

ExponentTM

Data Documentation and Interpretation Report

Submerged Aquatic Vegetation and Fish Community Analysis

Prepared for

General Electric Company
Albany, New York

312844

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Prepared by

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ACRONYMS AND ABBREVIATIONS

BMI	benthic macroinvertebrates
CPUE	catch per unit effort
DGPS	differential global positioning system
EPA	U.S. Environmental Protection Agency
GE	General Electric Company
NYSDEC	New York State Department of Environmental Conservation
PCB	polychlorinated biphenyl
PMI	phytophilous macroinvertebrates
QEA	Quantitative Environmental Analysis
SAV	submerged aquatic vegetation
the Study Plan	<i>Ecological Value and Food Web Structure of Aquatic Vegetation Communities in the Upper Hudson River: Study Plan</i>
TOC	total organic carbon

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is conducting a remedial investigation and feasibility study for polychlorinated biphenyls (PCBs) in the Upper Hudson River, New York. A number of ecological issues will be evaluated during this process. One area of interest is to understand how PCBs accumulate in aquatic biota. General Electric Company (GE) has contracted with Quantitative Environmental Analysis (QEA) to develop a PCB fate and transport model that includes an aquatic food web component. Another area of interest is to determine what impacts removal of sediment will have on habitat used by aquatic organisms. To date, EPA has not developed site-specific information to evaluate these issues.

To address these issues, GE contracted with Exponent (formerly PTI Environmental Services) to develop and implement a field program to collect relevant site-specific data. In August 1997, a study plan entitled *Ecological Value and Food Web Structure of Aquatic Vegetation Communities of the Upper Hudson River: Study Plan* (the Study Plan) (PTI 1997b) was submitted to New York State Department of Environmental Conservation (NYSDEC) and EPA. The two primary purposes of the study were to investigate the ecological values of the submerged aquatic vegetation (SAV) beds in Thompson Island Pool and to provide site-specific data on the food web structure within Thompson Island Pool and Stillwater. This information will allow evaluation of the impacts that invasive remedial options will have on the aquatic community and to calibrate key components of the food chain model being developed by QEA. This report documents the data collected as part of the vegetation survey, fish community analysis, and the analysis of phytophilous macroinvertebrates (PMI) and benthic macroinvertebrates (BMI). Additional reports will be prepared to document other aspects of the study.

The data presented in this interim report will be used to better understand bioaccumulation processes and the differences in PCB biomagnification in different aquatic food webs. A bioaccumulation model to predict PCBs in pumpkinseed and largemouth bass in the Upper Hudson River is being developed by QEA to compare predicted levels of PCBs to actual PCB concentrations reported for those species collected by NYSDEC as part of the state PCB monitoring program in the Upper Hudson River. Differences in the ratio of PCB concentrations in largemouth bass and pumpkinseed between Thompson Island Pool and Stillwater and differences between predicted and actual PCB concentrations in fish from these two areas suggest that there may be important differences in the supporting food webs between Thompson Island Pool and Stillwater. Data describing fish feeding patterns, trophic relationships in different habitats, and differences in communities between habitats and between Thompson Island Pool and Stillwater will support refinement of the predictive models.

SAV provides habitat for invertebrates and algae consumed by fish, shelter for fish breeding and rearing, food for waterfowl, substrate stabilization, and mitigation of nutrient loading. SAV is most common in areas with low currents, fine sediments, and high organic matter. Because fine sediments typically have a higher total organic carbon (TOC) content, their PCB concentrations are generally higher on a dry-weight basis than those of coarse-grained sediments. The fine-grained sediments, especially in Thompson Island Pool, are therefore the most likely to be dredged as part of EPA's remediation approach. However, because the biological productivity, diversity, and ecological value of SAV habitats is high relative to unvegetated habitats, a remediation design that ignores the ecological value of SAV could result in adverse impacts to important species on the Upper Hudson River.

This report presents all of the results of the study that are available at this time, which include:

- The vegetation survey
- The analysis of food webs and community structure, including:
 - Locations of sampling stations as recorded by the differential global positioning system (DGPS)
 - Fish community analysis
 - Qualitative observations of BMI and PMI.

All data generated during related field activities are reported in the appendices. This report presents a brief discussion of the potential effects of dredging on the distribution and abundance of aquatic habitats in the Upper Hudson River. Additional information about the potential effects of dredging will be evaluated as part of a separate task.

AQUATIC VEGETATION SURVEY

BACKGROUND

The vegetation survey was conducted by Exponent to provide the basis for quantitative estimates of the distribution of SAV in Thompson Island Pool and determine the maximum depth of SAV occurrence in Thompson Island Pool. The survey was also conducted to provide a context in which to interpret habitat-specific observations of invertebrates and fish and to estimate the significance of these communities to the river in general. The relevant questions identified in the Study Plan address the following:

- The spatial distribution and relative density of the dominant species of aquatic vegetation
- Qualitative relationships between vegetation type, sediment characteristics, and water depth
- Representativeness of habitats at NYSDEC stations for monitoring PCB concentrations in fish
- The depth distribution of the dominant SAV species.

Sampling and analytical methods and survey results are summarized below.

METHODS

Sampling

The survey of SAV included the main channel and side channels of the Upper Hudson River from the remnant deposits upstream of Rogers Island to the Thompson Island Dam. The vegetation survey consisted of 104 lateral transects spaced approximately 100 m apart, located from the northern end of Rogers Island to approximately 500 m north of the Thompson Island Dam. The area upstream of Rogers Island was sampled differently because of limitations of sampling equipment, as described below.

Each transect was situated to be approximately perpendicular to the current. At each point along each transect, the vegetation and sediment were observed with a submerged video camera, the water depth was measured using the Hummin digital depth sounder and recorded in field logs, and the vessel position was determined and recorded using DGPS.

Details of the DGPS method for vessel positioning are included in a report by David Evans and Associates, which has been included in Appendix A.

Observations of vegetation species and density, water depth at the point the vegetation was observed, geographic position, and the characteristics of the substrate were recorded at each point along all transects. Only relative vegetation density was recorded according to visual density classes shown in Figure 1. Neither stem density nor biomass per unit area were measured during the vegetation survey. Substrate characteristics were assessed qualitatively, with sediments classified consistently according to five particle size categories: fine (less than or equal to 0.5 mm); sand (0.6–2.0 mm); gravel (2.1–15.0 mm); cobble (15–150 mm); and rock, which consisted of particles greater than 15 cm in diameter, or bedrock. The occurrence of wood was also recorded, but wood particles were not distinguished by size. The total channel width was recorded to an accuracy of 1 m (approximately 1 yd) at each transect using the Bushnell® Yardage Pro™ 400. The time of data collection was recorded at each point, and the distances to shore of the first and last points on each transect were estimated and recorded for all transects.

The original sampling design for the vegetation survey involved spacing points *evenly* along each transect and having only 10 points to a transect. This approach was used from the north end of Rogers Island to the southern end of the island and in the side channel of Rogers Island (transect numbers T1–T19). However this approach resulted in spacing points too widely, such that large areas of vegetated habitat (most common along the river margins) were not being observed, while numerous observations were made in deep areas with no vegetation. After the first half day in the field, the sampling approach was changed so that a higher density of observations would be recorded for each transect. At this time, observations were recorded every 20 ft across the entire transect for transect numbers T20–T32). This method increased the density of observations in the vegetated areas, but also resulted in many observations where there were no plants and was highly time consuming. Finally, observations on transect numbers T33–T104 were spaced 20 ft apart in waters less than or equal to 10-ft deep. One to three points per transect were observed in waters greater than 10-ft deep.

The reach from Hudson Falls to Rogers Island was not surveyed using the same methods as for the rest of Thompson Island Pool. Departure from the standard method was necessary because the DGPS did not receive a positioning signal in the area near the remnant deposits. In addition, the current in this reach was much stronger than in downstream areas. As a result, the video camera could not be positioned properly for SAV observations. Therefore, the observations of vegetation in the reach from Hudson Falls to Rogers Island were made using a hand-drawn map (Appendix A, Figure A-1) and by looking into the water without the aid of a camera. Depth and sediment characteristics were not recorded for most observations in this reach.

Analysis

Electronic DGPS files of the State plane coordinates of each point on each transect and the observations of vegetation, sediment, and depth were combined in ARC/INFO. Data were plotted to generate maps of the density and distribution of plants in the main channel of Thompson Island Pool. Display maps were created to show the distribution of vascular plants, the distribution of *Vallisneria americana*, and the distribution of algae. Any combination of observations of vegetation can be produced with the existing ARC/INFO database.

The relationship between depth and the presence or absence of vegetation was evaluated statistically. Depth is not, by itself, a truly "controlling factor" in the development of aquatic vegetation. Light availability is more likely to determine the presence or absence of plants in an aquatic system (Harley and Findlay 1994) and will correlate with depth (Sheldon and Boylen 1977). This analysis is focused on the changes in vegetation density, or its presence/absence, with depth.

Because the water fluctuated irregularly, measurements of depth recorded during the vegetation survey were relative, not absolute, depth measurements. These relative depth measurements were standardized to the annual mean depth using hydrologic data generated and maintained by the U.S. Geological Survey. There is a water stage recorder at Fort Edward that records the river's stage height every 15 minutes of every day. These data are posted on the Internet (<http://water.usgs.gov/public/realtime.html>), and summary statistics are published each year. The data providing the stage height at Fort Edward at all time intervals during the vegetation survey, August 7 through August 12, 1997, were downloaded from the Internet. The annual mean discharge for Fort Edward for the period from 1978 to 1995 was reported by USGS (1995) to be 5,095 ft³/sec. The annual mean stage height of 21.88 ft for Fort Edward was calculated from this value using a model of the relationship between stage height and discharge derived by USGS (1992). For each data point on each transect, the adjusted depth was calculated as:

$$AD = (G_{AM} - G_T) + D_T$$

where:

- AD = adjusted depth (ft)
- G_{AM} = annual mean stage height (ft)
- G_T = stage height at time T (ft)
- D_T = depth at time T (ft).

For the statistical analysis of the relationship between the presence of plants and depth, the adjusted depth was used. The possibility of a relationship between vegetation and depth was explored by plotting the frequency of observations of vascular plants at each depth represented by the data. For development of a statistical model, the vegetation density

data were represented in two ways: as a presence/absence variable and as an ordinal variable, with categories of increasing density (i.e., absent, low, medium, and high). A logistic regression was used to evaluate the relationship between the presence of vegetation and depth, regardless of vegetation density. The logistic regression models the probability that vegetation would be present at any given water depth. The form of the logistic regression equation was:

$$P(\text{Presence}) = \frac{\exp(B0+B1 \times \text{depth})}{1 + \exp(B0+B1 \times \text{depth})}$$

where:

$P(\text{Presence})$ = probability that vegetation was observed

$B0$ = model intercept

$B1$ = depth parameter

depth = adjusted water depth.

A maximum likelihood loss function was used to fit the regression model to the data. The relative contribution of any one explanatory variable to the model was evaluated by the decrease in the loss estimate when another variable was added to the model:

$$(\text{Loss}(M1) - \text{Loss}(M2)) / df$$

where:

Loss = log-likelihood loss value ("Final value or loss function" in SYSTAT output)

$M1$ = a given logistic regression model

$M2$ = model $M1$ with an additional explanatory variable

df = degrees of freedom associated with the additional variable.

The equation defines a goodness-of-fit statistic with an approximate chi-square distribution with df degrees of freedom. This statistic was compared to a chi-square critical value to test if the additional variable improved the fit of the model. For these analyses, df was equal to 1 in all cases. At 95 percent significance with 1 degree of freedom, the chi-square critical value is 3.8. When the loss function decreased by more than 3.8 with the addition of a new variable, that variable significantly improved the goodness-of-fit for that model. SYSTAT was used for all statistical analyses.

To evaluate the effect of depth on vegetation density, the distribution of observations with vegetation present was displayed in a quantile plot. The depths associated with categories of density (absent, low, medium, and high) were also plotted and overlaid in one plot to show the depth limits of each vegetation density. The influence of the sediment size

variable was evaluated by tabulating the numbers of vascular plant observations for each sediment category.

RESULTS AND DISCUSSION

All data generated for the vegetation survey are presented in Appendix A, and Figures 2 and 3 present all observation points on transects. The aquatic vascular plant species observed were *V. americana*, *Trapa natans*, *Potamogeton epihydrous*, *P. richarsonii*, *P. angustifolium*, *Elodea canadensis*, *Nymphaea odorata*, and *Najas* species. Open sediments covered with a layer of periphyton were common and were recorded generically as an "algal mat." Filamentous algae was also very common, either found growing in large isolated patches or mixed with stems of vascular plants. *V. americana* was the plant most commonly observed throughout the main channel of Thompson Island Pool. *T. natans* was the second most common because of the large patch of *T. natans* in the west channel of Griffin Island. Only one other patch of *T. natans* was observed in the Thompson Island Pool, located near the north opening of the Thompson Island navigational channel that runs on the east side of Thompson Island. *T. natans* was not generally distributed in Thompson Island Pool.

Figures 4 and 5 show the locations of vascular plant observations and the densities of the vascular plants observed, and Figures 6 and 7 show the distribution and densities of periphytic algae and filamentous algae. The distribution and density of only *V. americana* is shown in Figures 8 and 9. The distribution and densities of all vascular plants other than *V. americana* are shown in Figures 10 and 11, illustrating the relatively low abundance of species other than *V. americana* in Thompson Island Pool.

Histograms showing the numbers and percent of observation points at which vascular plants were present provide a simple illustration of the relationship between mean annual water depth at a station and the presence or absence of vascular plants. Figure 12 shows the total number of observations at each 0.5-ft depth interval and the numbers of observations of plant occurrence at each interval. Because the number of observations differed among depths, the frequency of plant presence was normalized to the number of observations at each depth, resulting in the depth distribution expressed as percentages in Figure 13. When the observations at which plants were present are considered as a percentage of all observations at a given depth interval (Figure 13), the analysis shows that vascular plants were present at 50 percent or more of the observations of 0.5–7.5 ft adjusted depth. Vascular plants most often occurred at less than 7.5 ft adjusted depth and were only rarely present at depths greater than 9 ft (adjusted depth). The apparently high percentage of vegetation presence at intervals 17 and 22.5 in Figure 13 reflects the low number of total observations at these depths. Vegetation observed at depths greater than 13 ft was consistently very low density (e.g., one stem).

The logistic regression, which considers both observations of presence and absence of vegetation, suggests that water depth affects vegetation presence ($P < 0.05$; Table B-1 and

Figure 14). The logistic regression equation can be used to predict the probability that vegetation will be present at a given depth (Table 1). For example, at depths greater than 15 ft, the probability that vegetation will occur is ≤ 5 percent. The quantile plot of the distribution of each relative density of vegetation against depth (Figure 15) shows that the density of vegetation also changes with increasing depth, with only low density vegetation present at depths greater than about 11.5 ft adjusted depth and high density vegetation limited to adjusted depths of 9 ft or less.

Two-way classification tables of each sediment size category and each vegetation density indicate that plants were increasingly less likely to be present when larger sediment size categories or wood was present (Table 2). These tables list the number of times in the data set that each density class of plants was observed in the presence of each sediment size class. For example, in fine sediments, a high density of vegetation was present 188 times, out of a total of 1,238 observations of fine sediments. In only 12 observations of high plant density fine sediments were not observed. In total, 543 of 1,238 (44 percent) observations in which fine sediments were present, plants were also present. In contrast, a high density of plants was present in only 13 out of 289 (4 percent) observations in which cobble was present.

On the basis of the two-way classification tables, it would be expected that sediment size would be predictive of the presence/absence or density of vegetation. However, the predictive contributions of the sediment size variables to the logistic regression model could not be assessed because the resultant models were highly unstable. The instability of models in which sediment size was considered was due to the high degree of correlation between sediment size classes (Table 3). Nonetheless, the two-way classification tables show that fine sediments supported plant assemblages more often than any other sediment type and that plants occurred in the presence of all substrate sizes and types at least occasionally.

Additional analysis of this data will be preferred to determine if river flow velocity at a given location, which may correlate to grain size and sediment type, correlates to the occurrence of vegetation.

FOOD WEB ANALYSIS AND COMMUNITY STRUCTURE

One objective of this study is to characterize the relative value of specific vegetated habitat types to aquatic biota such as macroinvertebrates, fish, and waterfowl. Several lines of investigation to support characterization of habitat value are discussed in the Study Plan. To conduct the investigation, it was necessary to collect replicate samples for analysis of biological parameters from habitat patches that were representative of two specific vegetated habitat types, *T. natans* and *V. americana*, and unvegetated areas. Selection of specific sampling locations that were representative of habitat conditions for collection of PMI, BMI, sediment, and fish community samples, and fish tissue samples for PCB analysis, is discussed below. Fish community characteristics and qualitative observations of BMI and PMI communities are presented in later sections.

STATION LOCATIONS

Exponent personnel visited Thompson Island Pool and Stillwater on August 13 and September 11, 1997, to select sample station locations. The second site visit included personnel from NYSDEC, the National Oceanic and Atmospheric Administration, and EPA. Representatives from these agencies were consulted to determine the locations of previous agency-sponsored fish sampling for PCB monitoring. One station in unvegetated habitat, one in *T. natans*, and one in a representative density of *V. americana* were located in northern Thompson Island Pool (away from Griffin Island), near Griffin Island, and in the vicinity of Stillwater. The only exception was that *T. natans* was absent from the northern Thompson Island Pool area. Therefore, there are only two *T. natans* stations, one in Stillwater and one in the west channel of Griffin Island. Station locations were recorded using DGPS.

The locations of each sampling station are presented in Figures 16 and 17. State plane coordinates and station names are presented in Appendix C. Station names are encoded as two letters representing the location (ST - Stillwater; GI - Griffin Island; and TI - northern Thompson Island Pool), and two letters representing the habitat type (VA - *V. americana*; TR - *T. natans*; UN - unvegetated). These stations are presented in this report to indicate the locations of sampling conducted in support of the fish community analysis (below), and will be discussed in later reports of the results of invertebrate, sediment and fish sampling for analysis of PCBs.

FISH COMMUNITY ANALYSIS

Background

The analysis of fish communities provides one of the quantitative measures of habitat value in Thompson Island Pool. Fish community data were also collected at Stillwater for comparison of fish communities between Stillwater and Thompson Island Pool, which may help explain possible differences in food web structures between these locations. Assessment of the fish community in each habitat contributes to a better understanding of the following specific issues discussed in the Study Plan:

- Ecological values associated with vegetated habitats, including relative species biomass and size composition of fishes within the major types of vegetation, between vegetated and unvegetated habitats, and between northern Thompson Island Pool, Griffin Island, and Stillwater.
- Whether the areas sampled by NYSDEC for monitoring PCBs in fish tissue are representative of other habitats and communities in Thompson Island Pool.
- Differences in biological community structure (fish and macroinvertebrates) and associated PCB pathways between dominant vegetation types.
- Potential for habitat modifications as a result of dredging and the influence of dredging on the fish communities that use vegetated habitats.

Methods

Fish communities in SAV were sampled using buoyant pop-nets (Figure 18). Six pop nets were designed and built with modifications to the design of Serafy et al. (1988). Pop nets consisted of two square frames of white polyvinyl chloride conduit that was painted black, attached to continuous, 6.35-mm nylon mesh netting (Figure 18). Pop nets were 2 m on each side and 2-m deep. The total sampling area of each pop net was 4 m². Sample volume varied depending on the depth of water at the time the net was triggered, with a maximum volume of 8 m³. The top frame of the net was made buoyant with aerosol foam, and the lower frame was weighted with a 0.95-cm steel rod and had a 35.6-cm-wide skirt surrounding the edge.

Nets were set in patches of vegetation or in unvegetated habitats with the assistance of divers. Patches were selected to represent the average density of the plant species for the general area. *T. natans* occurs almost exclusively at high densities; medium density *V. americana* was selected as the representative density of that plant species. In the set position, both frames were clasped together with a pin and collar hardware unit (or

trigger) attached to a small loop of rope, and the entire net was placed on the river bottom. The skirt was spread around the perimeter of the net to prevent the escape of any fish and to keep external vegetation from getting tangled in the net. The triggers were connected to 10.7-m black ropes that were attached to a floating buoy. In *V. americana* and in unvegetated habitat, an anchor was attached to the buoy to prevent it from floating over the top of the pop net. An anchor was unnecessary in *T. natans* because the dense floating leaves prevented the buoy from moving. These ropes were pulled to release the triggers and allow the buoyant frame to rise to the water surface. The buoyant upper frame rose at a rate of approximately 0.6 m/sec. Nets were set in the afternoon and allowed to equilibrate overnight. Triggers were released on all pop nets during the morning between 7:30 and 10:00 a.m. After the nets were triggered, the vegetation was removed. Fish samples were collected using a backpack electroshocker to shock the fish and dip nets to remove the fish from the pop net. Fish were identified to species using Smith (1985), and their weights and lengths were measured.

Consistent with the field sampling plan (PTI 1997a), pop-net sampling was conducted until three pop-net samples from representative densities of each habitat (*T. natans*, *V. americana*, and unvegetated) in each area (Thompson Island Pool, Griffin Island, and Stillwater) had been successfully obtained. If more than three pop-net samples were successfully obtained in any one habitat, only the three that were completed first chronologically (referred to below as the qualifying pop-net samples) were included in the comparisons of species richness between areas and between habitats, because species richness may be correlated with sample numbers at small sample sizes. All pop nets were considered in calculations of mean standing stock biomass. Results of all pop-net samples are reported in Appendix D. *T. natans* was sampled only at Griffin Island and Stillwater because there was insufficient *T. natans* habitat present in northern Thompson Island Pool in which to collect the full suite of samples.

Fish biomass was calculated as the sum of wet weight mass of all fish caught in each pop net. Standing stock biomass was calculated as the total fish biomass divided by the area of the pop-net frame. Catch per unit effort (CPUE) is the number of fish caught per pop net. Comparisons of these parameters between habitat types and between areas were made using the Mann-Whitney U-test.

Sampling for analysis of PCBs in tissue of largemouth bass, brown bullhead, and pumpkinseed was conducted using a boat electroshocker. The results of the PCB analyses have been presented in a separate data report (PTI 1998). However, because the boat electroshocker was able to cover large areas within specific habitats, non-target fish collected incidentally during electroshocking provide insight into the fish communities characteristic of each habitat. Incidental catch from electroshock sampling was tabulated and summarized according to feeding habits.

Results and Discussion

Comparison Between Habitats

The full results of all pop-net samples are presented in Appendix D. Table 4 is a summary of the results of the pop-net samples, grouped by habitat. Only six qualifying pop-net samples were collected in *T. natans* habitat, and nine qualifying pop-net samples were collected in each of the other two habitats. As a result, comparison of total species number between habitats is limited because total species number could be correlated with total number of samples collected. Nonetheless, it is notable that *V. americana* had the greatest species richness of all habitats, with nine species appearing in the nine qualifying pop nets. Even if only the first six chronological pop-net samples in *V. americana* are considered, the first six samples of *V. americana* still produced six species whereas the first six *T. natans* samples had four species and unvegetated habitat had two species. Pop-net samples from unvegetated habitats rarely produced fish, with seven out of nine samples in unvegetated areas producing no fish at all, and the remaining two samples producing one fish each.

The mean ($\pm$ S.D.) standing stock biomass of fish in pop-net samples in *T. natans* was 2.6 ($\pm$ 3.1) g/m² (0–8.8 g/m²), in *V. americana* was 2.5 ($\pm$ 2.9) g/m² (0–8.7 g/m²), and in unvegetated habitats was 0.1 ($\pm$ 0.2) g/m² (0–0.75 g/m²). The relatively high standing stock biomass of *V. americana* habitat as a whole can be attributed to the presence of a 27.8 g yellow bullhead in Stillwater pop net number 2 (see Table C-1). In general, the fishes caught in *V. americana* habitats were small forage fish, predominantly minnows (Cyprinidae). Mean CPUE in terms of individual fish of all species was highest in *V. americana* at 6.7 ($\pm$ 7.7) fish/sample. The second highest was in *T. natans* at 4.9 ($\pm$ 7.5) fish/sample, and the lowest was in unvegetated habitat at 0.2 ($\pm$ 0.4) fish/sample. Pairwise comparisons using the Mann-Whitney U-test showed both vegetated habitats to have significantly ($P < 0.05$) greater standing stock biomass and CPUE than unvegetated habitats, but there was no significant difference in these two parameters between the two vegetated habitats. When all sites were grouped within areas, however, CPUE and standing stock biomass may vary significantly between vegetation types, but samples sizes were too small for statistical tests.

