Large leaf (0.5)
Coontail (0.25-0.75)
Wild celery (0.75)
Variable leaf (0.25)
Naiad sp. (0.5-0.75)

Transect 5
CLP (0.5)
Flat-stem (0.25-0.75)
Clasping leaf ()
Large leaf (0.5)
Coontail ()
Wild celery (0.25-1.0)
Northern milfoil ()
Narrow leaf (0.25-0.75)
Variable leaf (0.25-0.5)
Niad sp. (0.25-1.0)

Transect 13
CLP (0.25)
Flat-stem (0.25-0.75)
Clasping leaf (0.25)
Coontail (0.5-1.0)
Wild celery (0.25-0.75)
Northern milfoil (0.5-1.0)
Niad sp. (0.25-2.5)

Transect 15
CLP (0.25)
Flat-stem (1.25)
Clasping leaf (0.25)
Large leaf (0.75)
Coontail (0.25-0.75)
Wild celery (0.25-1.0)
Northern milfoil (0.25)
Narrow leaf (0.25)
Variable leaf (0.25-0.5)
Niad sp. (1.0)

Transect 9
Flat-stem (0.75)
Clasping leaf (0.25)
Large leaf (1.0)
Coontail (0.25)
Wild celery (0.25-0.75)
Northern milfoil (0.25-0.75)
Variable leaf (0.5)
Niad sp. (0.25-0.75)



Transect 29
Flat-stem (0.5-1.5)
Clasping leaf (0.25-0.5)
Coontail (0.25-0.75)
Wild celery (0.25-0.5)
Northern milfoil (0.25-1.5)
Narrow leaf (1.0)
Variable leaf (0.25)
Niad sp. (0.75-1.25)

Transect 8
Clasping leaf (0.75)
Large leaf (0.25-1.25)
Coontail (0.75-1.0
Wild celery (0.25)
Niad sp. (1.75)

Transect 32
CLP (0.5)
Flat-stem (0.25)
Clasping leaf (0.25)
Large leaf (0.25)
Wild celery (0.25-1.0)
Northern milfoil (1.25)
Narrow leaf (0.25-0.5)
Variable leaf (0.25)
Niad sp. (0.25-1.0)

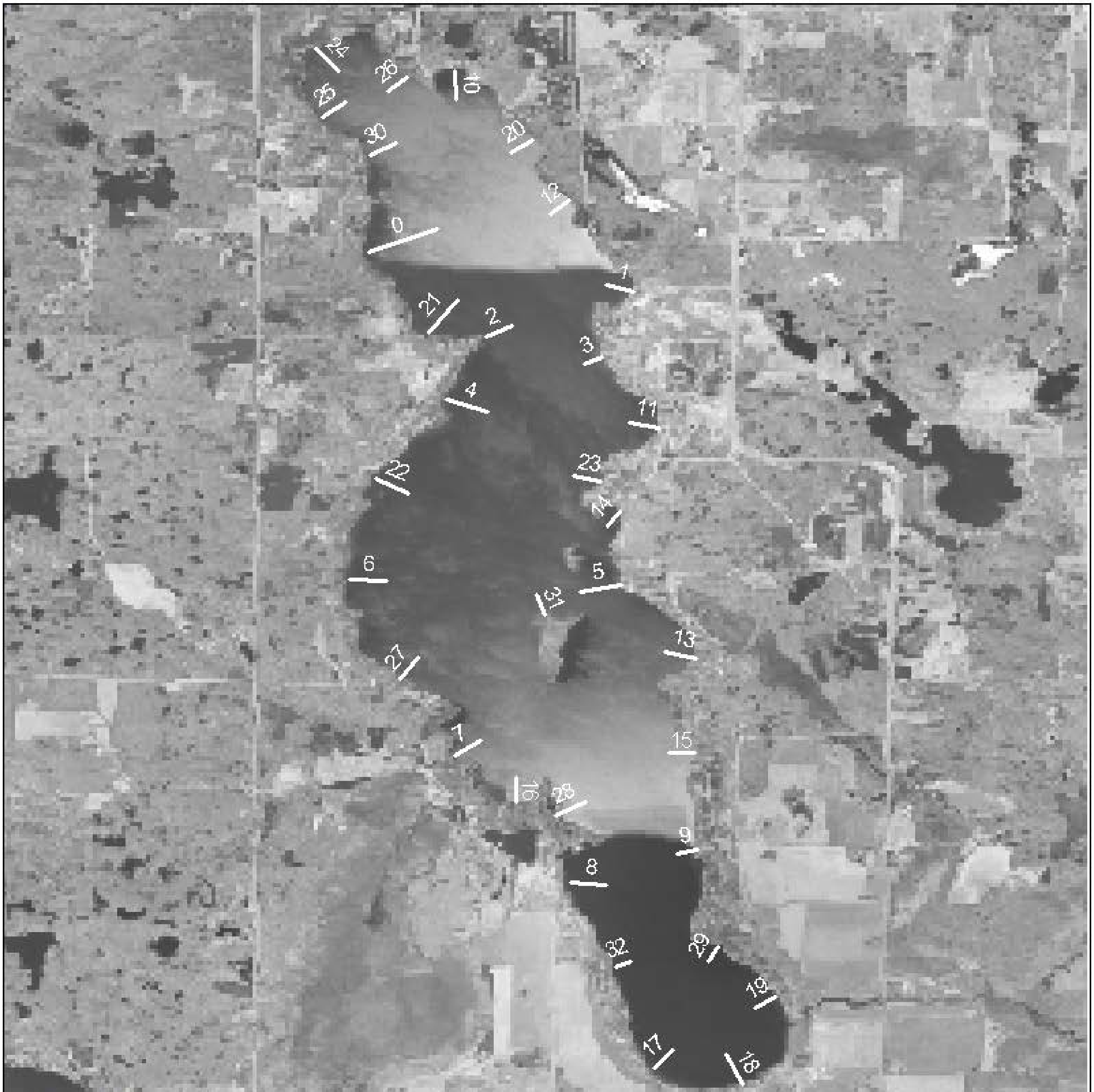
Transect 17
Flat stem (0.75)
Clasping leaf (0.5)
Large leaf (1.0-1.25)
Niad sp. (0.5-0.75)
Variable leaf (0.25)

Transect 18
Flat-stem (0.25)
Clasping leaf (0.5-0.75)
Large leaf (0.5)
Coontail (0.25)
Wild celery (0.25-0.5)
Northern milfoil (0.25-0.5)
Narrow leaf (0.5)
Variable leaf (0.75)
Niad sp. (0.25-1.25)
Yellow lily (0.25)

Transect 19
CLP (0.25-3.75)
Flat-stem (0.75)
Clasping leaf (0.75)
Large leaf (0.5)
Wild celery (0.25-0.5)
Northern milfoil (0.25-0.75)
Niad sp. (0.25)

Figure 6. Macrophyte Species Distribution and Density Range for Bone Lake *(Polk County, Wisconsin)* Summer, 2004.

Appendix A:
GIS Generated Maps of Plant Survey Information



Aquatic Engineering

Plant Prescription
Exotic Species Prescription
Invertebrate Prescription
Aquatic Prescription
Water Quality Prescription
Fish Prescription
Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Bone Lake 2004 AP Survey Transects

GIS Generated Map

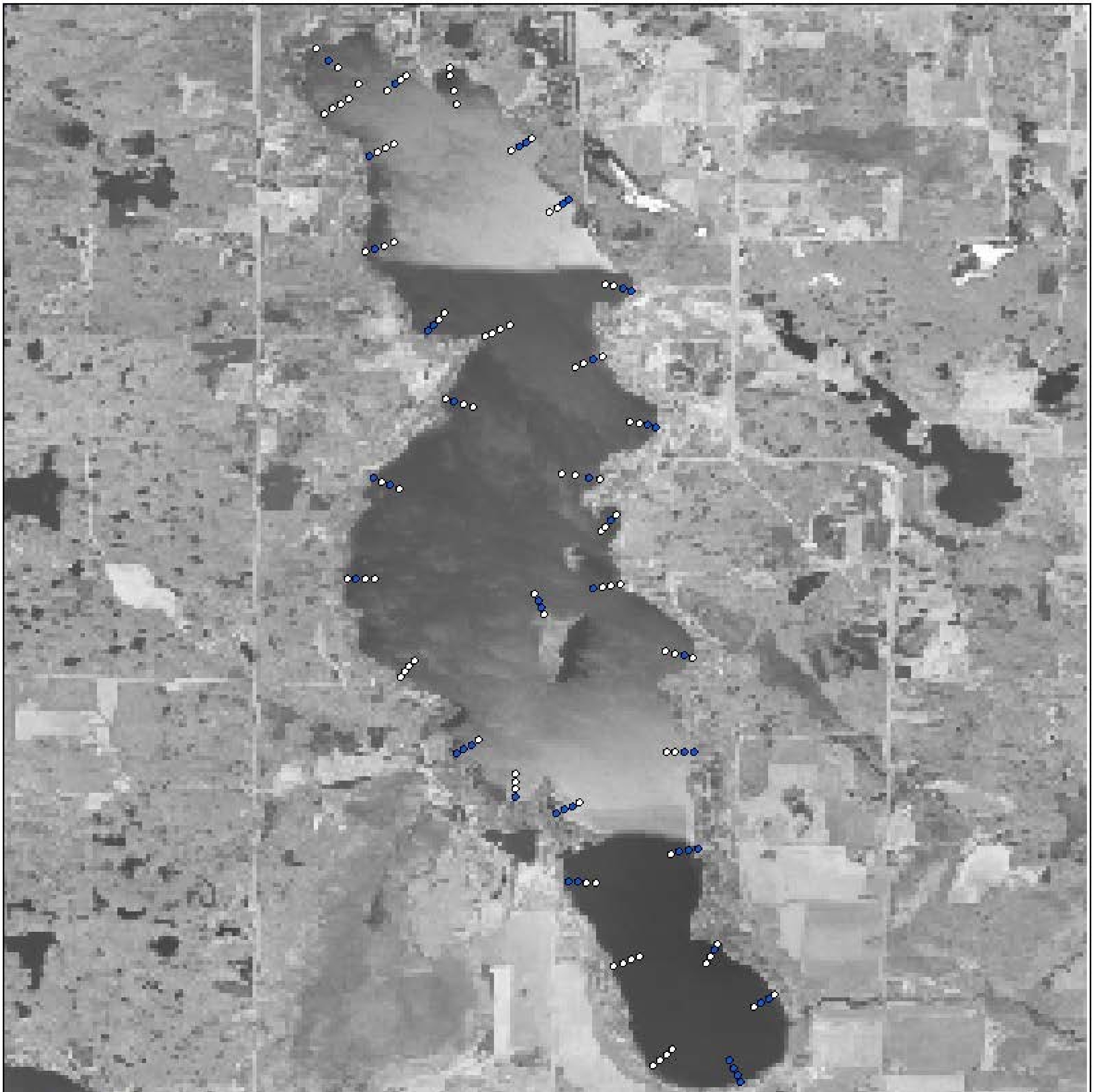
Bone Lake, Polk County, Wisconsin

Date: June through August, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810



Aquatic Engineering

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Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Clasping leaf pondweed (*Potamogeton perfoliatus*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0, 1,900, 3,800, 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810

Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Coon's tail (*Ceratophyllum demersum*)

GIS Generated Map

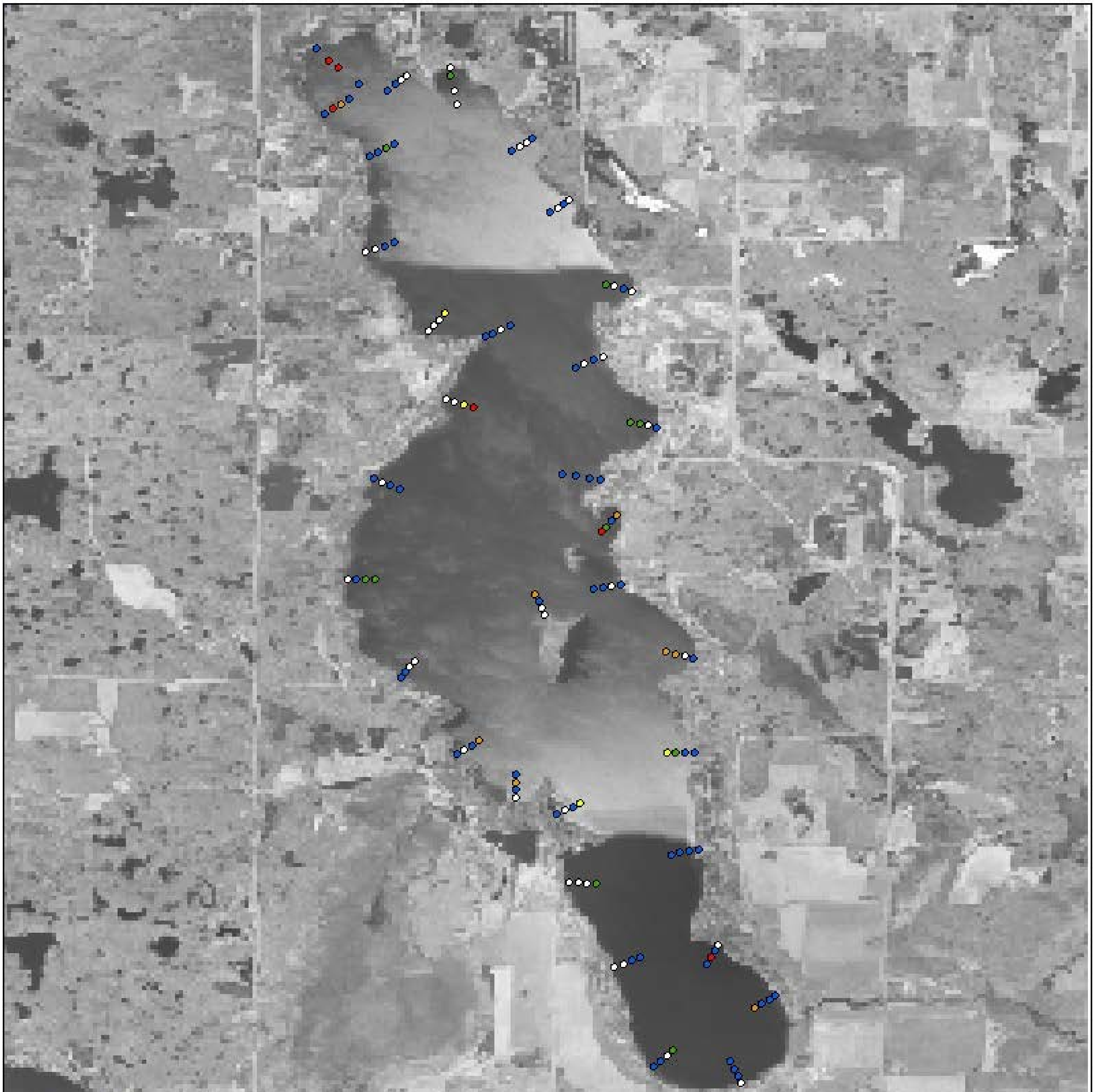
Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Curly leaf pondweed (*Potamogeton crispus*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810

Aquatic Engineering

Plant Prescription
Exotic Species Prescription
Invertebrate Prescription
Aquatic Prescription
Water Quality Prescription
Fish Prescription
Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Common waterweed (*Elodea canadensis*)

GIS Generated Map

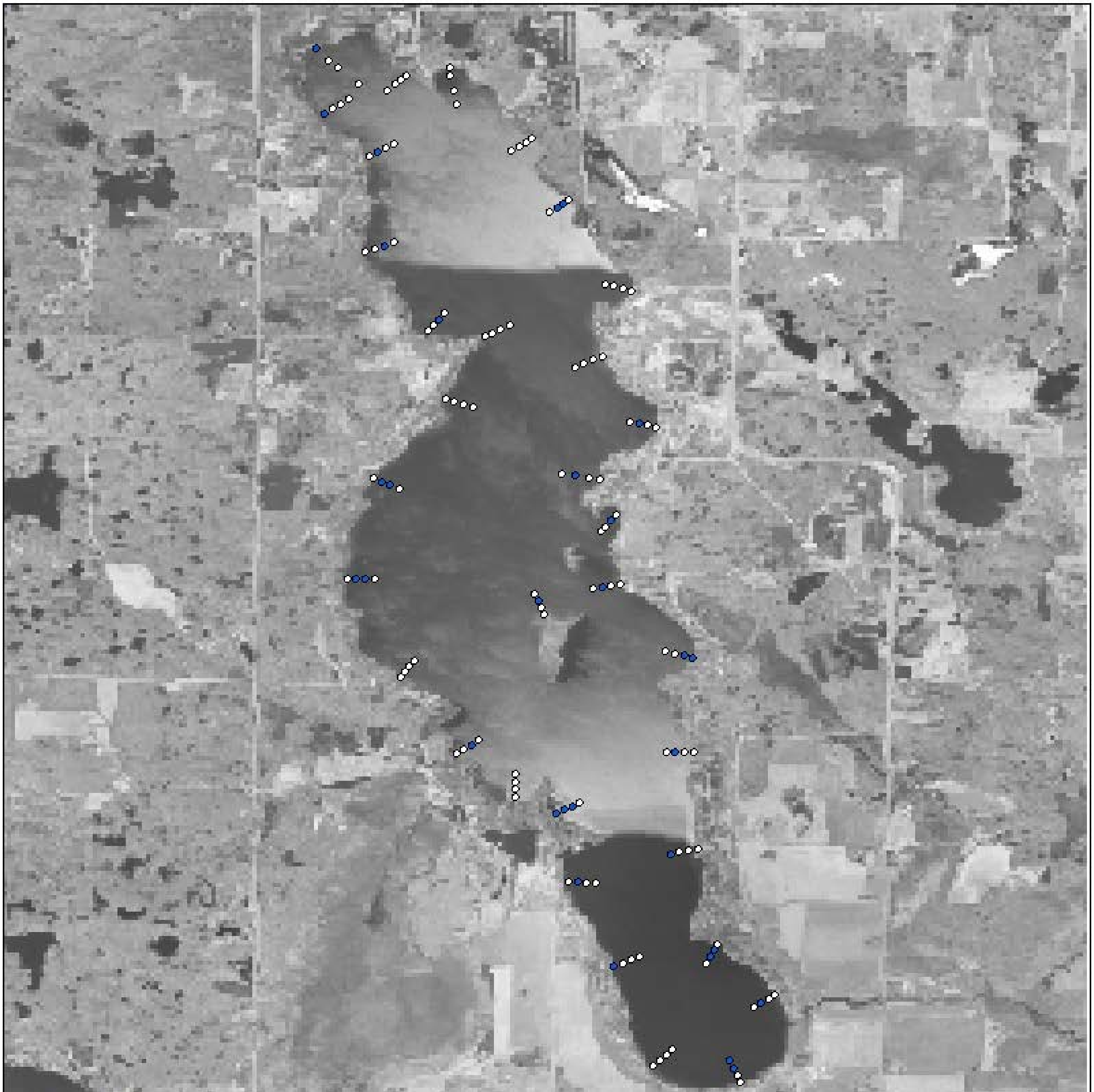
Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810



Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Flat-stemmed pondweed (*Potamogeton zosteriformis*)

GIS Generated Map

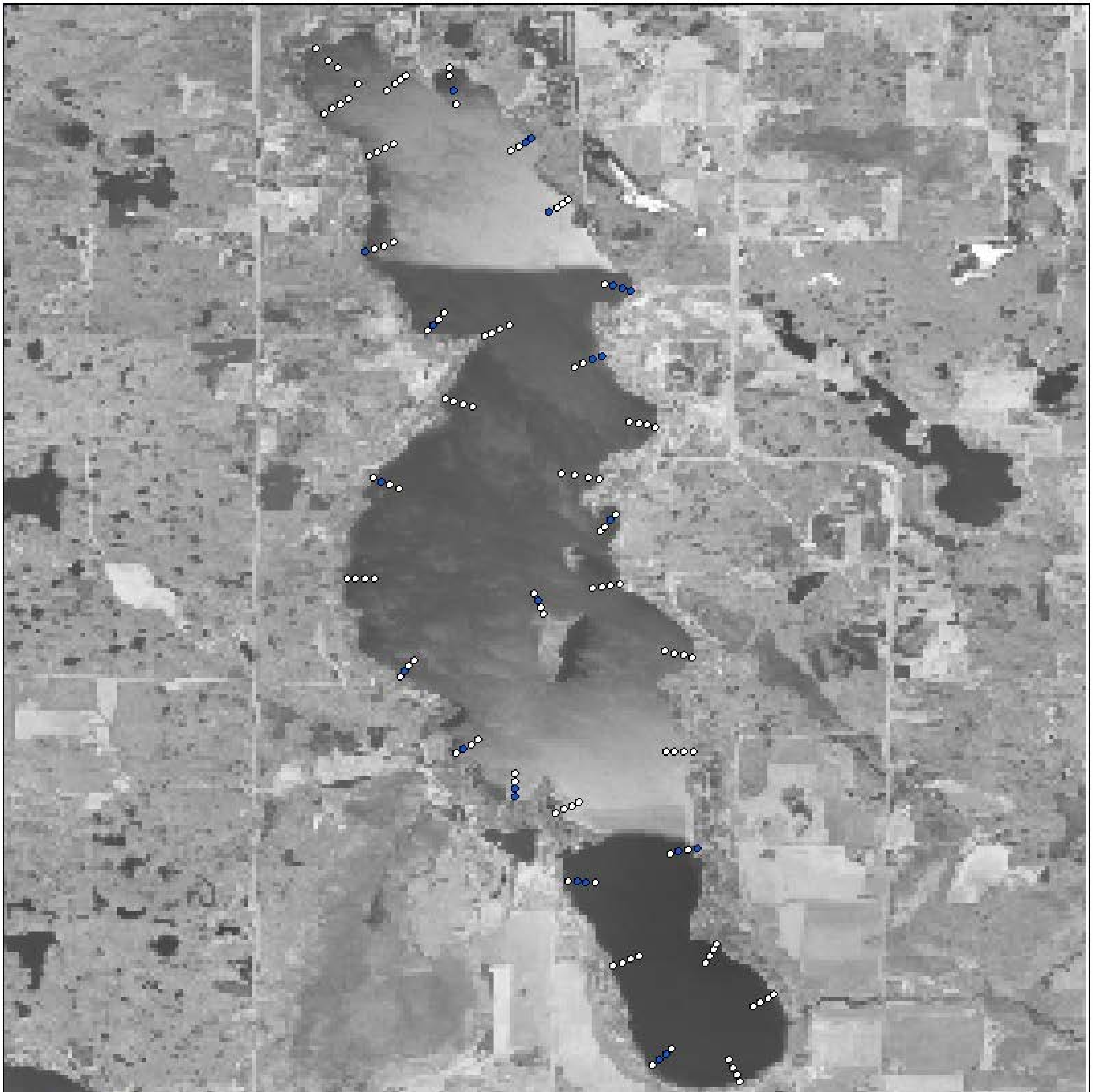
Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0 — 1,900 — 3,800 — 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Large leaf pondweed (*Potamogeton amplifolius*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Aquatic Engineering