Comparison Between Areas

The cumulative number of species in pop-net samples at Stillwater was six, and five species were present in nets at both Griffin Island and Thompson Island Pool. Species number at Griffin Island and Stillwater samples cannot be compared with those of Thompson Island Pool because only six pop-net samples (three in each of two habitats) were obtained from Thompson Island Pool. Mean CPUE for all fish was not significantly ($P < 0.05$) different between Griffin Island, Stillwater, and Thompson Island Pool at 3.9 ($\pm$ 6.8), 4.8 ($\pm$ 7.6), and 1.7 ($\pm$ 3.2), respectively. Mean ($\pm$ S.D.) standing stock biomass of fish

calculated from all pop-net samples was $1.7 (\pm 2.9) \text{ g/m}^2$ ($0-8.8 \text{ g/m}^2$) at Griffin Island and $2.2 (\pm 2.9) \text{ g/m}^2$ ($0-8.7 \text{ g/m}^2$) at Stillwater, with the Stillwater biomass value again biased by the presence of the one large yellow bullhead (Figure 19). Pairwise comparisons between areas showed a statistically significant difference in standing stock biomass only between Griffin Island and Stillwater, probably because of the yellow bullhead at Stillwater. The mean ($\pm$ S.D.) standing stock biomass in Thompson Island Pool was $0.51 (\pm 1.0) \text{ g/m}^2$ ($0-2.6 \text{ g/m}^2$), but *T. natans* habitat, which had the greatest standing stock biomass and CPUE in the other two areas, was not sampled in Thompson Island Pool. *V. americana* had the greatest standing stock biomass of habitats sampled at Stillwater and Thompson Island Pool, and *T. natans* had the greatest standing stock biomass of habitats sampled at Griffin Island.

Comparison With Other Studies

Hankin and Schmidt (1992) measured fish standing stock biomass in *T. natans* and *V. americana* in Tivoli Bay during 1991. In *V. americana* habitat, Hankin and Schmidt (1992) reported $0.3-7.1 \text{ g/m}^2$ fish standing stock biomass in pop nets, with a mean of 3.5 g/m^2 . Pelczarski (1990) reported up to 10.4 g/m^2 and a total of 10 species in *T. natans* but did not report a mean biomass. Few species caught in the present study were also observed by Hankin and Schmidt (1992) and by Pelczarski (1990), but these previous studies were conducted in tidal habitats of the lower Hudson River and differences in critical habitat factors (e.g., tidal fluctuations, presence of anadromous species) determined the fish communities observed.

Observations of the Fish Community from Electroshock Samples

In electroshock samples (Table 5), 28 species were observed in *V. americana*, 24 species were observed in *T. natans* habitat, and 15 species were observed in unvegetated areas. However, because the fishing effort was different between the three habitat types, the differences in species number could simply reflect the different amount of time spent electroshocking. Gill nets were used at Stillwater to catch fish targeted for PCB analysis; none of the gill net samples had species of fish not caught previously in electroshock samples, but larger sizes of several species were only found in gill nets. Electroshock samples of fish from *T. natans* at Stillwater were collected along the edge of the *T. natans* bed, where *V. americana* was present in medium to high densities. The particular species present in the Stillwater *T. natans* samples and the relatively high number of species there may be due to the proximity of *V. americana* habitat to the electroshock samples. As in pop-net samples, electroshock samples from *V. americana* habitat in all areas were the most species-rich among habitat types, and Stillwater was the most species-rich of the three areas, but this could be due to greater sampling effort in that area. Higher fish species richness suggests a higher degree of trophic complexity in *V. americana* habitats than in other habitats, and in Stillwater relative to other areas.

The fish observed in electroshock samples (Table 5) were classified according to feeding behavior as generally predaceous (one that consumes fish, large invertebrates, amphibians, and occasional birds and mammals), insectivorous, planktivorous, or benthivorous based on diet information provided by Smith (1985; Tables 6 and 7). Because adult fish often have a different diet than juveniles of the same species, a species was counted in all of its possible feeding groups when feeding group totals were calculated for each sampling area.

When the relative abundance of each feeding group is compared between habitats (Table 8), *V. americana* had the most consistent distribution of feeding groups between areas; planktivorous species dominated the collection, present at a rate of 33–38 percent. Planktivores were also dominant in *T. natans*, but the relative abundances of the feeding groups in *T. natans* was more dissimilar between Stillwater and Griffin Island than that of *V. americana*. Unvegetated areas had the highest relative abundance of general predators and very few benthic feeders, except in northern Thompson Island Pool. Griffin Island showed more differences in fish communities between habitats than did Stillwater. Griffin Island *T. natans* had a larger proportion of planktivores and insectivores than did Griffin Island *V. americana*, and less than 10 percent benthic feeders. Communities across habitats in Stillwater were similar, although planktivores were relatively high in unvegetated habitats and benthic feeders were scarce.

QUALITATIVE OBSERVATIONS OF BMI/PMI

The quantitative analytical results of the BMI and PMI samples are not yet available. Observations of BMI and PMI in the field include the following:

- There were fewer taxa of PMI associated with *V. americana* than with *T. natans*.
- Periphyton was common on all vegetation, but is particularly abundant on *V. americana* throughout Thompson Island Pool and seemed to be more abundant on *V. americana* than on *T. natans*.
- Dominant taxonomic groups in *V. americana* samples were molluscs, chironomids, and amphipods. Samples of PMI from *T. natans* were variable, but amphipods, molluscs, odonates, chironomids and other dipterans, hemipterans, and coleopterans were present in most samples.
- Very few benthic invertebrates were found, especially in sediments from northern Thompson Island Pool and Griffin Island. BMI included chironomids, molluscs, and oligochaetes.

The ongoing analysis of invertebrate samples includes identification and enumeration of all species present in each sample. Results are expected to be available in the first quarter of 1998 and will allow determination of food web complexity and comparisons between

habitats. Taxonomy of PMI and BMI samples, in combination with the results of the fish stomach content analyses, will also be used to interpret feeding patterns of forage fish.

INTERIM STUDY CONCLUSIONS

The information summarized in this interim data report partially addresses the potential for habitat modification as a result of dredging and the influence of dredging on the fish communities that use vegetated habitats. The results of the vegetation survey indicate that a significant area of the main channel of Thompson Island Pool is vegetated, primarily by *V. americana* and secondarily by *T. natans*. Medium to high density growth of vascular plants in Thompson Island Pool is generally restricted to waters that, on the basis of average flow conditions, are less than or equal to approximately 10 ft deep (Figure 15). Plants are found rarely and only in very low densities at depths greater than 11.5 ft.

A qualitative analysis of the relationship between the presence of SAV and sediment characteristics indicates that SAV is most commonly associated with fine sediments in Thompson Island Pool. In the river margins, where current velocities are lowest, fine sediments become deposited and remain in place because of an absence of scouring action. The river margins, which are also the shallowest part of the channel, allow for significant light penetration, creating a generally hospitable environment for aquatic plant growth. In addition, fine sediments usually have a high TOC content, and as a result are generally the most contaminated with PCBs of all sediment types in an aquatic system. These sediments, which support a large fraction of the total plant biomass observed in this study, have been the target of past dredging proposals to remove PCB-contaminated sediments from the Upper Hudson River. Because vegetation density appears to be a function of water depth, increases in water depth resulting from sediment removal will reduce the vegetation density. Based on the analysis of the presence or absence of plants as a function of water depth, deepening of the channel to greater than approximately 9–10 ft (on the basis of average flow conditions) as a result of sediment removal will result in the loss of vegetation in these areas.

Pop nets were used in this study because they provide quantitative samples of fish communities in vegetated aquatic habitats better than other fish sampling techniques (Serafy et al. 1988). Although pop-net samples do not fully describe a fish community associated with a particular habitat type, their replicability and the quantitative nature of pop-net samples allows direct comparison of fish communities between habitats, between individual pop nets, and between sampling areas. Fish communities sampled in *V. americana* habitats are the most species-rich among habitat types. On the basis of standing stock biomass and CPUE, vegetated habitats have significantly more fish than unvegetated habitats, but are not significantly different from each other when all stations for a habitat type are grouped. Differences between habitats within areas were not tested due to small sample sizes. With the level of replication in this study, the variability is high for CPUE and biomass, which is consistent with qualitative observations made during sampling and during previous studies that used the same sampling method (Hankin and Schmidt 1992). CPUE standing stock and fish species numbers in *T. natans* were comparable to those in

V. americana. Samples from unvegetated areas had very few fish, suggesting that unvegetated areas are relatively poor habitat for fish.

The communities of fish represented by the full set of pop-net samples in each area were very dissimilar with only pumpkinseed common to samples from all three areas. The differences between areas in the assemblage of species present, species richness, and biomass in quantitative (i.e., pop-net) samples, and the variation in these parameters suggests that no one area is "representative" of either of the other two with respect to the forage fish community. Moreover, on the basis of fish species number, *V. americana* may have a more complex food web, especially in Stillwater. The differences in relative abundances of feeding groups between habitats at Griffin Island indicates a high potential for variability in the food web at Griffin Island relative to Thompson Island Pool and Stillwater. Although invertebrate diversity appeared to be high in *T. natans*, suggesting longer food chains there, the variation in the relative abundance of fish feeding groups in *T. natans* makes it difficult to generalize about biomagnification potential on the basis of the existing data

Sediment removal would deepen the shallow areas that support growth of aquatic plants and increase the extent of unvegetated habitat. These results indicate that, to the extent vegetation supports more species, greater numbers, and more biomass of fish, a sediment removal program that increases water depth to greater than 10 ft (based on annual average flow) would reduce the most extensive fish habitats in Thompson Island Pool. Habitat loss would negatively impact the fish community, and the bird and mammalian predators that rely on the food web in this habitat, by reducing fish biomass and numbers of fish species for every year that the habitat is absent or poorly restored. The total fish biomass that would be lost can be estimated on the basis of the data presented in this report if the area of dredged habitat and the resulting depth are known.

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Figures

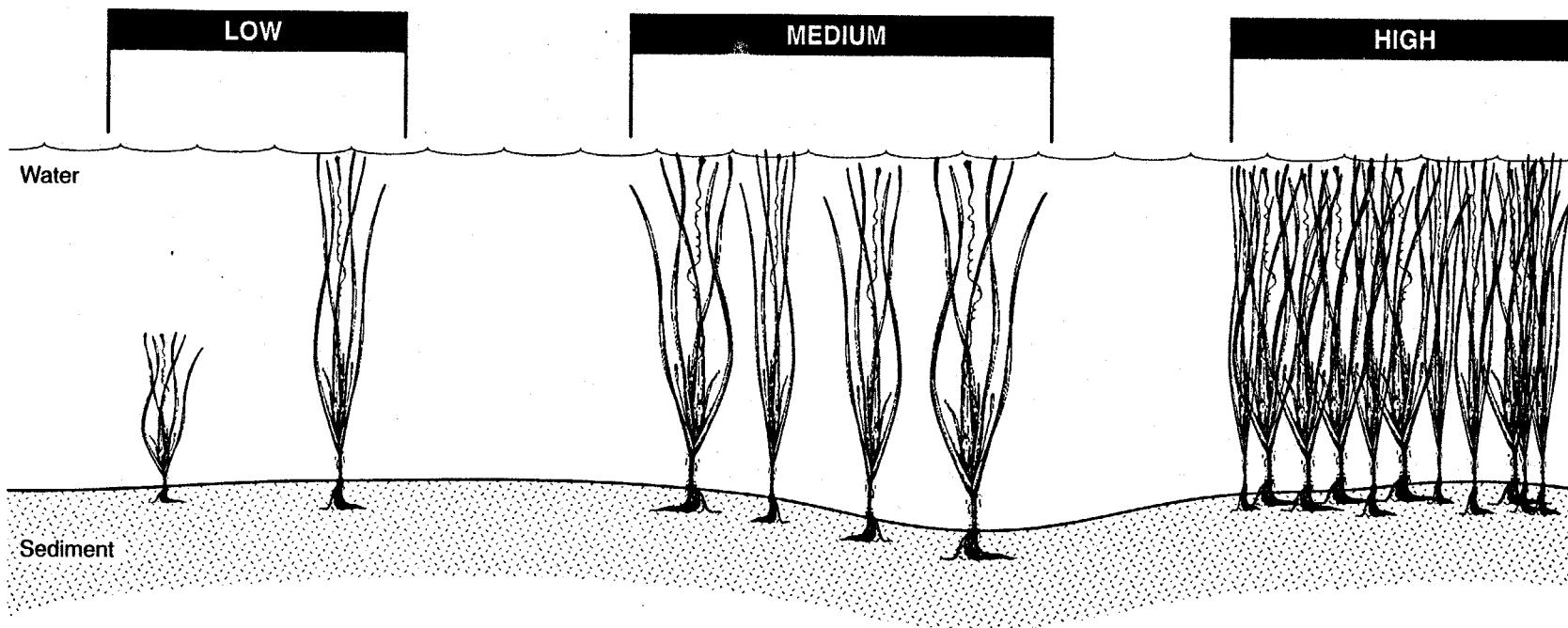
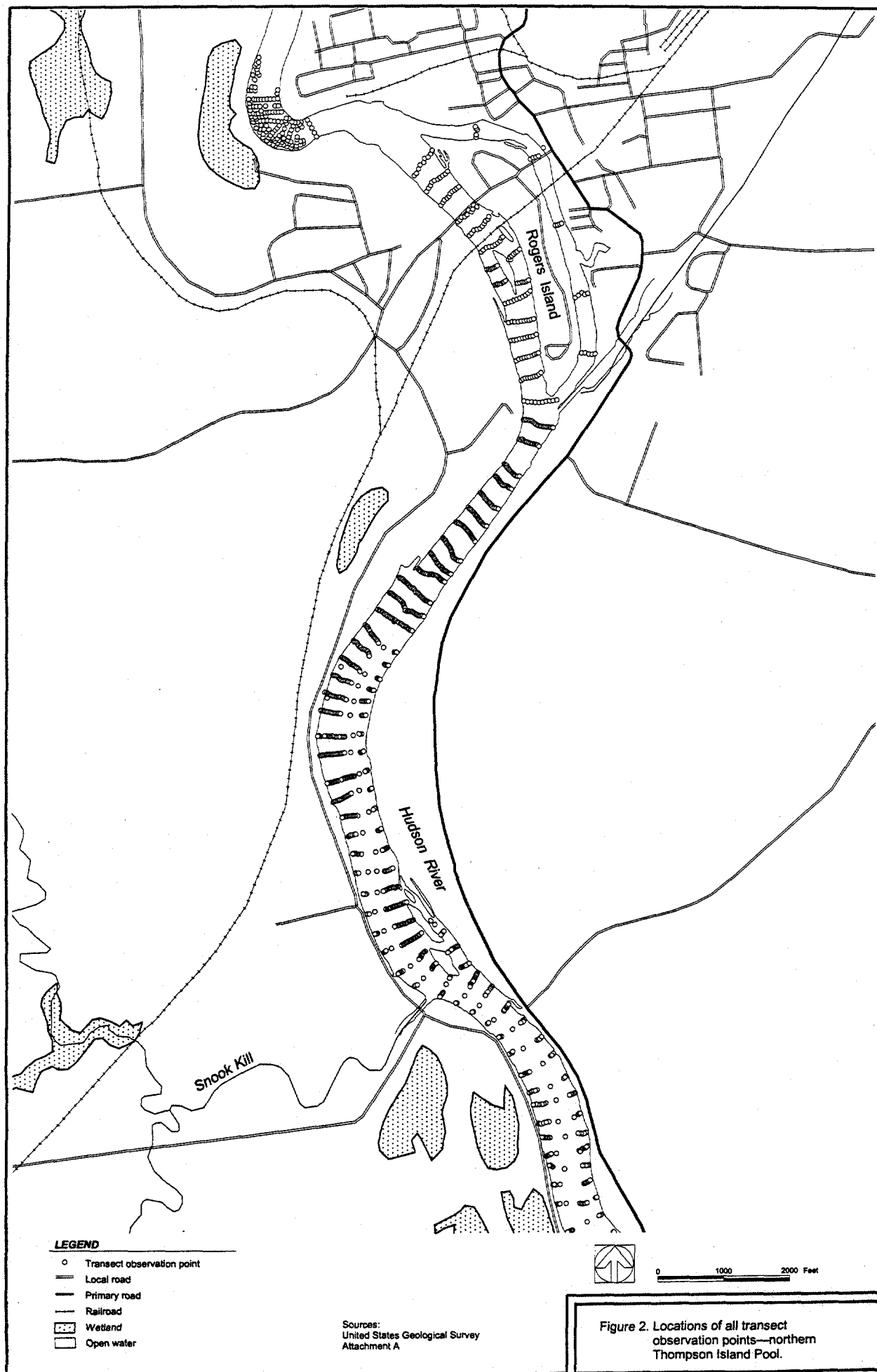
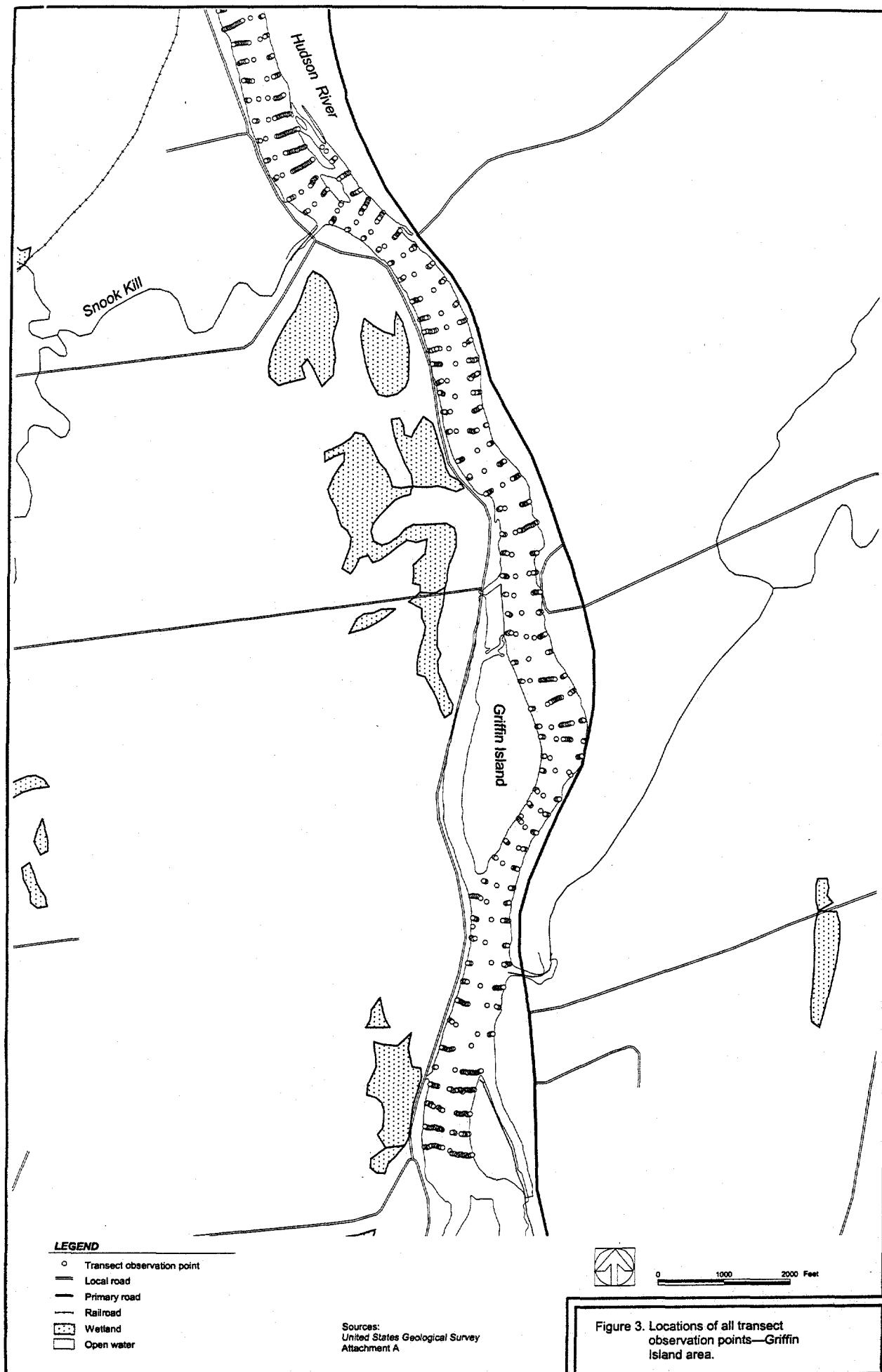
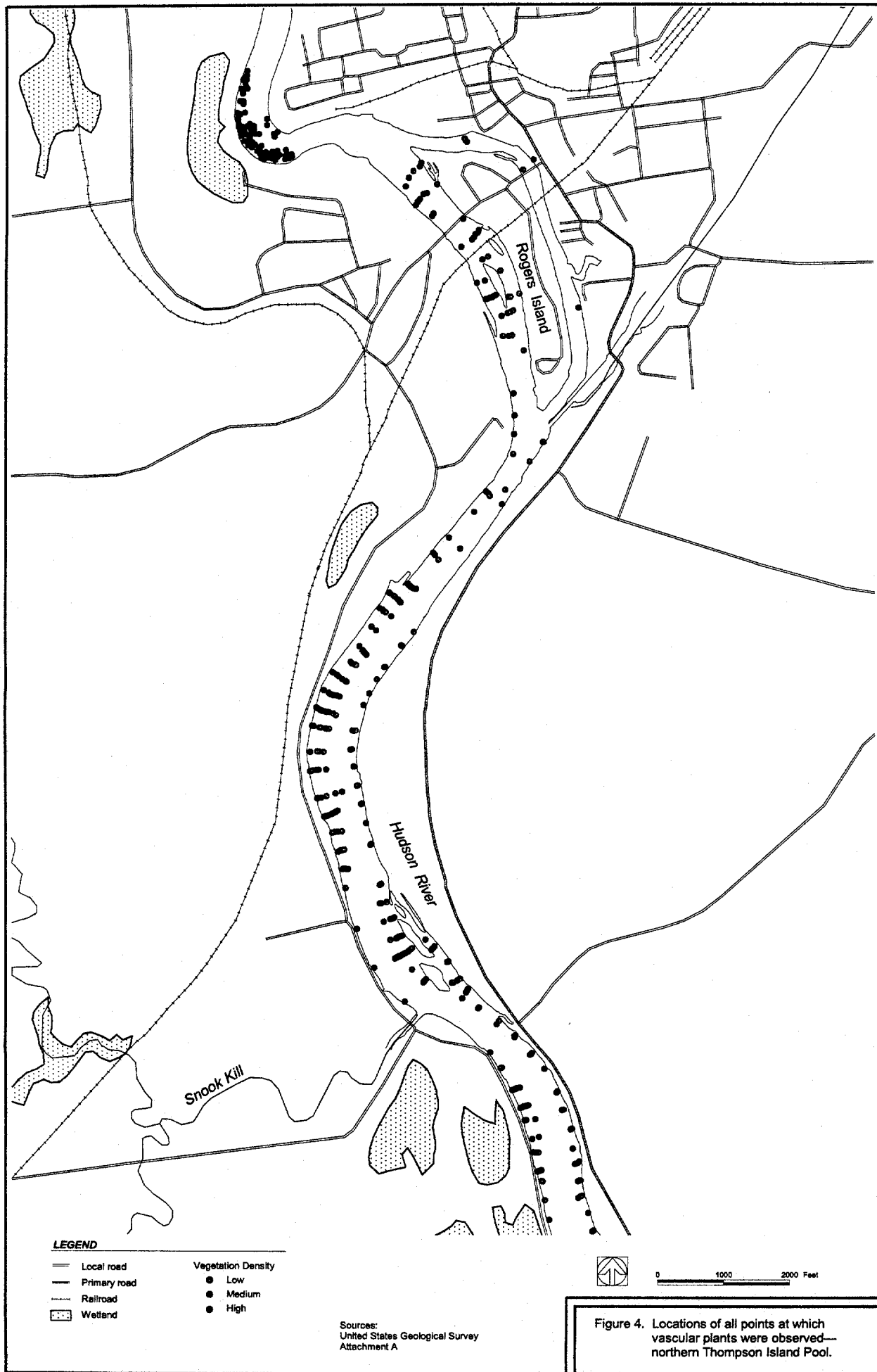


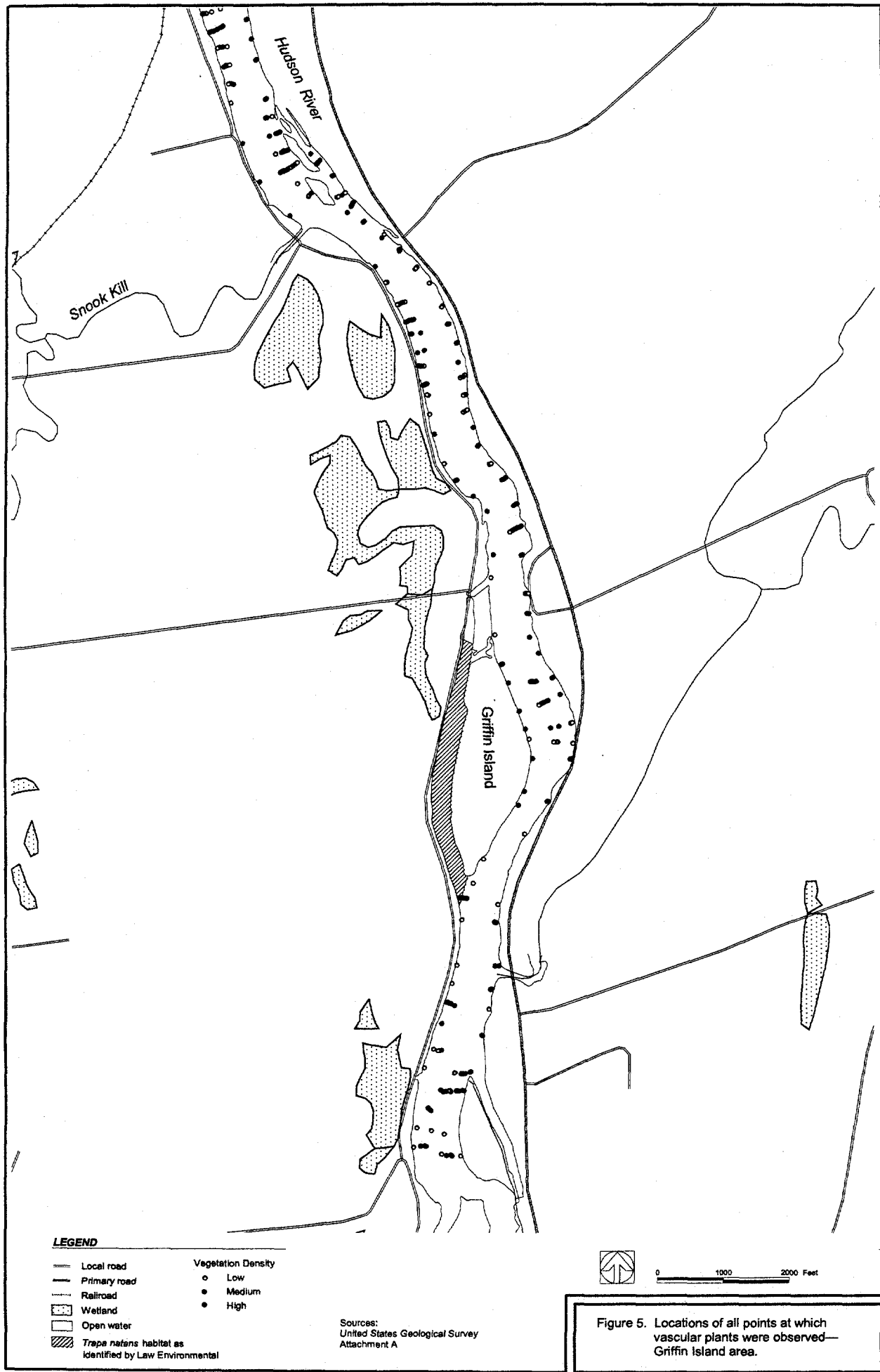
Figure 1. Illustration of low, medium, and high densities of *Vallisneria americana*.



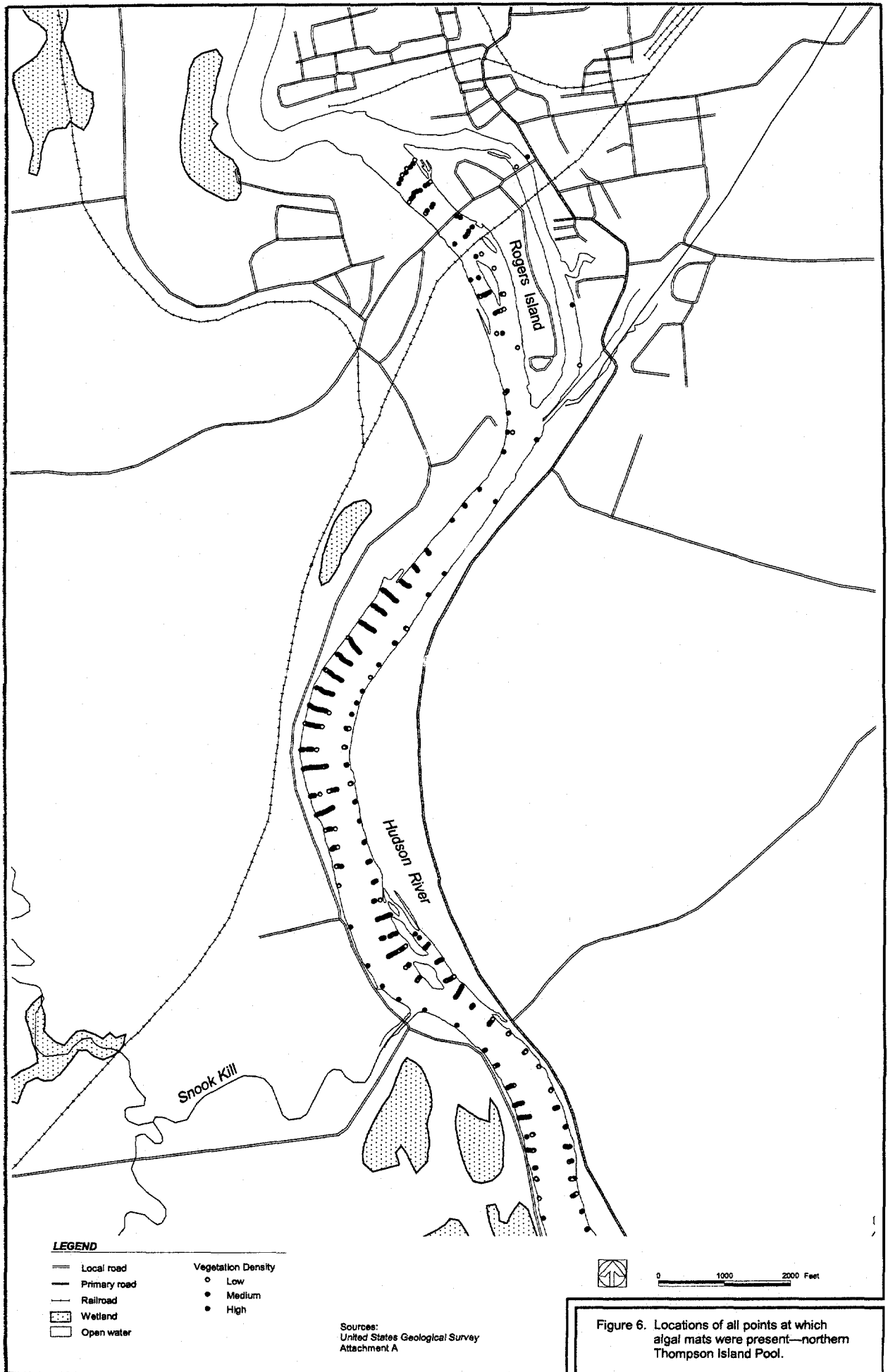


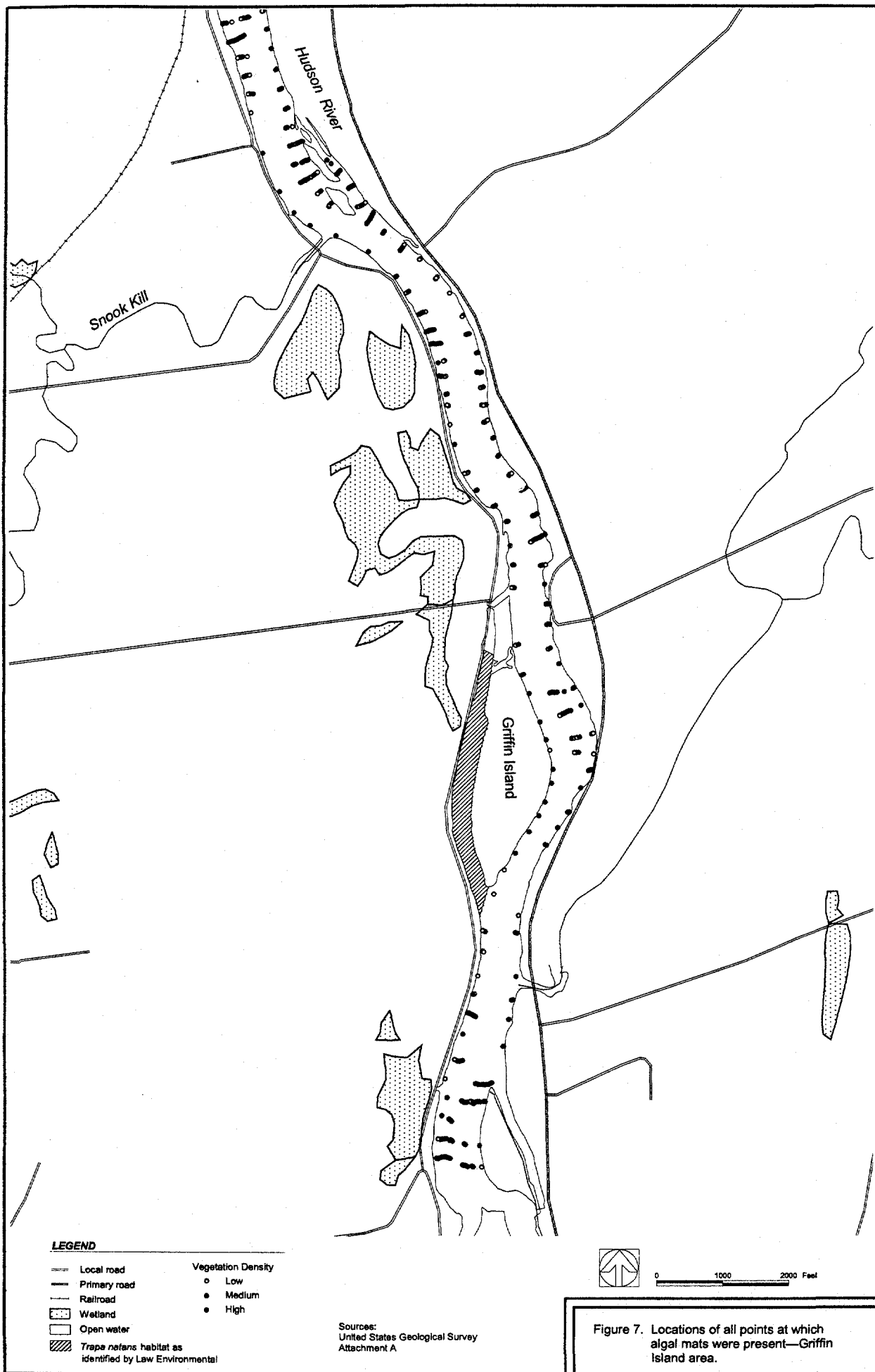
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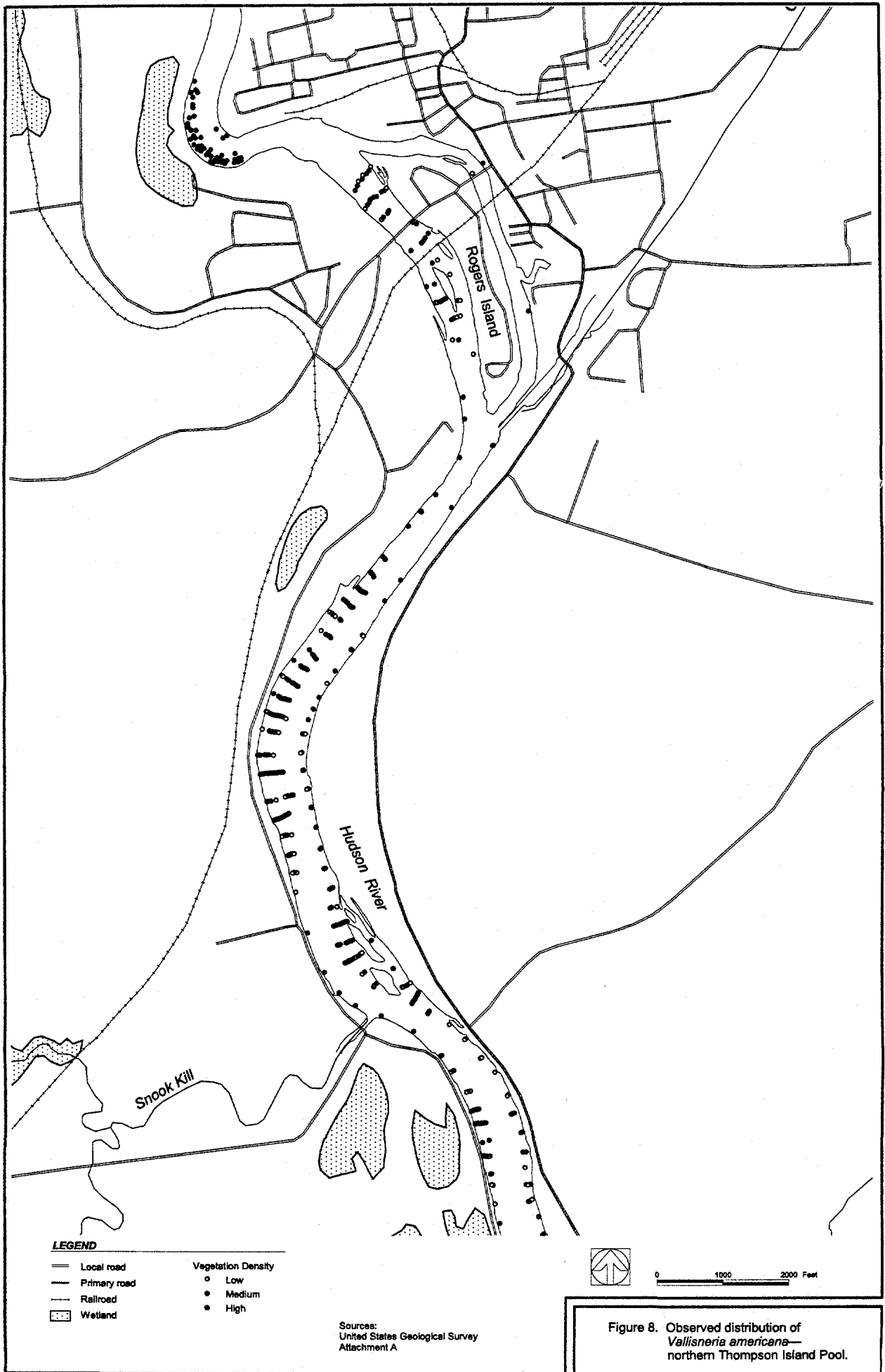


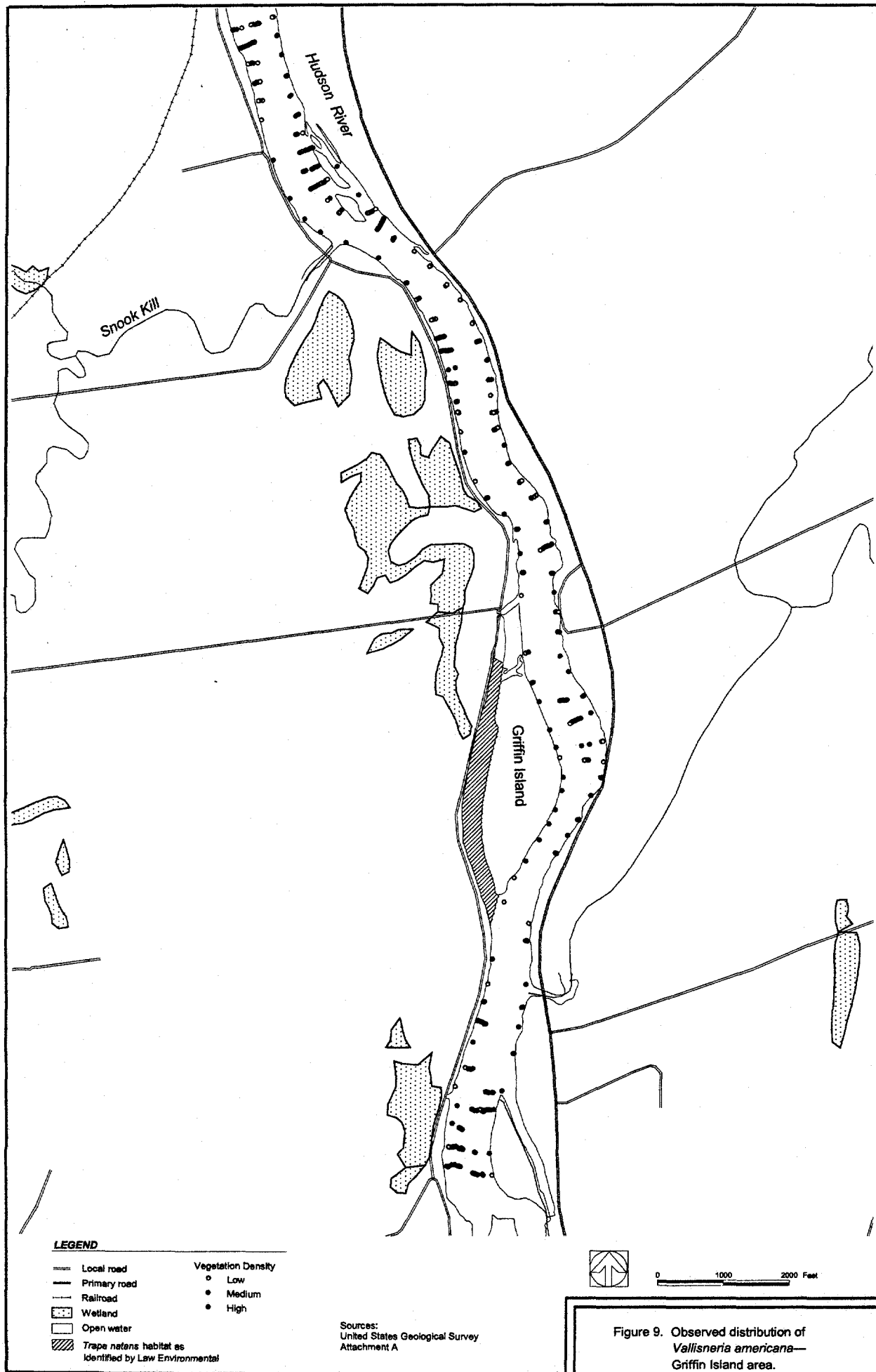


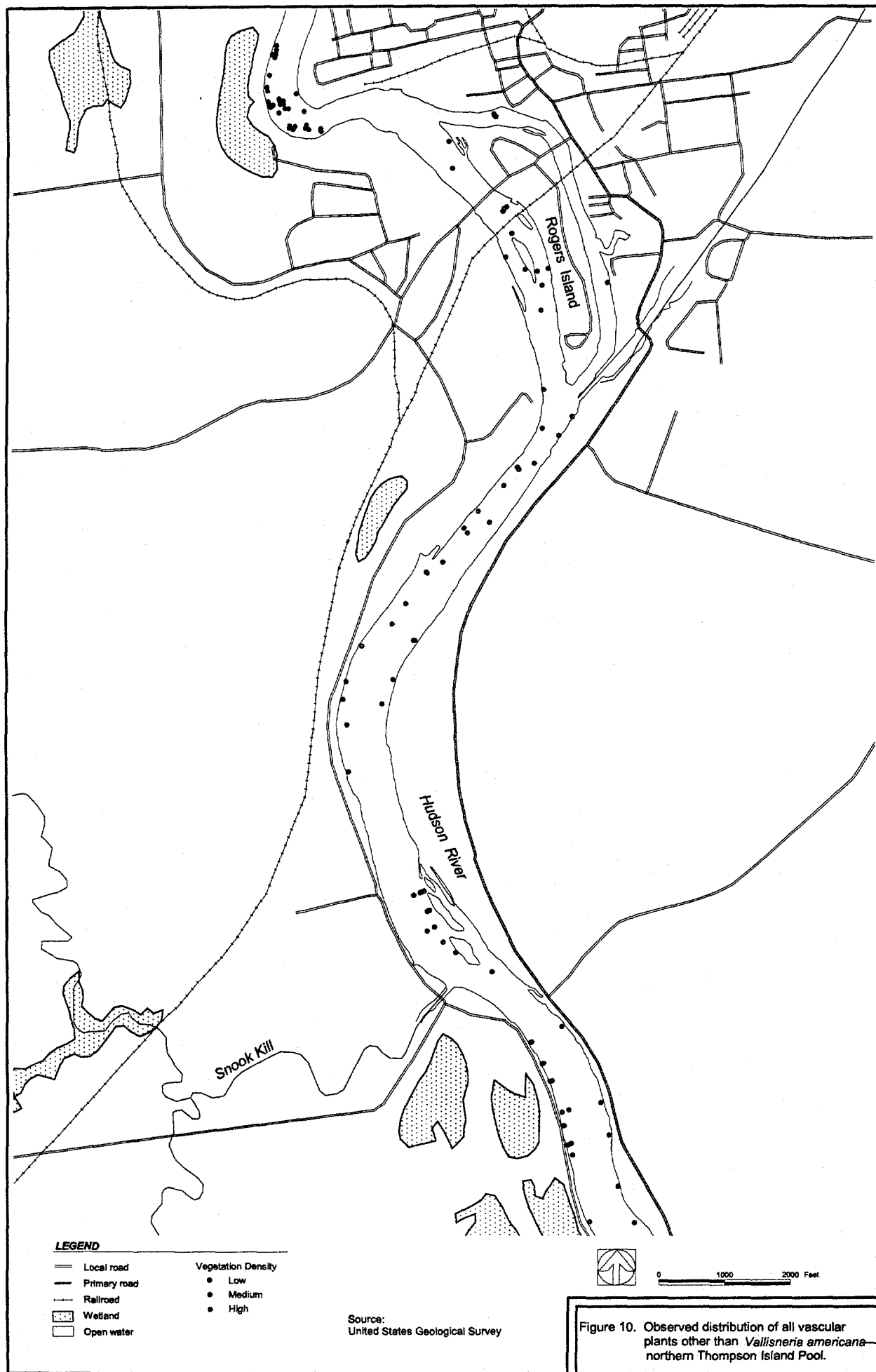
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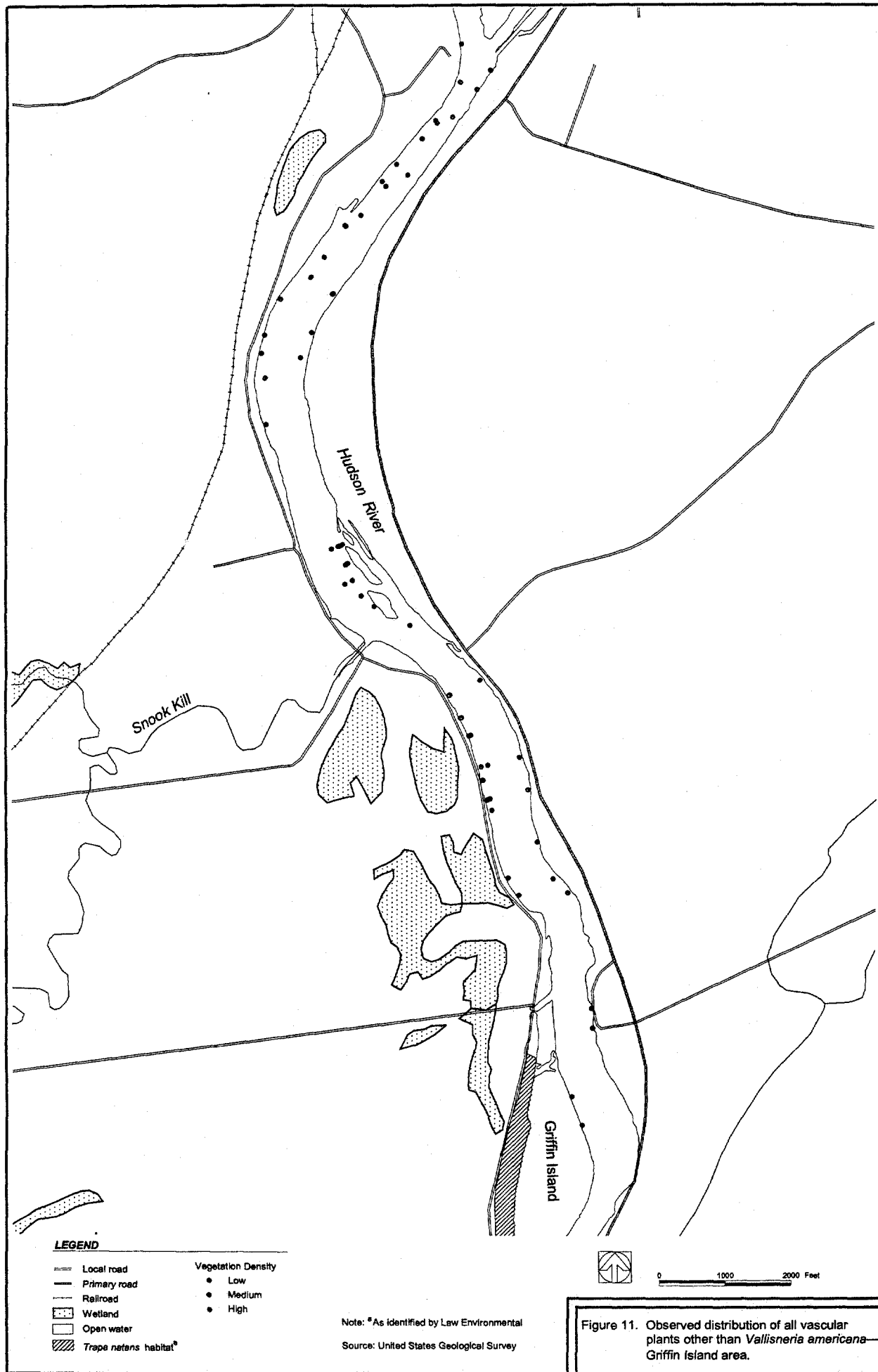


Figure 11. Observed distribution of all vascular plants other than *Vallisneria americana*—Griffin Island area.