Plant Prescription
Exotic Species Prescription
Invertebrate Prescription
Aquatic Prescription
Water Quality Prescription
Fish Prescription
Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Narrow leaf pondweed (*Potamogeton strictifolius*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Niad (*Najas* sp)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0, 1,900, 3,800, 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810

Aquatic Engineering

Plant Prescription
Exotic Species Prescription
Invertebrate Prescription
Aquatic Prescription
Water Quality Prescription
Fish Prescription
Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Northern milfoil (*Myriophyllum sibiricum*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Aquatic Engineering

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Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Variable-leaved pondweed (*Potamogeton gramineus*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Aquatic Engineering

Plant Prescription

Exotic Species Prescription

Invertebrate Prescription

Aquatic Prescription

Water Quality Prescription

Fish Prescription

Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Water buttercup (*Ranunculus flammula*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810

Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Wild celery (*Vallisneria americana*)

GIS Generated Map

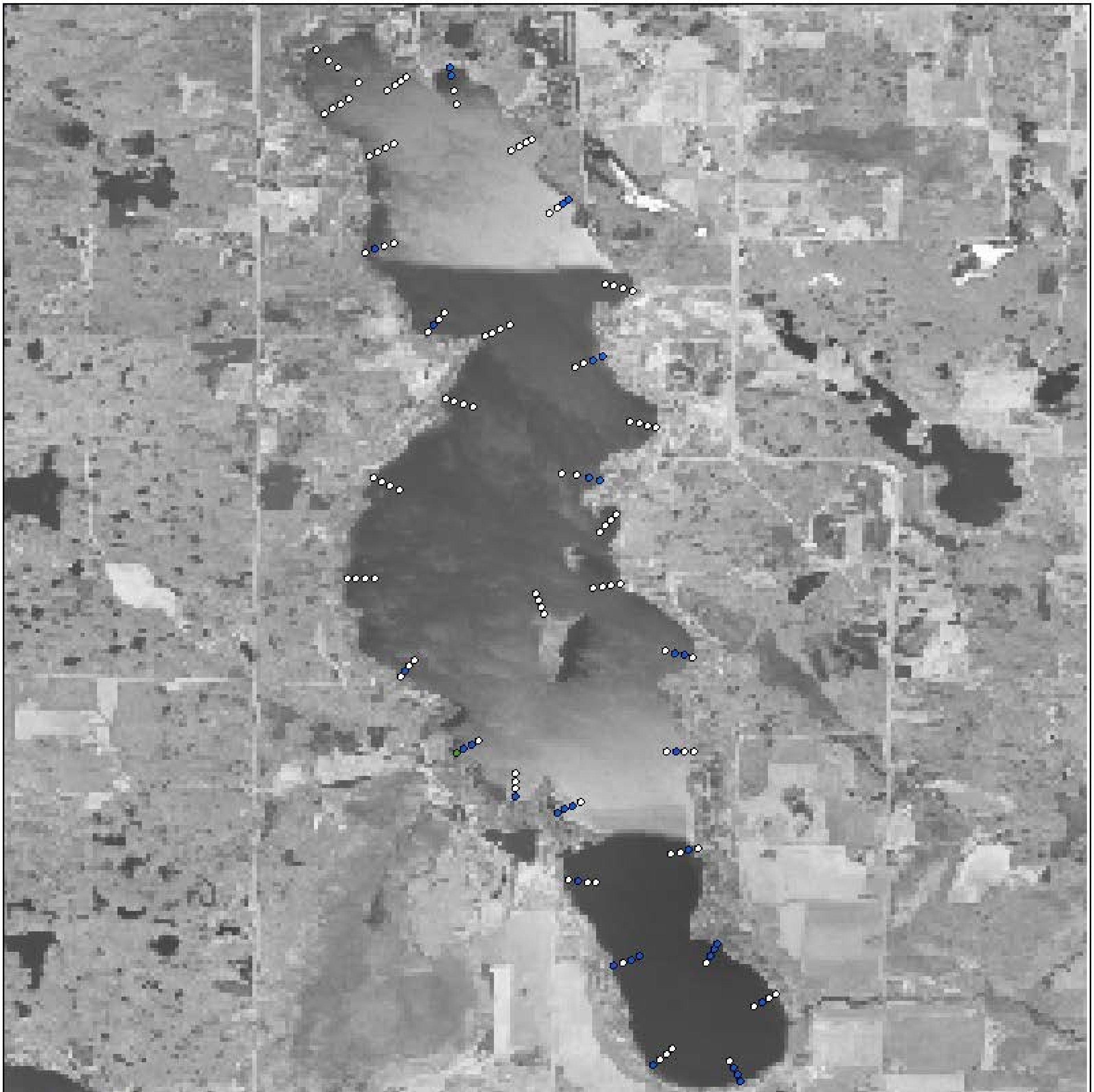
Bone Lake, Polk County, Wisconsin

Date: June 21 and 22, 2004

0 | 1,900 | 3,800 | 5,700 Feet

Coordinate System GCS North American 1983

Map Scale
1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Clasping leaf pondweed (*Potamogeton perfoliatus*)

GIS Generated Map

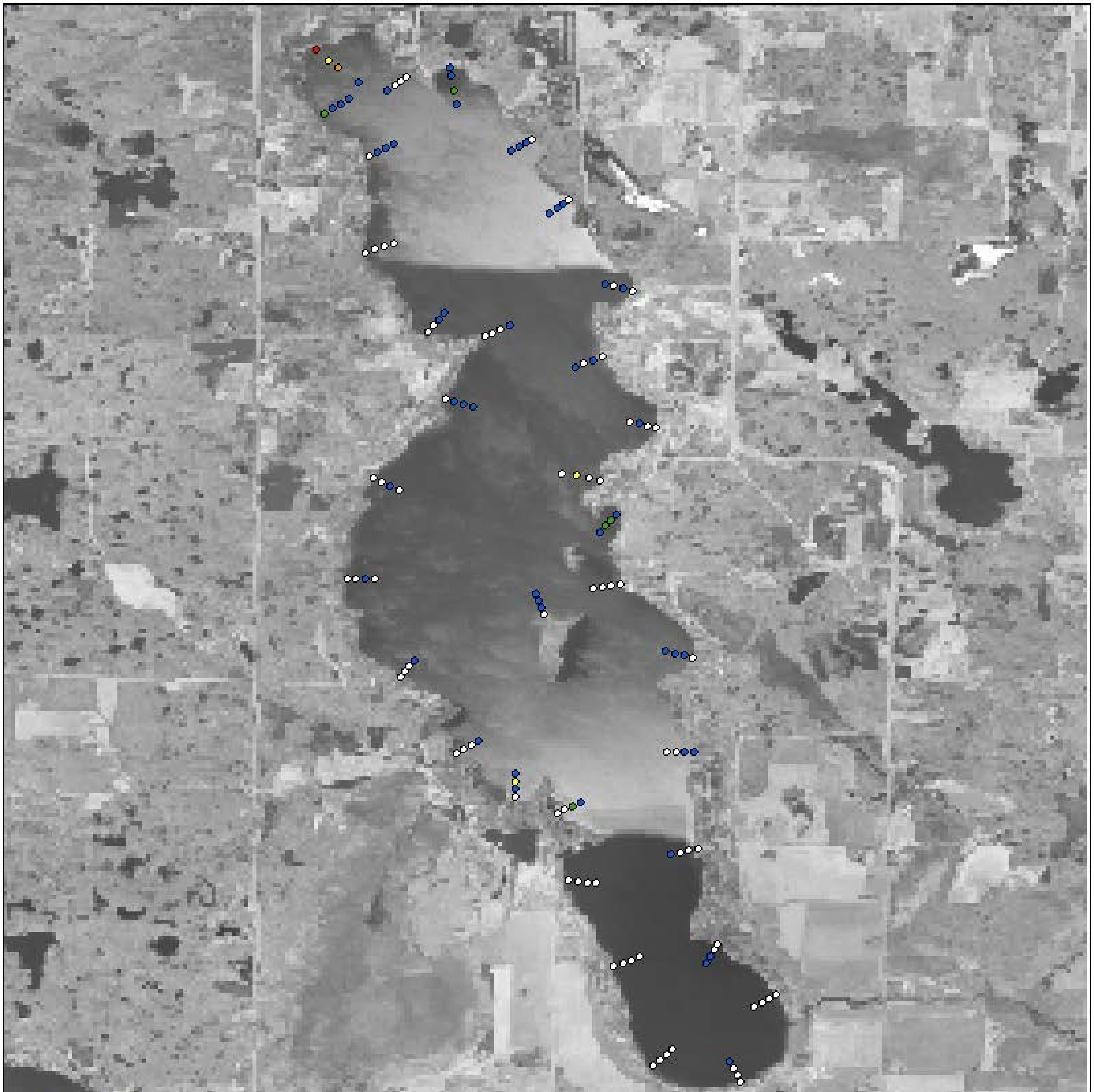
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Coon's tail (*Ceratophyllum demersum*)

GIS Generated Map

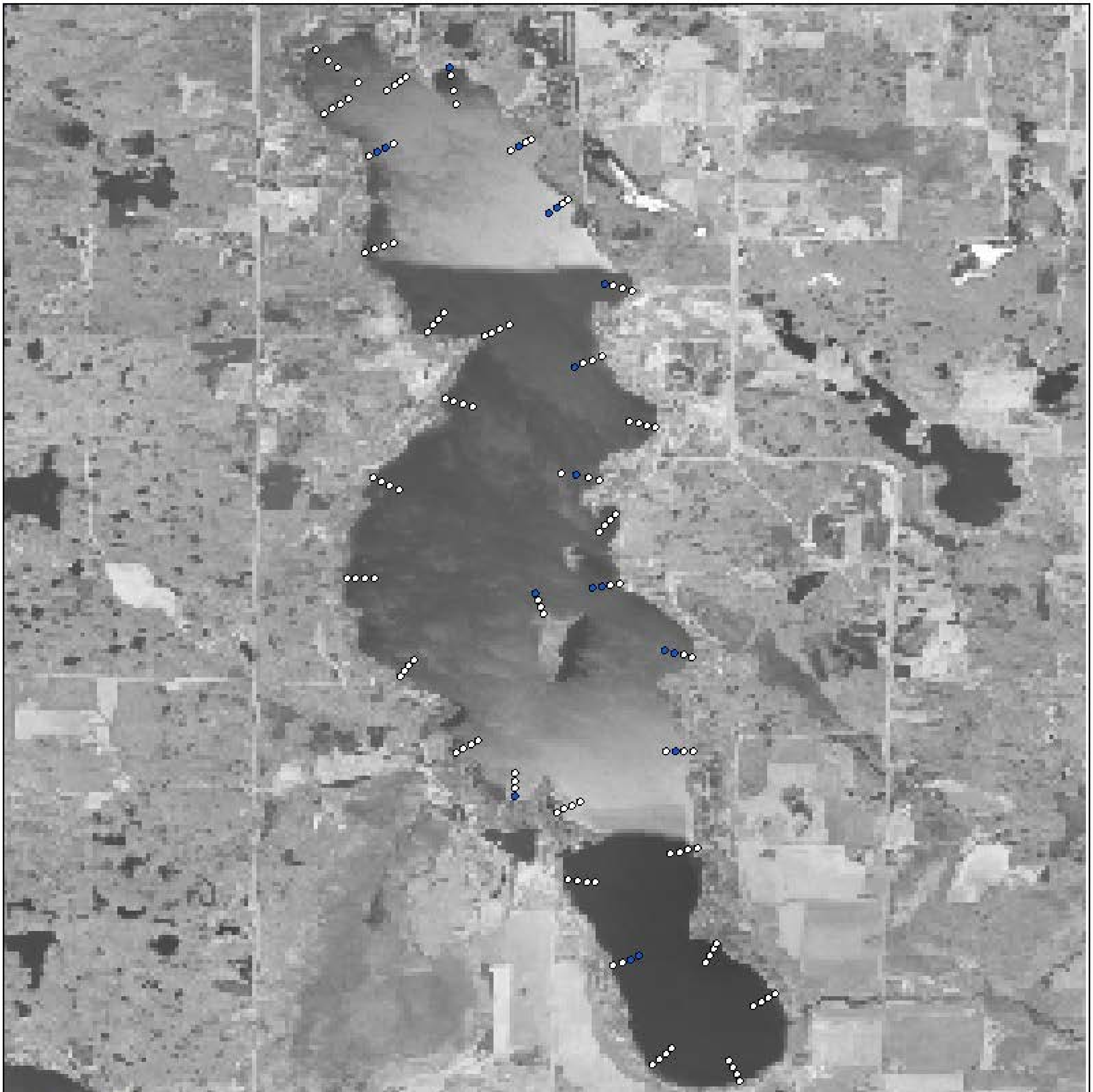
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Curly leaf pondweed (*Potamogeton crispus*)

GIS Generated Map

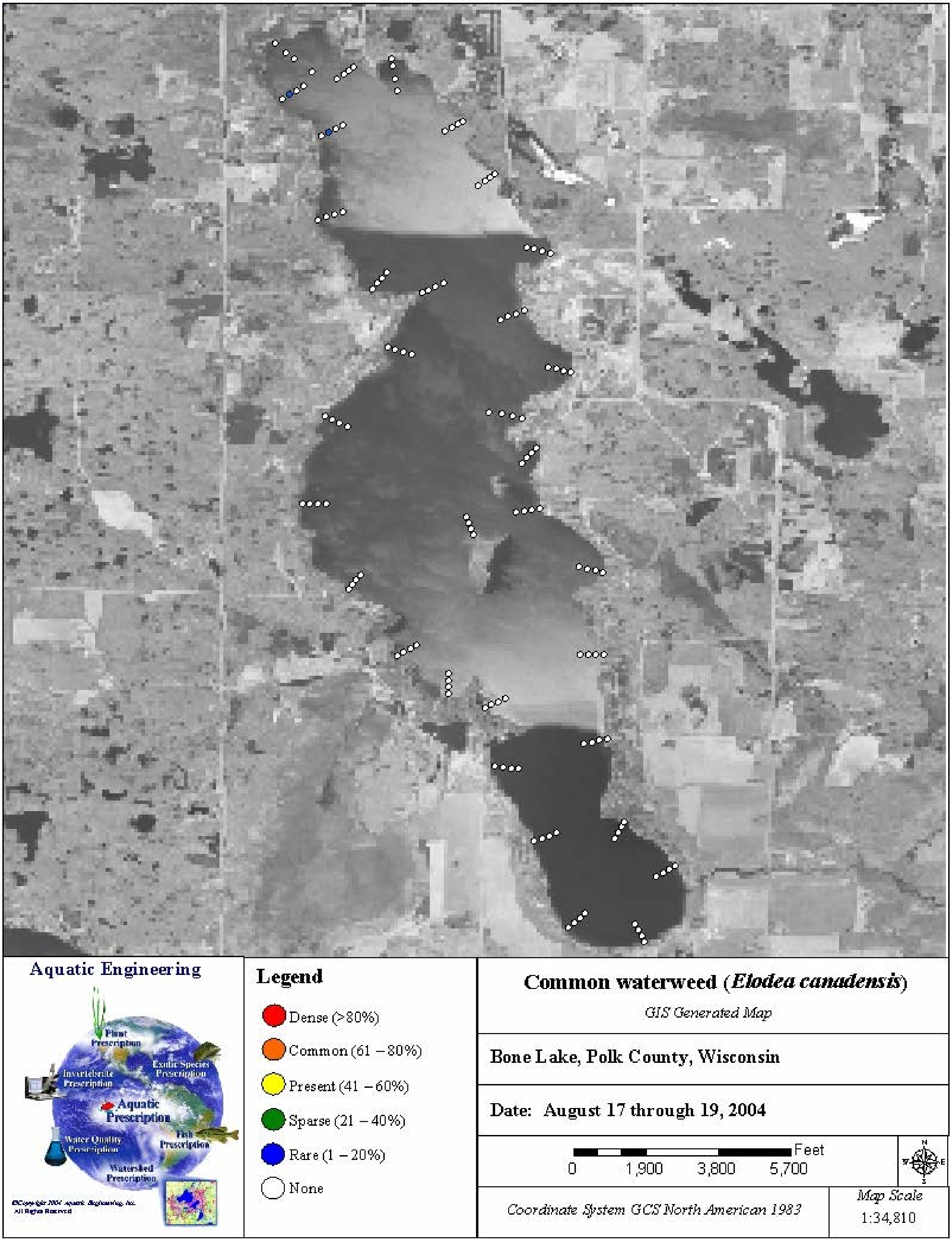
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Common waterweed (*Elodea canadensis*)

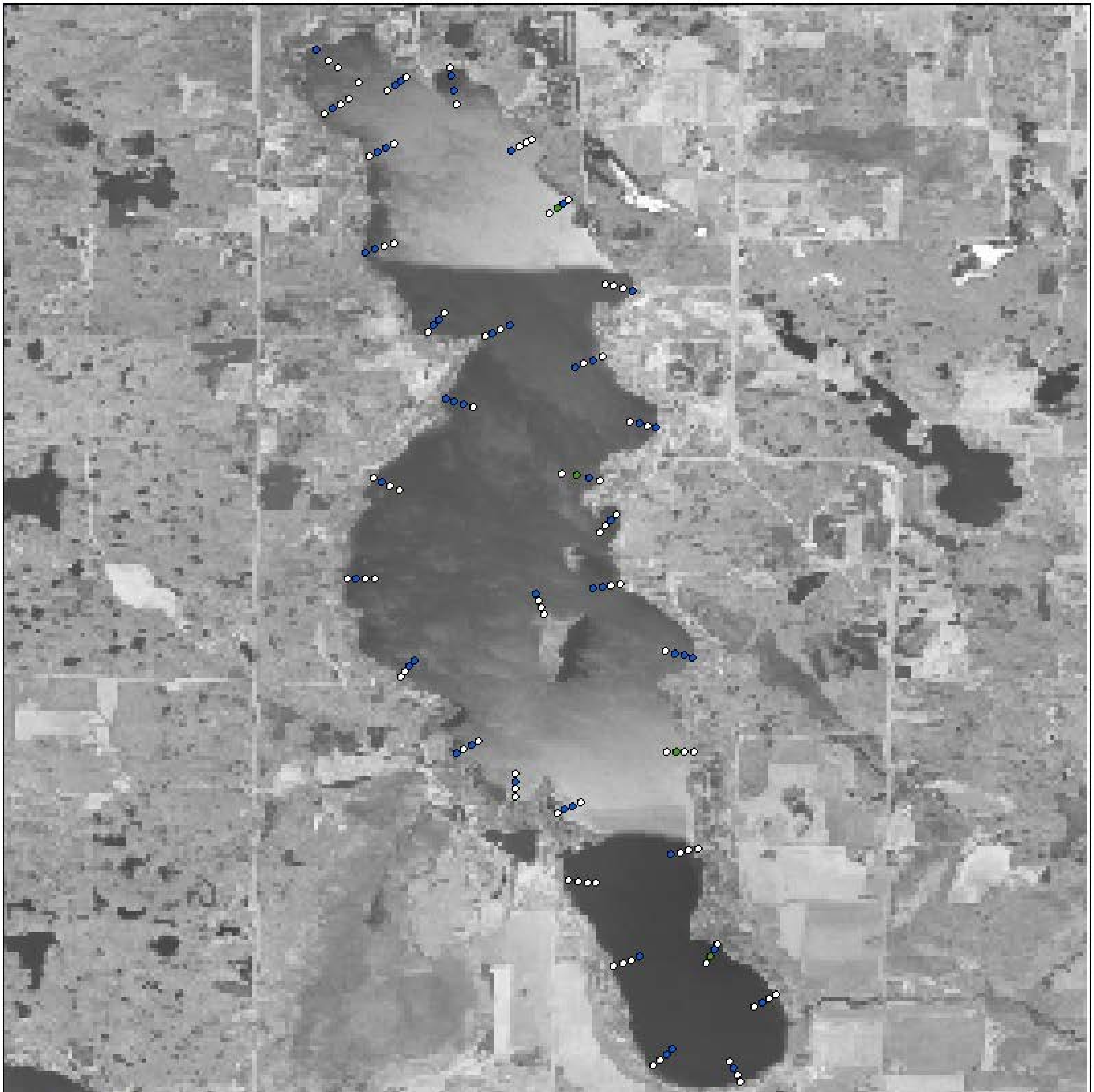
GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Coordinate System GCS North American 1983