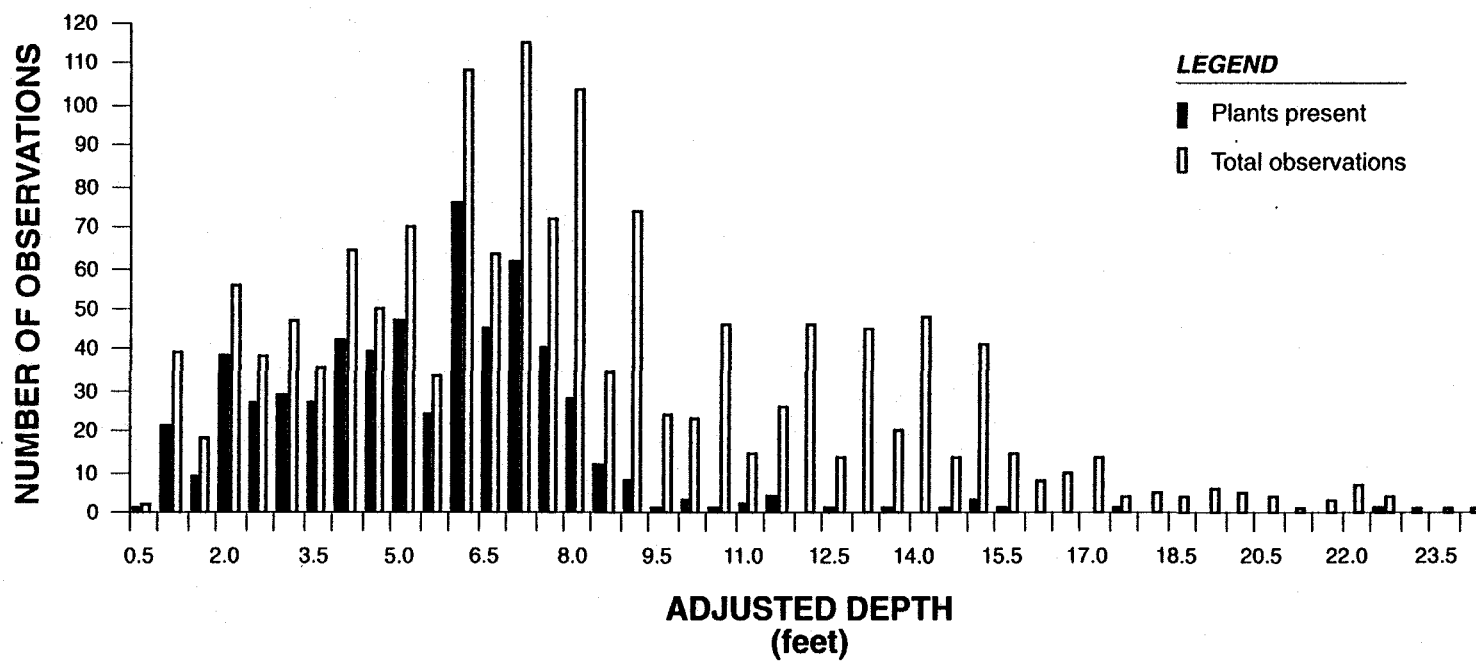
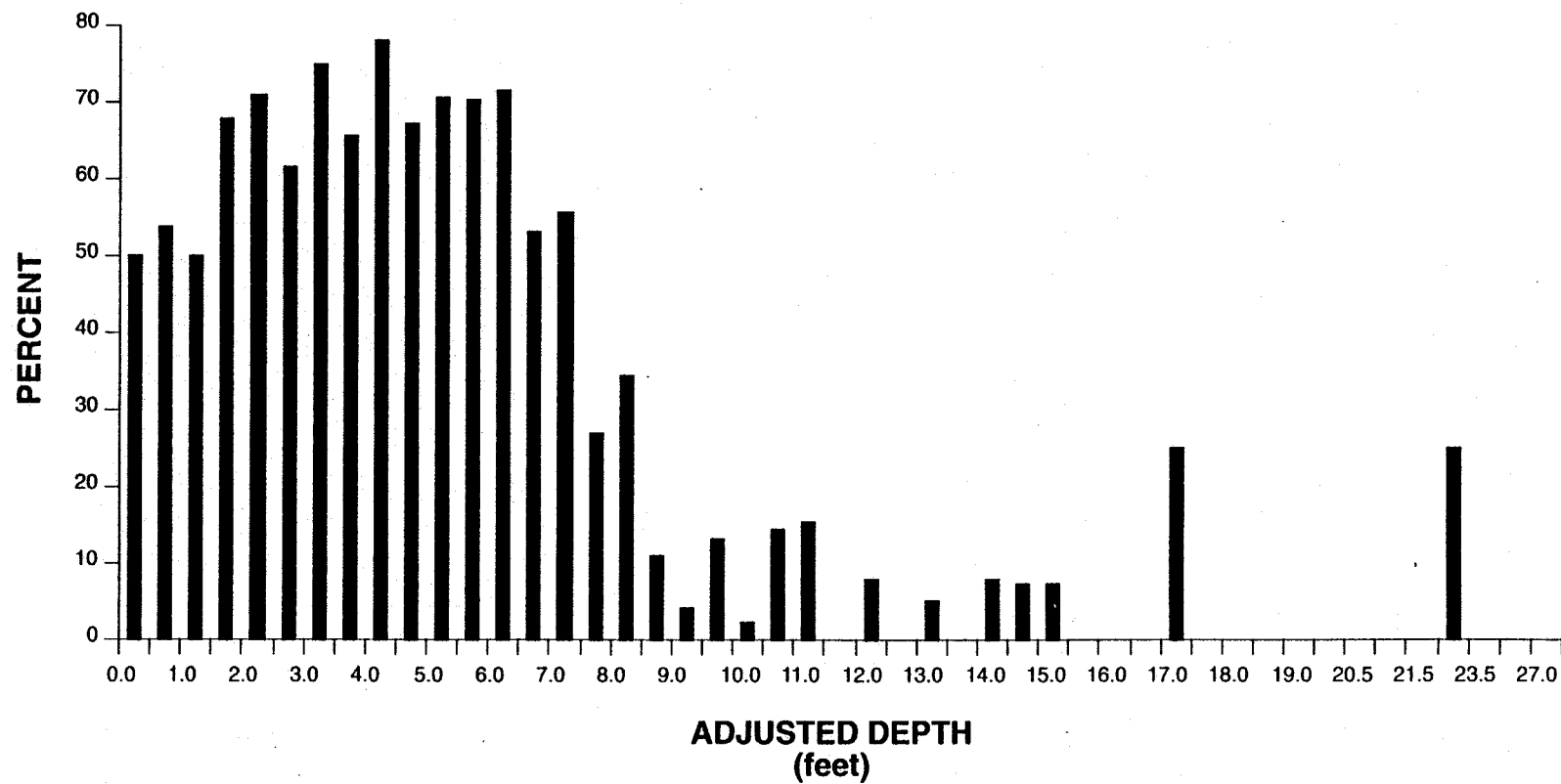
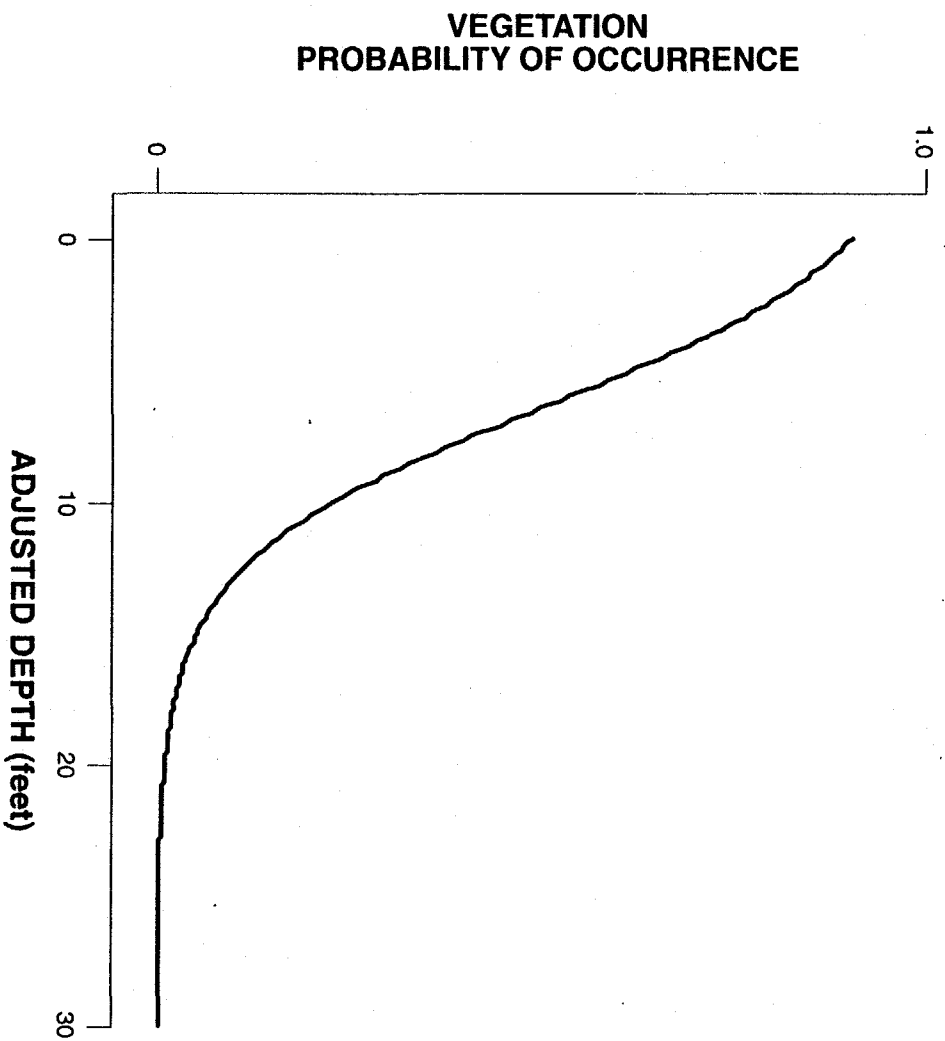


Figure 12. Frequency of observations of vascular plants.



Note: See Figure 12 for frequency of observations.

Figure 13. Percent of total observations in each depth interval at which vascular plants were present.



Note: Figure 12 presents depth frequency distributions for presence and absence of vegetation from which the logistic model above was derived.

Figure 14. The logistic regression model.

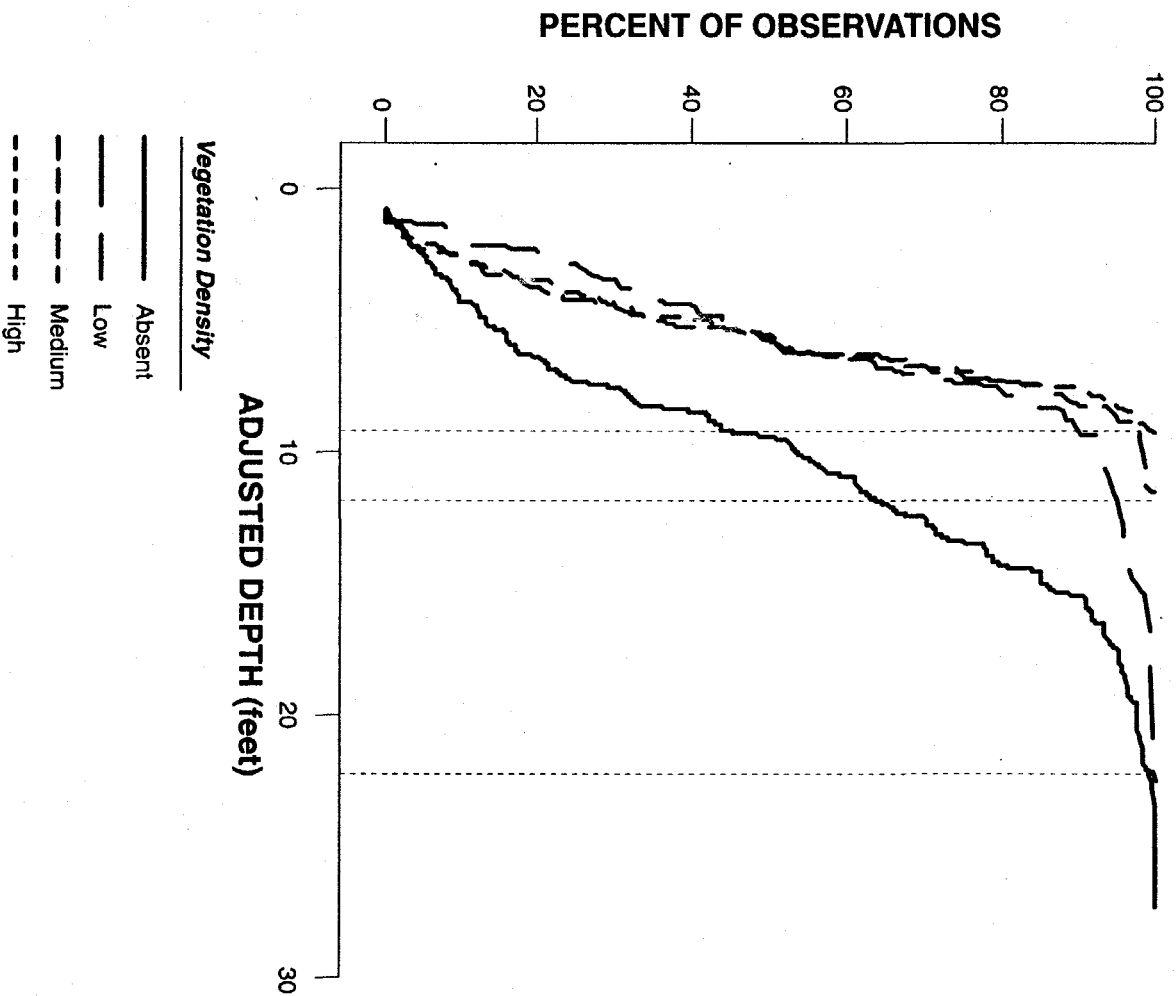
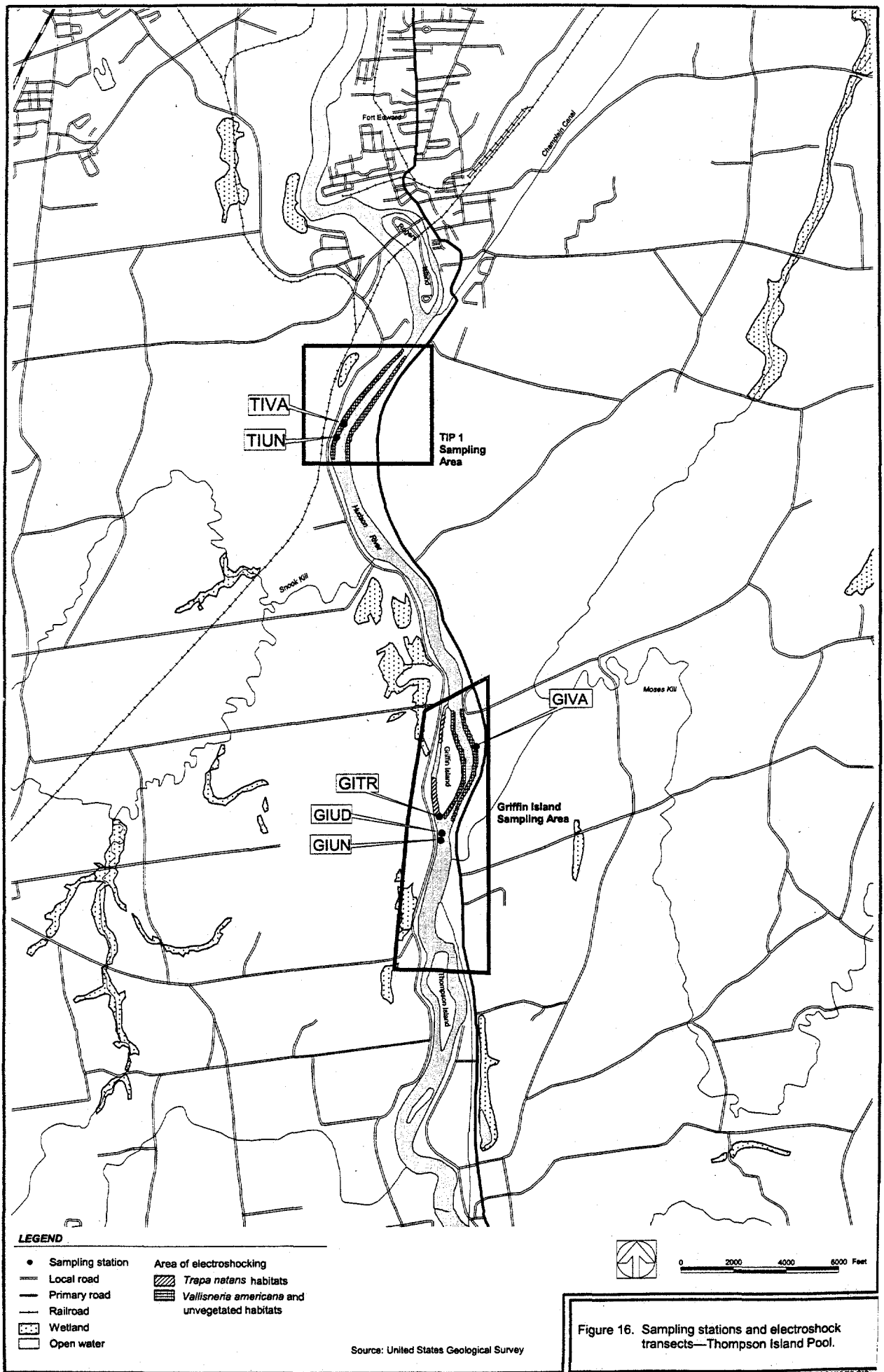
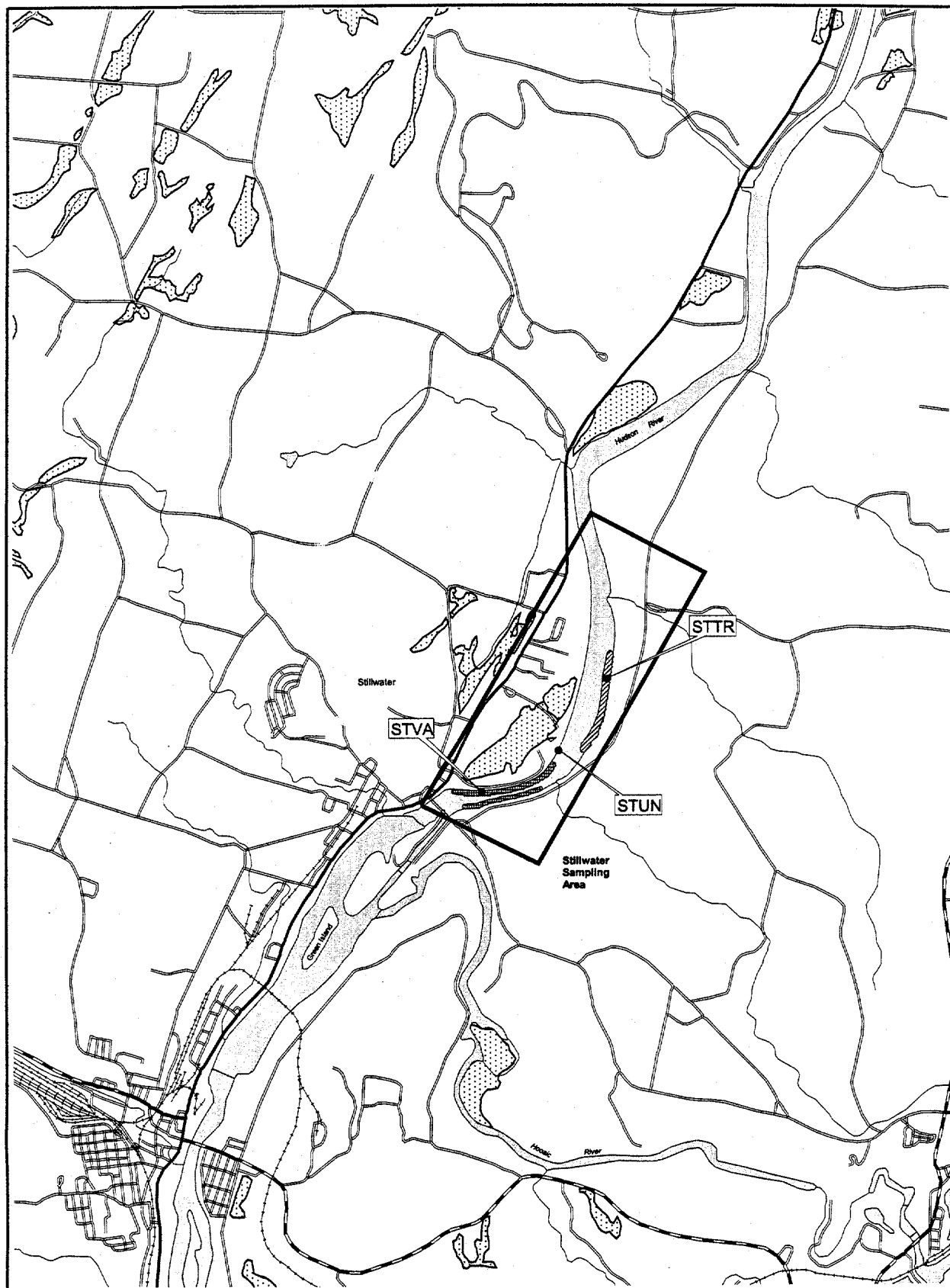


Figure 15. Quantile plot of depth observations for different vegetation densities.





LEGEND

- | | |
|--------------------|---|
| ● Sampling station | Area of electroshocking |
| — Local road | <i>Trape natans</i> habitats |
| — Primary road | <i>Vallisneria americana</i> and unvegetated habitats |
| — Railroad | |
| Wetland | |
| Open water | |



0 2000 4000 6000 Feet

Source: United States Geological Survey

Figure 17. Sampling stations and electroshock transects—Stillwater.

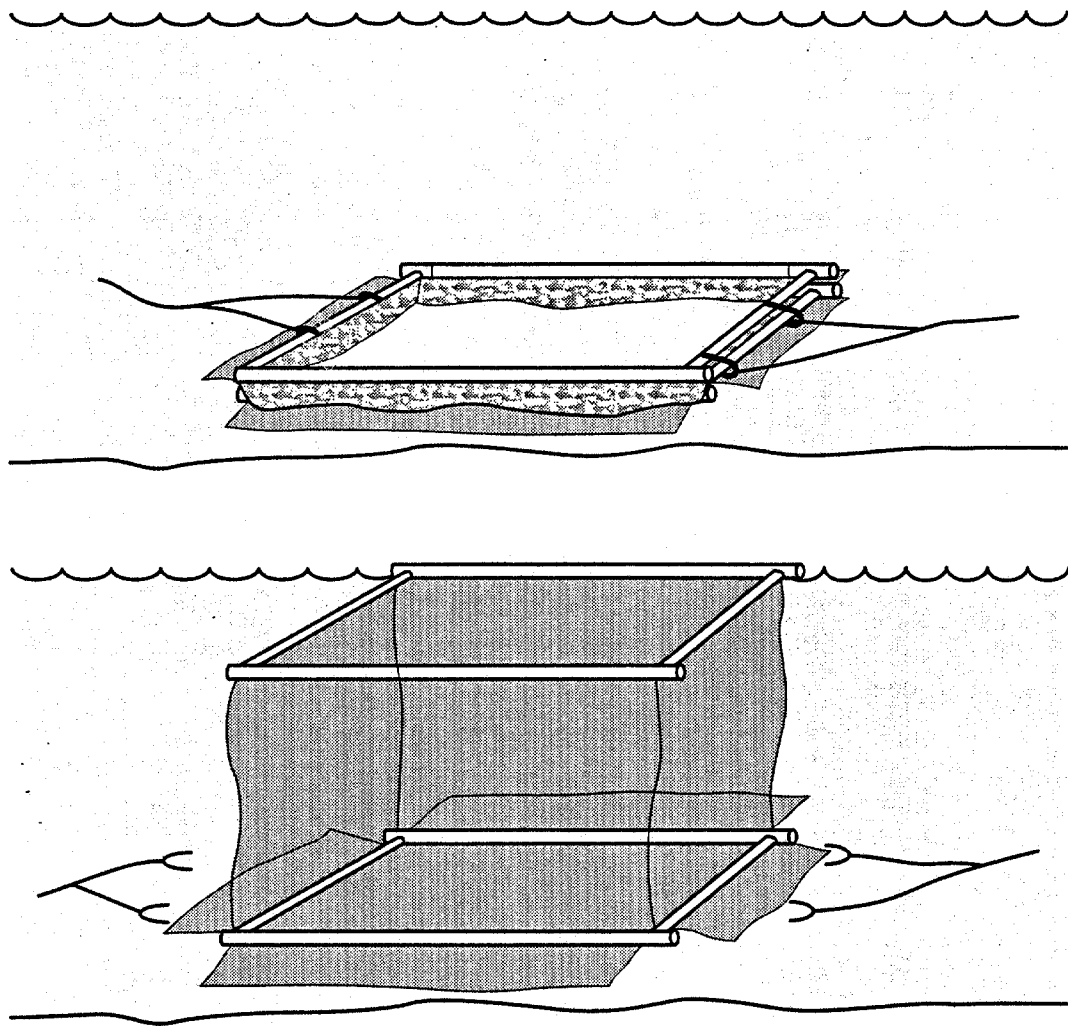


Figure 18. Pop-net for sampling fish communities.