Map Scale
1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Flat-stemmed pondweed (*Potamogeton zosteriformis*)

GIS Generated Map

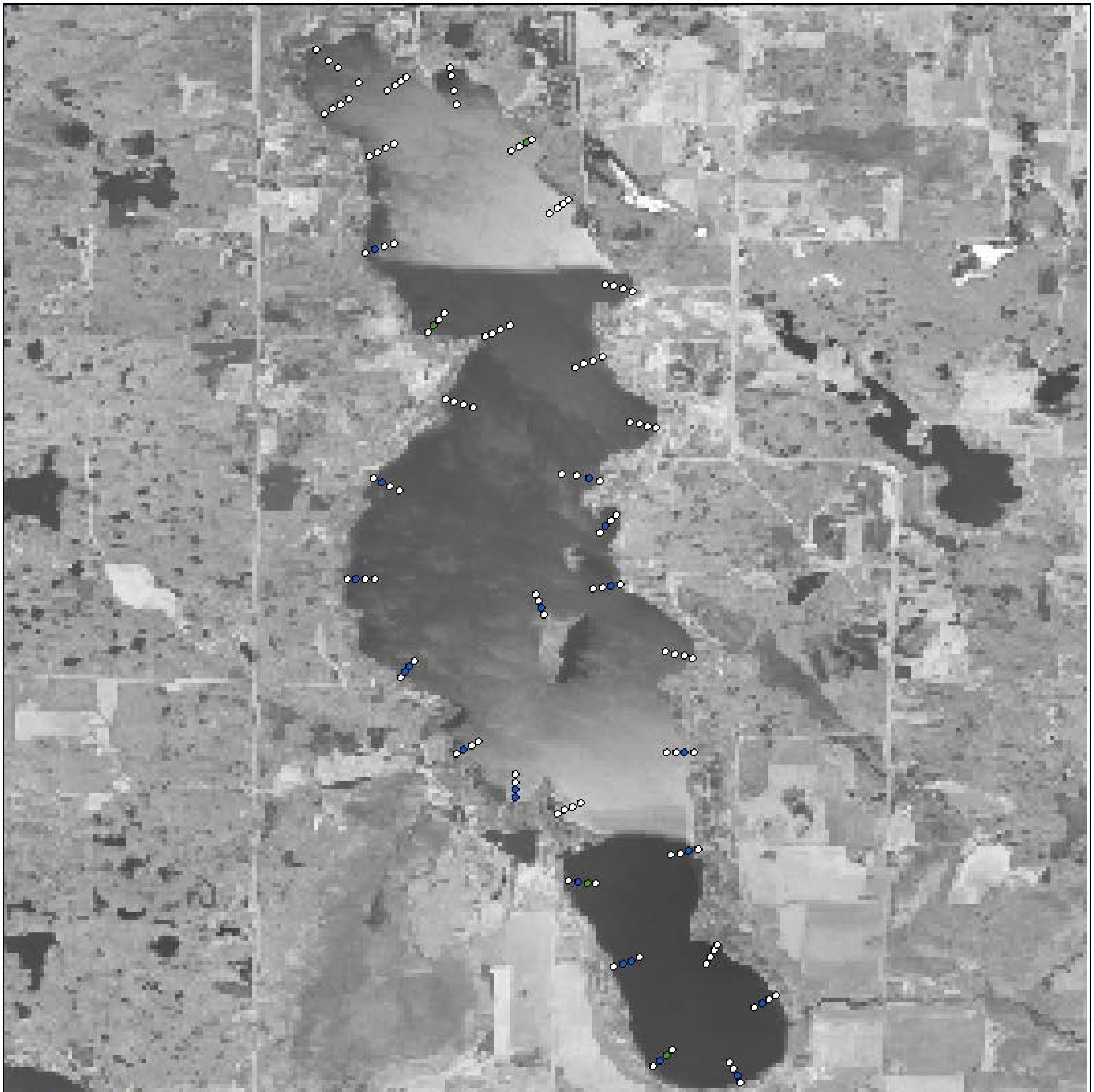
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Large leaf pondweed (*Potamogeton amplifolius*)

GIS Generated Map

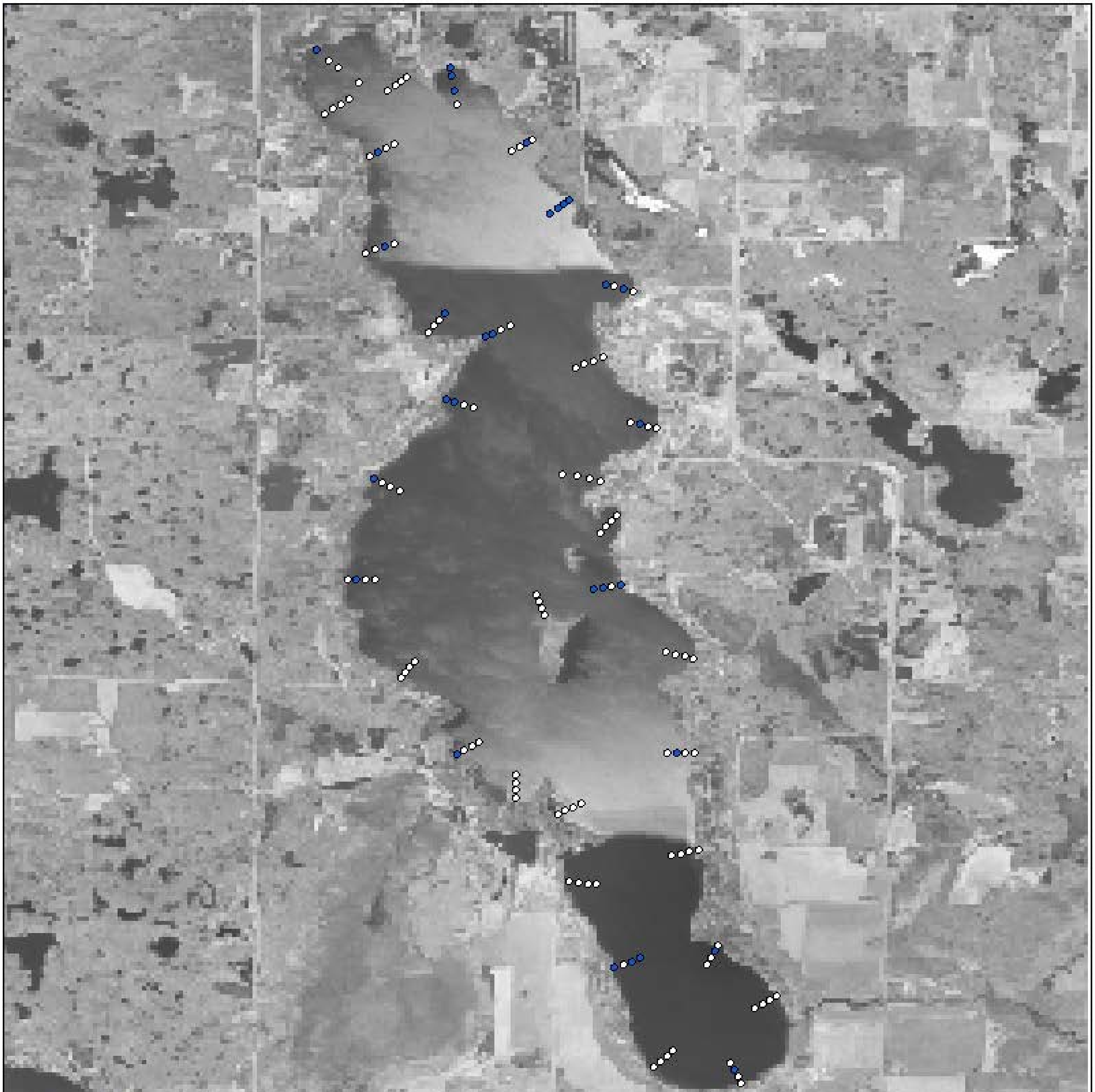
Bone Lake, Polk County, Wisconsin

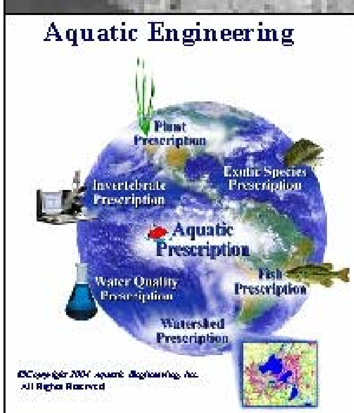
Date: August 17 through 19, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810





Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Narrow leaf pondweed (*Potamogeton strictifolius*)

GIS Generated Map

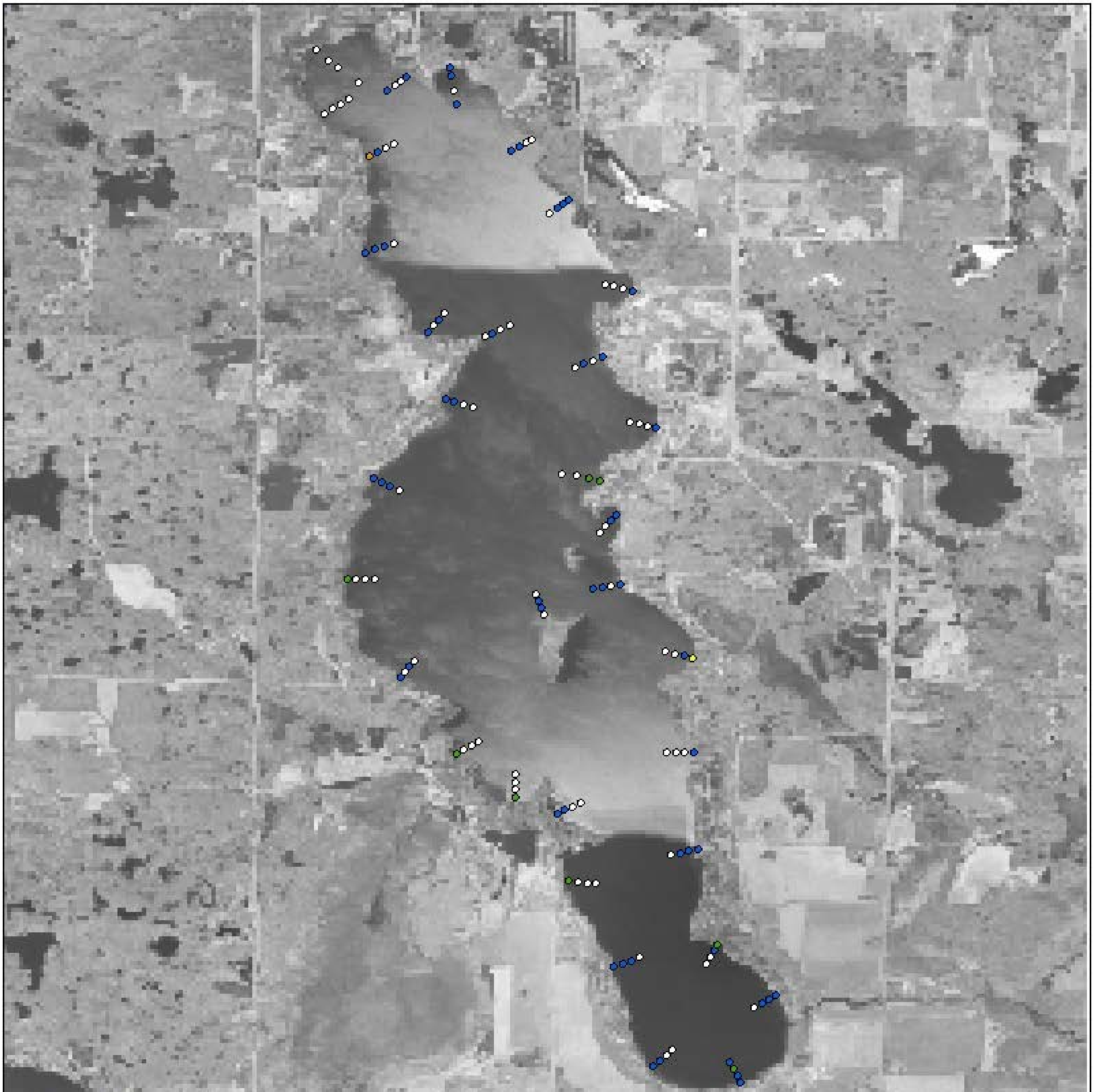
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Niad (*Najas* sp.)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

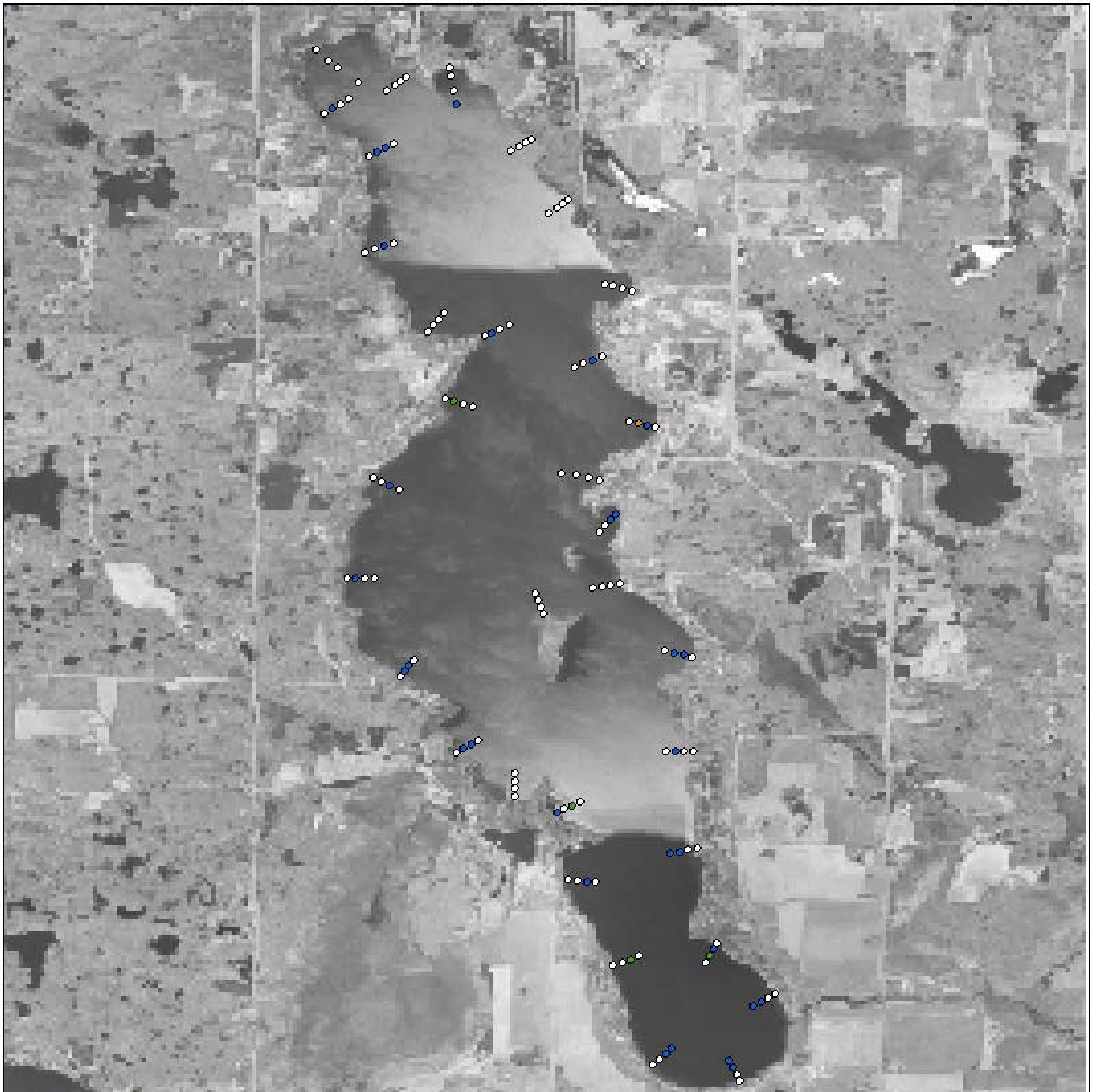
Feet

0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale

1:34,810



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Northern milfoil (*Myriophyllum sibiricum*)

GIS Generated Map

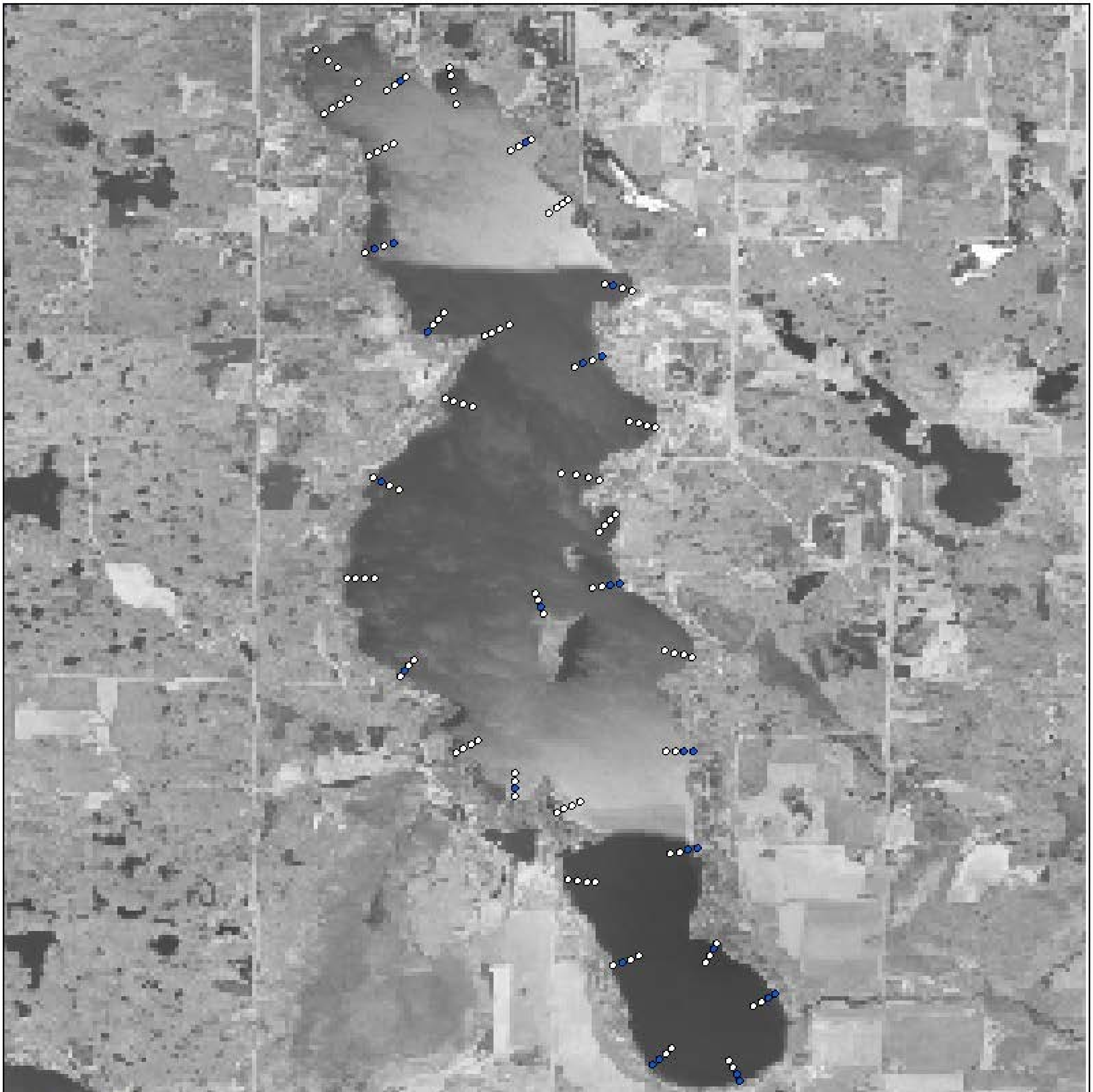
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810



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Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Variable-leaved pondweed (*Potamogeton gramineus*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