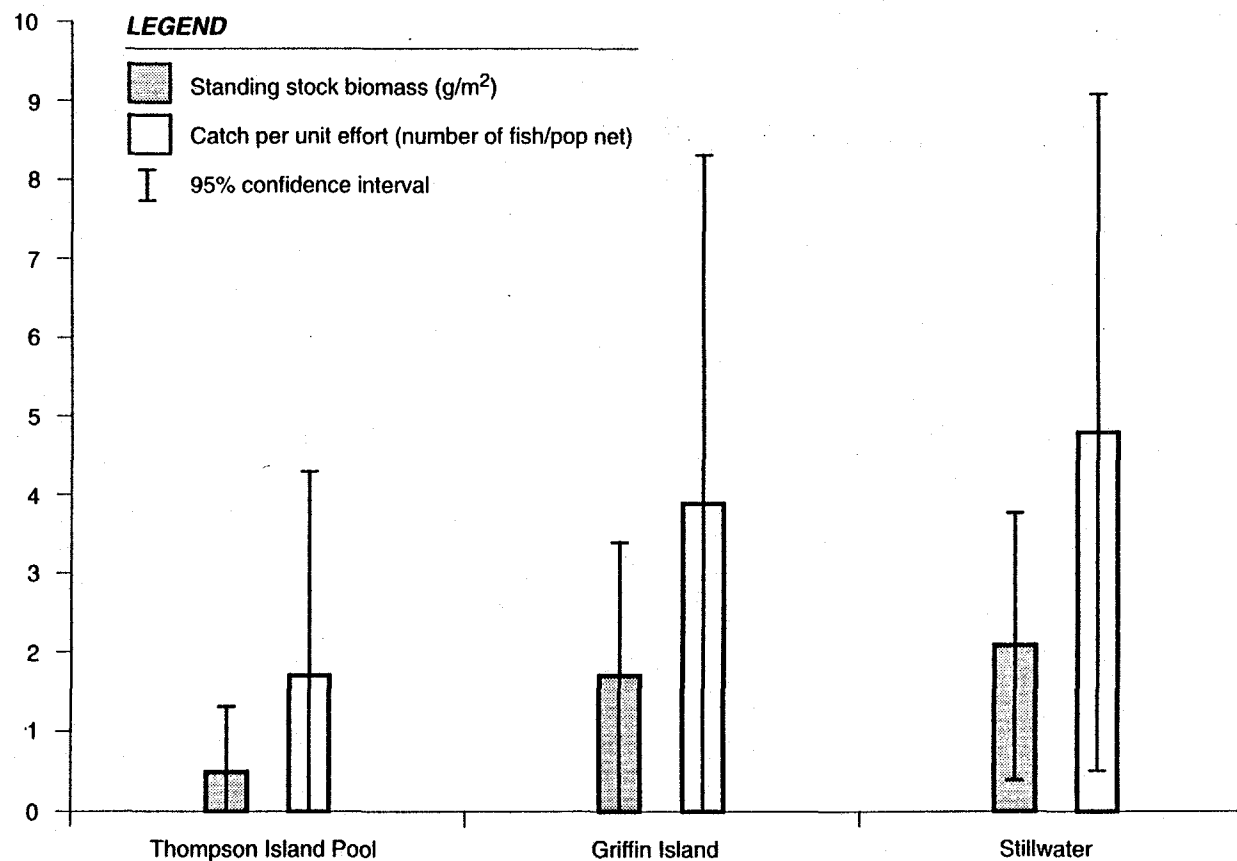


Figure 19. Catch per unit effort and standing stock biomass of fish by area.

Tables

**TABLE 1. PROBABILITY OF OCCURRENCE OF
VEGETATION AT 1-FT DEPTH INTERVALS**

D'	P'
0.00	0.90
1.00	0.87
2.00	0.82
3.00	0.76
4.00	0.70
5.00	0.62
6.00	0.54
7.00	0.45
8.00	0.37
9.00	0.29
10.00	0.23
11.00	0.17
12.00	0.13
13.00	0.10
14.00	0.07
15.00	0.05
16.00	0.04
17.00	0.03
18.00	0.02
19.00	0.01

logistic regression equation:

$$P' = \exp \frac{(B0 + B1 \times D')}{(1 + \exp(B0 + B1 \times D'))}$$

$$B0 = 2.204$$

$$B1 = -0.342$$

Note: D' - depth greater than which the likelihood of observing
vegetation is less than or equal to P'
P' - probability that vegetation will be present at or
greater than the corresponding depth

**TABLE 2. FREQUENCY OF OCCURRENCE OF EACH PLANT
DENSITY IN EACH SEDIMENT CATEGORY**

Fines				Sand			
	Absent	Present	Total Counts		Absent	Present	Total Counts
Absent	186	695	881	Absent	527	354	881
High	12	188	200	High	172	28	200
Medium	12	207	219	Medium	173	46	219
Low	20	148	168	Low	118	50	168
Total	217	1,238	1,468	Total	990	478	1,468

Gravel				Cobble			
	Absent	Present	Total Counts		Absent	Present	Total Counts
Absent	522	359	881	Absent	652	229	881
High	175	25	200	High	187	13	200
Medium	182	37	219	Medium	190	29	219
Low	135	33	168	Low	149	19	168
Total	1,014	454	1,468	Total	1,178	289	1,468

Wood				Rock			
	Absent	Present	Total Counts		Absent	Present	Total Counts
Absent	743	138	881	Absent	863	18	881
High	194	6	200	High	199	1	200
Medium	207	12	219	Medium	217	2	219
Low	149	19	168	Low	165	3	168
Total	1,293	175	1,468	Total	1,444	24	1,468

TABLE 3. CORRELATION MATRIX OF SUBSTRATE TYPES

	Fine	Sand	Gravel	Cobble	Wood	Rock
Fine	1.000					
Sand	0.292	1.000				
Gravel	0.220	0.841	1.000			
Cobble	0.220	0.672	0.728	1.000		
Wood	0.251	0.604	0.620	0.726	1.000	
Rock	0.157	0.662	0.678	0.791	0.869	1.000

TABLE 4. SUMMARY OF FISH CAUGHT IN POP NETS

	Vallisneria												Trapa				Unvegetated										
	TIVA1	TIVA2	TIVA5	GIVA6	GIVA4	GIVA2	STVA1	STVA2	STVA3	STVA4	GITR1	GITR2	GITR5	STTR1	STTR2	STTR3	STTR4	TIUN1	TIUN2	TIUN3	GIUN8	GIUN7	GIUN3	STUN1	STUN4	STUN5	STUN6
No fish	0			0		0								0			0	0	0	0	0		0	0	0	0	
Pumpkinseed			2		1			1	2	3	4	13				1						1					
Bluegill									3	2	2	8	2		1												
Spottail							19	6		12																	
Rock bass					1		1			2																	
Yellow bullhead								1																			
Tessellated darter		1	3						2																	1	
Redbreast sunfish		1								1																	
Chain pickerel													1														
Largemouth bass													2														
Fall fish			2																								
Banded killifish			1																								
Total number of fish	0	2	8	0	2	0	20	8	7	20	6	21	5	0	1	1	0	0	0	0	0	1	0	0	0	1	0
Standing stock (g/m ²)	0	0.48	2.6	0	0.9	0	4.8	8.7	3.5	4.4	2.7	8.8	4.0	0	0.5	2.3	0	0	0	0	0	0.33	0	0	0	0.75	0
Species number	0	2	4	0	2	0	2	3	3	5	2	2	3	0	1	1	0	0	0	0	0	1	0	0	0	1	0

Note: The station names are coded as follows:

The first two letters designate the area

GI - Griffin Island

TI - Northern Thompson Island Pool

ST - Stillwater

The second two letters designate habitat type, as follows:

TR - *Trapa natans*

VA - *Vallisneria americana*

UN - unvegetated

The fifth character denotes the trial number for pop-net sampling at the location.

TABLE 5. SPECIES OCCURRENCE IN ELECTROSHOCK SAMPLES, BY HABITAT

Species	Station:	TIVA	GIVA	STVA	GITR	STTR	TIUN	GIUN	STUN
Total shock time (sec):		24,407	26,317	22,120	28,827	16,845	3,587	2,985	1,502
American eel				X		X	X		
Black crappie		X				X			
Blueback herring				X	X	X			
Bluegill sunfish				X					
Bluntnose minnow				X		X			
Brassy minnow		X		X					X
Brook silverside						X			
Brown bullhead		X		X	X	X			
Carp				X		X			
Cutlips minnow		X							
Chain pickerel		X							
Emerald shiner			X						
Fallfish		X	X	X			X		X
Golden shiner		X	X	X	X	X			
Lake chub		X							
Largemouth bass		X	X	X	X	X		X	X
Logperch				X	X	X		X	X
Muskelunge				X		X			
Northern pike				X		X			
Pumpkinseed		X	X	X	X	X		X	
Redbreast sunfish		X		X		X		X	
Rock bass		X		X		X			
Rosyface shiner							X		X
Smallmouth bass		X		X		X		X	X
Spotfin shiner						X			X
Spottail shiner		X	X	X	X	X	X		X
Tessellated darter		X	X	X		X	X		
Walleye			X	X		X			
White perch						X	X		
White sucker		X	X	X		X	X		X
Yellow perch		X	X	X	X	X	X	X	X
Yellow bullhead		X	X	X		X			

TABLE 5. (cont.)

Note: The station names are coded as follows:

The first two letters designate the area

- GI - Griffin Island
- TI - Northern Thompson Island Pool
- ST - Stillwater

The second two letters designate habitat type, as follows:

- TR - *Trapa natans*
- VA - *Vallisneria americana*
- UN - unvegetated

TABLE 6. CLASSIFICATION OF FISHES INTO FUNCTIONAL FEEDING GROUPS

General Predators	Insectivores	Benthivores	Planktivores
American eel	Black crappie (J)	Bluntnose minnow	Blueback herring
Black crappie (A)	Bluegill sunfish	Brown bullhead	Brassy minnow
Chain pickerel	Brook silverside	Yellow bullhead	Brook silverside (J)
Fallfish (A)	Lake chub (A)	Carp	Emerald shiner
Largemouth bass	Logperch (A)	Cutlips minnow	Fallfish (J)
Muskelunge	Pumpkinseed (J-A)	White sucker	Golden shiner
Northern pike	Redbreast sunfish (A)	Spottail shiner	Lake chub (J)
Pumpkinseed (A)	Rock bass (A)		Logperch (J)
Smallmouth bass	Rosyface shiner		Redbreast sunfish
Walleye (A)	Spotfin shiner (A)		Rock bass (J)
White perch (A)	Tessellated darter (A)		Spotfin shiner (J)
Yellow perch (A)	Walleye (J)		Tessellated darter (J)
	Yellow perch (A)		White perch
			Yellow perch (J)
			Spottail shiner

Note: A - adult
J - juvenile

^a Based on information provided by Smith (1985) and summarized in Table 7.

TABLE 7. DIETS OF NEW YORK FISHES^a

Species	Diet
Anguillidae	
American eel (<i>Anguilla rostrata</i>)	Insects, fish, crustaceans
Atherinidae	
Brook silverside (<i>Labidesthes sicculus</i>)	Adult and larval surface-dwelling insects, cladocerans
Catastomidae	
White sucker (<i>Catastomus commersoni</i>)	Benthic invertebrates
Centrarchidae	
Black crappie (<i>Pomoxis nigromaculatus</i>)	Insects, fish
Bluegill sunfish (<i>Lepomis macrochirus</i>)	Insects, plant material
Largemouth bass (<i>Micropterus salmoides</i>)	Insects, fish
Pumpkinseed (<i>Lepomis gibbosus</i>)	Insects, amphipods, molluscs, smaller fish and amphibians
Redbreast sunfish (<i>Lepomis auritus</i>)	Plankton, invertebrates
Rock bass (<i>Ambloplites rupestris</i>)	Highly variable bottom and midwater; plankton copepods and cladocera, insects; fish, crayfish at larger sizes
Smallmouth bass (<i>Micropterus dolomieu</i>)	Insects, crayfish, fish, tadpoles, and frogs
Clupeidae	
Blueback herring (<i>Alosa aestivalis</i>)	Copepods, fish larvae, pelagic shrimp larvae
Cyprinidae	
Bluntnose minnow (<i>Pimephales notatus</i>)	"Bottom ooze" (algae), chironomids, cladocera
Brassy minnow (<i>Hybognathus hankinsoni</i>)	Algae, cladocerans, copepods, some insects
Carp (<i>Cyprinus carpio</i>)	Algae and benthic invertebrates
Cutlips minnow (<i>Exoglossum maxillingua</i>)	Benthic invertebrates (insects and molluscs), detritus and algae
Emerald shiner (<i>Notropis atherinoides</i>)	Zooplankton, algae/diatoms
Fallfish (<i>Semotilus corporalis</i>)	Algae and plankton (as juveniles); insects, fish (as adults)
Golden shiner (<i>Notemigonus crysoleucas</i>)	Algae and zooplankton (adults eat small fish)
Lake chub (<i>Couesius plumbeus</i>)	Zooplankton, insects, algae, small fish
Rosyface shiner (<i>Notropis rubellus</i>)	Insects
Spotfin shiner (<i>Notropis spilopterus</i>)	Insects
Spottail shiner (<i>Notropis hudsonius</i>)	Zooplankton, benthic invertebrates

TABLE 7. (cont.)

Species	Diet
Esocidae	
Chain pickerel (<i>Esox niger</i>)	Fish, crayfish
Muskelunge (<i>Esox masquinongy</i>)	Zooplankton (as juveniles), fish, frogs, birds, mammals
Northern pike (<i>Esox lucius</i>)	Larger fish, crayfish, frogs, mammals
Ictaluridae	
Brown bullhead (<i>Ictalurus nebulosus</i>)	Crustaceans, fish, crayfish, benthic insects, eggs, plants
Yellow bullhead (<i>Ictalurus natalis</i>)	Crustaceans, molluscs, some fish, plants/algae
Moronidae	
White perch (<i>Morone americana</i>)	Copepods, amphipods; eat fish when > 200 mm
Percidae	
Logperch (<i>Percina caprodes</i>)	Entomostraca, benthic insects
Tessellated darter (<i>Etheostoma olmstedii</i>)	Entomostraca, small insects
Walleye (<i>Stizostedion vitreum</i>)	Insects, fish
Yellow perch (<i>Perca flavescens</i>)	Cladocera, ostracods, midges (as juveniles); large invertebrates and fish (as adults)

^a Adapted from Smith (1985).

**TABLE 8. RELATIVE ABUNDANCE (PERCENT)
OF FISH FEEDING GROUPS BY HABITAT**

	General Predators	Insectivores	Planktivores	Benthivores
TIVA	22	26	33	19
GIVA	25	19	38	19
STVA	25	25	34	16
GITR	18	27	45	9
STTR	28	25	31	16
TIUN	27	27	9	37
GIUN	40	30	30	0
STUN	29	21	43	7

Note: The station names are coded as follows:

The first two letters designate the area

GI - Griffin Island

TI - Northern Thompson Island Pool

ST - Stillwater

The second two letters designate habitat type, as follows:

TR - *Trapa natans*

VA - *Vallisneria americana*

UN - unvegetated

Appendix A

Vegetation Study Data

Attachment A1

**Results of the Navigation
Survey, Hudson River
Vegetation Study, New
York**

CAZD1021

OCT 23 1997

PTI

**RESULTS OF THE NAVIGATION SURVEY
HUDSON RIVER VEGETATION STUDY
NEW YORK**

Prepared for:

PTI Environmental
Bellevue, Washington

Submitted by:

David Evans and Associates, Inc.
Portland, Oregon

August 1997

Outstanding Professionals . . .
Outstanding Quality

DAVID EVANS AND ASSOCIATES, INC.



312901A

INTRODUCTION

This report presents the results of navigational support for a preliminary study in the Hudson River in upstate New York. The goals of the navigation effort were to provide positioning and navigation for a visual survey with underwater video equipment and for placement and positioning of station location markers for subsequent sediment, aquatic plant, and fish sampling. The navigator and navigation equipment for this preliminary study were provided by David Evans and Associates, Inc. (DEA), Portland, Oregon between August 4 through August 13, 1997.

An integrated and automated hydrographic system was used for positioning and data acquisition. This system consisted of the following instruments: Trimble 4000SE Differential Global Positioning System (DGPS) receiver, Trimble Probeacon Radio for reception of differential broadcasts from the Canadian Coast Guard Beacon, Omnistar National DGPS receiver radio and Coastal Oceanographics Hypack navigation and data acquisition software running on a 486 PC.

Vessel Positioning

Sub-meter positioning was accomplished with the DGPS system by utilizing differential corrections from the Canadian Coast Guard (CCG) Beacon, Station 312, located at St. Jean-sur-Richelieu (latitude 45° 19.2796' N, longitude 73° 18.6199' W). The CCG shore-based DGPS receiver calculated and transmitted real-time differential corrections to the shipboard DGPS roving receiver at a rate of once per second. Differentially corrected North American Datum (NAD) 83 latitude and longitude values were output every second from the ship DGPS receiver to the data acquisition computer. Using HYPACK software and a three parameter Molodensky transformation, NAD27 New York State Plane East Zone coordinates (U.S. survey feet) were computed and recorded in real-time by the navigation and data acquisition computer. The positioning system was checked by placing the GPS antenna over National Geodetic Survey (NGS) First order control station "Ft. Miller" and inputting published coordinates into the ship's navigation software. The navigation computer displays the difference between assigned coordinates and the current position of the GPS antenna. The resultant deviation recorded at this position check point was 1-foot.

Methodology

In order to achieve the goals of the study, the crew ran transects from bank to bank, stopping every 20 feet for visual confirmation of the vegetation in the river via underwater video equipment. At every stopping point the navigator would record a position by marking a target to a digital file. The target pinpoints coordinates of the area within 3 feet. The navigator would accompany the target with a description of time and depth in daily logs. These daily logs were also recorded on a 486 PC and backed up daily on disk for post-processing and editing. This technique allows the navigator to know the distance from the last target and locate the next inspection station. Further, the navigator may recall and navigate back to any target with submeter accuracy.



Hydrographic Equipment

POSITIONING SYSTEM:

Differential Global Positioning System (DGPS) composed of the following:

- Trimble 4000 SE ship receiver for processing differential positions and outputting geographical coordinates to the ship's processing and data acquisition system.
- Trimble Probeacon radio for reception of the Canadian Coast Guard DGPS Beacon.
- Accuracy for this system is less than 1 meter (1-2 feet typical).

NAVIGATION:

- 486 PC computer with Coastal Oceanographics "HYPACK" software. This system processes geographical positions from the positioning system, provides navigation displays and time tags and records position data.

Deviations From Scope

At the start of the survey, it was assumed differential corrections would be obtained from the Omnistar National GPS System. The system went down for improvements during the start of the survey and an alternate method was utilized to receive differential corrections. A backup system which included a Trimble Probeacon radio for reception of U.S. Coast Guard (USCG) differential corrections was deployed. This was not the primary system as there is no USCG DGPS stations in the area of operations. The Probeacon radio was set to automatic mode to enable frequency scanning to locate a source of differential corrections. A signal lock was acquired and differential corrections were obtained from a Canadian Coast Guard Beacon. This beacon, Station 312, is located about 230 miles north of the study area in St. Jean-sur-Richelieu, Canada. The beacon provided solid coverage for most of the survey area. Intermittent reception of the DGPS broadcast was a problem in the vicinity of Roger's Island due to the canyon-like terrain and the long range between the CCG beacon and the ship receiver.

Attachment A2

**Field Notes for Vegetation
Observations in the Reach
North of Rogers Island**

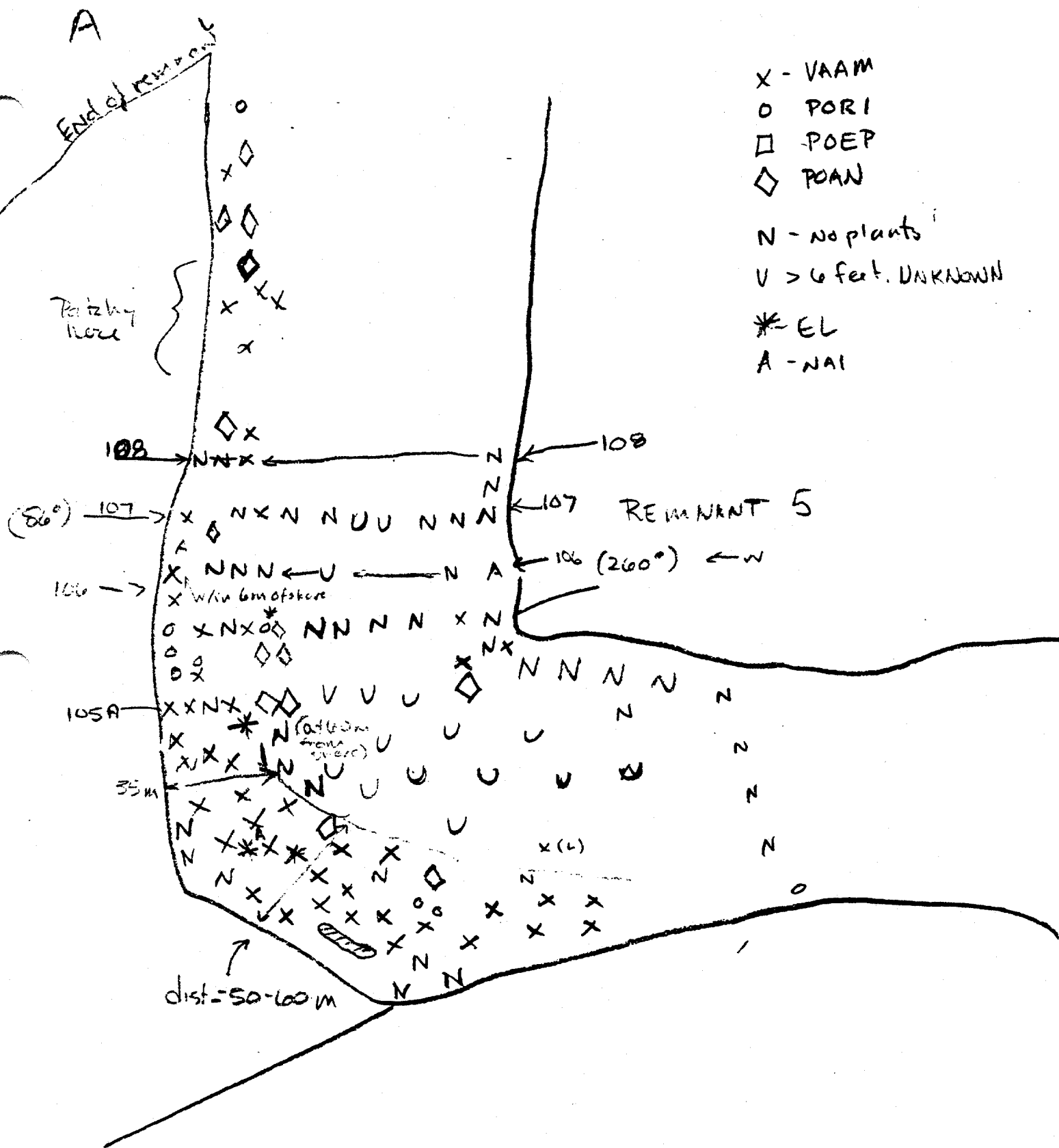


Figure A-1. Field notes for vegetation observations in the reach north of Rogers Island.