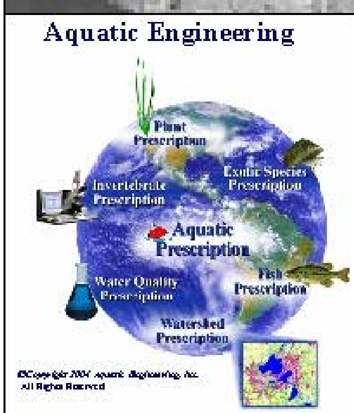
Feet

0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale

1:34,810



Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Water stargrass (*Zosterella dubia*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 — 1,900 — 3,800 — 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810

Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

White-water lily (*Nymphaea odorata*)

GIS Generated Map

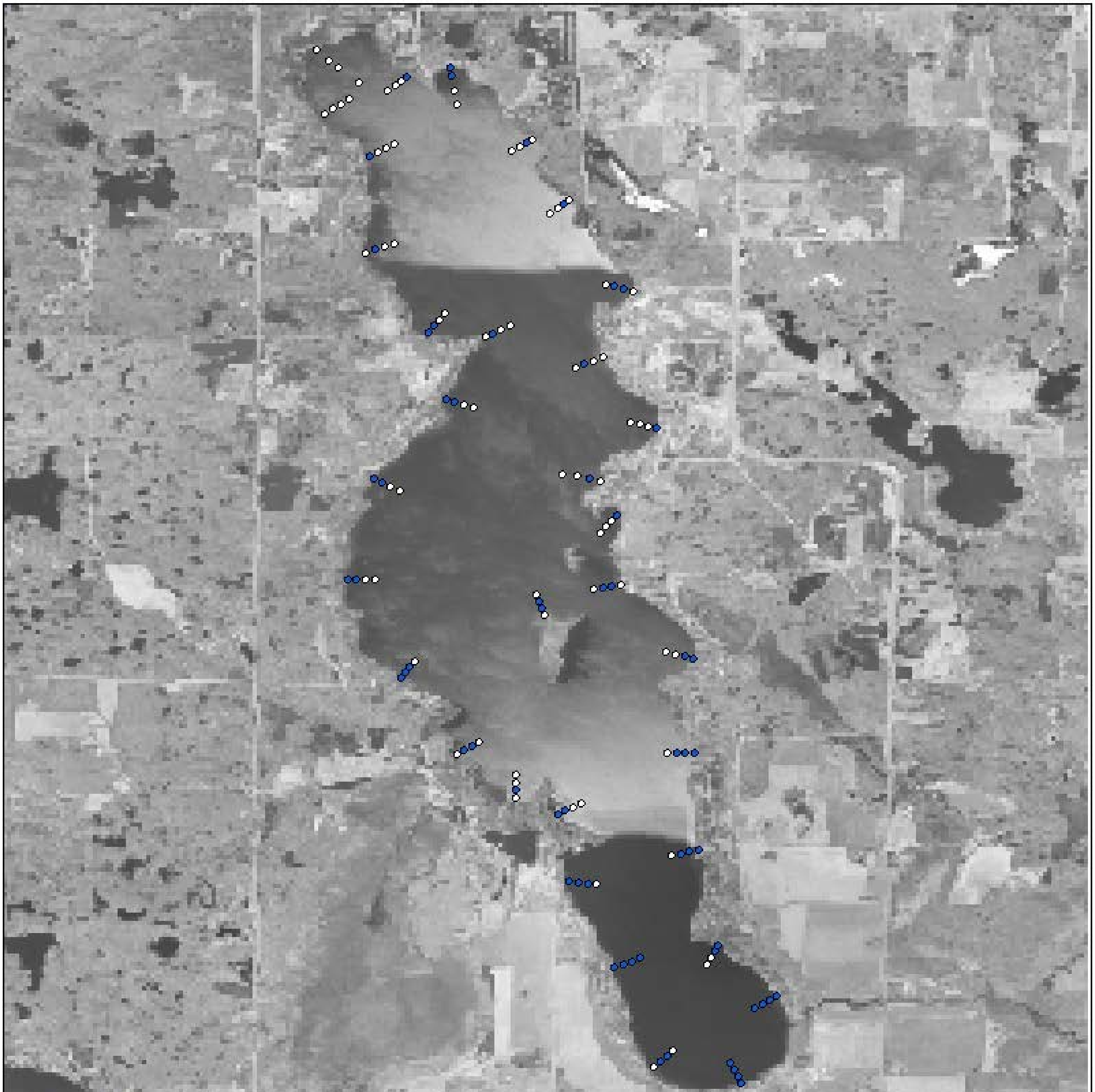
Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet: 0 | 1,900 | 3,800 | 5,700

Coordinate System GCS North American 1983

Map Scale 1:34,810



Aquatic Engineering

Plant Prescription
Invertebrate Prescription
Exotic Species Prescription
Aquatic Prescription
Water Quality Prescription
Fish Prescription
Watershed Prescription

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Wild celery (*Vallisneria americana*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Aquatic Engineering

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Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Yellow-water lily (*Nuphar advena*)

GIS Generated Map

Bone Lake, Polk County, Wisconsin

Date: August 17 through 19, 2004

Feet
0 1,900 3,800 5,700

Coordinate System GCS North American 1983

Map Scale
1:34,810

Appendix B:
Plant Survey Data Sheets

DATE	AUTO_ID	FID	DEPTH (ft)	TEMP (C)	COND (mS/cm)	DO (mg/L)	DO (% saturation)	PH	RAKE	NO_AQ_VEG	CLP	FLAT_STEM	CLASPING_LEAF	LARGE_LEAF	COONTAIL	WILD_CELERY	NORTHERN_MILFOIL	NARROW_LEAF	WATER_BUTTERCUP	ELODEA_CANADENSIS	VARIABLE_PONDWEED	NIAD_SP	YELLOW_LILLY	WATER_STAR_GRASS	WHITE_LILLY
6/21/2004	21	6	11.5	20.00	0.209	8.89	98	8.34	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	21	6	11.5	20.00	0.209	8.89	98	8.34	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	21	6	11.5	20.00	0.209	8.89	98	8.34	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	21	6	11.5	20.00	0.209	8.89	98	8.34	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	22	6	7.3	19.87	0.210	8.83	97	8.33	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	22	6	7.3	19.87	0.210	8.83	97	8.33	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	22	6	7.3	19.87	0.210	8.83	97	8.33	3	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	22	6	7.3	19.87	0.210	8.83	97	8.33	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	23	6	4.8	19.99	0.210	8.93	98	8.34	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	23	6	4.8	19.99	0.210	8.93	98	8.34	2	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	23	6	4.8	19.99	0.210	8.93	98	8.34	3	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	23	6	4.8	19.99	0.210	8.93	98	8.34	4	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	24	6	1.4	21.38	0.207	11.24	127	8.79	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	24	6	1.4	21.38	0.207	11.24	127	8.79	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	24	6	1.4	21.38	0.207	11.24	127	8.79	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	24	6	1.4	21.38	0.207	11.24	127	8.79	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
6/21/2004	29	7	11.3	20.22	0.207	9.61	106	8.52	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	29	7	11.3	20.22	0.207	9.61	106	8.52	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	29	7	11.3	20.22	0.207	9.61	106	8.52	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	29	7	11.3	20.22	0.207	9.61	106	8.52	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	30	7	6.1	20.28	0.204	10.03	111	8.63	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	30	7	6.1	20.28	0.204	10.03	111	8.63	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	30	7	6.1	20.28	0.204	10.03	111	8.63	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	30	7	6.1	20.28	0.204	10.03	111	8.63	4	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	31	7	3.7	20.44	0.206	9.76	108	8.56	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	31	7	3.7	20.44	0.206	9.76	108	8.56	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	31	7	3.7	20.44	0.206	9.76	108	8.56	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	31	7	3.7	20.44	0.206	9.76	108	8.56	4	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	32	7	1.3	20.74	0.210	10.06	113	8.54	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	32	7	1.3	20.74	0.210	10.06	113	8.54	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	32	7	1.3	20.74	0.210	10.06	113	8.54	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	32	7	1.3	20.74	0.210	10.06	113	8.54	4	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	15	9	11.6	19.89	0.210	8.73	96	8.33	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	15	9	11.6	19.89	0.210	8.73	96	8.33	2	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	15	9	11.6	19.89	0.210	8.73	96	8.33	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	15	9	11.6	19.89	0.210	8.73	96	8.33	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	16	9	5.6	20.02	0.210	8.93	98	8.38	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	16	9	5.6	20.02	0.210	8.93	98	8.38	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	16	9	5.6	20.02	0.210	8.93	98	8.38	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	16	9	5.6	20.02	0.210	8.93	98	8.38	4	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004		9	1.0	20.03	0.210	9.21	102	8.45	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0

6/21/2004		9	1.0	20.03	0.210	9.21	102	8.45	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		9	1.0	20.03	0.210	9.21	102	8.45	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		9	1.0	20.03	0.210	9.21	102	8.45	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	17	9	2.0	20.14	0.210	8.91	98	8.38	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	17	9	2.0	20.14	0.210	8.91	98	8.38	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	17	9	2.0	20.14	0.210	8.91	98	8.38	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	17	9	2.0	20.14	0.210	8.91	98	8.38	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	18	15	13.1	20.02	0.210	8.94	99	8.39	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	18	15	13.1	20.02	0.210	8.94	99	8.39	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	18	15	13.1	20.02	0.210	8.94	99	8.39	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	18	15	13.1	20.02	0.210	8.94	99	8.39	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	19	15	6.2	20.17	0.210	8.92	99	8.38	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	19	15	6.2	20.17	0.210	8.92	99	8.38	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	19	15	6.2	20.17	0.210	8.92	99	8.38	3	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	19	15	6.2	20.17	0.210	8.92	99	8.38	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		15	1.4	20.84	0.210	9.53	107	8.65	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		15	1.4	20.84	0.210	9.53	107	8.65	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		15	1.4	20.84	0.210	9.53	107	8.65	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		15	1.4	20.84	0.210	9.53	107	8.65	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	20	15	3.0	20.71	0.210	9.10	101	8.46	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
6/21/2004	20	15	3.0	20.71	0.210	9.10	101	8.46	2	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
6/21/2004	20	15	3.0	20.71	0.210	9.10	101	8.46	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	20	15	3.0	20.71	0.210	9.10	101	8.46	4	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
6/21/2004	33	16	13.2	19.91	0.210	8.72	96	8.32	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	33	16	13.2	19.91	0.210	8.72	96	8.32	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	33	16	13.2	19.91	0.210	8.72	96	8.32	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	33	16	13.2	19.91	0.210	8.72	96	8.32	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	34	16	7.1	20.56	0.206	10.77	120	8.77	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	34	16	7.1	20.56	0.206	10.77	120	8.77	2	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	34	16	7.1	20.56	0.206	10.77	120	8.77	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	34	16	7.1	20.56	0.206	10.77	120	8.77	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	35	16	3.6	20.54	0.209	9.37	104	8.48	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	35	16	3.6	20.54	0.209	9.37	104	8.48	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	35	16	3.6	20.54	0.209	9.37	104	8.48	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	35	16	3.6	20.54	0.209	9.37	104	8.48	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	36	16	1.4	21.14	0.211	9.21	104	8.43	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	36	16	1.4	21.14	0.211	9.21	104	8.43	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
6/21/2004	36	16	1.4	21.14	0.211	9.21	104	8.43	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
6/21/2004	36	16	1.4	21.14	0.211	9.21	104	8.43	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	1	18	11.2	19.41	0.212	8.24	90	8.10	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	1	18	11.2	19.41	0.212	8.24	90	8.10	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	1	18	11.2	19.41	0.212	8.24	90	8.10	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	1	18	11.2	19.41	0.212	8.24	90	8.10	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	2	18	6.1	19.39	0.212	8.10	88	8.10	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	2	18	6.1	19.39	0.212	8.10	88	8.10	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	2	18	6.1	19.39	0.212	8.10	88	8.10	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	2	18	6.1	19.39	0.212	8.10	88	8.10	4	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	4	18	3.3	19.39	0.212	8.10	88	8.10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	4	18	3.3	19.39	0.212	8.10	88	8.10	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	4	18	3.3	19.39	0.212	8.10	88	8.10	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	4	18	3.3	19.39	0.212	8.10	88	8.10	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/21/2004	6	18	1.1	19.51	0.212	8.31	91	8.13	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
6/21/2004	6	18	1.1	19.51	0.212	8.31	91	8.13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	6	18	1.1	19.51	0.212	8.31	91	8.13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	6	18	1.1	19.51	0.212	8.31	91	8.13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	7	19	11.5	19.35	0.211	8.37	91	8.21	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	7	19	11.5	19.35	0.211	8.37	91	8.21	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	7	19	11.5	19.35	0.211	8.37	91	8.21	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	7	19	11.5	19.35	0.211	8.37	91	8.21	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	8	19	6.8	19.51	0.210	8.65	94	8.27	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	8	19	6.8	19.51	0.210	8.65	94	8.27	2	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0
6/21/2004	8	19	6.8	19.51	0.210	8.65	94	8.27	3	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0
6/21/2004	8	19	6.8	19.51	0.210	8.65	94	8.27	4	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
6/21/2004	10	19	2.4	19.73	0.210	8.67	96	8.31	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	10	19	2.4	19.73	0.210	8.67	96	8.31	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	10	19	2.4	19.73	0.210	8.67	96	8.31	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	10	19	2.4	19.73	0.210	8.67	96	8.31	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	9	19	1.2	20.50	0.210	8.85	98	8.36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	9	19	1.2	20.50	0.210	8.85	98	8.36	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	9	19	1.2	20.50	0.210	8.85	98	8.36	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	9	19	1.2	20.50	0.210	8.85	98	8.36	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	25	27	13.8	19.67	0.210	8.63	94	8.28	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	25	27	13.8	19.67	0.210	8.63	94	8.28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	25	27	13.8	19.67	0.210	8.63	94	8.28	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	25	27	13.8	19.67	0.210	8.63	94	8.28	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	26	27	6.0	19.80	0.210	8.93	98	8.37	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	26	27	6.0	19.80	0.210	8.93	98	8.37	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
6/21/2004	26	27	6.0	19.80	0.210	8.93	98	8.37	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	26	27	6.0	19.80	0.210	8.93	98	8.37	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	27	27	3.3	20.49	0.206	10.62	118	8.72	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	27	27	3.3	20.49	0.206	10.62	118	8.72	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	27	27	3.3	20.49	0.206	10.62	118	8.72	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	27	27	3.3	20.49	0.206	10.62	118	8.72	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	28	27	1.3	21.61	0.208	10.27	117	8.78	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	28	27	1.3	21.61	0.208	10.27	117	8.78	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	28	27	1.3	21.61	0.208	10.27	117	8.78	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	28	27	1.3	21.61	0.208	10.27	117	8.78	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	37	28	12.2	19.82	0.210	8.82	97	8.27	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	37	28	12.2	19.82	0.210	8.82	97	8.27	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	37	28	12.2	19.82	0.210	8.82	97	8.27	3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/21/2004	37	28	12.2	19.82	0.210	8.82	97	8.27	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
6/21/2004	38	28	5.4	20.89	0.209	9.31	105	8.47	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	38	28	5.4	20.89	0.209	9.31	105	8.47	2	0	2	1	1	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	38	28	5.4	20.89	0.209	9.31	105	8.47	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	38	28	5.4	20.89	0.209	9.31	105	8.47	4	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	39	28	2.3	21.10	0.208	10.23	116	8.58	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	39	28	2.3	21.10	0.208	10.23	116	8.58	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	39	28	2.3	21.10	0.208	10.23	116	8.58	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	39	28	2.3	21.10	0.208	10.23	116	8.58	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		28	1.0	21.03	0.206	10.56	119	8.69	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		28	1.0	21.03	0.206	10.56	119	8.69	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004		28	1.0	21.03	0.206	10.56	119	8.69	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0

6/21/2004		28	1.0	21.03	0.206	10.56	119	8.69	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	11	29	12.7	19.85	0.210	8.79	96	8.28	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	11	29	12.7	19.85	0.210	8.79	96	8.28	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	11	29	12.7	19.85	0.210	8.79	96	8.28	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	11	29	12.7	19.85	0.210	8.79	96	8.28	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	12	29	6.6	19.83	0.210	8.88	97	8.33	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	12	29	6.6	19.83	0.210	8.88	97	8.33	2	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/21/2004	12	29	6.6	19.83	0.210	8.88	97	8.33	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	12	29	6.6	19.83	0.210	8.88	97	8.33	4	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	13	29	4.8	20.07	0.210	8.77	97	8.32	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	13	29	4.8	20.07	0.210	8.77	97	8.32	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	13	29	4.8	20.07	0.210	8.77	97	8.32	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	13	29	4.8	20.07	0.210	8.77	97	8.32	4	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	14	29	1.0	20.08	0.210	9.06	100	8.39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2004	14	29	1.0	20.08	0.210	9.06	100	8.39	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6/21/2004	14	29	1.0	20.08	0.210	9.06	100	8.39	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6/21/2004	14	29	1.0	20.08	0.210	9.06	100	8.39	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6/22/2004	64	0	1.0	20.80	0.232	8.99	101	8.36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	64	0	1.0	20.80	0.232	8.99	101	8.36	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	64	0	1.0	20.80	0.232	8.99	101	8.36	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	64	0	1.0	20.80	0.232	8.99	101	8.36	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	61	0	2.5	20.80	0.232	8.99	101	8.36	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	61	0	2.5	20.80	0.232	8.99	101	8.36	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	61	0	2.5	20.80	0.232	8.99	101	8.36	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	61	0	2.5	20.80	0.232	8.99	101	8.36	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	62	0	5.5	20.68	0.233	9.14	102	8.31	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	62	0	5.5	20.68	0.233	9.14	102	8.31	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	62	0	5.5	20.68	0.233	9.14	102	8.31	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	62	0	5.5	20.68	0.233	9.14	102	8.31	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	63	0	12.0	20.68	0.233	9.14	102	8.31	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	63	0	12.0	20.68	0.233	9.14	102	8.31	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	63	0	12.0	20.68	0.233	9.14	102	8.31	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	63	0	12.0	20.68	0.233	9.14	102	8.31	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	32	1	1.4	19.21	0.234	9.16	99	8.36	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	32	1	1.4	19.21	0.234	9.16	99	8.36	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	32	1	1.4	19.21	0.234	9.16	99	8.36	3	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0
6/22/2004	32	1	1.4	19.21	0.234	9.16	99	8.36	4	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
6/22/2004	31	1	2.8	19.30	0.233	9.22	100	8.34	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	31	1	2.8	19.30	0.233	9.22	100	8.34	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	31	1	2.8	19.30	0.233	9.22	100	8.34	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	31	1	2.8	19.30	0.233	9.22	100	8.34	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	30	1	6.2	19.21	0.233	8.70	94	8.26	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	30	1	6.2	19.21	0.233	8.70	94	8.26	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	30	1	6.2	19.21	0.233	8.70	94	8.26	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	30	1	6.2	19.21	0.233	8.70	94	8.26	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	29	1	11.2	19.13	0.233	8.54	92	8.20	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	29	1	11.2	19.13	0.233	8.54	92	8.20	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	29	1	11.2	19.13	0.233	8.54	92	8.20	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	29	1	11.2	19.13	0.233	8.54	92	8.20	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	3	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004		2	0.0	19.85	0.233	9.11	100	8.38	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	0.8	19.85	0.233	9.11	100	8.38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	0.8	19.85	0.233	9.11	100	8.38	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	0.8	19.85	0.233	9.11	100	8.38	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	0.8	19.85	0.233	9.11	100	8.38	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	11.8	19.45	0.233	8.70	95	8.22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	11.8	19.45	0.233	8.70	95	8.22	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	11.8	19.45	0.233	8.70	95	8.22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	68	2	11.8	19.45	0.233	8.70	95	8.22	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	28	3	1.1	19.77	0.232	9.26	102	8.47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	28	3	1.1	19.77	0.232	9.26	102	8.47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	28	3	1.1	19.77	0.232	9.26	102	8.47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	28	3	1.1	19.77	0.232	9.26	102	8.47	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	27	3	2.2	19.72	0.232	9.37	102	8.48	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	27	3	2.2	19.72	0.232	9.37	102	8.48	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	27	3	2.2	19.72	0.232	9.37	102	8.48	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	27	3	2.2	19.72	0.232	9.37	102	8.48	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	26	3	6.2	19.48	0.232	9.01	98	8.39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	26	3	6.2	19.48	0.232	9.01	98	8.39	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	26	3	6.2	19.48	0.232	9.01	98	8.39	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	26	3	6.2	19.48	0.232	9.01	98	8.39	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	25	3	11.5	19.32	0.233	8.81	96	8.31	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	25	3	11.5	19.32	0.233	8.81	96	8.31	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	25	3	11.5	19.32	0.233	8.81	96	8.31	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	25	3	11.5	19.32	0.233	8.81	96	8.31	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	71	4	0.9	22.00	0.222	12.84	150	9.07	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	0.9	22.00	0.222	12.84	150	9.07	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
6/22/2004	71	4	0.9	22.00	0.222	12.84	150	9.07	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	0.9	22.00	0.222	12.84	150	9.07	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	2.4	21.36	0.221	13.62	154	9.05	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	2.4	21.36	0.221	13.62	154	9.05	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	2.4	21.36	0.221	13.62	154	9.05	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	71	4	2.4	21.36	0.221	13.62	154	9.05	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
6/22/2004	70	4	6.1	20.58	0.222	10.59	116	8.67	1	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	70	4	6.1	20.58	0.222	10.59	116	8.67	2	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	70	4	6.1	20.58	0.222	10.59	116	8.67	3	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	70	4	6.1	20.58	0.222	10.59	116	8.67	4	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	70	4	12.2	19.20	0.231	9.20	100	8.30	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	70	4	12.2	19.20	0.231	9.20	100	8.30	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	70	4	12.2	19.20	0.231	9.20	100	8.30	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	70	4	12.2	19.20	0.231	9.20	100	8.30	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	8	5	1.4	18.41	0.232	8.30	89	8.81	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	8	5	1.4	18.41	0.232	8.30	89	8.81	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	8	5	1.4	18.41	0.232	8.30	89	8.81	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	8	5	1.4	18.41	0.232	8.30	89	8.81	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/22/2004	7	5	2.8	18.84	0.232	8.22	88	8.19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	7	5	2.8	18.84	0.232	8.22	88	8.19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	7	5	2.8	18.84	0.232	8.22	88	8.19	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	7	5	2.8	18.84	0.232	8.22	88	8.19	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	6	5	5.2	18.93	0.233	8.11	87	8.15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	6	5	5.2	18.93	0.233	8.11	87	8.15	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	6	5	5.2	18.93	0.233	8.11	87	8.15	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	6	5	5.2	18.93	0.233	8.11	87	8.15	4	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	5	5	10.2	19.06	0.233	8.07	87	8.13	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	5	5	10.2	19.06	0.233	8.07	87	8.13	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	5	5	10.2	19.06	0.233	8.07	87	8.13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	5	5	10.2	19.06	0.233	8.07	87	8.13	4	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	79	8	0.8	20.29	0.231	9.68	107	8.44	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	79	8	0.8	20.29	0.231	9.68	107	8.44	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	79	8	0.8	20.29	0.231	9.68	107	8.44	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	79	8	0.8	20.29	0.231	9.68	107	8.44	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	78	8	2.6	20.27	0.232	9.51	106	8.39	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	78	8	2.6	20.27	0.232	9.51	106	8.39	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	78	8	2.6	20.27	0.232	9.51	106	8.39	3	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	78	8	2.6	20.27	0.232	9.51	106	8.39	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	77	8	6.3	20.54	0.232	9.30	103	8.38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	77	8	6.3	20.54	0.232	9.30	103	8.38	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	77	8	6.3	20.54	0.232	9.30	103	8.38	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	77	8	6.3	20.54	0.232	9.30	103	8.38	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	76	8	12.4	20.34	0.232	9.07	100	8.32	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	76	8	12.4	20.34	0.232	9.07	100	8.32	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	76	8	12.4	20.34	0.232	9.07	100	8.32	3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	76	8	12.4	20.34	0.232	9.07	100	8.32	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	1.0	19.92	0.229	10.62	117	8.58	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	1.0	19.92	0.229	10.62	117	8.58	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	1.0	19.92	0.229	10.62	117	8.58	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	1.0	19.92	0.229	10.62	117	8.58	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	4.0	19.00	0.231	9.06	99	8.27	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	4.0	19.00	0.231	9.06	99	8.27	2	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	4.0	19.00	0.231	9.06	99	8.27	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	44	10	4.0	19.00	0.231	9.06	99	8.27	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	43	10	8.0	19.50	0.230	9.10	100	8.32	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	43	10	8.0	19.50	0.230	9.10	100	8.32	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	43	10	8.0	19.50	0.230	9.10	100	8.32	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	43	10	8.0	19.50	0.230	9.10	100	8.32	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	42	10	13.4	19.13	0.232	8.67	94	8.22	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	42	10	13.4	19.13	0.232	8.67	94	8.22	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	42	10	13.4	19.13	0.232	8.67	94	8.22	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	42	10	13.4	19.13	0.232	8.67	94	8.22	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	24	11	1.2	19.12	0.234	8.70	94	8.28	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	24	11	1.2	19.12	0.234	8.70	94	8.28	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	24	11	1.2	19.12	0.234	8.70	94	8.28	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	24	11	1.2	19.12	0.234	8.70	94	8.28	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	23	11	4.2	19.47	0.233	8.73	95	8.29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	23	11	4.2	19.47	0.233	8.73	95	8.29	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	23	11	4.2	19.47	0.233	8.73	95	8.29	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/22/2004	23	11	4.2	19.47	0.233	8.73	95	8.29	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	22	11	8.0	19.39	0.233	8.61	93	8.27	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	22	11	8.0	19.39	0.233	8.61	93	8.27	2	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	22	11	8.0	19.39	0.233	8.61	93	8.27	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	22	11	8.0	19.39	0.233	8.61	93	8.27	4	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0
6/22/2004	21	11	13.3	19.29	0.233	8.51	92	8.21	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	21	11	13.3	19.29	0.233	8.51	92	8.21	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	21	11	13.3	19.29	0.233	8.51	92	8.21	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	21	11	13.3	19.29	0.233	8.51	92	8.21	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	36	12	1.1	19.34	0.232	9.48	103	8.41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	36	12	1.1	19.34	0.232	9.48	103	8.41	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	36	12	1.1	19.34	0.232	9.48	103	8.41	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	36	12	1.1	19.34	0.232	9.48	103	8.41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	35	12	4.2	19.53	0.232	9.43	103	8.41	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	35	12	4.2	19.53	0.232	9.43	103	8.41	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	35	12	4.2	19.53	0.232	9.43	103	8.41	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	35	12	4.2	19.53	0.232	9.43	103	8.41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	34	12	7.6	19.39	0.233	8.92	97	8.30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	34	12	7.6	19.39	0.233	8.92	97	8.30	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	34	12	7.6	19.39	0.233	8.92	97	8.30	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	34	12	7.6	19.39	0.233	8.92	97	8.30	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	33	12	12.1	19.27	0.233	8.64	94	8.21	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	33	12	12.1	19.27	0.233	8.64	94	8.21	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	33	12	12.1	19.27	0.233	8.64	94	8.21	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	33	12	12.1	19.27	0.233	8.64	94	8.21	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	3	13	1.4	17.18	0.235	6.74	70	8.20	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
6/22/2004	3	13	1.4	17.18	0.235	6.74	70	8.20	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	3	13	1.4	17.18	0.235	6.74	70	8.20	3	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
6/22/2004	3	13	1.4	17.18	0.235	6.74	70	8.20	4	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
6/22/2004	2	13	4.2	18.70	0.234	7.71	83	8.09	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
6/22/2004	2	13	4.2	18.70	0.234	7.71	83	8.09	2	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
6/22/2004	2	13	4.2	18.70	0.234	7.71	83	8.09	3	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
6/22/2004	2	13	4.2	18.70	0.234	7.71	83	8.09	4	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
6/22/2004	4	13	5.8	18.99	0.234	8.11	88	8.14	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	4	13	5.8	18.99	0.234	8.11	88	8.14	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	4	13	5.8	18.99	0.234	8.11	88	8.14	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	4	13	5.8	18.99	0.234	8.11	88	8.14	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	1	13	11.5	18.96	0.233	7.97	86	8.11	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	1	13	11.5	18.96	0.233	7.97	86	8.11	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	1	13	11.5	18.96	0.233	7.97	86	8.11	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	1	13	11.5	18.96	0.233	7.97	86	8.11	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	16	14	1.4	17.47	0.237	7.32	76	8.20	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	16	14	1.4	17.47	0.237	7.32	76	8.20	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	16	14	1.4	17.47	0.237	7.32	76	8.20	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	16	14	1.4	17.47	0.237	7.32	76	8.20	4	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6/22/2004	15	14	3.6	18.72	0.234	7.66	82	8.26	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	15	14	3.6	18.72	0.234	7.66	82	8.26	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	15	14	3.6	18.72	0.234	7.66	82	8.26	3	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	15	14	3.6	18.72	0.234	7.66	82	8.26	4	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	14	14	5.4	19.22	0.230	8.32	90	8.38	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	14	14	5.4	19.22	0.230	8.32	90	8.38	2	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0

6/22/2004	14	14	5.4	19.22	0.230	8.32	90	8.38	3	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	14	14	5.4	19.22	0.230	8.32	90	8.38	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
6/22/2004	13	14	11.7	19.27	0.232	8.55	93	8.30	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	13	14	11.7	19.27	0.232	8.55	93	8.30	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	13	14	11.7	19.27	0.232	8.55	93	8.30	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	13	14	11.7	19.27	0.232	8.55	93	8.30	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	87	17	1.4	20.75	0.232	9.61	108	8.44	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6/22/2004	87	17	1.4	20.75	0.232	9.61	108	8.44	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	87	17	1.4	20.75	0.232	9.61	108	8.44	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	87	17	1.4	20.75	0.232	9.61	108	8.44	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	86	17	4.3	19.86	0.232	9.06	100	8.37	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	86	17	4.3	19.86	0.232	9.06	100	8.37	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	86	17	4.3	19.86	0.232	9.06	100	8.37	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	86	17	4.3	19.86	0.232	9.06	100	8.37	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	85	17	7.5	19.72	0.233	8.73	96	8.24	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	85	17	7.5	19.72	0.233	8.73	96	8.24	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	85	17	7.5	19.72	0.233	8.73	96	8.24	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	85	17	7.5	19.72	0.233	8.73	96	8.24	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	84	17	10.3	19.69	0.233	8.67	95	8.24	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	84	17	10.3	19.69	0.233	8.67	95	8.24	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	84	17	10.3	19.69	0.233	8.67	95	8.24	3	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6/22/2004	84	17	10.3	19.69	0.233	8.67	95	8.24	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	40	20	1.0	19.61	0.231	9.84	108	8.45	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	40	20	1.0	19.61	0.231	9.84	108	8.45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	40	20	1.0	19.61	0.231	9.84	108	8.45	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	40	20	1.0	19.61	0.231	9.84	108	8.45	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	39	20	4.7	19.76	0.231	9.83	108	8.47	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	39	20	4.7	19.76	0.231	9.83	108	8.47	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	39	20	4.7	19.76	0.231	9.83	108	8.47	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	39	20	4.7	19.76	0.231	9.83	108	8.47	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	38	20	8.6	19.73	0.232	9.41	103	8.39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	38	20	8.6	19.73	0.232	9.41	103	8.39	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	38	20	8.6	19.73	0.232	9.41	103	8.39	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	38	20	8.6	19.73	0.232	9.41	103	8.39	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	37	20	13.0	19.29	0.233	8.63	94	8.22	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	37	20	13.0	19.29	0.233	8.63	94	8.22	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	37	20	13.0	19.29	0.233	8.63	94	8.22	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	37	20	13.0	19.29	0.233	8.63	94	8.22	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	1.0	21.16	0.233	9.55	108	8.47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	1.0	21.16	0.233	9.55	108	8.47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	1.0	21.16	0.233	9.55	108	8.47	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	1.0	21.16	0.233	9.55	108	8.47	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	4.0	20.30	0.233	9.13	102	8.34	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	4.0	20.30	0.233	9.13	102	8.34	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	4.0	20.30	0.233	9.13	102	8.34	3	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	67	21	4.0	20.30	0.233	9.13	102	8.34	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
6/22/2004	66	21	7.0	20.05	0.233	8.74	96	8.24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	66	21	7.0	20.05	0.233	8.74	96	8.24	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	66	21	7.0	20.05	0.233	8.74	96	8.24	3	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
6/22/2004	66	21	7.0	20.05	0.233	8.74	96	8.24	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	65	21	12.1	19.99	0.233	8.78	97	8.26	1	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0

6/22/2004	65	21	12.1	19.99	0.233	8.78	97	8.26	2	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	65	21	12.1	19.99	0.233	8.78	97	8.26	3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	65	21	12.1	19.99	0.233	8.78	97	8.26	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	75	22	0.9	20.77	0.230	11.10	124	8.73	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	75	22	0.9	20.77	0.230	11.10	124	8.73	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	75	22	0.9	20.77	0.230	11.10	124	8.73	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	75	22	0.9	20.77	0.230	11.10	124	8.73	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	74	22	4.2	19.81	0.231	9.87	108	8.52	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	74	22	4.2	19.81	0.231	9.87	108	8.52	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	74	22	4.2	19.81	0.231	9.87	108	8.52	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	74	22	4.2	19.81	0.231	9.87	108	8.52	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	73	22	6.6	19.76	0.231	9.34	102	8.41	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	73	22	6.6	19.76	0.231	9.34	102	8.41	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	73	22	6.6	19.76	0.231	9.34	102	8.41	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	73	22	6.6	19.76	0.231	9.34	102	8.41	4	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	72	22	12.2	19.77	0.232	9.26	101	8.40	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	72	22	12.2	19.77	0.232	9.26	101	8.40	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	72	22	12.2	19.77	0.232	9.26	101	8.40	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	72	22	12.2	19.77	0.232	9.26	101	8.40	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	17	23	1.2	18.37	0.234	8.06	86	8.20	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	1.2	18.37	0.234	8.06	86	8.20	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	1.2	18.37	0.234	8.06	86	8.20	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	1.2	18.37	0.234	8.06	86	8.20	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6/22/2004	17	23	3.2	18.57	0.233	8.27	88	8.21	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	3.2	18.57	0.233	8.27	88	8.21	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	3.2	18.57	0.233	8.27	88	8.21	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	17	23	3.2	18.57	0.233	8.27	88	8.21	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	18	23	6.4	18.81	0.233	8.62	93	8.27	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	18	23	6.4	18.81	0.233	8.62	93	8.27	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	18	23	6.4	18.81	0.233	8.62	93	8.27	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	18	23	6.4	18.81	0.233	8.62	93	8.27	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	19	23	12.5	19.11	0.233	8.32	90	8.17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	19	23	12.5	19.11	0.233	8.32	90	8.17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	19	23	12.5	19.11	0.233	8.32	90	8.17	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	19	23	12.5	19.11	0.233	8.32	90	8.17	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	51	24	1.4	20.20	0.202	10.79	119	9.15	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	51	24	1.4	20.20	0.202	10.79	119	9.15	2	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
6/22/2004	51	24	1.4	20.20	0.202	10.79	119	9.15	3	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0
6/22/2004	51	24	1.4	20.20	0.202	10.79	119	9.15	4	0	1	0	0	0	4	0	1	0	0	0	0	0	0	0	0
6/22/2004	50	24	4.3	19.41	0.191	10.56	115	8.81	1	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	50	24	4.3	19.41	0.191	10.56	115	8.81	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	50	24	4.3	19.41	0.191	10.56	115	8.81	3	0	5	0	1	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	50	24	4.3	19.41	0.191	10.56	115	8.81	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	49	24	6.4	19.32	0.221	9.82	105	8.48	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	49	24	6.4	19.32	0.221	9.82	105	8.48	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	49	24	6.4	19.32	0.221	9.82	105	8.48	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	49	24	6.4	19.32	0.221	9.82	105	8.48	4	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	52	24	16.9	19.01	0.232	8.70	94	8.22	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	52	24	16.9	19.01	0.232	8.70	94	8.22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	52	24	16.9	19.01	0.232	8.70	94	8.22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	52	24	16.9	19.01	0.232	8.70	94	8.22	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/22/2004	56	25	1.0	20.05	0.225	11.22	124	8.74	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
6/22/2004	56	25	1.0	20.05	0.225	11.22	124	8.74	2	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
6/22/2004	56	25	1.0	20.05	0.225	11.22	124	8.74	3	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
6/22/2004	56	25	1.0	20.05	0.225	11.22	124	8.74	4	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0
6/22/2004	55	25	4.9	19.24	0.227	9.61	105	8.38	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	55	25	4.9	19.24	0.227	9.61	105	8.38	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	55	25	4.9	19.24	0.227	9.61	105	8.38	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	55	25	4.9	19.24	0.227	9.61	105	8.38	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	54	25	9.8	18.86	0.231	8.82	95	8.23	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	54	25	9.8	18.86	0.231	8.82	95	8.23	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	54	25	9.8	18.86	0.231	8.82	95	8.23	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	54	25	9.8	18.86	0.231	8.82	95	8.23	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	53	25	12.8	18.92	0.231	8.83	95	8.24	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	53	25	12.8	18.92	0.231	8.83	95	8.24	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	53	25	12.8	18.92	0.231	8.83	95	8.24	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	53	25	12.8	18.92	0.231	8.83	95	8.24	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	48	26	1.2	19.53	0.227	9.95	109	8.59	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	48	26	1.2	19.53	0.227	9.95	109	8.59	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	48	26	1.2	19.53	0.227	9.95	109	8.59	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	48	26	1.2	19.53	0.227	9.95	109	8.59	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	47	26	2.9	19.39	0.230	9.41	102	8.44	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	47	26	2.9	19.39	0.230	9.41	102	8.44	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	47	26	2.9	19.39	0.230	9.41	102	8.44	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	47	26	2.9	19.39	0.230	9.41	102	8.44	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	46	26	6.8	19.37	0.230	9.43	103	8.41	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	46	26	6.8	19.37	0.230	9.43	103	8.41	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	46	26	6.8	19.37	0.230	9.43	103	8.41	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	46	26	6.8	19.37	0.230	9.43	103	8.41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	45	26	10.5	19.26	0.231	9.05	98	8.32	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	45	26	10.5	19.26	0.231	9.05	98	8.32	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	45	26	10.5	19.26	0.231	9.05	98	8.32	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	45	26	10.5	19.26	0.231	9.05	98	8.32	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	60	30	1.2	20.39	0.230	10.93	122	8.71	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0
6/22/2004	60	30	1.2	20.39	0.230	10.93	122	8.71	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	60	30	1.2	20.39	0.230	10.93	122	8.71	3	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
6/22/2004	60	30	1.2	20.39	0.230	10.93	122	8.71	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	59	30	3.7	19.86	0.231	9.41	103	8.45	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	59	30	3.7	19.86	0.231	9.41	103	8.45	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	59	30	3.7	19.86	0.231	9.41	103	8.45	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	59	30	3.7	19.86	0.231	9.41	103	8.45	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	58	30	6.5	19.59	0.232	9.05	99	8.34	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	58	30	6.5	19.59	0.232	9.05	99	8.34	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	58	30	6.5	19.59	0.232	9.05	99	8.34	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	58	30	6.5	19.59	0.232	9.05	99	8.34	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	57	30	14.7	19.33	0.233	8.65	94	8.22	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	57	30	14.7	19.33	0.233	8.65	94	8.22	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	57	30	14.7	19.33	0.233	8.65	94	8.22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	57	30	14.7	19.33	0.233	8.65	94	8.22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	12	31	1.3	18.96	0.233	8.38	90	8.20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	12	31	1.3	18.96	0.233	8.38	90	8.20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	12	31	1.3	18.96	0.233	8.38	90	8.20	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6/22/2004	12	31	1.3	18.96	0.233	8.38	90	8.20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	11	31	2.6	19.02	0.233	8.41	91	8.22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	11	31	2.6	19.02	0.233	8.41	91	8.22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	11	31	2.6	19.02	0.233	8.41	91	8.22	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	11	31	2.6	19.02	0.233	8.41	91	8.22	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	10	31	6.3	19.06	0.233	8.45	92	8.21	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
6/22/2004	10	31	6.3	19.06	0.233	8.45	92	8.21	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
6/22/2004	10	31	6.3	19.06	0.233	8.45	92	8.21	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	10	31	6.3	19.06	0.233	8.45	92	8.21	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	9	31	10.4	19.05	0.232	8.54	92	8.23	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	9	31	10.4	19.05	0.232	8.54	92	8.23	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	9	31	10.4	19.05	0.232	8.54	92	8.23	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	9	31	10.4	19.05	0.232	8.54	92	8.23	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	83	32	1.2	21.22	0.232	9.99	112	8.59	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	83	32	1.2	21.22	0.232	9.99	112	8.59	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	83	32	1.2	21.22	0.232	9.99	112	8.59	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	83	32	1.2	21.22	0.232	9.99	112	8.59	4	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
6/22/2004	82	32	4.8	20.57	0.233	9.76	109	8.47	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	82	32	4.8	20.57	0.233	9.76	109	8.47	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	82	32	4.8	20.57	0.233	9.76	109	8.47	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	82	32	4.8	20.57	0.233	9.76	109	8.47	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	81	32	8.3	20.79	0.234	9.50	106	8.43	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	81	32	8.3	20.79	0.234	9.50	106	8.43	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	81	32	8.3	20.79	0.234	9.50	106	8.43	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	81	32	8.3	20.79	0.234	9.50	106	8.43	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	80	32	12.2	20.60	0.233	9.13	101	8.36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	80	32	12.2	20.60	0.233	9.13	101	8.36	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	80	32	12.2	20.60	0.233	9.13	101	8.36	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/22/2004	80	32	12.2	20.60	0.233	9.13	101	8.36	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	45	0	1.4	22.62	0.208	10.48	120	8.78	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	45	0	1.4	22.62	0.208	10.48	120	8.78	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	45	0	1.4	22.62	0.208	10.48	120	8.78	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	45	0	1.4	22.62	0.208	10.48	120	8.78	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	44	0	2.2	22.10	0.209	10.26	118	8.69	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	44	0	2.2	22.10	0.209	10.26	118	8.69	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	44	0	2.2	22.10	0.209	10.26	118	8.69	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	44	0	2.2	22.10	0.209	10.26	118	8.69	4	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0
8/17/2004	1*	0	9.9	22.10	0.211	9.18	104	8.52	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1*	0	9.9	22.10	0.211	9.18	104	8.52	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1*	0	9.9	22.10	0.211	9.18	104	8.52	3	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
8/17/2004	1*	0	9.9	22.10	0.211	9.18	104	8.52	4	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8/17/2004	2*	0	11.1	22.10	0.211	9.18	104	8.52	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/17/2004	2*	0	11.1	22.10	0.211	9.18	104	8.52	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	2*	0	11.1	22.10	0.211	9.18	104	8.52	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/17/2004	2*	0	11.1	22.10	0.211	9.18	104	8.52	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/17/2004	39	1	0.5	22.41	0.209	10.19	118	8.74	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	39	1	0.5	22.41	0.209	10.19	118	8.74	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	39	1	0.5	22.41	0.209	10.19	118	8.74	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/17/2004	39	1	0.5	22.41	0.209	10.19	118	8.74	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	4*	1	4.8	21.61	0.210	9.80	111	8.52	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0