Attachment A3

Vegetation Data

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a	Vegetation Species ^b														Sediment Characteristic ^c					
Transect	Point								PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
								A,H,M,L																				
T1	A	8/7/97	14:17	200	7	3	4.08	A																		C		
T1	B	8/7/97	14:28			4	5.08	M			V		AM													C		
T1	C	8/7/97	14:33			4	4.94	H			V		AM									S	G					
T1	D	8/7/97	14:34			5	5.94	L			V		AM									S	G					
T1	E	8/7/97	14:35			4	4.94	H			V		AM						F		S							
T1	F	8/7/97	14:39			4	4.94	L			V		AM								S	G						
T1	G	8/7/97	14:42			4	4.94	H			V		AM									G	C					
T1	H	8/7/97	14:44			3	3.94	H			V		AM			PR						G	C					
T1	I ^d	8/7/97	14:47			2.5	3.36	L			V		AM								S	G	C					
T1	J	8/7/97	NR			<1	1.36	A													S	G	C					
T2	A	8/7/97	14:57			3	3.86	L			V		AM											C	W			
T2	B	8/7/97	14:58			3	3.86	M			V		AM											C				
T2	C	8/7/97	14:59			4	4.86	M			V		AM									S	G	C				
T2	D	8/7/97	15:00			4	4.84	H			V		AM						F									
T2	E	8/7/97	15:02			4-5	5.34	H		PE	V		AM						F		S							
T2	F	8/7/97	15:03			3	3.84	M			V		AM								S	G						
T2	G	8/7/97	15:04			3	3.84	A													S	G						
T2	H	8/7/97	15:05			4	4.84	H			V		AM								S	G						
T2	I	8/7/97	15:06			6	6.84	H			V		AM								S	G	C					
T2	J	8/7/97	15:07			5	5.84	L			V		AM													R		
T3	A	8/7/97	15:14			4	4.84	A													S	G	C					
T3	B	8/7/97	15:15			4	4.84	L			V		AM								S	G						
T3	C	8/7/97	15:16			6	6.84	M			V		AM								S							
T3	D	8/7/97	15:17			6	6.84	A													S	G						
T3	E	8/7/97	15:19			6	6.84	H			V		AM						F		S	G	C					
T3	F	8/7/97	15:21			4	4.84	H			V		AM						F									
T3	G	8/7/97	15:22			3	3.84	A															C					
T3	H	8/7/97	15:23	140		4	4.84	A															C					
T3	I	8/7/97	15:24			4	4.84	A														G	C					
T3	J	8/7/97	15:26		4	4.5	5.34	A															C	W	R			
T4	A	8/7/97	15:34	144	3	4	4.84	A													S	G	C					
T4	B	8/7/97	15:35			6	6.84	A															C					
T4	C	8/7/97	15:42			7.5	8.34	A													S	G	C					
T4	D	8/7/97	15:44			8	8.84	A													S	G	C					
T4	E	8/7/97	15:45			7	7.92	A													S	G	C					
T4	F	8/7/97	15:47			6	6.92	A															C					
T4	G	8/7/97	15:48			5	5.92	A													S	G	C					
T4	H	8/7/97	15:49			6	6.92	A													S	G						
T4	I	8/7/97	15:51			6	6.92	M			V		AM								S	G						
T4	J	8/7/97	15:51		6	6	6.92	H			V		AM								S	G	C					
T5	A	8/7/97	15:56	160	3	4	4.92	A												F								
T5	B	8/7/97	15:57			4.5	5.42	M			V		AM							F		S	G	C				
T5	C	8/7/97	15:58			8	8.92	A													S	G	C					
T5	D	8/7/97	15:59			8	8.92	A													S	G	C					
T5	E	8/7/97	15:59			7	7.92	A													S	G						
T5	F	8/7/97	16:00			6	7.03	M			V		AM							F		S	G	C				

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation													Sediment				
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b												Characteristic ^c				
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T5	G	8/7/97	16:01			4	5.03	H			PE	V	AM									S	G		
T5	H	8/7/97	16:02			3	4.03	H			PE	V	AM									S	G		
T5	I	8/7/97	16:04			2.5	3.53	H	PA							PR						S			
T5	J	8/7/97	16:05		7	3	4.03	M				V	AM									S			
T6	A	8/7/97	16:12	150	4	6	7.03	A												F					
T6	B	8/7/97	16:13			10	11.53	A												F					
T6	C	8/7/97	16:14			6	7.03	A														S	G	C	
T6	D	8/7/97	16:15			6	7.16	A														S	G	C	
T6	E	8/7/97	16:16			6	7.16	H		PE	V		AM							F					
T6	F	8/7/97	16:16			6	7.16	A														S	G		
T6	G	8/7/97	16:17			6	7.16	L				V	AM									S	G		
T6	H	8/7/97	16:18			8	9.16	A														S	G		
T6	I	8/7/97	16:18			7	8.16	A															G		
T6	J	8/7/97	16:19		3	6	7.16	A														S	G		
T7	A	8/7/97	16:48	73	3	2	3.33	H				V	N	AM						F					
T7	B	8/7/97	16:48			4	5.33	A												F	S				
T7	C	8/7/97	16:49			6	7.33	A												F	S	G	C		
T7	D	8/7/97	16:50			5.5	6.83	A														G			
T7	E	8/7/97	16:50			6	7.33	A												F	S	G	C		
T7	F	8/7/97	16:51			6	7.33	M				V	AM									S	G	C	
T7	G	8/7/97	16:52			6	7.33	A														S	G	C	
T7	H	8/7/97	16:52		4	5	6.33	A														S	G	C	
T7	I	8/7/97	17:20	88	1.5	4.5	5.92	A												F					
T7	J	8/7/97	17:21			6	7.42	A															C		
T7	K	8/7/97	17:21			6	7.42	L				V	AM										G		
T7	L	8/7/97	17:22			7	8.42	A															G		
T7	M	8/7/97	17:22			7	8.42	A														S			
T7	N	8/7/97	17:23			8	9.42	A														S	G		
T7	O	8/7/97	17:23			8	9.42	A														S		C	
T7	P	8/7/97	17:24		2	2	3.42	A												F	S				
T8	A	8/7/97	16:57	76	8	4	5.33	M				V	AM							F					
T8	B	8/7/97	16:57			6	7.33	L				V	AM							F	S	G			
T8	C	8/7/97	16:58			5	6.33	A				V	AM									S	G	C	
T8	D	8/7/97	16:59			6	7.33	L				V	AM							F	S	G			
T8	E	8/7/97	16:59			6	7.33	M				V	AM							F	S	G			
T8	F	8/7/97	17:00			6	7.39	M				V	AM							F	S	G	C		
T8	G	8/7/97	17:00			4.5	5.89	M				V	AM							F	S	G	C		
T8	H	8/7/97	17:01		4	4	5.39	M				V	N	AM						F					
T8	I	8/7/97	17:30	75	2	2	3.4	M				V	N	AM						F					
T8	J	8/7/97	17:31			5.5	6.9	L				V	AM							F					
T8	K	8/7/97	17:32			8	9.4	A															G		
T8	L	8/7/97	17:32			8	9.4	A														S	G	C	
T8	M	8/7/97	17:33			8	9.4	A																C	
T8	N	8/7/97	17:33			7.5	8.9	A																C	
T8	O	8/7/97	17:33		4	6	7.4	L					N							F					
T9	A	8/7/97	17:05	157	5	2	3.39	A												F					

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width	to Shore	of Water	Depth	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T9	B	8/7/97	17:06			6	7.39	A															G	C	
T9	C	8/7/97	17:07			6	7.39	M			V		AM							F	S	G	C		
T9	D	8/7/97	17:08			6	7.39	H			V		AM							F					
T9	E	8/7/97	17:09			5	6.39	L			V		AM							F					
T9	F	8/7/97	17:09			3	4.39	L			V		AM							F					
T9	G	8/7/97	17:10			6	7.39	L				N								F					
T9	H	8/7/97	17:11			8	9.39	A														S	G		
T9	I	8/7/97	17:11			7.5	8.89	A														S	G		
T9	J	8/7/97	17:12		3	5.5	6.89	A												F					
T10	A	8/7/97	17:38	140	6	1.5	2.9	A														S	G		
T10	B	8/7/97	17:40			3	4.4	L			V		AM							F					
T10	C	8/7/97	17:41			5.5	6.9	A														S	G		
T10	D	8/7/97	17:42			6.5	7.9	M			V		AM							F	S	G			
T10	E	8/7/97	17:43			7	8.4	L				N								F	S	G	C		
T10	F	8/7/97	17:43			8	9.4	A														S	G		
T10	G	8/7/97	17:44			8	9.4	A														G			
T10	H	8/7/97	17:44			8	9.4	A														G	C		
T10	I	8/7/97	17:45			8	9.35	A														G	C		
T10	J	8/7/97	17:45		4	5	6.35	A												F					
T11	A	8/7/97	17:50	136	5	1.5	2.85	A												F	F				
T11	B	8/7/97	17:53			4	5.35	A												F					
T11	C	8/7/97	17:54			5.5	6.85	A														S	G		
T11	D	8/7/97	17:54			8	9.35	A														G	C		
T11	E	8/7/97	17:55			7	8.35	A														G			
T11	F	8/7/97	17:55			7	8.35	A														S	G	C	
T11	G	8/7/97	17:56			7.5	8.85	A														S	G	C	
T11	H	8/7/97	17:56			7.5	8.85	A														S	G		
T11	I	8/7/97	17:57			6.5	7.85	L			V		AM									G	C		
T11	J	8/7/97	17:57		3	6	7.35	A												F					
T12	A	8/7/97	18:02		3	4.5	5.81	A												F	F				
T12	B	8/7/97	18:03			6	7.31	A												F				W	
T12	C	8/7/97	18:05			6	7.31	A														S	G		
T12	D	8/7/97	18:05			8	9.31	A												F	S	G	C		
T12	E	8/7/97	NR			8	9.31	A														S	G	C	
T12	F	8/7/97	18:06			7	8.31	A												F	S	G	C		
T12	G	8/7/97	18:07			7	8.31	A														S	G		
T12	H	8/7/97	18:07			7	8.31	A														S	G		
T12	I	8/7/97	18:08			8	9.31	A														S	G	C	
T12	J	8/7/97	18:08		2	6	7.31	A												F	S	G	C	W	R
T13	A	8/7/97	18:13	116	3	6	7.31	L					AM	FA						F					
T13	B	8/7/97	18:20			6	7.3	M			V		AM							F					
T13	C	8/7/97	18:21			10	11.8	A												F					
T13	D	8/7/97	18:21			10	11.8	A														G	C		
T13	E	8/7/97	18:22			10	11.8	A														G	C		
T13	F	8/7/97	18:22			10	11.8	A														S	G		
T13	G	8/7/97	18:22			9	10.3	A														G			

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b														Sediment					
Element	Point			Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b														Characteristic ^c					
Transect	Point			(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
T13	H	8/7/97	18:23			9	10.3	A																		G		
T13	I	8/7/97	18:23			8	9.3	A																		G	C	
T13	J	8/7/97	18:24		10	2.5	3.8	A												F							W	
T14	A	8/7/97	18:29	189		4	5.3	H			V	N	AM							F								
T14	B	8/7/97	18:31			10	11.83	A												F							C	
T14	C	8/7/97	18:31			12	13.33	A												F							C	
T14	D	8/7/97	18:32			12	13.33	A												F								
T14	E	8/7/97	18:32			16	17.33	A															G		C			
T14	F	8/7/97	18:33			14	15.33	A												F							C	
T14	G	8/7/97	18:34			6	7.33	A												F								
T14	H	8/7/97	18:34			9	10.33	A												F								
T14	I	8/7/97	18:35			12	13.33	A												F								
T14	J	8/7/97	18:36			13	14.33	A												F								
T15	A	8/7/97	19:00	61	2	2	3.43	A															S		G			
T15	B	8/7/97	19:02			3	4.43	A															S		G			
T15	C	8/7/97	19:02			3	4.43	L				N												G		C		
T15	D	8/7/97	19:06			3	4.43	L				N													C			
T15	E	8/7/97	19:07			3	4.43	L				N												G		C		
T15	F	8/7/97	NR		10	4	5.43	H		PE	V		AM			PR								G				
T16	A	8/7/97	19:16	77		2.5	4	A															S		G		C	
T16	B	8/7/97	19:17			5	6.5	L			V		AM							F		S						
T16	C	8/7/97	19:18			8	9.5	A												F		S		G				
T16	D	8/7/97	19:19			6	7.5	A												F		S		G		C		
T16	E	8/7/97	19:21		4	4	5.5	M			V		AM							F		S		G		C		
T17	A	8/7/97	19:26	56	2	4	5.5	A												F								
T17	B	8/7/97	19:28			14	15.5	A																G		C		
T17	C	8/7/97	19:28			14	15.5	A																	G		C	
T17	D	8/7/97	19:29		8	5	6.5	A															S		G		C	
T18	A	8/7/97	19:34	87	1	2	3.52	A												F								
T18	B	8/7/97	19:35			9	10.52	A															S		G			
T18	C	8/7/97	19:36			9	10.52	A															S		G			
T18	D	8/7/97	19:37			10	12.02	A															S		G			
T18	E	8/7/97	19:37		5	3	4.52	H			V	N	AM							F								
T19	A	8/7/97	19:42	80	3	1.5	3.02	A												F								
T19	B	8/7/97	19:43			10	12.02	A															S		G			
T19	C	8/7/97	19:44			12	13.52	A															S		G			
T19	D	8/7/97	19:45			12	13.45	A															S		G			
T19	E	8/7/97	19:46			2	3.45	L					AM	FA						F		S						
T20	A	8/7/97	8:21	170	4	4	5.48	H					AM	FA						F								
T20	B	8/7/97	8:22			9	10.48	A												F								
T20	C	8/7/97	8:23			10	11.98	A												F								
T20	D	8/7/97	8:25			10	11.98	A												F		S		G		C		
T20	E	8/7/97	8:25			13	14.48	L					AM	FA						F						W		
T20	F	8/7/97	8:26			14.5	15.98	A												F		S		G				
T20	G	8/7/97	8:26			18	19.48	A												F						W		
T20	H	8/7/97	8:27			17	18.48	A												F				C		W		

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation																	Sediment				
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b																Characteristic ^c				
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R				
T20	I	8/7/97	8:28			15.5	16.98	A													F			C					
T20	J	8/7/97	8:28			12.5	13.98	A															G	C					
T20	K	8/7/97	8:29			14	15.48	A														S	G	C					
T20	L	8/7/97	8:29			14.5	15.98	A															G	C					
T20	M	8/7/97	8:30			14.5	16.04	A															G	C					
T20	N	8/7/97	8:30			15	16.54	A												F	S	G							
T20	O	8/7/97	8:31			15	16.54	A												F	S	G	C						
T20	P	8/7/97	8:31			15	16.54	A												F	S	G	C						
T20	Q	8/7/97	8:32			15.5	17.04	A												F	S	G	C						
T20	R	8/7/97	8:33			15	16.54	A												F	S	G	C						
T20	S	8/7/97	8:34			14	15.54	A												F	S	G							
T20	T	8/7/97	8:34			12	13.54	A												F	S	G	C						
T20	U	8/7/97	8:35			10	12.04	A												F									
T20	V	8/7/97	8:36			6	7.54	A												F									
T20	W	8/7/97	8:36			2.5	4.04	M			V	N	AM							F									
T20	X	8/7/97	8:37		4	2	3.54	H			V	N	AM		EL					F									
T21	A	8/7/97	8:43	117	3	2	3.54	H			V		AM	FA						F									
T21	B	8/7/97	8:44			11	12.54	A												F									
T21	C	8/7/97	8:46			16	17.57	L				N								F				W					
T21	D	8/7/97	8:46			15.5	17.07	A												F	S	G							
T21	E	8/7/97	8:47			17	18.57	A												F	S	G	C						
T21	F	8/7/97	8:47			20	22.07	A												F	S	G	C						
T21	G	8/7/97	8:48			20	22.07	A												F	S	G	C						
T21	H	8/7/97	8:48			20	22.07	A														G	C	W					
T21	I	8/7/97	8:49			20	22.07	A												F	S	G							
T21	J	8/7/97	8:49			21	22.57	A												F	S	G	C						
T21	K	8/7/97	8:50			20	22.07	A														G	C						
T21	L	8/7/97	8:51			19	20.57	A												F	S	G	C						
T21	M	8/7/97	8:51			18	19.57	A												F			C						
T21	N	8/7/97	8:52			15.5	17.07	A												F			C	W					
T21	O	8/7/97	8:53			12	13.57	A												F			C	W					
T21	P	8/7/97	8:53		3	5	6.57	L				N								F			C	W					
T22	A	8/7/97	9:02	109	3	4.5	6.02	A												F									
T22	B	8/7/97	9:03			10	12.02	A												F			C						
T22	C	8/7/97	9:05			14	15.52	A													S		C	W					
T22	D	8/7/97	9:05			14.5	16.02	A												F	S								
T22	E	8/7/97	9:06			16	17.52	A													S	G	C						
T22	F	8/7/97	9:07			18	19.52	A												F	S	G							
T22	G	8/7/97	9:07			18	19.52	A														G							
T22	H	8/7/97	9:08			18	19.52	A												F	S	G	C	W					
T22	I	8/7/97	9:08			20	22.02	A												F	S	G	C	W					
T22	J	8/7/97	9:09			22	23.52	A												F	S	G							
T22	K	8/7/97	9:09			21	22.52	L				N								F			C	W					
T22	L	8/7/97	9:10			16.5	18.02	A												F			C	W					
T22	M	8/7/97	9:11			12	13.52	A												F			C	W					
T22	N	8/7/97	9:12			9	10.52	A												F			C						

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a	Vegetation Species ^b												Sediment Characteristic ^c					
Element									PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
Transect	Point							A,H,M,L																		
T22	O	8/7/97	9:12		3	4	5.52	A												F			C	W		
T23	A	8/7/97	9:16	121	6	1.5	2.91	M			V		AM							F						
T23	B	8/7/97	9:18			9	10.41	A												F						
T23	C	8/7/97	9:19			13.5	14.91	L				N								F				W		
T23	D	8/7/97	9:20			14	15.41	A												F				W		
T23	E	8/7/97	9:20			14	15.41	L				N								F	S		C			
T23	F	8/7/97	9:21			14	15.41	A												F	S		C	W		
T23	G	8/7/97	9:22			16	17.41	A												F				W		
T23	H	8/7/97	9:22			16	17.41	A														G		W		
T23	I	8/7/97	9:23			17	18.41	A												F			C	W		
T23	J	8/7/97	9:23			17.5	18.91	A												F		G				
T23	K	8/7/97	9:24			18	19.41	A												F		G	C			
T23	L	8/7/97	9:25			20	21.91	A												F		G				
T23	M	8/7/97	9:26			20	21.91	A												F						
T23	N	8/7/97	9:26			17.5	18.91	A												F			C			
T23	O	8/7/97	9:27			16	17.41	A												F						
T23	P	8/7/97	9:27		3	4	5.41	M			V		AM							F						
T24	A	8/7/97	9:35	148	4	1.5	2.84	H			V		AM							F						
T24	B	8/7/97	9:38			4.5	5.84	H			V		AM							F						
T24	C	8/7/97	9:52			7	8.35	A												F			C			
T24	D	8/7/97	9:54			10	11.85	A												F				W		
T24	E	8/7/97	9:55			10	11.85	L				N								F	S			W		
T24	F	8/7/97	9:55			13	14.35	A												F				W		
T24	G	8/7/97	9:56			14	15.35	A												F		G				
T24	H	8/7/97	9:56			16	17.35	A													S	G				
T24	I	8/7/97	9:57			15	16.35	A														G				
T24	J	8/7/97	9:58			14	15.35	A													S	G		W		
T24	K	8/7/97	9:58			14	15.35	A													S	G				
T24	L	8/7/97	9:59			14	15.35	A													S	G				
T24	M	8/7/97	9:59			15	16.35	A														G				
T24	N	8/7/97	10:00			15.5	16.91	A														G	C			
T24	O	8/7/97	10:01			16.5	17.91	A												F						
T24	P	8/7/97	10:01			16.5	17.91	A												F						
T24	Q	8/7/97	10:02			16	17.41	A															C			
T24	R	8/7/97	10:03			8	9.41	A												F			C			
T24	S	8/7/97	NR		3	4	5.41	M			V		AM							F						
T25	A	8/7/97	10:08	140	4	2	3.41	H			V		AM							F						
T25	B	8/7/97	10:09			9.5	10.91	A												F				W		
T25	C	8/7/97	10:12			12	13.41	A												F						
T25	D	8/7/97	10:12			12	13.41	A												F						
T25	E	8/7/97	10:12			12	13.41	A												F						
T25	F	8/7/97	10:13			14	15.41	A												F	S					
T25	G	8/7/97	10:13			14	15.41	A												F	S					
T25	H	8/7/97	10:18			14	15.49	A													S	G				
T25	I	8/7/97	10:19			15	16.49	A														G				
T25	J	8/7/97	10:19			13	14.49	A												F		G				

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width		to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T25	K	8/7/97	10:20			13	14.49	A												F		G			
T25	L	8/7/97	10:20			14	15.49	A												F		G	C		
T25	M	8/7/97	10:21			14	15.49	A														G	C		
T25	N	8/7/97	10:21			14	15.49	A												F		G	C		
T25	O	8/7/97	10:22			16	17.49	A												F		G	C		
T25	P	8/7/97	10:22			15	16.49	A												F		G			
T25	Q	8/7/97	10:23			14.5	15.99	A												F					
T25	R	8/7/97	10:23			13.5	14.99	A												F			C		
T25	S	8/7/97	10:24			12.5	13.99	A												F			C		
T25	T	8/7/97	10:25			4.5	5.99	A												F					
T26	A	8/7/97	10:37	151	4	1.5	3.05	A												F					
T26	B	8/7/97	10:38			6	7.55	A												F					
T26	C	8/7/97	10:40			12	13.55	L				N								F					
T26	D	8/7/97	10:41			13	14.55	A												F					
T26	E	8/7/97	10:41			13	14.55	A												F	S				
T26	F	8/7/97	10:42			13.5	15.05	A												F					
T26	G	8/7/97	10:42			14	15.55	A												F	S				
T26	H	8/7/97	10:43			13.5	15.05	A												F	S				
T26	I	8/7/97	10:43			13	14.55	A												F	S	G			
T26	J	8/7/97	10:44			12	13.55	A												F	S	G			
T26	K	8/7/97	10:44			12	13.55	A												F	S	G			
T26	L	8/7/97	10:45			12	13.5	A												F	S	G			
T26	M	8/7/97	10:45			13	14.5	A												F	S	G	C		
T26	N	8/7/97	10:46			13.5	15	L				N								F	S	G			
T26	O	8/7/97	10:46			14	15.5	A												F	S	G			
T26	P	8/7/97	10:47			15	16.5	A												F	S	G		W	
T26	Q	8/7/97	10:47			14	15.5	A												F				W	
T26	R	8/7/97	10:48			14	15.5	A												F			C		
T26	S	8/7/97	10:48			14	15.5	A												F			C		
T26	T	8/7/97	10:49			13	14.5	A												F			C		
T26	U	8/7/97	10:49		3	3	4.5	A												F					
T27	A	8/7/97	10:53	158	3	2	3.5	M			V		AM							F					
T27	B	8/7/97	10:55			7	8.5	A												F				W	
T27	C	8/7/97	10:57			5.5	7	H			V	N	AM	FA						F					
T27	D	8/7/97	10:57			5	6.5	H			V		AM							F					
T27	E	8/7/97	10:58			8	9.5	A												F			C		
T27	F	8/7/97	10:58			11.5	13	A														S	G	C	
T27	G	8/7/97	10:59			14	15.5	L				N										S	G	C	
T27	H	8/7/97	10:59			13.5	15	N				N								F		S	G		
T27	I	8/7/97	11:00			12.5	13.46	A												F	S	G			
T27	J	8/7/97	11:00			13.5	14.46	A												F	S	G			
T27	K	8/7/97	11:01			13	13.96	A												F	S				
T27	L	8/7/97	11:01			13	13.96	A												F	S	G			
T27	M	8/7/97	11:02			13	13.96	A												F	S	G			
T27	N	8/7/97	11:02			13	13.96	A												F	S	G			
T27	O	8/7/97	11:02			14	14.96	A												F	S	G		W	

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation																	Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b																Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R					
T27	P	8/7/97	11:03			13.5	14.46	A													F	S	G		W					
T27	Q	8/7/97	11:03			13.5	14.46	A													F	S	G							
T27	R	8/7/97	11:04			14	14.96	A														S	G	C						
T27	S	8/7/97	11:04			14	14.96	A																	W					
T27	T	8/7/97	11:05			14	14.96	A													F	S	G	C						
T27	U	8/7/97	11:05			10.5	11.46	A													F			C						
T27	V	8/7/97	11:06			2.5	3.46	H			V		AM								F									
T28	A	8/7/97	11:11	158	3	1.5	2.46	H			V		AM								F									
T28	B	8/7/97	11:12			4.5	5.46	H			V		AM								F									
T28	C	8/7/97	11:14			6	6.96	H			V		AM								F									
T28	D	8/7/97	11:15			5	5.46	H			V		AM								F									
T28	E	8/7/97	11:16			6	6.46	H			V		AM								F			C						
T28	F	8/7/97	11:17			9.5	9.96	A													F				W					
T28	G	8/7/97	11:17			10	10.96	A													F			C	W					
T28	H	8/7/97	11:20			14	14.46	A													F									
T28	I	8/7/97	11:21			13	13.46	A													F			C						
T28	K	8/7/97	11:22			14	14.46	A														S	G							
T28	L	8/7/97	11:22			14	14.46	A														S	G							
T28	M	8/7/97	11:23			14	14.46	A													F	S	G		W					
T28	N	8/7/97	11:23			14	14.46	A													F	S								
T28	O	8/7/97	11:24			14	14.46	A													F	S	G	C	W					
T28	P	8/7/97	11:24			14	14.46	A													F	S	G							
T28	Q	8/7/97	11:25			14	14.46	A													F	S	G		W					
T28	R	8/7/97	11:25			14	14.46	A													F	S	G							
T28	S	8/7/97	11:26			14	14.46	A													F			C						
T28	T	8/7/97	11:27			13	13.46	A													F				W					
T28	U	8/7/97	11:28			9	9.46	A													F			C						
T28	V	8/7/97	NR		3	5	5.46	L			V		AM								F				W					
T29	A	8/7/97	11:34	170	4	1	1.18	M			V		AM								F									
T29	B	8/7/97	11:35			4	4.18	M			V		AM								F									
T29	C	8/7/97	11:39			5	5.18	M			V		AM								F									
T29	D	8/7/97	11:40			6	6.18	M			V		AM								F									
T29	E	8/7/97	11:41			4	4.18	H			V		AM								F									
T29	F	8/7/97	11:42			4.5	4.68	M			V	N	AM								F									
T29	G	8/7/97	11:42			4	4.18	H			V		AM								F					R				
T29	H	8/7/97	11:43			7	7.18	M			V		AM								F			C						
T29	I	8/7/97	11:43			9	9.18	A													F			C						
T29	J	8/7/97	11:58			11	11.14	A													F									
T29	K	8/7/97	11:59			14	14.14	A													F			C						
T29	L	8/7/97	12:00			14	14.26	A													F	S	G							
T29	M	8/7/97	12:00			14	14.42	A													F	S	G	C						
T29	N	8/7/97	12:01			14	14.42	A													F	S	G							
T29	O	8/7/97	12:01			15	15.42	A													F			C	W					
T29	P	8/7/97	12:02			15	15.42	A													F	S	G	C	W					
T29	Q	8/7/97	12:03			15	15.42	A													F	S	G	C						
T29	R	8/7/97	12:03			14	14.42	A													F	S	G	C						