8/17/2004	4*	1	4.8	21.61	0.210	9.80	111	8.52	2	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0
8/17/2004	4*	1	4.8	21.61	0.210	9.80	111	8.52	3	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
8/17/2004	4*	1	4.8	21.61	0.210	9.80	111	8.52	4	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0
8/17/2004	5*	1	6.9	21.59	0.212	8.91	101	8.47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	5*	1	6.9	21.59	0.212	8.91	101	8.47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	5*	1	6.9	21.59	0.212	8.91	101	8.47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	5*	1	6.9	21.59	0.212	8.91	101	8.47	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	6*	1	11.5	21.59	0.212	8.91	101	8.47	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	6*	1	11.5	21.59	0.212	8.91	101	8.47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	6*	1	11.5	21.59	0.212	8.91	101	8.47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	6*	1	11.5	21.59	0.212	8.91	101	8.47	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	38	2	1.4	22.81	0.199	13.29	155	9.15	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	38	2	1.4	22.81	0.199	13.29	155	9.15	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	38	2	1.4	22.81	0.199	13.29	155	9.15	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	38	2	1.4	22.81	0.199	13.29	155	9.15	4	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0
8/17/2004	37	2	4.1	21.40	0.211	9.78	111	8.60	1	0	0	1	0	0	1	0	3	0	0	0	0	0	0	0	0
8/17/2004	37	2	4.1	21.40	0.211	9.78	111	8.60	2	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
8/17/2004	37	2	4.1	21.40	0.211	9.78	111	8.60	3	0	0	1	0	0	0	2	0	1	0	0	0	1	0	0	0
8/17/2004	37	2	4.1	21.40	0.211	9.78	111	8.60	4	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
8/17/2004	36	2	7.2	21.30	0.212	9.40	106	8.54	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	36	2	7.2	21.30	0.212	9.40	106	8.54	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	36	2	7.2	21.30	0.212	9.40	106	8.54	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	36	2	7.2	21.30	0.212	9.40	106	8.54	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	35	2	10.1	21.33	0.212	9.26	104	8.48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	35	2	10.1	21.33	0.212	9.26	104	8.48	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	35	2	10.1	21.33	0.212	9.26	104	8.48	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	35	2	10.1	21.33	0.212	9.26	104	8.48	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	30	3	1.5	23.58	0.197	13.52	159	9.09	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/17/2004	30	3	1.5	23.58	0.197	13.52	159	9.09	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	30	3	1.5	23.58	0.197	13.52	159	9.09	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	30	3	1.5	23.58	0.197	13.52	159	9.09	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	29	3	4.9	21.96	0.212	9.17	105	8.51	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	29	3	4.9	21.96	0.212	9.17	105	8.51	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	29	3	4.9	21.96	0.212	9.17	105	8.51	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	29	3	4.9	21.96	0.212	9.17	105	8.51	4	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
8/17/2004	28	3	9.8	21.20	0.212	9.01	101	8.44	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	28	3	9.8	21.20	0.212	9.01	101	8.44	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	28	3	9.8	21.20	0.212	9.01	101	8.44	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	28	3	9.8	21.20	0.212	9.01	101	8.44	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	27	3	10.2	21.37	0.212	8.86	101	8.43	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	27	3	10.2	21.37	0.212	8.86	101	8.43	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	27	3	10.2	21.37	0.212	8.86	101	8.43	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	27	3	10.2	21.37	0.212	8.86	101	8.43	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	22	4	1.3	22.68	0.206	11.54	134	8.76	1	0	0	0	2	0	0	0	0	1	0	0	0	1	0	0	0
8/17/2004	22	4	1.3	22.68	0.206	11.54	134	8.76	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	22	4	1.3	22.68	0.206	11.54	134	8.76	3	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0
8/17/2004	22	4	1.3	22.68	0.206	11.54	134	8.76	4	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	21	4	3.8	21.79	0.209	10.15	115	8.59	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	21	4	3.8	21.79	0.209	10.15	115	8.59	2	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	21	4	3.8	21.79	0.209	10.15	115	8.59	3	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	21	4	3.8	21.79	0.209	10.15	115	8.59	4	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0

8/17/2004	20	4	5.5	21.53	0.211	8.84	100	8.43	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
8/17/2004	20	4	5.5	21.53	0.211	8.84	100	8.43	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	20	4	5.5	21.53	0.211	8.84	100	8.43	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	20	4	5.5	21.53	0.211	8.84	100	8.43	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	19	4	12.1	21.49	0.212	8.93	103	8.41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	19	4	12.1	21.49	0.212	8.93	103	8.41	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	19	4	12.1	21.49	0.212	8.93	103	8.41	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	19	4	12.1	21.49	0.212	8.93	103	8.41	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	10	5	1.3	22.06	0.204	12.50	143	8.87	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0
8/17/2004	10	5	1.3	22.06	0.204	12.50	143	8.87	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	10	5	1.3	22.06	0.204	12.50	143	8.87	3	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0
8/17/2004	10	5	1.3	22.06	0.204	12.50	143	8.87	4	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0
8/17/2004	9	5	2.9	21.04	0.209	9.76	110	8.55	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	9	5	2.9	21.04	0.209	9.76	110	8.55	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	9	5	2.9	21.04	0.209	9.76	110	8.55	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	9	5	2.9	21.04	0.209	9.76	110	8.55	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	8	5	5.2	21.15	0.212	8.62	97	8.32	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	8	5	5.2	21.15	0.212	8.62	97	8.32	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	8	5	5.2	21.15	0.212	8.62	97	8.32	3	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	8	5	5.2	21.15	0.212	8.62	97	8.32	4	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	7	5	11.8	8.16	0.213	7.60	85	7.61	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	7	5	11.8	8.16	0.213	7.60	85	7.61	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	7	5	11.8	8.16	0.213	7.60	85	7.61	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	7	5	11.8	8.16	0.213	7.60	85	7.61	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	18	6	1.4	22.51	0.208	11.34	133	8.83	1	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0
8/17/2004	18	6	1.4	22.51	0.208	11.34	133	8.83	2	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
8/17/2004	18	6	1.4	22.51	0.208	11.34	133	8.83	3	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	18	6	1.4	22.51	0.208	11.34	133	8.83	4	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	17	6	3.3	21.87	0.207	11.05	126	8.75	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	17	6	3.3	21.87	0.207	11.05	126	8.75	2	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	17	6	3.3	21.87	0.207	11.05	126	8.75	3	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
8/17/2004	17	6	3.3	21.87	0.207	11.05	126	8.75	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	16	6	7.4	21.33	0.212	8.68	98	8.39	1	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8/17/2004	16	6	7.4	21.33	0.212	8.68	98	8.39	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	16	6	7.4	21.33	0.212	8.68	98	8.39	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	16	6	7.4	21.33	0.212	8.68	98	8.39	4	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	15	6	12.7	21.17	0.212	8.71	98	8.37	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	15	6	12.7	21.17	0.212	8.71	98	8.37	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	15	6	12.7	21.17	0.212	8.71	98	8.37	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	15	6	12.7	21.17	0.212	8.71	98	8.37	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	4	7	1.4	22.11	0.209	10.48	120	8.50	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	4	7	1.4	22.11	0.209	10.48	120	8.50	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
8/17/2004	4	7	1.4	22.11	0.209	10.48	120	8.50	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	4	7	1.4	22.11	0.209	10.48	120	8.50	4	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	3	7	3.0	21.08	0.213	8.32	94	8.16	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	3	7	3.0	21.08	0.213	8.32	94	8.16	2	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0
8/17/2004	3	7	3.0	21.08	0.213	8.32	94	8.16	3	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	3	7	3.0	21.08	0.213	8.32	94	8.16	4	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	2	7	5.3	20.85	0.214	7.29	82	7.97	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
8/17/2004	2	7	5.3	20.85	0.214	7.29	82	7.97	2	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	2	7	5.3	20.85	0.214	7.29	82	7.97	3	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0

8/17/2004	2	7	5.3	20.85	0.214	7.29	82	7.97	4	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1	7	12.5	20.85	0.213	7.36	82	7.91	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1	7	12.5	20.85	0.213	7.36	82	7.91	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1	7	12.5	20.85	0.213	7.36	82	7.91	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	1	7	12.5	20.85	0.213	7.36	82	7.91	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	43	8	1.3	23.72	0.204	11.89	140	8.99	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/17/2004	43	8	1.3	23.72	0.204	11.89	140	8.99	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	43	8	1.3	23.72	0.204	11.89	140	8.99	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	43	8	1.3	23.72	0.204	11.89	140	8.99	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	42	8	3.3	22.70	0.208	11.04	128	8.80	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	42	8	3.3	22.70	0.208	11.04	128	8.80	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	42	8	3.3	22.70	0.208	11.04	128	8.80	3	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	42	8	3.3	22.70	0.208	11.04	128	8.80	4	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	41	8	6.3	22.25	0.211	9.31	107	8.56	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	41	8	6.3	22.25	0.211	9.31	107	8.56	2	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8/17/2004	41	8	6.3	22.25	0.211	9.31	107	8.56	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	41	8	6.3	22.25	0.211	9.31	107	8.56	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	40	8	10.7	22.25	0.212	9.06	104	8.51	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	40	8	10.7	22.25	0.212	9.06	104	8.51	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/17/2004	40	8	10.7	22.25	0.212	9.06	104	8.51	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/17/2004	40	8	10.7	22.25	0.212	9.06	104	8.51	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	34	9	1.5	22.38	0.209	12.07	140	8.87	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	34	9	1.5	22.38	0.209	12.07	140	8.87	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	34	9	1.5	22.38	0.209	12.07	140	8.87	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/17/2004	34	9	1.5	22.38	0.209	12.07	140	8.87	4	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8/17/2004	33	9	4.1	21.19	0.210	10.24	115	8.66	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0
8/17/2004	33	9	4.1	21.19	0.210	10.24	115	8.66	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	33	9	4.1	21.19	0.210	10.24	115	8.66	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	33	9	4.1	21.19	0.210	10.24	115	8.66	4	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	32	9	6.4	21.17	0.211	9.30	105	8.54	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0
8/17/2004	32	9	6.4	21.17	0.211	9.30	105	8.54	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	32	9	6.4	21.17	0.211	9.30	105	8.54	3	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0
8/17/2004	32	9	6.4	21.17	0.211	9.30	105	8.54	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	31	9	11.4	21.37	0.211	9.30	104	8.49	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	31	9	11.4	21.37	0.211	9.30	104	8.49	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	31	9	11.4	21.37	0.211	9.30	104	8.49	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	31	9	11.4	21.37	0.211	9.30	104	8.49	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	52	10	1.5	22.79	0.213	6.89	80	7.95	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	52	10	1.5	22.79	0.213	6.89	80	7.95	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	52	10	1.5	22.79	0.213	6.89	80	7.95	3	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
8/17/2004	52	10	1.5	22.79	0.213	6.89	80	7.95	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/17/2004	51	10	4.3	21.24	0.215	8.08	91	8.24	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8/17/2004	51	10	4.3	21.24	0.215	8.08	91	8.24	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
8/17/2004	51	10	4.3	21.24	0.215	8.08	91	8.24	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
8/17/2004	51	10	4.3	21.24	0.215	8.08	91	8.24	4	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1
8/17/2004	50	10	9.3	21.11	0.215	7.95	89	8.22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	50	10	9.3	21.11	0.215	7.95	89	8.22	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	50	10	9.3	21.11	0.215	7.95	89	8.22	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	50	10	9.3	21.11	0.215	7.95	89	8.22	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	14*	10	13.7	21.08	0.215	7.91	89	8.25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	14*	10	13.7	21.08	0.215	7.91	89	8.25	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

8/17/2004	14*	10	13.7	21.08	0.215	7.91	89	8.25	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	14*	10	13.7	21.08	0.215	7.91	89	8.25	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	26	11	1.4	23.33	0.205	11.33	133	8.87	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	26	11	1.4	23.33	0.205	11.33	133	8.87	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	26	11	1.4	23.33	0.205	11.33	133	8.87	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	26	11	1.4	23.33	0.205	11.33	133	8.87	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	25	11	3.3	22.38	0.209	10.32	119	8.67	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
8/17/2004	25	11	3.3	22.38	0.209	10.32	119	8.67	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	25	11	3.3	22.38	0.209	10.32	119	8.67	3	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
8/17/2004	25	11	3.3	22.38	0.209	10.32	119	8.67	4	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	24	11	5.8	21.52	0.211	8.87	101	8.44	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	24	11	5.8	21.52	0.211	8.87	101	8.44	2	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	24	11	5.8	21.52	0.211	8.87	101	8.44	3	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0
8/17/2004	24	11	5.8	21.52	0.211	8.87	101	8.44	4	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
8/17/2004	23	11	10.5	21.70	0.212	8.74	99	8.41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	23	11	10.5	21.70	0.212	8.74	99	8.41	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	23	11	10.5	21.70	0.212	8.74	99	8.41	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	23	11	10.5	21.70	0.212	8.74	99	8.41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	14	12	1.2	22.53	0.198	13.65	150	8.99	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	14	12	1.2	22.53	0.198	13.65	150	8.99	2	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
8/17/2004	14	12	1.2	22.53	0.198	13.65	150	8.99	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	14	12	1.2	22.53	0.198	13.65	150	8.99	4	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	13	12	2.8	21.53	0.207	11.00	125	8.73	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	13	12	2.8	21.53	0.207	11.00	125	8.73	2	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	13	12	2.8	21.53	0.207	11.00	125	8.73	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/17/2004	13	12	2.8	21.53	0.207	11.00	125	8.73	4	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	12	12	5.3	21.35	0.211	9.03	102	8.42	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	12	12	5.3	21.35	0.211	9.03	102	8.42	2	0	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0
8/17/2004	12	12	5.3	21.35	0.211	9.03	102	8.42	3	0	0	1	0	0	2	0	3	0	0	0	0	0	0	0	0
8/17/2004	12	12	5.3	21.35	0.211	9.03	102	8.42	4	0	0	1	1	0	3	0	0	0	0	0	0	0	0	0	0
8/17/2004	11	12	11.5	21.05	0.211	8.51	96	8.34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	11	12	11.5	21.05	0.211	8.51	96	8.34	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	11	12	11.5	21.05	0.211	8.51	96	8.34	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	11	12	11.5	21.05	0.211	8.51	96	8.34	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	49	13	1.3	23.20	0.200	13.31	158	9.03	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/17/2004	49	13	1.3	23.20	0.200	13.31	158	9.03	2	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0
8/17/2004	49	13	1.3	23.20	0.200	13.31	158	9.03	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
8/17/2004	49	13	1.3	23.20	0.200	13.31	158	9.03	4	0	0	0	0	0	0	1	0	0	0	0	0	4	0	0	0
8/17/2004	48	13	4.9	21.60	0.211	9.31	106	8.51	1	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0
8/17/2004	48	13	4.9	21.60	0.211	9.31	106	8.51	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	48	13	4.9	21.60	0.211	9.31	106	8.51	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	48	13	4.9	21.60	0.211	9.31	106	8.51	4	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0
8/17/2004	47	13	9.1	21.81	0.212	9.02	103	8.51	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	47	13	9.1	21.81	0.212	9.02	103	8.51	2	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
8/17/2004	47	13	9.1	21.81	0.212	9.02	103	8.51	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	47	13	9.1	21.81	0.212	9.02	103	8.51	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	46	13	13.2	21.60	0.213	9.01	102	8.46	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	46	13	13.2	21.60	0.213	9.01	102	8.46	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	46	13	13.2	21.60	0.213	9.01	102	8.46	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	46	13	13.2	21.60	0.213	9.01	102	8.46	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/17/2004	6	14	1.1	22.17	0.207	12.01	138	8.73	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

8/17/2004	6	14	1.1	22.17	0.207	12.01	138	8.73	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
8/17/2004	6	14	1.1	22.17	0.207	12.01	138	8.73	3	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0
8/17/2004	6	14	1.1	22.17	0.207	12.01	138	8.73	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	15*	14	4.9	20.92	0.212	8.59	97	8.30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	15*	14	4.9	20.92	0.212	8.59	97	8.30	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	15*	14	4.9	20.92	0.212	8.59	97	8.30	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
8/17/2004	15*	14	4.9	20.92	0.212	8.59	97	8.30	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	16*	14	7.7	21.22	0.211	9.22	104	8.39	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0
8/17/2004	16*	14	7.7	21.22	0.211	9.22	104	8.39	2	0	1	0	0	0	0	2	0	0	0	0	0	1	0	0	0
8/17/2004	16*	14	7.7	21.22	0.211	9.22	104	8.39	3	0	1	0	1	0	0	0	4	1	0	0	0	0	0	0	0
8/17/2004	16*	14	7.7	21.22	0.211	9.22	104	8.39	4	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
8/17/2004	5	14	11.1	21.44	0.210	10.18	115	8.52	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/17/2004	5	14	11.1	21.44	0.210	10.18	115	8.52	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	5	14	11.1	21.44	0.210	10.18	115	8.52	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2004	5	14	11.1	21.44	0.210	10.18	115	8.52	4	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
8/18/2004	3*	1	1.5	21.08	0.199	9.07	102	8.51	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	3*	1	1.5	21.08	0.199	9.07	102	8.51	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	3*	1	1.5	21.08	0.199	9.07	102	8.51	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	3*	1	1.5	21.08	0.199	9.07	102	8.51	4	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	23	1	3.3	20.95	0.199	8.91	100	8.47	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8/18/2004	23	1	3.3	20.95	0.199	8.91	100	8.47	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/18/2004	23	1	3.3	20.95	0.199	8.91	100	8.47	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	23	1	3.3	20.95	0.199	8.91	100	8.47	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	22	1		20.88	0.200	8.66	97	8.45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/18/2004	22	1		20.88	0.200	8.66	97	8.45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	22	1		20.88	0.200	8.66	97	8.45	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	22	1		20.88	0.200	8.66	97	8.45	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	21	1	11.2	20.86	0.199	8.71	98	8.45	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	21	1	11.2	20.86	0.199	8.71	98	8.45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	21	1	11.2	20.86	0.199	8.71	98	8.45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	21	1	11.2	20.86	0.199	8.71	98	8.45	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	27	2	1.5	20.80	0.199	8.88	99	8.53	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	27	2	1.5	20.80	0.199	8.88	99	8.53	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	27	2	1.5	20.80	0.199	8.88	99	8.53	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	27	2	1.5	20.80	0.199	8.88	99	8.53	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	25	2	4.3	21.05	0.198	9.34	105	8.59	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	25	2	4.3	21.05	0.198	9.34	105	8.59	2	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
8/18/2004	25	2	4.3	21.05	0.198	9.34	105	8.59	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	25	2	4.3	21.05	0.198	9.34	105	8.59	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	26	2	7.0	21.00	0.199	9.11	102	8.54	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0
8/18/2004	26	2	7.0	21.00	0.199	9.11	102	8.54	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	26	2	7.0	21.00	0.199	9.11	102	8.54	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	26	2	7.0	21.00	0.199	9.11	102	8.54	4	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	24	2	10.3	20.81	0.199	8.73	98	8.47	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	24	2	10.3	20.81	0.199	8.73	98	8.47	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	24	2	10.3	20.81	0.199	8.73	98	8.47	3	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	24	2	10.3	20.81	0.199	8.73	98	8.47	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	12	3	1.2	19.93	0.201	8.92	98	8.33	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	12	3	1.2	19.93	0.201	8.92	98	8.33	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/18/2004	12	3	1.2	19.93	0.201	8.92	98	8.33	3	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0

8/18/2004	12	3	1.2	19.93	0.201	8.92	98	8.33	4	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	11	3	1.9	20.07	0.201	8.89	98	8.40	1	0	0	0	0	0	1	1	0	1	0	0	0	2	0	0	0
8/18/2004	11	3	1.9	20.07	0.201	8.89	98	8.40	2	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0
8/18/2004	11	3	1.9	20.07	0.201	8.89	98	8.40	3	0	0	1	0	0	2	1	0	0	0	0	0	1	0	0	0
8/18/2004	11	3	1.9	20.07	0.201	8.89	98	8.40	4	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0
8/18/2004	8*	3	6.6	20.28	0.201	8.54	94	8.35	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	8*	3	6.6	20.28	0.201	8.54	94	8.35	2	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	8*	3	6.6	20.28	0.201	8.54	94	8.35	3	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	8*	3	6.6	20.28	0.201	8.54	94	8.35	4	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	10	3	12.2	20.67	0.199	8.64	97	8.42	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	10	3	12.2	20.67	0.199	8.64	97	8.42	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
8/18/2004	10	3	12.2	20.67	0.199	8.64	97	8.42	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	10	3	12.2	20.67	0.199	8.64	97	8.42	4	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
8/18/2004	31	4	0.7	20.74	0.200	8.97	101	8.54	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	31	4	0.7	20.74	0.200	8.97	101	8.54	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/18/2004	31	4	0.7	20.74	0.200	8.97	101	8.54	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	31	4	0.7	20.74	0.200	8.97	101	8.54	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	30	4	2.0	20.91	0.199	8.90	100	8.54	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/18/2004	30	4	2.0	20.91	0.199	8.90	100	8.54	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	30	4	2.0	20.91	0.199	8.90	100	8.54	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	30	4	2.0	20.91	0.199	8.90	100	8.54	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	29	4	7.3	20.90	0.199	8.96	100	8.54	1	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0
8/18/2004	29	4	7.3	20.90	0.199	8.96	100	8.54	2	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0	0
8/18/2004	29	4	7.3	20.90	0.199	8.96	100	8.54	3	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0
8/18/2004	29	4	7.3	20.90	0.199	8.96	100	8.54	4	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
8/18/2004	28	4	14.0	20.88	0.198	8.96	100	8.51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	28	4	14.0	20.88	0.198	8.96	100	8.51	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	28	4	14.0	20.88	0.198	8.96	100	8.51	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	28	4	14.0	20.88	0.198	8.96	100	8.51	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	20	5	0.9	19.45	0.203	8.45	92	8.30	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	20	5	0.9	19.45	0.203	8.45	92	8.30	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	20	5	0.9	19.45	0.203	8.45	92	8.30	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/18/2004	20	5	0.9	19.45	0.203	8.45	92	8.30	4	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0
8/18/2004	19	5	2.6	20.43	0.200	9.01	100	8.49	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	19	5	2.6	20.43	0.200	9.01	100	8.49	2	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	0
8/18/2004	19	5	2.6	20.43	0.200	9.01	100	8.49	3	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	19	5	2.6	20.43	0.200	9.01	100	8.49	4	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8/18/2004	18	5	7.2	20.85	0.199	8.91	100	8.49	1	0	1	2	0	0	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	18	5	7.2	20.85	0.199	8.91	100	8.49	2	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0
8/18/2004	18	5	7.2	20.85	0.199	8.91	100	8.49	3	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0
8/18/2004	18	5	7.2	20.85	0.199	8.91	100	8.49	4	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0
8/18/2004	16	5	11.3	20.83	0.199	8.73	98	8.46	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	16	5	11.3	20.83	0.199	8.73	98	8.46	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	16	5	11.3	20.83	0.199	8.73	98	8.46	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	16	5	11.3	20.83	0.199	8.73	98	8.46	4	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	37	6	8.3	20.94	0.198	9.27	104	8.53	1	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
8/18/2004	37	6	8.3	20.94	0.198	9.27	104	8.53	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	37	6	8.3	20.94	0.198	9.27	104	8.53	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/18/2004	37	6	8.3	20.94	0.198	9.27	104	8.53	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	36	6	11.8	20.88	0.198	9.14	102	8.51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	36	6	11.8	20.88	0.198	9.14	102	8.51	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

8/18/2004	36	6	11.8	20.88	0.198	9.14	102	8.51	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	36	6	11.8	20.88	0.198	9.14	102	8.51	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	13	6	1.1	19.88	0.199	9.19	101	8.43	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	13	6	1.1	19.88	0.199	9.19	101	8.43	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	13	6	1.1	19.88	0.199	9.19	101	8.43	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	13	6	1.1	19.88	0.199	9.19	101	8.43	4	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
8/18/2004	15	6	3.8	20.24	0.199	9.03	100	8.48	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	15	6	3.8	20.24	0.199	9.03	100	8.48	2	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0
8/18/2004	15	6	3.8	20.24	0.199	9.03	100	8.48	3	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	15	6	3.8	20.24	0.199	9.03	100	8.48	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/18/2004	14	7	7.2	20.75	0.199	8.78	98	8.45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	14	7	7.2	20.75	0.199	8.78	98	8.45	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	14	7	7.2	20.75	0.199	8.78	98	8.45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	14	7	7.2	20.75	0.199	8.78	98	8.45	4	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
8/18/2004	13*	7	11.9	20.79	0.199	8.77	98	8.46	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	13*	7	11.9	20.79	0.199	8.77	98	8.46	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	13*	7	11.9	20.79	0.199	8.77	98	8.46	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	13*	7	11.9	20.79	0.199	8.77	98	8.46	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	35	7	1.0	21.34	0.194	10.47		8.71	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
8/18/2004	35	7	1.0	21.34	0.194	10.47		8.71	2	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
8/18/2004	35	7	1.0	21.34	0.194	10.47		8.71	3	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
8/18/2004	35	7	1.0	21.34	0.194	10.47		8.71	4	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/18/2004	34	7	5.1	21.11	0.197	9.77	110	8.62	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	34	7	5.1	21.11	0.197	9.77	110	8.62	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/18/2004	34	7	5.1	21.11	0.197	9.77	110	8.62	3	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	34	7	5.1	21.11	0.197	9.77	110	8.62	4	0	0	1	1	1	0	1	0	0	0	0	0	1	0	0	0
8/18/2004	33	8	6.8	20.83	0.198	9.12	102	8.54	1	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	33	8	6.8	20.83	0.198	9.12	102	8.54	2	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0
8/18/2004	33	8	6.8	20.83	0.198	9.12	102	8.54	3	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0
8/18/2004	33	8	6.8	20.83	0.198	9.12	102	8.54	4	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	32	8	11.7	20.73	0.198	8.72	98	8.49	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	32	8	11.7	20.73	0.198	8.72	98	8.49	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	32	8	11.7	20.73	0.198	8.72	98	8.49	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	32	8	11.7	20.73	0.198	8.72	98	8.49	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	5	8	1.2						1	0	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0
8/18/2004	5	8	1.2						2	0	0	1	0	0	4	0	0	0	0	0	0	0	0	0	1
8/18/2004	5	8	1.2						3	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
8/18/2004	5	8	1.2						4	0	0	1	0	0	5	0	0	1	0	0	0	0	0	0	0
8/18/2004	4	8	4.0	19.81	0.205	6.75	74	7.94	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/18/2004	4	8	4.0	19.81	0.205	6.75	74	7.94	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	4	8	4.0	19.81	0.205	6.75	74	7.94	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	4	8	4.0	19.81	0.205	6.75	74	7.94	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
8/18/2004	3	9	7.3	20.18	0.201	7.93	88	8.23	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
8/18/2004	3	9	7.3	20.18	0.201	7.93	88	8.23	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	3	9	7.3	20.18	0.201	7.93	88	8.23	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
8/18/2004	3	9	7.3	20.18	0.201	7.93	88	8.23	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
8/18/2004	1	9	15.5	20.44	0.200	8.18	91	8.30	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	1	9	15.5	20.44	0.200	8.18	91	8.30	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	1	9	15.5	20.44	0.200	8.18	91	8.30	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	1	9	15.5	20.44	0.200	8.18	91	8.30	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	9	9	1.1	20.58	0.200	8.60	96	8.45	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

8/18/2004	9	9	1.1	20.58	0.200	8.60	96	8.45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	9	9	1.1	20.58	0.200	8.60	96	8.45	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/18/2004	9	9	1.1	20.58	0.200	8.60	96	8.45	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	8	9	2.0	20.63	0.200	8.46	96	8.45	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	8	9	2.0	20.63	0.200	8.46	96	8.45	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	8	9	2.0	20.63	0.200	8.46	96	8.45	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	8	9	2.0	20.63	0.200	8.46	96	8.45	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/18/2004	7	10	7.5	20.67	0.199	8.62	96	8.42	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	7	10	7.5	20.67	0.199	8.62	96	8.42	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	7	10	7.5	20.67	0.199	8.62	96	8.42	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	7	10	7.5	20.67	0.199	8.62	96	8.42	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	6	10	11.6	20.67	0.199	8.61	96	8.41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	6	10	11.6	20.67	0.199	8.61	96	8.41	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/18/2004	6	10	11.6	20.67	0.199	8.61	96	8.41	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2004	6	10	11.6	20.67	0.199	8.61	96	8.41	4	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
8/19/2004	28	10	1.3	19.76	0.200	7.95	87	8.22	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/19/2004	28	10	1.3	19.76	0.200	7.95	87	8.22	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8/19/2004	28	10	1.3	19.76	0.200	7.95	87	8.22	3	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
8/19/2004	28	10	1.3	19.76	0.200	7.95	87	8.22	4	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8/19/2004	27	10	3.3	19.75	0.201	7.56	82	8.10	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	27	10	3.3	19.75	0.201	7.56	82	8.10	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
8/19/2004	27	10	3.3	19.75	0.201	7.56	82	8.10	3	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	27	10	3.3	19.75	0.201	7.56	82	8.10	4	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0
8/19/2004	7*	11	7.7	19.71	0.201	7.32	80	8.04	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	7*	11	7.7	19.71	0.201	7.32	80	8.04	2	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
8/19/2004	7*	11	7.7	19.71	0.201	7.32	80	8.04	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	7*	11	7.7	19.71	0.201	7.32	80	8.04	4	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	26	11	10.0	19.71	0.201	7.32	80	8.04	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	26	11	10.0	19.71	0.201	7.32	80	8.04	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/19/2004	26	11	10.0	19.71	0.201	7.32	80	8.04	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	26	11	10.0	19.71	0.201	7.32	80	8.04	4	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	13	11	1.2	16.58	0.202	7.43	76	8.00	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
8/19/2004	13	11	1.2	16.58	0.202	7.43	76	8.00	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/19/2004	13	11	1.2	16.58	0.202	7.43	76	8.00	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/19/2004	13	11	1.2	16.58	0.202	7.43	76	8.00	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	11	11	2.7	19.61	0.201	7.31	80	8.05	1	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	11	11	2.7	19.61	0.201	7.31	80	8.05	2	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	11	11	2.7	19.61	0.201	7.31	80	8.05	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8/19/2004	11	11	2.7	19.61	0.201	7.31	80	8.05	4	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0
8/19/2004	12	12	6.4	19.81	0.201	7.02	77	8.00	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
8/19/2004	12	12	6.4	19.81	0.201	7.02	77	8.00	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
8/19/2004	12	12	6.4	19.81	0.201	7.02	77	8.00	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	12	12	6.4	19.81	0.201	7.02	77	8.00	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	10	12	11.7	19.77	0.201	7.17	78	8.01	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	10	12	11.7	19.77	0.201	7.17	78	8.01	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	10	12	11.7	19.77	0.201	7.17	78	8.01	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	10	12	11.7	19.77	0.201	7.17	78	8.01	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	21	12	1.5	17.63	0.200	8.22	86	8.35	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0
8/19/2004	21	12	1.5	17.63	0.200	8.22	86	8.35	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/19/2004	21	12	1.5	17.63	0.200	8.22	86	8.35	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0

8/19/2004	21	12	1.5	17.63	0.200	8.22	86	8.35	4	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0
8/19/2004	20	12	3.8	19.40	0.200	7.96	87	8.26	1	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	20	12	3.8	19.40	0.200	7.96	87	8.26	2	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0
8/19/2004	20	12	3.8	19.40	0.200	7.96	87	8.26	3	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0
8/19/2004	20	12	3.8	19.40	0.200	7.96	87	8.26	4	0	0	0	1	0	2	1	1	0	0	0	0	0	0	0	0
8/19/2004	19	13	7.7	19.65	0.200	7.58	83	8.17	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/19/2004	19	13	7.7	19.65	0.200	7.58	83	8.17	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	19	13	7.7	19.65	0.200	7.58	83	8.17	3	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	19	13	7.7	19.65	0.200	7.58	83	8.17	4	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0
8/19/2004	18	13	12.1	19.64	0.200	7.65	84	8.19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	18	13	12.1	19.64	0.200	7.65	84	8.19	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	18	13	12.1	19.64	0.200	7.65	84	8.19	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	18	13	12.1	19.64	0.200	7.65	84	8.19	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	9*	13	1.3	16.22	0.201	8.32	84	7.88	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
8/19/2004	9*	13	1.3	16.22	0.201	8.32	84	7.88	2	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0
8/19/2004	9*	13	1.3	16.22	0.201	8.32	84	7.88	3	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
8/19/2004	9*	13	1.3	16.22	0.201	8.32	84	7.88	4	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
8/19/2004	29	13	4.5	19.13	0.199	9.09	98	8.43	1	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0
8/19/2004	29	13	4.5	19.13	0.199	9.09	98	8.43	2	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
8/19/2004	29	13	4.5	19.13	0.199	9.09	98	8.43	3	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0
8/19/2004	29	13	4.5	19.13	0.199	9.09	98	8.43	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	17	14	1.3	17.66	0.200	8.35	88	8.21	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	17	14	1.3	17.66	0.200	8.35	88	8.21	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	17	14	1.3	17.66	0.200	8.35	88	8.21	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
8/19/2004	17	14	1.3	17.66	0.200	8.35	88	8.21	4	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0
8/19/2004	16	14	3.3	19.15	0.200	7.61	82	8.12	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	16	14	3.3	19.15	0.200	7.61	82	8.12	2	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0
8/19/2004	16	14	3.3	19.15	0.200	7.61	82	8.12	3	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0
8/19/2004	16	14	3.3	19.15	0.200	7.61	82	8.12	4	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
8/19/2004	15	14	5.8	19.58	0.200	7.45	81	8.10	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	15	14	5.8	19.58	0.200	7.45	81	8.10	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
8/19/2004	15	14	5.8	19.58	0.200	7.45	81	8.10	3	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
8/19/2004	15	14	5.8	19.58	0.200	7.45	81	8.10	4	0	1	2	0	0	0	1	0	1	0	0	0	0	0	0	0
8/19/2004	14	14	13.2	19.77	0.201	7.27	80	8.07	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	14	14	13.2	19.77	0.201	7.27	80	8.07	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	14	14	13.2	19.77	0.201	7.27	80	8.07	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	14	14	13.2	19.77	0.201	7.27	80	8.07	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	10*	15	1.3	19.46	0.200	7.33	79	8.06	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	10*	15	1.3	19.46	0.200	7.33	79	8.06	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	10*	15	1.3	19.46	0.200	7.33	79	8.06	3	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0
8/19/2004	10*	15	1.3	19.46	0.200	7.33	79	8.06	4	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	3	15	2.0	19.46	0.200	7.33	79	8.06	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	3	15	2.0	19.46	0.200	7.33	79	8.06	2	0	0	0	1	1	0	1	0	0	0	0	1	1	0	1	0
8/19/2004	3	15	2.0	19.46	0.200	7.33	79	8.06	3	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0
8/19/2004	3	15	2.0	19.46	0.200	7.33	79	8.06	4	0	0	0	1	1	0	1	0	0	0	0	1	1	0	0	0
8/19/2004	2	15	5.2	19.72	0.201	7.08	77	8.01	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
8/19/2004	2	15	5.2	19.72	0.201	7.08	77	8.01	2	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0
8/19/2004	2	15	5.2	19.72	0.201	7.08	77	8.01	3	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0
8/19/2004	2	15	5.2	19.72	0.201	7.08	77	8.01	4	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0
8/19/2004	1	15	10.2	19.74	0.201	7.04	77	8.01	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	1	15	10.2	19.74	0.201	7.04	77	8.01	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

8/19/2004	1	15	10.2	19.74	0.201	7.04	77	8.01	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	1	15	10.2	19.74	0.201	7.04	77	8.01	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	11*	16	1.4	18.73	0.200	7.75	83	8.31	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	11*	16	1.4	18.73	0.200	7.75	83	8.31	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	11*	16	1.4	18.73	0.200	7.75	83	8.31	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
8/19/2004	11*	16	1.4	18.73	0.200	7.75	83	8.31	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	12*	16	1.6	18.73	0.200	7.75	83	8.31	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	12*	16	1.6	18.73	0.200	7.75	83	8.31	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
8/19/2004	12*	16	1.6	18.73	0.200	7.75	83	8.31	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	12*	16	1.6	18.73	0.200	7.75	83	8.31	4	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
8/19/2004	5	16	5.1	19.64	0.200	7.41	81	8.11	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	5	16	5.1	19.64	0.200	7.41	81	8.11	2	0	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	5	16	5.1	19.64	0.200	7.41	81	8.11	3	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	5	16	5.1	19.64	0.200	7.41	81	8.11	4	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
8/19/2004	4	16	10.3	19.78	0.200	7.21	79	8.05	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	4	16	10.3	19.78	0.200	7.21	79	8.05	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
8/19/2004	4	16	10.3	19.78	0.200	7.21	79	8.05	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	4	16	10.3	19.78	0.200	7.21	79	8.05	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	9	17	1.1	18.34	0.202	7.17	76	7.97	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	9	17	1.1	18.34	0.202	7.17	76	7.97	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	9	17	1.1	18.34	0.202	7.17	76	7.97	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/19/2004	9	17	1.1	18.34	0.202	7.17	76	7.97	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	8	17	3.7	19.35	0.200	6.95	76	7.98	1	0	0	0	0	0	0	1	0	2	0	0	0	2	0	0	0
8/19/2004	8	17	3.7	19.35	0.200	6.95	76	7.98	2	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0
8/19/2004	8	17	3.7	19.35	0.200	6.95	76	7.98	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	8	17	3.7	19.35	0.200	6.95	76	7.98	4	0	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0
8/19/2004	7	17	7.2	19.77	0.201	6.90	76	7.97	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
8/19/2004	7	17	7.2	19.77	0.201	6.90	76	7.97	2	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
8/19/2004	7	17	7.2	19.77	0.201	6.90	76	7.97	3	0	0	2	0	0	3	0	1	0	0	0	0	0	0	0	0
8/19/2004	7	17	7.2	19.77	0.201	6.90	76	7.97	4	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
8/19/2004	6	17	12.0	19.78	0.201	6.88	75	7.95	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	6	17	12.0	19.78	0.201	6.88	75	7.95	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	6	17	12.0	19.78	0.201	6.88	75	7.95	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	6	17	12.0	19.78	0.201	6.88	75	7.95	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	25	18	1.0	18.71	0.200	7.98	86	8.20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	25	18	1.0	18.71	0.200	7.98	86	8.20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	25	18	1.0	18.71	0.200	7.98	86	8.20	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	25	18	1.0	18.71	0.200	7.98	86	8.20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	24	18	2.9	19.68	0.200	7.86	85	8.17	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
8/19/2004	24	18	2.9	19.68	0.200	7.86	85	8.17	2	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
8/19/2004	24	18	2.9	19.68	0.200	7.86	85	8.17	3	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
8/19/2004	24	18	2.9	19.68	0.200	7.86	85	8.17	4	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0
8/19/2004	23	18	5.7	19.64	0.201	7.28	80	8.04	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0
8/19/2004	23	18	5.7	19.64	0.201	7.28	80	8.04	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/19/2004	23	18	5.7	19.64	0.201	7.28	80	8.04	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
8/19/2004	23	18	5.7	19.64	0.201	7.28	80	8.04	4	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
8/19/2004	22	18	10.6	19.65	0.201	7.18	78	8.02	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	22	18	10.6	19.65	0.201	7.18	78	8.02	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2004	22	18	10.6	19.65	0.201	7.18	78	8.02	3	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8/19/2004	22	18	10.6	19.65	0.201	7.18	78	8.02	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* point generated by GIS software, not in the field