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width	to Shore	of Water	Depth	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T29	S	8/7/97	12:04			14	14.42	A												F	S	G	C		
T29	T	8/7/97	12:05			13	13.42	A												F	S	G	C		
T29	U	8/7/97	12:05			11	11.42	A												F	S	G	C		
T29	V	8/7/97	12:06			9	9.42	A												F	S	G	C		
T29	W	8/7/97	12:07		5	4.5	4.92	H			V		AM							F					
T30	A	8/7/97	12:55	229	7	1.5	2.06	H						FA						F					
T30	B	8/7/97	12:56			2	2.56	H					AM							F					
T30	C	8/7/97	12:57			2	2.56	L					AM							F					
T30	D	8/7/97	12:58			2	2.56	M					AM							F					
T30	E	8/7/97	12:58			2	2.56	M			V		AM							F					
T30	F	8/7/97	12:58			3	3.56	H					AM							F	S				
T30	G	8/7/97	12:59			2	2.56	H			V		AM							F					
T30	H	8/7/97	12:59			2.5	3.06	H							EL					F					
T30	I	8/7/97	13:00			2.5	2.95	H			V		AM		EL					F					
T30	J	8/7/97	13:02			3.5	3.95	A												F	S	G			
T30	K	8/7/97	13:03			4	4.45	M			V		AM							F					
T30	L	8/7/97	13:04			4.5	4.95	M			V		AM							F					
T30	M	8/7/97	13:04			4.5	4.95	H			V		AM							F					
T30	N	8/7/97	13:05			6	6.45	H			V		AM							F					
T30	O	8/7/97	13:05			7	7.45	A												F				C	
T30	P	8/7/97	13:06			12	12.45	A												F	S	G	C		
T30	Q	8/7/97	13:06			12.5	12.95	A												F				C	
T30	R	8/7/97	13:06			13	13.45	A												F				C	
T30	S	8/7/97	13:07			13	13.45	A												F	S	G	C		
T30	T	8/7/97	13:07			13	13.45	A												F	S	G	C		
T30	U	8/7/97	13:08			14	14.45	A												F	S	G			
T30	V	8/7/97	13:08			14	14.45	A												F	S	G			
T30	W	8/7/97	13:09			13	13.45	A													S	G	C		
T30	X	8/7/97	13:09			13	13.45	A												F	S	G			
T30	Y	8/7/97	13:10			14	14.45	A												F	S	G			
T30	Z	8/7/97	13:10			14	14.45	A												F	S	G			
T30	AA	8/7/97	13:11			13	13.45	A												F				W	
T30	AB	8/7/97	13:12			12	12.45	A												F				C	
T30	AC	8/7/97	13:12			10	10.95	A												F				C	
T30	AD	8/7/97	13:13		4	7.5	7.95	A												F		G			
T31	A	8/7/97	13:35	213	8	<1	0.78	L			V		AM							F					
T31	B	8/7/97	13:38			2	2.28	L					AM							F					
T31	C	8/7/97	13:39			2.5	2.78	L			V		AM							F					
T31	D	8/7/97	13:39			2.5	2.78	L			V		AM							F	S				
T31	E	8/7/97	13:40			2	2.28	L			V		AM							F	S				
T31	F	8/7/97	13:40			2	2.28	L			V		AM							F	S				
T31	G	8/7/97	13:41			2	2.28	L					AM							F	S				
T31	H	8/7/97	13:41			2	2.28	L					AM							F	S				
T31	I	8/7/97	13:41			4	4.28	L					AM							F	S				
T31	J	8/7/97	13:42			6	6.28	H			V		AM							F					
T31	K	8/7/97	13:42			6	6.28	M			V		AM							F	S				

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T31	L	8/7/97	13:43			6	6.28	A													F	S		C		
T31	M	8/7/97	13:43			7	7.28	A													F			C		
T31	N	8/7/97	13:43			10	10.78	A													F			C		
T31	O	8/7/97	13:44			12	12.28	A													F			C		
T31	P	8/7/97	13:44			12.5	12.78	A													F			C		
T31	Q	8/7/97	13:44			13	13.28	A													F	S	G			
T31	R	8/7/97	13:46			13	13.3	A															G			
T31	S	8/7/97	13:46			13	13.3	A													F	S	G			
T31	T	8/7/97	13:47			13	13.3	A													F	S	G			
T31	U	8/7/97	13:47			12.5	12.8	A													F	S	G			
T31	V	8/7/97	13:48			12.5	12.8	A													F	S	G			
T31	W	8/7/97	13:48			12	12.3	A													F		G	C		
T31	X	8/7/97	13:49			12.5	12.8	A														S		C		
T31	Y	8/7/97	13:49			12.5	12.8	A													F	S	G		W	
T31	Z	8/7/97	13:50			12	12.3	A													F			C		
T31	AA	8/7/97	13:51			11	11.3	A													F				W	
T31	AB	8/7/97	13:53			9	9.3	A													F			C		
T31	AC	8/7/97	13:53			8	8.3	A													F			C		
T31	AD	8/7/97	13:54			4.5	4.8	H			V		AM								F					
T31	AE	8/7/97	13:55		4	1	1.3	L			V		AM								F					
T32	A	8/7/97	14:00	225	4	1.5	1.87	L					AM								F					
T32	B	8/7/97	14:05			3	3.37	L					AM								F					
T32	C	8/7/97	14:06			3	3.37	L					AM								F					
T32	D	8/7/97	14:07			2.5	2.87	L			V		AM								F	S				
T32	E	8/7/97	14:08			2.5	2.87	L					AM								F	S				
T32	F	8/7/97	14:08			2	2.37	L					AM								F	S				
T32	G	8/7/97	14:09			2	2.37	L						FA							F	S				
T32	H	8/7/97	14:09			3	3.37	H			V		AM		EL						F					
T32	I	8/7/97	14:10			4	4.37	L					AM								F	S				
T32	J	8/7/97	14:10			5	5.37	H			V		AM								F					
T32	K	8/7/97	14:11			6.5	6.87	H			V		AM								F					
T32	L	8/7/97	14:11			7	7.37	H			V		AM								F					
T32	M	8/7/97	14:13			10	10.87	A													F	S	G			
T32	N	8/7/97	14:15			12.5	12.93	A													F	S	G	C		
T32	O	8/7/97	14:15			12.5	12.93	A													F	S	G			
T32	P	8/7/97	14:21			13	13.43	A													F	S	G	C		
T32	Q	8/7/97	14:24			13	13.43	A													F	S	G			
T32	R	8/7/97	14:24			12	12.43	A													F	S	G			
T32	S	8/7/97	14:25			12	12.43	A													F	S	G			
T32	T	8/7/97	14:25			12	12.43	A															G		W	
T32	U	8/7/97	14:26			12	12.43	A													F	S	G			
T32	V	8/7/97	14:26			12	12.43	A															G			
T32	W	8/7/97	14:27			12	12.43	A													F	S	G	C		
T32	X	8/7/97	14:27			12	12.43	A													F	S	G	C		
T32	Y	8/7/97	14:27			14	14.43	A													F	S	G		W	
T32	Z	8/7/97	14:28			15	15.43	A																	W	

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width		to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T32	AA	8/7/97	14:28			10	10.93	A												F				W	
T32	AB	8/7/97	14:29			7.5	7.93	M			V		AM							F					
T32	AC	8/7/97	14:30			4	4.45	M			V		AM							F					
T32	AD	8/7/97	NR		3	1	1.45	L			V		AM							F					
T33	A	8/7/97	14:59	226	3	2.5	2.9	L					AM							F					
T33	B	8/7/97	15:00			2.5	2.8	A												F					
T33	C	8/7/97	15:01			4	4.3	L					AM							F					
T33	D	8/7/97	15:02			3.5	3.8	L					AM							F	S				
T33	E	8/7/97	15:02			3	3.3	L					AM							F	S				
T33	F	8/7/97	15:02			4	4.3	M			V		AM							F	S				
T33	G	8/7/97	15:03			5	5.3	M					AM							F	S				
T33	H	8/7/97	15:03			5	5.3	M					AM							F	S				
T33	I	8/7/97	15:04			5.5	5.8	H			V		AM		EL					F					
T33	J	8/7/97	15:04			6	6.3	L			V		AM							F					
T33	K	8/7/97	15:05			6	6.3	M			V		AM							F					
T33	L	8/7/97	15:05			8	8.3	H			V		AM							F					
T33	M	8/7/97	15:05			7.5	7.8	M			V		AM							F					
T33	N	8/7/97	15:06			8	8.3	A												F	S	G	C		
T33	O	8/7/97	15:06			10	10.8	A												F	S	G	C		
T33	P	8/7/97	15:08			12	12.3	A														G		W	
T33	Q	8/7/97	15:10			8.5	8.8	L				N								F				W	
T33	R	8/7/97	15:10			4.5	4.8	M			V	N	AM							F					
T33	S	8/7/97	15:11			1	1.3	A												F					
T34	A	8/7/97	15:18	230	2.5	1	1.26	A												F					
T34	B	8/7/97	15:18			2	2.26	H			V		AM							F					
T34	C	8/7/97	15:19			3	3.26	A												F				W	
T34	D	8/7/97	15:20			4	4.26	L					AM							F					
T34	E	8/7/97	15:20			4	4.26	L					AM							F				W	
T34	F	8/7/97	15:21			4	4.26	L					AM							F	S				
T34	G	8/7/97	15:23			5	5.26	L					AM							F	S				
T34	H	8/7/97	15:24			6	6.26	L			V		AM							F	S				
T34	I	8/7/97	15:24			6	6.26	M			V		AM							F	S				
T34	J	8/7/97	15:24			6	6.26	H			V		AM							F					
T34	K	8/7/97	15:25			6.5	6.76	M			V		AM							F					
T34	L	8/7/97	15:25			7	7.26	L			V		AM							F	S				
T34	M	8/7/97	15:25			7.5	7.76	H			V		AM							F					
T34	N	8/7/97	15:26			8	8.26	A												F	S	G			
T34	O	8/7/97	15:26			9	9.26	A														S	G		
T34	P	8/7/97	15:26			10	10.76	A														S	G		
T34	Q	8/7/97	15:29			10	10.76	A												F				W	
T34	R	8/7/97	15:29			9	9.26	A												F				W	
T34	S	8/7/97	15:30			6	6.28	L			V		AM							F					
T34	T	8/7/97	15:31		2	2	2.28	A												F					
T35	A	8/7/97	15:41	240	3	1	1.28	L			V		AM			PR				F					
T35	B	8/7/97	15:41			2.5	2.78	L			V		AM							F					
T35	C	8/7/97	15:43			3	3.28	A												F					

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a	Vegetation Species ^b												Sediment Characteristic ^c					
Transect	Point								PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
								A,H,M,L																		
T35	D	8/7/97	15:43			4	4.28	M						FA						F					W	
T35	E	8/7/97	15:44			4	4.28	M			V		AM							F						
T35	F	8/7/97	15:44			4.5	4.78	M			V		AM							F						
T35	G	8/7/97	15:44			5.5	5.78	M			V		AM							F	S					
T35	H	8/7/97	15:45			5.5	5.85	A												F						
T35	I	8/7/97	15:45			5.5	5.85	L					AM							F	S					
T35	J	8/7/97	15:45			6	6.35	M			V		AM							F	S					
T35	K	8/7/97	15:46			6	6.35	H			V		AM							F						
T35	L	8/7/97	15:47			6.5	6.85	H			V		AM							F	S					
T35	M	8/7/97	15:47			6.5	6.85	M			V		AM							F	S					
T35	N	8/7/97	15:47			7.5	7.85	M			V		AM							F						
T35	O	8/7/97	15:48			7	7.35	H			V		AM							F			C			
T35	P	8/7/97	15:48			9	9.35	A												F			C			
T35	Q	8/7/97	15:48			10	10.85	A												F	S	G	C			
T35	R	8/7/97	15:49			12	12.35	A												F		G				
T35	S	8/7/97	15:52			10	10.85	A												F				W		
T35	T	8/7/97	15:52			8	8.35	A												F				W		
T35	U	8/7/97	15:53			5.5	5.85	M			V		AM							F						
T35	V	8/7/97	15:54		3	2.5	2.85	A													S					
T36	A	8/7/97	15:59	245	2	1	1.35	A												F						
T36	B	8/7/97	16:00			3	3.4	M			V		AM							F						
T36	C	8/7/97	16:01			3	3.4	A												F						
T36	D	8/7/97	16:02			4	4.4	A												F						
T36	E	8/7/97	16:02			6	6.4	L					AM							F	S					
T36	F	8/7/97	16:02			6	6.4	M			V		AM							F						
T36	G	8/7/97	16:03			6	6.4	M			V		AM							F						
T36	H	8/7/97	16:03			6	6.4	M			V		AM							F						
T36	I	8/7/97	16:03			6	6.4	L			V		AM							F	S					
T36	J	8/7/97	16:04			6	6.4	L			V		AM							F	S					
T36	K	8/7/97	16:04			7	7.4	H			V		AM							F						
T36	L	8/7/97	16:04			6.5	6.9	M			V		AM							F						
T36	M	8/7/97	16:05			6	6.4	H			V		AM							F						
T36	N	8/7/97	16:05			6	6.4	M			V		AM							F						
T36	O	8/7/97	16:05			9	9.4	A												F	S	G				
T36	P	8/7/97	16:07			12	12.4	A												F	S	G				
T36	Q	8/7/97	16:10			10	10.9	A												F				W		
T36	R	8/7/97	16:10			9	9.4	A												F				W		
T36	S	8/7/97	16:11			8	8.4	A												F				W		
T36	T	8/7/97	16:12			8	8.4	A												F						
T36	U	8/7/97	16:13		4	4	4.4	H			V	N	AM							F						
T37	A	8/7/97	16:19	275	2	1	1.43	A												F						
T37	B	8/7/97	16:32			3	3.42	M			V		AM		EL					F						
T37	C	8/7/97	16:33			3	3.42	L			V		AM							F						
T37	D	8/7/97	16:34			4	4.42	M					AM							F						
T37	E	8/7/97	16:34			4	4.42	M			V		AM							F						
T37	F	8/7/97	16:35			4	4.42	M			V		AM							F						

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b																Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a																	Characteristic ^c					
Transect	Point			(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R					
T37	G	8/7/97	16:35			6	6.42	M			V		AM						F											
T37	H	8/7/97	16:36			7	7.42	M			V		AM						F											
T37	I	8/7/97	16:36			7	7.42	M			V		AM						F											
T37	J	8/7/97	16:36			6.5	6.92	M			V		AM						F											
T37	K	8/7/97	16:37			7.5	7.92	M			V		AM						F											
T37	L	8/7/97	16:37			6.5	6.92	H			V		AM						F											
T37	M	8/7/97	16:38			7	7.42	H			V		AM						F	S										
T37	N	8/7/97	16:38			7	7.42	M			V		AM						F											
T37	O	8/7/97	16:39			8	8.42	A											F											
T37	P	8/7/97	16:39			9	9.42	L			V		AM						F	S	G									
T37	Q	8/7/97	16:40			10.5	10.92	A											F	S	G									
T37	R	8/7/97	16:40			12	12.42	A											F	S	G									
T37	S	8/7/97	16:42			10	10.92	A													G		W							
T37	T	8/7/97	16:42			10	10.92	A											F				W							
T37	U	8/7/97	16:43			10	10.92	A											F				W							
T37	V	8/7/97	16:43			8	8.42	A											F											
T37	W	8/7/97	16:44			6.5	6.92	H			V		AM						F		C									
T37	X	8/7/97	16:45		4	4	4.4	H			V		AM						F											
T38	A	8/7/97	16:49	242		1	1.4	A											F		G									
T38	B	8/7/97	16:51			2	2.4	L			V		AM						F		G									
T38	C	8/7/97	16:52			6	6.4	H				N							F											
T38	D	8/7/97	16:53			6.5	6.9	L					AM						F	S										
T38	E	8/7/97	16:53			6	6.4	L					AM								G	C								
T38	F	8/7/97	16:53			8	8.4	L					AM						F	S										
T38	G	8/7/97	16:54			6	6.4	M			V		AM						F					R						
T38	H	8/7/97	16:54			7.5	7.9	L			V		AM						F	S										
T38	I	8/7/97	16:54			7	7.4	H			V		AM						F											
T38	J	8/7/97	16:55			7	7.4	H			V		AM						F											
T38	K	8/7/97	16:55			7	7.4	M			V		AM						F											
T38	L	8/7/97	16:55			6.5	6.9	L			V		AM						F											
T38	M	8/7/97	16:55			9	9.4	L			V		AM						F											
T38	N	8/7/97	16:56			10	10.9	A											F		G		W							
T38	O	8/7/97	16:57			12	12.4	A											F	S	G									
T38	P	8/7/97	16:59			9	9.4	A											F				W							
T38	Q	8/7/97	16:59			6	6.4	H			V	N	AM						F				W							
T38	R	8/7/97	17:00			4	4.35	M			V		AM	FA					F				W							
T38	S	8/7/97	17:01		3	2	2.35	L			V		AM						F	S										
T39	A	8/9/97	7:59	234	4	2.5	3.88	M			V		AM						F											
T39	B	8/9/97	8:00			6.5	7.88	L			V		AM						F											
T39	C	8/9/97	8:02			9	10.38	A											F				W							
T39	D	8/9/97	8:03			11.5	12.88	A											F	S	G		W							
T39	E	8/9/97	8:04			7	8.38	A											F	S	G	C								
T39	F	8/9/97	8:05			9	10.38	A												S	G									
T39	G	8/9/97	8:05			10	11.88	A												S	G									
T39	H	8/9/97	8:06			10	11.88	A												S	G									
T39	I	8/9/97	8:07			10	11.88	A												S	G									

312919

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation														Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R		
T39	J	8/9/97	8:07			8.5	9.88	A												F							
T39	K	8/9/97	8:08			8	9.38	L			V		AM							F				W			
T39	L	8/9/97	8:09			10	11.88	A												F	S						
T39	M	8/9/97	8:09			6	7.38	A												F	S						
T39	N	8/9/97	8:09			7.5	8.88	L			V		AM							F	S						
T39	O	8/9/97	8:10			5	6.38	L			V	N	AM							F	S						
T39	P	8/9/97	8:10			3.5	4.88	H			V		AM							F							
T39	Q	8/9/97	8:11			1	2.38	H			V		AM							F	S						
T39	R	8/9/97	8:15			4	5.45	M			V		AM							F							
T39	S	8/9/97	8:17			3.5	4.95	H			V		AM							F							
T39	T	8/9/97	8:17		4	1.5	2.95	H			V		AM							F							
T40	A	8/9/97	8:24	237	2.5	3	4.45	M			V		AM	FA						F							
T40	B	8/9/97	8:25			4.5	5.95	M			V		AM							F							
T40	C	8/9/97	8:27			5.5	6.95	L			V		AM							F							
T40	D	8/9/97	8:27			4	5.45	H			V		AM							F	S	G					
T40	E	8/9/97	8:28			3.5	4.95	L			V		AM							F							
T40	F	8/9/97	8:28			3	4.45	L			V		AM							F	S						
T40	G	8/9/97	8:29			5	6.45	M			V		AM							F							
T40	H	8/9/97	8:29			6.5	7.95	H			V		AM							F							
T40	I	8/9/97	8:30			6	7.53	H			V		AM							F							
T40	J	8/9/97	8:30			6	7.53	H			V		AM							F							
T40	K	8/9/97	8:31			5	6.53	H			V		AM							F				W			
T40	L	8/9/97	8:31			6	7.53	M			V		AM							F		G					
T40	M	8/9/97	8:32			6	7.53	H			V		AM							F		G					
T40	N	8/9/97	8:32			6	7.53	H			V		AM							F							
T40	O	8/9/97	8:33			7.5	9.03	H			V		AM							F				W			
T40	P	8/9/97	8:33			6	7.53	H			V		AM							F			C				
T40	Q	8/9/97	8:34			6	7.53	H			V		AM							F							
T40	R	8/9/97	8:34			9	10.53	A												F							
T40	S	8/9/97	8:35			13	14.53	A												F	S	G	C	W			
T40	T	8/9/97	8:37			8	9.53	A												F	S	G		W			
T40	U	8/9/97	8:38			8	9.53	A												F	S	G		W			
T40	V	8/9/97	8:39			4.5	6.03	H			V		AM							F							
T40	W	8/9/97	8:39		3	2.5	4.03	M			V		AM							F							
T41	A	8/9/97	8:43	227	3	2	3.53	M			V		AM							F							
T41	B	8/9/97	8:44			5	6.53	L			V		AM							F							
T41	C	8/9/97	8:46			8	9.58	A												F	S			W			
T41	D	8/9/97	8:47			12	13.58	A												F	S						
T41	E	8/9/97	8:48			8	9.58	A												F	S	G	C	W			
T41	F	8/9/97	8:49			5	6.58	H			V		AM							F	S	G	C				
T41	G	8/9/97	8:49			6	7.58	M			V		AM							F	S	G	C	W			
T41	H	8/9/97	8:50			6	7.58	H			V		AM							F				W			
T41	I	8/9/97	8:51			5	6.58	A												F				W			
T41	J	8/9/97	8:51			6	7.58	H			V		AM							F							
T41	K	8/9/97	8:51			6.5	8.08	A												F	S			W			
T41	L	8/9/97	8:52			8.5	10.08	L			V		AM							F	S						

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Date	Time	Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a A,H,M,L	Vegetation Species ^b												Sediment Characteristic ^c					
Transect	Point								PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T41	M	8/9/97	8:52			9	10.58	A												F					W	
T41	N	8/9/97	8:53			9	10.58	A												F						
T41	O	8/9/97	8:53			10	12.08	A												F					W	
T41	P	8/9/97	8:55			8	9.58	A												F						
T41	Q	8/9/97	8:55			7.5	9.08	L			V		AM							F						
T41	R	8/9/97	8:55			7	8.58	A												F	S					
T41	S	8/9/97	8:56			6	7.58	A												F	S	G	C			
T41	T	8/9/97	8:56			6	7.58	A												F	S	G				
T41	U	8/9/97	8:56			6	7.58	L			V		AM							F						
T41	V	8/9/97	8:57			5	6.58	M					AM							F	S					
T41	W	8/9/97	8:57			4	5.58	M			V	N	AM							F						
T41	X	8/9/97	8:58		5	1.5	3.08	M			V		AM							F						
T42	A	8/9/97	9:03	222	2	2	3.59	L					AM							F						
T42	B	8/9/97	9:05			4	5.59	M			V		AM							F						
T42	C	8/9/97	9:09			5	6.59	H/M			V		AM	FA						F						
T42	D	8/9/97	9:09			5	6.59	L			V		AM	FA						F						
T42	E	8/9/97	9:10			5	6.59	M			V		AM							F						
T42	F	8/9/97	9:10			6	7.59	H			V		AM	FA						F						
T42	G	8/9/97	9:10			6	7.59	L			V		AM							F					W	
T42	H	8/9/97	9:11			6	7.59	M			V		AM							F						
T42	I	8/9/97	9:11			6	7.59	H			V		AM							F					W	
T42	J	8/9/97	9:12			6	7.59	M			V		AM							F					W	
T42	K	8/9/97	9:12			6	7.59	M			V		AM							F					W	
T42	L	8/9/97	9:12			6	7.59	M			V		AM							F					W	
T42	M	8/9/97	9:13			6	7.59	H			V		AM							F						
T42	N	8/9/97	9:13			7	8.59	A												F			C			
T42	O	8/9/97	9:14			9	10.59	A												F			C	W		
T42	P	8/9/97	9:15			12	13.51	A														G		W		
T42	Q	8/9/97	9:17			7.5	9.01	A												F					W	
T42	R	8/9/97	9:18			4	5.51	L			V		AM							F					W	
T42	S	8/9/97	9:19		3	2.5	4.01	M			V		AM							F						
T43	A	8/9/97	9:23	190	4	2	3.51	M			V		AM							F						
T43	B	8/9/97	9:24			6	7.51	A												F					W	
T43	C	8/9/97	9:26			9	10.51	A												F						
T43	D	8/9/97	9:27			12	13.51	A														S	G			
T43	E	8/9/97	9:28			8	9.51	A												F	S	G	C			
T43	F	8/9/97	9:29			10	12.01	A												F	S		C			
T43	G	8/9/97	9:30			7.5	8.91	A												F			C			
T43	H	8/9/97	9:30			7	8.41	L			V		AM							F					W	
T43	I	8/9/97	9:31			6	7.41	A												F	S	G			W	
T43	J	8/9/97	9:31			7	8.41	A												F	S	G				
T43	K	8/9/97	9:31			4	5.41	M			V		AM							F	S	G	C			
T43	L	8/9/97	9:32			5.5	6.91	H			V		AM							F						
T43	M	8/9/97	9:32			7	8.41	M			V		AM							F	S	G	C			
T43	N	8/9/97	9:33			6	7.41	A												F	S	G	C			
T43	O	8/9/97	9:33		6	3.5	4.91	L			V		AM							F	S					