Appendix C:
GPS Information for Sample Sites

Date	Auto ID	Transect	WGS84 lon	WGS84 lat
6/21/2004	1	18	-92.3761734	45.5013400
6/21/2004	2	18	-92.3760734	45.5013400
6/21/2004	4	18	-92.3760650	45.5012766
6/21/2004	6	18	-92.3747366	45.5061584
6/21/2004	7	19	-92.3744900	45.5064016
6/21/2004	8	19	-92.3741284	45.5064384
6/21/2004	9	19	-92.3741800	45.5064234
6/21/2004	10	19	-92.3778716	45.5095550
6/21/2004	11	29	-92.3777716	45.5096316
6/21/2004	12	29	-92.3777616	45.5097550
6/21/2004	13	29	-92.3777350	45.5098084
6/21/2004	14	29	-92.3797484	45.5155516
6/21/2004	15	9	-92.3796634	45.5155166
6/21/2004	16	9	-92.3794150	45.5155650
6/21/2004	17	9	-92.3802950	45.5218266
6/21/2004	18	15	-92.3796434	45.5218600
6/21/2004	19	15	-92.3793966	45.5217866
6/21/2004	20	15	-92.3991716	45.5325800
6/21/2004	21	6	-92.3994666	45.5326516
6/21/2004	22	6	-92.4001484	45.5326834
6/21/2004	23	6	-92.4008266	45.5326100
6/21/2004	24	6	-92.3967800	45.5273966
6/21/2004	25	27	-92.3970666	45.5271534
6/21/2004	26	27	-92.3973366	45.5267850
6/21/2004	27	27	-92.3975266	45.5265516
6/21/2004	28	27	-92.3928700	45.5224150
6/21/2004	29	7	-92.3933500	45.5220566
6/21/2004	30	7	-92.3936416	45.5218350
6/21/2004	31	7	-92.3938984	45.5216150
6/21/2004	32	7	-92.3902384	45.5202934
6/21/2004	33	16	-92.3902784	45.5199216
6/21/2004	34	16	-92.3900684	45.5194550
6/21/2004	35	16	-92.3901016	45.5190500
6/21/2004	36	16	-92.3870566	45.5180950
6/21/2004	37	28	-92.3873800	45.5181000
6/21/2004	38	28	-92.3875534	45.5179384
6/21/2004	39	28	-92.3876384	45.5178600
6/22/2004	1	13	-92.3802434	45.5279700
6/22/2004	2	13	-92.3798684	45.5278766
6/22/2004	3	13	-92.3792284	45.5278284
6/22/2004	4	13	-92.3800666	45.5279166
6/22/2004	5	5	-92.3844666	45.5322066
6/22/2004	6	5	-92.3842516	45.5323266
6/22/2004	7	5	-92.3840816	45.5323666
Date	Auto ID	Transect	WGS84 lon	WGS84 lat

6/22/2004	8	5	-92.3837784	45.5322584
6/22/2004	9	31	-92.3888550	45.5312384
6/22/2004	10	31	-92.3886866	45.5309450
6/22/2004	11	31	-92.3887100	45.5308050
6/22/2004	12	31	-92.3886234	45.5305800
6/22/2004	13	14	-92.3852016	45.5357716
6/22/2004	14	14	-92.3848200	45.5360534
6/22/2004	15	14	-92.3843034	45.5362484
6/22/2004	16	14	-92.3839084	45.5365750
6/22/2004	17	23	-92.3851300	45.5388816
6/22/2004	18	23	-92.3853000	45.5389150
6/22/2004	19	23	-92.3857816	45.5390184
6/22/2004	20	23	-92.3874650	45.5391016
6/22/2004	21	11	-92.3827366	45.5423750
6/22/2004	22	11	-92.3819466	45.5423634
6/22/2004	23	11	-92.3817566	45.5422250
6/22/2004	24	11	-92.3815700	45.5422200
6/22/2004	25	3	-92.3859316	45.5462634
6/22/2004	26	3	-92.3855016	45.5464034
6/22/2004	27	3	-92.3852316	45.5463834
6/22/2004	28	3	-92.3850950	45.5465000
6/22/2004	29	1	-92.3842700	45.5510350
6/22/2004	30	1	-92.3838766	45.5509150
6/22/2004	31	1	-92.3834850	45.5508884
6/22/2004	32	1	-92.3832716	45.5507884
6/22/2004	33	12	-92.3877984	45.5558816
6/22/2004	34	12	-92.3873466	45.5560650
6/22/2004	35	12	-92.3872584	45.5561916
6/22/2004	36	12	-92.3870266	45.5562534
6/22/2004	37	20	-92.3899816	45.5598516
6/22/2004	38	20	-92.3895650	45.5600766
6/22/2004	39	20	-92.3894134	45.5601450
6/22/2004	40	20	-92.3892916	45.5601700
6/22/2004	41	10	-92.3892916	45.5601700
6/22/2004	42	10	-92.3940184	45.5624016
6/22/2004	43	10	-92.3942900	45.5641316
6/22/2004	44	10	-92.3942650	45.5647134
6/22/2004	45	26	-92.3975434	45.5639866
6/22/2004	46	26	-92.3972566	45.5641300
6/22/2004	47	26	-92.3972666	45.5641366
6/22/2004	48	26	-92.3972084	45.5641434
6/22/2004	49	24	-92.4015884	45.5646500
6/22/2004	50	24	-92.4020984	45.5651316
6/22/2004	51	24	-92.4028266	45.5658716
6/22/2004	52	24	-92.4003150	45.5636916
Date	Auto ID	Transect	WGS84 lon	WGS84 lat
6/22/2004	53	25	-92.4015734	45.5621566
6/22/2004	54	25	-92.4018116	45.5621484

6/22/2004	55	25	-92.4021084	45.5618950
6/22/2004	56	25	-92.4023966	45.5617400
6/22/2004	57	30	-92.3983966	45.5597166
6/22/2004	58	30	-92.3986884	45.5596116
6/22/2004	59	30	-92.3991300	45.5593950
6/22/2004	60	30	-92.3995116	45.5592484
6/22/2004	61	0	-92.3996300	45.5530400
6/22/2004	62	0	-92.3996034	45.5530950
6/22/2004	63	0	-92.3996016	45.5530934
6/22/2004	64	0	-92.3997034	45.5529600
6/22/2004	65	21	-92.3953284	45.5488066
6/22/2004	66	21	-92.3954100	45.5485784
6/22/2004	67	21	-92.3955400	45.5483134
6/22/2004	68	2	-92.3922866	45.5479400
6/22/2004	69	2	-92.3922834	45.5479384
6/22/2004	70	4	-92.3941400	45.5436700
6/22/2004	71	4	-92.3944284	45.5436484
6/22/2004	72	22	-92.3977900	45.5385984
6/22/2004	73	22	-92.3982166	45.5386016
6/22/2004	74	22	-92.3986734	45.5386516
6/22/2004	75	22	-92.3991584	45.5390466
6/22/2004	76	8	-92.3862584	45.5135250
6/22/2004	77	8	-92.3866116	45.5134916
6/22/2004	78	8	-92.3868084	45.5135134
6/22/2004	79	8	-92.3869634	45.5134950
6/22/2004	80	32	-92.3839316	45.5084034
6/22/2004	81	32	-92.3839916	45.5083866
6/22/2004	82	32	-92.3839934	45.5083850
6/22/2004	83	32	-92.3841984	45.5084734
6/22/2004	84	17	-92.3814250	45.5024184
6/22/2004	85	17	-92.3815534	45.5022600
6/22/2004	86	17	-92.3815050	45.5022334
6/22/2004	87	17	-92.3817166	45.5021684
8/17/2004	1	17	-92.3814000	45.5024016
8/17/2004	2	17	-92.3816116	45.5023384
8/17/2004	3	17	-92.3814950	45.5023584
8/17/2004	4	17	-92.3817666	45.5022534
8/17/2004	5	32	-92.3839416	45.5084034
8/17/2004	6	32	-92.3841784	45.5084100
8/17/2004	7	8	-92.3862600	45.5135016
8/17/2004	8	8	-92.3865884	45.5134816
8/17/2004	9	8	-92.3867200	45.5134884
8/17/2004	10	8	-92.3869166	45.5134634
8/17/2004	11	28	-92.3870366	45.5180750
Date	Auto ID	Transect	WGS84 lon	WGS84 lat
8/17/2004	12	28	-92.3873400	45.5180450
8/17/2004	13	28	-92.3875384	45.5180034

8/17/2004	14	28	-92.3876416	45.5178916
8/17/2004	15	16	-92.3902200	45.5202116
8/17/2004	16	16	-92.3901834	45.5198816
8/17/2004	17	16	-92.3900450	45.5194516
8/17/2004	18	16	-92.3901000	45.5190550
8/17/2004	19	7	-92.3928816	45.5223666
8/17/2004	20	7	-92.3933434	45.5220234
8/17/2004	21	7	-92.3937234	45.5218784
8/17/2004	22	7	-92.3939034	45.5216566
8/17/2004	23	27	-92.3968066	45.5273616
8/17/2004	24	27	-92.3970384	45.5271366
8/17/2004	25	27	-92.3973500	45.5267934
8/17/2004	26	27	-92.3975634	45.5265666
8/17/2004	27	6	-92.3991466	45.5326300
8/17/2004	28	6	-92.3994850	45.5326534
8/17/2004	29	6	-92.4003816	45.5326650
8/17/2004	30	6	-92.4008884	45.5326100
8/17/2004	31	22	-92.3979034	45.5384650
8/17/2004	32	22	-92.3982166	45.5386016
8/17/2004	33	22	-92.3985966	45.5387200
8/17/2004	34	22	-92.3991316	45.5391434
8/17/2004	35	4	-92.3941166	45.5436100
8/17/2004	36	4	-92.3942816	45.5436784
8/17/2004	37	4	-92.3944750	45.5437284
8/17/2004	38	4	-92.3947084	45.5437584
8/17/2004	39	2	-92.3922666	45.5478834
8/17/2004	40	21	-92.3951950	45.5488050
8/17/2004	41	21	-92.3954484	45.5485800
8/17/2004	42	21	-92.3956400	45.5483066
8/17/2004	43	21	-92.3956984	45.5481616
8/17/2004	44	0	-92.3996484	45.5531116
8/17/2004	45	0	-92.3997366	45.5530834
8/17/2004	46	30	-92.3983500	45.5597184
8/17/2004	47	30	-92.3987600	45.5595900
8/17/2004	48	30	-92.3991166	45.5593984
8/17/2004	49	30	-92.3995684	45.5592866
8/17/2004	50	25	-92.4018950	45.5620466
8/17/2004	51	25	-92.4021316	45.5619300
8/17/2004	52	25	-92.4022584	45.5617650
8/18/2004	1	24	-92.4001834	45.5637316
8/18/2004	3	24	-92.4014416	45.5646816
8/18/2004	4	24	-92.4020884	45.5651550
8/18/2004	5	24	-92.4028050	45.5658266
8/18/2004	6	26	-92.3975966	45.5640000
Date	Auto ID	Transect	WGS84 lon	WGS84 lat
8/18/2004	7	26	-92.3975716	45.5640184
8/18/2004	8	26	-92.3973884	45.5641166

8/18/2004	9	26	-92.3973316	45.5642034
8/18/2004	10	10	-92.3940216	45.5624316
8/18/2004	11	10	-92.3944134	45.5641616
8/18/2004	12	10	-92.3944334	45.5647166
8/18/2004	13	20	-92.3899750	45.5598600
8/18/2004	14	20	-92.3895450	45.5600750
8/18/2004	15	20	-92.3894466	45.5601616
8/18/2004	16	12	-92.3878016	45.5558834
8/18/2004	17	12	-92.3873984	45.5560566
8/18/2004	18	12	-92.3873984	45.5560566
8/18/2004	19	12	-92.3871384	45.5561816
8/18/2004	20	12	-92.3870416	45.5562700
8/18/2004	21	1	-92.3842934	45.5510316
8/18/2004	22	1	-92.3838950	45.5509234
8/18/2004	23	1	-92.3835666	45.5507500
8/18/2004	24	3	-92.3859184	45.5462084
8/18/2004	25	3	-92.3854934	45.5464016
8/18/2004	26	3	-92.3856666	45.5463700
8/18/2004	27	3	-92.3850834	45.5464100
8/18/2004	28	11	-92.3824566	45.5423366
8/18/2004	29	11	-92.3819234	45.5423100
8/18/2004	30	11	-92.3816450	45.5423416
8/18/2004	31	11	-92.3815584	45.5423600
8/18/2004	32	23	-92.3874634	45.5391966
8/18/2004	33	23	-92.3858500	45.5390050
8/18/2004	34	23	-92.3854134	45.5389784
8/18/2004	35	23	-92.3850716	45.5388784
8/18/2004	36	14	-92.3850550	45.5356000
8/18/2004	37	14	-92.3848050	45.5359134
Date	Auto ID	Transect	WGS84 lon	WGS84 lat

8/19/2004	1	18	-92.3761734	45.5013800
8/19/2004	2	18	-92.3761634	45.5013350
8/19/2004	3	18	-92.3761184	45.5012816
8/19/2004	4	19	-92.3747200	45.5061716
8/19/2004	5	19	-92.3744184	45.5063434
8/19/2004	6	29	-92.3777884	45.5093950
8/19/2004	7	29	-92.3778234	45.5096666
8/19/2004	8	29	-92.3776916	45.5096916
8/19/2004	9	29	-92.3776016	45.5097566
8/19/2004	10	9	-92.3798716	45.5156666
8/19/2004	11	9	-92.3795816	45.5156616
8/19/2004	12	9	-92.3796700	45.5156350
8/19/2004	13	9	-92.3789200	45.5158034
8/19/2004	14	15	-92.3803150	45.5218016
8/19/2004	15	15	-92.3797900	45.5219200
8/19/2004	16	15	-92.3795716	45.5219350
8/19/2004	17	15	-92.3792300	45.5219850
8/19/2004	18	13	-92.3802334	45.5280734
8/19/2004	19	13	-92.3801566	45.5279216
8/19/2004	20	13	-92.3799034	45.5278116
8/19/2004	21	13	-92.3793234	45.5276384
8/19/2004	22	31	-92.3888816	45.5312884
8/19/2004	23	31	-92.3888334	45.5309784
8/19/2004	24	31	-92.3887434	45.5307316
8/19/2004	25	31	-92.3886466	45.5304966
8/19/2004	26	5	-92.3844834	45.5321750
8/19/2004	27	5	-92.3840900	45.5321834
8/19/2004	28	5	-92.3838884	45.5322016
8/19/2004	29	14	-92.3842066	45.5362616

Appendix D:
Macroinvertebrate Raw Data

Family	Genus (species)	6/30/04 T-1 NS	6/30/04 T-1 2'	6/30/04 T-1 4'	6/28/04 T-2 NS	6/28/04 T-2 2'	6/28/04 T-2 4'	6/28/04 T-3 NS	6/30/04 T-3 2'	6/30/04 T-3 4'	JUNE F.O.
Amphipoda	*Hyalella azteca*	52	132	262	302	152	211	47	122	9	**1**
Cambaridae	*(immature)*	1			2						**0.22**
Cambaridae	*Orconectes virilis*			7							**0.11**
Ceratopogonidae	*Probezzia*			2		2					**0.22**
Ceratopogonidae	*Bezzia*										**0**
Ceratopogonidae	*Alludomyia*										**0**
Chironomidae	*Natarsia*		5								**0.11**
Chironomidae	*Stempellinella*		9								**0.11**
Chironomidae	*Stenochironomus*		2					15	2		**0.33**
Chironomidae	*Clinotanypus*			3	5	4	2	1	4	1	**0.78**
Chironomidae	*Chironomini*			6							**0.11**
Chironomidae	*Potthastia*			5			1				**0.22**
Chironomidae	*Pagastia*			11			2				**0.22**
Chironomidae	*Orthcladiinae*			6							**0.11**
Chironomidae	*Diamesa*				17	11	18				**0.33**
Chironomidae	*Acricotopus*							4			**0.11**
Chironomidae	*Parachaetocladius*							2			**0.11**
Chironomidae	*Pseudosmittia*							1			**0.11**
Chironomidae	*Sympotthastia*								4		**0.11**
Chironomidae	*Procladius*										**0**
Coengrionidae	*Enallagma*	3		6	2	7			2		**0.56**
Coengrionidae	*Argia*		4								**0.11**
Copepoda			1	1			2				**0.33**
Cordullidae	*Epitheca*		1								**0.11**
Culicidae	*Anopheles*		1								**0.11**
Ephemerellidae	*Euryloplella*	1									**0.11**
Ephemerellidae	*Attenella*		2	8	1			2	2		**0.56**
Ephemerellidae	*Serratella*		1								**0.11**
Ephemeridae	*Hexagenia*										**0**
Glossosomatidae	*Glossosoma*							1			**0.11**
Haliplidae	*Haliplus*				3			11			**0.22**
Haliplidae	*Brychias*								2		**0.11**
Haliplidae	*Peltodyles*										**0**
Hirudinae	*Helobdella fusca*		1		3						**0.22**
Hirudinae	*Batracebdella*							2			**0.11**
Hirudinae	*Helobdella elongoata*					4					**0.11**
Hydracarina			3		1					1	**0.33**
Hydroptilidae	*Agraylea*							1			**0.11**
Imature gastropod		11	14	63	31	48	42	2	119	138	**1**
Isopoda	*Asellus*	10	31	104	6	4	17	8			**0.78**
Lepidostomatidae	*Lepidostoma*		4								**0.11**
Leptoceridae	*Mystacides*	1	7								**0.22**
Leptoceridae	*Ylodes*			25		3					**0.22**
Leptoceridae	*Triaenodes*			1	3	7	3				**0.44**
Leptoceridae	*Oecetis*			2						1	**0.22**
Leptoceridae	*Setodes*										**0**
Leptoceridae	*Nectopsyche*										**0**
Libellulidae	*Perithemus*									1	**0.11**
Limnephilidae	*Hydatophylax*		7								**0.11**
Lymnaeidae	*Fossaria*	1			5			21	15		**0.44**
Nepidae	*Ranata*										**0**
Oligochaete			6	6	1	3	4	1			**0.67**
Physidae	*Physella*	1	3	3	2	4	7	2	2		**0.89**
Polycentopodidae	*Cernotina*									1	**0.11**
Sialidae	*Sialis*		4								**0.11**
Sphaeriidae		1	2	8	5	6	3	30	24	3	**1**
Tabanidae	*Tabanus*										**0**
Tipulidae	*Limnophila*							2			**0.11**
Valvatidae	*Valvata*	1	8	5							**0.33**
Viviparidae	*Cipangopaludina*		3	4	1	3	1				**0.56**
Viviparidae	*Viviparus*				4	8	9	2	2	15	**0.67**

Family	*Genus (species)*	8/31/04 T-1 NS	8/31/04 T-1 2'	8/31/04 T-1 4'	8/31/04 T-2 NS	8/31/04 T-2 2'	8/31/04 T-2 4'	8/31/04 T-3 NS	8/31/04 T-3 2'	8/31/04 T-3 4'	AUG F.O.
Amphipoda	*Hyalella azteca*	229	56	2	22	11	34	33	88	17	**1**
Cambaridae	*(immature)*										**0**
Cambaridae	*Orconectes virilis*										**0**
Ceratopogonidae	*Probezzia*										**0**
Ceratopogonidae	*Bezzia*	1					1				**0.22**
Ceratopogonidae	*Alludomyia*							1			**0.11**
Chironomidae	*Natarsia*										**0**
Chironomidae	*Stempellinella*										**0**
Chironomidae	*Stenochironomus*										**0**
Chironomidae	*Clinotanypus*								1		**0.11**
Chironomidae	*Chironomini*										**0**
Chironomidae	*Potthastia*										**0**
Chironomidae	*Pagastia*										**0**
Chironomidae	*Orthcladiinae*										**0**
Chironomidae	*Diamesa*										**0**
Chironomidae	*Acricotopus*										**0**
Chironomidae	*Parachaetocladius*										**0**
Chironomidae	*Pseudosmittia*										**0**
Chironomidae	*Sympotthastia*								2		**0.11**
Chironomidae	*Procladius*							1			**0.11**
Coengrionidae	*Enallagma*								1	1	**0.22**
Coengrionidae	*Argia*										**0**
Copepoda											**0**
Cordullidae	*Epitheca*										**0**
Culicidae	*Anopheles*										**0**
Ephemerellidae	*Euryloplella*										**0**
Ephemerellidae	*Attenella*				1	1				2	**0.33**
Ephemerellidae	*Serratella*										**0**
Ephemeridae	*Hexagenia*							4		1	**0.22**
Glossosomatidae	*Glossosoma*										**0**
Haliplidae	*Haliplus*				6			1			**0.22**
Haliplidae	*Brychias*										**0**
Haliplidae	*Peltodyles*	1									**0.11**
Hirudinae	*Helobdella fusca*										**0**
Hirudinae	*Batracebdella*										**0**
Hirudinae	*Helobdella elongoata*				1						**0.11**
Hydracarina											**0**
Hydroptilidae	*Agraylea*										**0**
Imature gastropod		1	66	4	1	5	3	3	6	41	**1**
Isopoda	*Asellus*		1	11	4	22			8		**0.56**
Lepidostomatidae	*Lepidostoma*										**0**
Leptoceridae	*Mystacides*										**0**
Leptoceridae	*Ylodes*										**0**
Leptoceridae	*Triaenodes*		1	1							**0.22**
Leptoceridae	*Oecetis*										**0**
Leptoceridae	*Setodes*	1					2			20	**0.33**
Leptoceridae	*Nectopsyche*							2	3	21	**0.33**
Libellulidae	*Perithemus*								1		**0.11**
Limnephilidae	*Hydatophylax*										**0**
Lymnaeidae	*Fossaria*										**0**
Nepidae	*Ranata*							2			**0.11**
Oligochaete				3		2	2		4		**0.44**
Physidae	*Physella*										**0**
Polycentopodidae	*Cernotina*										**0**
Sialidae	*Sialis*					2					**0.11**
Sphaeriidae			2	2			1	5	2	6	**0.67**
Tabanidae	*Tabanus*					1					**0.11**
Tipulidae	*Limnophila*										**0**
Valvatidae	*Valvata*										**0**
Viviparidae	*Cipangopaludina*										**0**
Viviparidae	*Viviparus*			4		4	1		3	8	**0.56**