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b													Sediment				
Element		Date	Time	Width	to Shore	of Water	Depth	Density ^a														Characteristic ^c				
Transect	Point			(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR		F	S	G	C	W	R
T44	A	8/9/97	9:39	185	6	1.5	2.91	M			V		AM								F					
T44	B	8/9/97	9:40			2	3.41	M			V		AM								F	S				
T44	C	8/9/97	9:43			4	5.41	M			V		AM								F	S				
T44	D	8/9/97	9:43			6	7.41	M			V		AM	FA							F					
T44	E	8/9/97	9:44			6	7.41	L			V		AM								F	S	G			
T44	F	8/9/97	9:44			8.5	9.91	A													F					R
T44	G	8/9/97	9:45			14	15.36	A													F		G	C		
T44	H	8/9/97	9:48			8	9.36	A													F					
T44	I	8/9/97	9:48			6	7.36	A													F				W	
T44	J	8/9/97	9:49			4	5.36	M			V		AM								F					
T44	K	8/9/97	9:49		7	2	3.36	M			V		AM								F					
T45	A	8/9/97	9:54	200	3	<1	1.86	A													F					
T45	B	8/9/97	9:55			3	4.36	L					AM	FA							F					
T45	C	8/9/97	9:56			4	5.36	H			V		AM								F					
T45	D	8/9/97	9:58			6	7.36	H			V		AM								F				W	
T45	E	8/9/97	9:58			8	9.36	A													F		G			
T45	F	8/9/97	9:59			12	13.36	A													F	S	G			
T45	G	8/9/97	10:01			12	13.36	A													F	S	G			
T45	H	8/9/97	10:02			9	10.36	H					AM								F					
T45	I	8/9/97	10:03			6.5	7.86	L			V		AM								F	S				
T45	J	8/9/97	10:03			6	7.36	H					AM	FA							F					
T45	K	8/9/97	10:04			3	4.36	L			V		AM	FA							F					
T45	L	8/9/97	10:04		4	1	2.36	L			V		AM								F					
T46	A	8/9/97	10:21	211		2.5	3.92	L			V		AM								F					
T46	B	8/9/97	10:22			7.5	8.92	A													F					
T46	C	8/9/97	10:24			9.5	10.92	A													F					
T46	D	8/9/97	10:25			13	14.42	A													F	S	G			
T46	E	8/9/97	10:26			12	13.42	A													F	S				
T46	F	8/9/97	10:28			7.5	8.92	A													F				C	
T46	G	8/9/97	10:28			6	7.42	A													F				C	
T46	H	8/9/97	10:28			6	7.42	A													F		G			
T46	I	8/9/97	10:29			6	7.42	A													F				C	
T46	J	8/9/97	10:29			5	6.42	M			V		AM								F					
T46	K	8/9/97	10:30			5	6.49	M			V		AM								F					
T46	L	8/9/97	10:30		5	1	2.49	H			V		AM								F					
T47	A	8/9/97	10:42	207	4	1	2.49	A													F	S	G			
T47	B	8/9/97	10:43			5	6.49	L			V		AM								F					
T47	C	8/9/97	10:44			6	7.49	A													F				W	
T47	D	8/9/97	10:45			6	7.55	A													F		G			
T47	E	8/9/97	10:46			5.5	7.05	A													F		G			
T47	F	8/9/97	10:46			6	7.55	L			V		AM								F		G			
T47	G	8/9/97	10:46			5	6.55	M			V		AM								F		G			
T47	H	8/9/97	10:47			6	7.55	A													F		G			
T47	I	8/9/97	10:47			6	7.55	A													F		G			
T47	J	8/9/97	10:47			6	7.55	A													F				C	
T47	K	8/9/97	10:48			6	7.55	A													F	S	G	C		

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width	to Shore	of Water	Depth	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T47	L	8/9/97	10:48			8	9.55	A												F	S	G	C		
T47	M	8/9/97	10:49			12	13.55	A												F	S	G			
T47	N	8/9/97	10:51			11	12.55	A												F	S				
T47	O	8/9/97	10:52			10	12.05	A												F	S				
T47	P	8/9/97	10:52		10	10	12.05	A												F				W	
T48	A	8/9/97	10:56	214	2.5	6	7.55	M			V		AM							F					
T48	B	8/9/97	10:58			10	12.05	A												F					
T48	C	8/9/97	10:59			15	16.55	A												F	S	G			
T48	D	8/9/97	11:01			9	10.55	A												F	S	G			
T48	E	8/9/97	11:01			8	9.55	A												F	S	G			
T48	F	8/9/97	11:02			7	8.55	A												F	S	G	C		
T48	G	8/9/97	11:02			7	8.55	A												F	S	G	C		
T48	H	8/9/97	11:02			7	8.55	A												F	S	G	C		
T48	I	8/9/97	11:03			6	7.55	A														G	C		
T48	J	8/9/97	11:03			6	7.55	H			V	N	AM							F	S	G	C		
T48	K	8/9/97	11:03			5	6.55	A												F	S	G	C		
T48	L	8/9/97	11:04			5	6.55	H			V		AM							F					
T48	M	8/9/97	11:04			5	6.55	A												F	S	G	C		
T48	N	8/9/97	11:05			4	5.55	H			V		AM							F					
T48	O	8/9/97	11:05			4	5.55	H		PE	V		AM							F					
T48	P	8/9/97	11:06			4	5.55	H			V		AM		EL					F					
T48	Q	8/9/97	11:06			3	4.55	H			V		AM		EL					F					
T48	R	8/9/97	11:06			2.5	4.05	H			V		AM		EL					F					
T48	S	8/9/97	11:07			1.5	3.05	H			V		AM							F					
T48	T	8/9/97	11:07		10	1	2.55	H			V		AM							F					
T49	A	8/9/97	11:16	226		1	2.44	A												F					
T49	B	8/9/97	11:17			1.5-2	3.19	L			V		AM							F					
T49	C	8/9/97	11:18			4	5.44	L			V		AM							F					
T49	D	8/9/97	11:19			4	5.44	M			V		AM		EL					F					
T49	E	8/9/97	11:19			2.5	3.94	H		PE	V		AM		EL					F					
T49	F	8/9/97	11:25			4.5	5.94	H			V		AM		EL					F					
T49	G	8/9/97	11:25			6	7.44	M			V		AM							F					
T49	H	8/9/97	11:26			6	7.44	A												F	S				
T49	I	8/9/97	11:26			6	7.44	A												F			C		
T49	J	8/9/97	11:27			6	7.44	A												F			C		
T49	K	8/9/97	11:27			6	7.44	L			V		AM							F					
T49	L	8/9/97	11:27			6	7.44	H			V		AM							F					
T49	M	8/9/97	11:28			6	7.44	H			V		AM							F					
T49	N	8/9/97	11:28			7	8.44	A												F	S	G			
T49	O	8/9/97	11:29			8	9.44	A													S	G			
T49	P	8/9/97	11:30			14	15.36	A												F	S	G			
T49	Q	8/9/97	11:31			9	10.36	A												F	S				
T49	R	8/9/97	11:32			8	9.36	A												F					
T49	S	8/9/97	11:32		3	5.5	6.86	A												F					
T49	T	8/9/97	NR			2	3.36	H			V		AM							F					
T50	A	8/9/97	11:36	222	3	2.5	3.86	M			V		AM							F					

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TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width		to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T50	B	8/9/97	11:37			8	9.36	A												F	S			W	
T50	C	8/9/97	11:38			10	11.86	A												F	S			W	
T50	D	8/9/97	11:39			15	16.36	A												F		G			
T50	E	8/9/97	11:41			8	9.36	A												F	S				
T50	F	8/9/97	11:41			7.5	8.86	A												F					
T50	G	8/9/97	11:41			6	7.36	L			V		AM							F			C		
T50	H	8/9/97	11:41			6	7.36	M			V		AM							F		G			
T50	I	8/9/97	11:42			6	7.36	M		PE	V		AM							F					
T50	J	8/9/97	11:42			5.5	6.86	M			V		AM							F					
T50	K	8/9/97	11:43			6	7.36	M			V		AM							F					
T50	L	8/9/97	11:44			4.5	5.86	L			V		AM							F					
T50	M	8/9/97	11:44			4	5.36	M			V		AM							F					
T50	N	8/9/97	11:44			4	5.36	A												F					
T50	O	8/9/97	11:45			3.5	4.77	H	PA		V		AM		EL					F					
T50	P	8/9/97	11:45			3	4.27	L			V		AM							F					
T50	Q	8/9/97	11:46			3	4.27	A												F					
T50	R	8/9/97	11:46			4	5.27	M			V		AM							F					
T50	S	8/9/97	11:47			3	4.27	H			V		AM							F					
T50	T	8/9/97	11:47			3	4.27	M			V		AM							F					
T50	U	8/9/97	11:48			2	3.27	L			V		AM							F					
T50	V	8/9/97	11:48			1	2.27	L			V		AM							F					
T50	W	8/9/97	NR			2	3.27	H					AM							F					
T51	A	8/9/97	12:34	199		1	1.24	L					AM							F	S				
T51	B	8/9/97	12:35			2.5	2.74	H			V		AM							F					
T51	C	8/9/97	12:36			3.5	3.74	H							EL					F	S				
T51	D	8/9/97	12:37			6	6.24	L			V		AM							F	S				
T51	E	8/9/97	12:38			6	6.24	A												F	S				
T51	F	8/9/97	12:38			7	7.24	A													S	G	C		
T51	G	8/9/97	12:38			7.5	7.74	A													S				
T51	H	8/9/97	12:39			8	8.24	A												F	S			W	
T51	I	8/9/97	12:41			17	17.24	A												F	S			W	
T51	J	8/9/97	12:43			8	8.24	A												F			C		
T51	K	8/9/97	12:43			8	8.24	A												F				W	
T51	L	8/9/97	12:44			5	5.24	A												F	S	G	C		
T51	M	8/9/97	12:45		8	1	1.13	H			V		AM							F					
T51	N	8/9/97	12:45				1.32																		
T51	O	8/9/97	14:15			1	3.32	H						FA											
T51	P	8/9/97	14:16			3	5.32	H						FA											
T51	Q	8/9/97	14:18			5	4.32	H						FA											
T51	R	8/9/97	14:18			4	1.32	A																	
T51	S	8/9/97	14:19			1	2.13	H						FA											
T52	A	8/9/97	12:49	185	2	2	6.13	M			V		AM							F	S				
T52	B	8/9/97	12:50			6	13.13	A												F	S	G			
T52	C	8/9/97	12:52			13	15.13	A												F	S				
T52	D	8/9/97	12:53			15	8.13	A													S	G			
T52	E	8/9/97	12:54			8	6.13	A												F					

312924

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation													Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b												Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T52	F	8/9/97	12:55			6	4.13	M			V		AM								F					
T52	G	8/9/97	12:55			4	5.13	L			V		AM								F	S	G			
T52	H	8/9/97	12:55			5	4.13	A													F	S				
T52	I	8/9/97	12:56			4	1.13	M			V		AM		EL						F					
T52	J	8/9/97	12:56		4	1	1.32	A													F	S				
T52	K	8/9/97	14:23		3	1	5.32	H						FA							F					
T52	L	8/9/97	14:24			5	4.32	H						FA							F					
T52	M	8/9/97	14:25			4	3.82	M						FA							F					
T52	N	8/9/97	14:25			3.5	2.32	M						FA							F					
T52	O	8/9/97	14:26			2	8.32	H			V		AM								F					
T52	P	8/9/97	14:26			8	8.32	A													F					
T52	Q	8/9/97	14:27			8	8.32	A													F					
T52	R	8/9/97	14:27			8	4.82	A													F	S	G			
T52	S	8/9/97	14:28			4.5	2.23	A													F	S	G			
T53	A	8/9/97	13:02	125	2	2	14.23	A														S				
T53	B	8/9/97	13:03			14	15.23	A														S				
T53	C	8/9/97	13:04			15	8.23	A														S	G	C		
T53	D	8/9/97	13:05			8	8.23	A													F	S	G	C		
T53	E	8/9/97	13:06			8	8.23	A													F	S	G	C		
T53	F	8/9/97	13:06			8	7.73	A													F	S	G	C		
T53	G	8/9/97	13:07			7.5	6.23	A															C			
T53	H	8/9/97	13:07		4	6	2.27	H			V		AM								F	S	G	C		
T53	I	8/9/97	14:31		2	2	4.27	M			V		AM								F	S				
T53	J	8/9/97	14:32			4	6.27	L			V		AM								F	S				
T53	K	8/9/97	14:34			6	5.27	A													F					
T53	L	8/9/97	14:34			5	6.27	H			V		AM	FA							F					
T53	M	8/9/97	14:34			6	6.27	M			V		AM	FA							F					
T53	N	8/9/97	14:35			6	5.27	A													F					
T53	O	8/9/97	14:35			5	1.27	H						FA							F					
T53	P	8/9/97	14:36		3	1	2.54	L			V		AM								F			W		
T54	A	8/9/97	13:45	201	6	2	5.54	M			V		AM								F	S				
T54	B	8/9/97	13:46			5	6.54	L			V		AM								F	S				
T54	C	8/9/97	13:48			6	6.04	L			V		AM									S	G	C		
T54	D	8/9/97	13:48			5.5	5.04	M			V		AM									S	G	C		
T54	E	8/9/97	13:48			4.5	4.54	H			V		AM								F					
T54	F	8/9/97	13:49			4	4.54	H			V		AM								F					
T54	G	8/9/97	13:49			4	3.54	A													F					
T54	H	8/9/97	13:50			3	1.54	H			V		AM								F					
T54	I	8/9/97	13:50			1	4.54	H			V		AM		EL						F					
T54	J	8/9/97	13:51			4	8.54	H			V		AM								F					
T54	K	8/9/97	13:51			8	9.54	A													F					
T54	L	8/9/97	13:52			9	14.54	A													F	S				
T54	M	8/9/97	13:53			14	8.54	A													F	S		W		
T54	N	8/9/97	13:55			8	1.54	A													F			W		
T54	O	8/9/97	13:56			1	2.27	A													F					
T55	A	8/9/97	14:41	188	3	2	5.27	A													F					

312925

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b														Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a															Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
T55	B	8/9/97	14:42			5	5.27	A													F				W			
T55	C	8/9/97	14:44			5	5.27	A													F				W			
T55	D	8/9/97	14:44			5	4.84	A													F							
T55	E	8/9/97	14:45			4.5	5.84	M			V		AM								F							
T55	F	8/9/97	14:45			5.5	6.34	M			V		AM								F							
T55	G	8/9/97	14:45			6	8.34	H			V		AM	FA							F							
T55	H	8/9/97	14:46			8	20.84	A													F							
T55	I	8/9/97	14:47			20	10.84	A													F	S	G					
T55	J	8/9/97	14:49		7	10	3.84	A													F	S	G	C				
T55	K	8/9/97	14:50		3	3.5	1.34	H			V		AM								F							
T56	A	8/9/97	14:54	160	5	1	9.34	A													F							
T56	B	8/9/97	14:55			9	22.34	A													F	S						
T56	C	8/9/97	14:57			22	8.34	A													NS							
T56	D	8/9/97	14:58			8	4.84	L						FA							F							
T56	E	8/9/97	14:58			4.5	5.34	M						FA							F							
T56	F	8/9/97	14:59			5	4.84	H						FA							F							
T56	G	8/9/97	14:59			4.5	4.45	M						FA							F			C	W			
T56	H	8/9/97	15:00			4	3.45	L						FA							F				W			
T56	I	8/9/97	15:01			3	2.45	L			V		AM	FA							F							
T56	J	8/9/97	15:02		3	2	1.45	A													F							
T57	A	8/9/97	15:14	174	4	1	3.02	L			V		AM								F							
T57	B	8/9/97	15:15			2.5	4.52	L			V		AM								F							
T57	C	8/9/97	15:16			4	7.52	H					F								F							
T57	D	8/9/97	15:17			7	9.52	A													F							
T57	E	8/9/97	15:17			9	22.52	A													F							
T57	F	8/9/97	15:18			22	8.52	A													NS							
T57	G	8/9/97	15:20			8	5.02	A													F		G					
T57	H	8/9/97	15:20			4.5	2.52	H			V		AM								F							
T57	I	8/9/97	15:21		7	2	2.52	M			V		AM								F							
T58	A	8/9/97	15:24	201	5	2	3.02	L			V		AM			PR					F							
T58	B	8/9/97	15:25			2.5	6.52	H			V		AM		EL						F							
T58	C	8/9/97	15:26			6	11.02	H			V		AM	FA							F							
T58	D	8/9/97	15:27			10	16.52	A													F							
T58	E	8/9/97	15:28			16	9.02	A													F	S	G					
T58	F	8/9/97	15:30			8.5	7.52	A													F							
T58	G	8/9/97	15:30			7	4.52	L			V		AM								F							
T58	H	8/9/97	15:31			4	2.52	L			V		AM								F							
T58	I	8/9/97	15:31			2	1.52	H						FA	EL		NY				F							
T58	J	8/9/97	15:32		2	1	1.52	A													F	S						
T59	A	8/9/97	15:36		2	1	3.52	A													F							
T59	B	8/9/97	15:39			3	7.52	L			V		AM								F							
T59	C	8/9/97	15:40			7	11.52	A													F			W				
T59	D	8/9/97	15:42			11	19.52	A													F							
T59	E	8/9/97	15:43			19	8.38	A													NS							
T59	F	8/9/97	15:45			8	8.38	A													F			W				
T59	G	8/9/97	15:45			8	9.38	L			V		AM								F	S	G					

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b													Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a														Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R		
T59	H	8/9/97	15:45			9	8.38	A												F							
T59	I	8/9/97	15:46			8	7.38	L			V		AM							F							
T59	J	8/9/97	15:46			7	6.38	L			V		AM							F							
T59	K	8/9/97	15:47			6	5.38	H						FA						F							
T59	L	8/9/97	15:47			5	1.38	H						FA	EL		NY			F							
T59	M	8/9/97	15:48		3	1	1.38	L							EL					F							
T60	A	8/9/97	15:53	222	3	1	4.38	L			V		AM				NY			F							
T60	B	8/9/97	15:54			4	6.38	H			V		AM	FA	EL					F							
T60	C	8/9/97	15:56			6	6.88	L			V		AM							F							
T60	D	8/9/97	15:56			6.5	6.88	M			V		AM							F							
T60	E	8/9/97	15:56			6.5	8.38	M			V		AM							F							
T60	F	8/9/97	15:57			8	15.38	M			V		AM							F	S	G		W			
T60	G	8/9/97	15:58			15	9.28	A												NS							
T60	H	8/9/97	16:00			9	5.28	A												F				W			
T60	I	8/9/97	16:00			5	2.78	L			V		AM	FA						F				W			
T60	J	8/9/97	16:01		3	2.5	2.26	M			V		AM							F							
T61	A	8/9/97	16:18	229	3	2	2.26	A												F							
T61	B	8/9/97	16:20			2	2.76	A												F							
T61	C	8/9/97	16:20			2.5	3.26	L			V		AM							F							
T61	D	8/9/97	16:21			3	6.76	M			V		AM							F			C				
T61	E	8/9/97	16:21			6.5	14.26	H			V		AM							F		G					
T61	F	8/9/97	16:23			14	8.26	A												NS							
T61	G	8/9/97	16:24			8	8.26	A												F				W			
T61	H	8/9/97	16:25			8	8.26	M			V		AM							F				W			
T61	I	8/9/97	16:25			8	7.26	H			V		AM							F							
T61	J	8/9/97	16:25			7	6.76	H			V		AM							F							
T61	K	8/9/97	16:26			6.5	5.26	H			V		AM							F							
T61	L	8/9/97	16:26			5	3.76	H			V		AM							F							
T61	M	8/9/97	16:27			3.5	2.76	H			V		AM							F							
T61	N	8/9/97	16:28			2.5	1.76	M			V		AM							F							
T61	O	8/9/97	16:28			1.5	1.34	M			V		AM							F							
T62	A	8/9/97	16:33	232	1.5	1	2.84	A												F							
T62	B	8/9/97	16:34			2.5	3.34	A												F							
T62	C	8/9/97	16:35			3	4.34	H			V	N	AM		EL					F							
T62	D	8/9/97	16:36			4	5.34	A												F				W			
T62	E	8/9/97	16:37			5	6.34	A												F							
T62	F	8/9/97	16:37			6	6.34	A												F			C				
T62	G	8/9/97	16:38			6	7.34	L						FA						F							
T62	H	8/9/97	16:38			7	10.84	H		PE	V		AM							F							
T62	I	8/9/97	16:39			10	13.34	A												F				W			
T62	J	8/9/97	16:39			13	13.34	A												F							
T62	K	8/9/97	16:41			13	9.34	A												F		G					
T62	L	8/9/97	16:42			9	4.34	A												F				W			
T62	M	8/9/97	16:43			4	2.34	M			V		AM	FA	EL					F							
T62	N	8/9/97	16:43			2	1.95	M			V		AM							F							
T63	A	8/9/97	16:48	239	3	1.5	4.95	A												F							

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a	Vegetation Species ^b														Sediment Characteristic ^c					
Element		Date	Time						A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R		
Transect	Point							F		S	G	C	W	R														
T63	B	8/9/97	16:48			4.5	6.45	H			V		AM								F							
T63	C	8/9/97	16:49			6	4.95	L						FA							F			W				
T63	D	8/9/97	16:51			4.5	6.95	M			V		AM								F							
T63	E	8/9/97	16:52			6.5	12.45	M						FA							F							
T63	F	8/9/97	16:52			12	13.45	A													F		G					
T63	G	8/9/97	16:53			13	6.95	A													F		G					
T63	H	8/9/97	16:55			6.5	4.95	A													F			C				
T63	I	8/9/97	16:55			4.5	3.95	H			V		AM								F							
T63	J	8/9/97	16:56			3.5	3.45	L			V		AM								F							
T63	K	8/9/97	16:56			3	3.45	A													F							
T63	L	8/9/97	16:57			3	2.45	L			V		AM								F							
T63	M	8/9/97	16:57			2	1.95	H			V		AM		EL						F							
T63	N	8/9/97	16:58		3	1.5	1.47	H			V		AM		EL						F							
T64	A	8/9/97	17:05	234	3	1	1.97	L							EL						F							
T64	B	8/9/97	17:05			1.5	3.47	L							EL						F							
T64	C	8/9/97	17:06			3	5.47	M			V		AM		EL						F							
T64	D	8/9/97	17:07			5	11.47	M			V		AM		EL						F							
T64	E	8/9/97	17:09			11	13.47	A													F							
T64	F	8/9/97	17:10			13	8.47	A													F	S	G					
T64	G	8/9/97	17:12			8	10.97	A													F	S	G					
T64	H	8/9/97	17:13			10	12.47	A													F	S	G					
T64	I	8/9/97	17:13			12	10.97	A													F				W			
T64	J	8/9/97	17:14			10	10.97	L			V		AM								F				W			
T64	K	8/9/97	17:14			10	9.47	A													F							
T64	L	8/9/97	17:15			9	5.47	H						FA							F				W			
T64	M	8/9/97	17:15			5	3.47	A													F				W			
T64	N	8/9/97	17:16		3	3	1.97	L							EL						F							
T65	A	8/9/97	17:21	210	2.5	1.5	6.47	M			V		AM								F	S	G					
T65	B	8/9/97	17:22			6	6.97	H/L			V		AM	FA							F							
T65	C	8/9/97	17:23			6.5	6.47	L			V		AM								F	S	G					
T65	D	8/9/97	17:24			6	12.47	H			V		AM								F							
T65	E	8/9/97	17:25			12	12.47	A													F	S	G					
T65	F	8/9/97	17:27			12	8.47	A													F	S	G					
T65	G	8/9/97	17:29			8	5.35	A													F							
T65	H	8/9/97	17:30			5	3.85	M			V		AM		EL						F							
T65	I	8/9/97	17:30			3.5	0.85	L			V		AM								F							
T65	J	8/9/97	17:31		4	<1	1.85	A													F							
T66	A	8/9/97	17:35	206	3	1.5	6.35	L			V		AM								F							
T66	B	8/9/97	17:36			6	9.35	A													F							
T66	C	8/9/97	17:36			9	14.35	A													F							
T66	D	8/9/97	17:37			14	9.35	A													F				W			
T66	E	8/9/97	17:39			9	7.35	A													F		G		W			
T66	F	8/9/97	17:40			7	7.35	A													F			C				
T66	G	8/9/97	17:40			7	6.35	L			V		AM								F	S	G					
T66	H	8/9/97	17:40			6	4.85	H			V		AM								F							
T66	I	8/9/97	17:41			4.5	2.35	M			V		AM								F							

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a A,H,M,L	Vegetation Species ^b														Sediment Characteristic ^c					
Transect	Point	Date	Time						PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
T66	J	8/9/97	17:41		4	2	2.72	L			V		AM							F								
T67	A	8/10/97	7:55	209		1.5	6.22	M			V		AM							F								
T67	B	8/10/97	7:56		2	5	9.22	A												F								
T67	C	8/10/97	7:58			8	15.22	A												F								
T67	D	8/10/97	7:59			14	10.22	A												F	S	G			W			
T67	E	8/10/97	8:01			9	9.22	A												F		G			W			
T67	F	8/10/97	8:01			8	14.22	A												F	S	G						
T67	G	8/10/97	8:02			13	15.22	A												F	S	G			W			
T67	H	8/10/97	8:02			14	15.22	A												F	S	G	C					
T67	I	8/10/97	8:03			14	14.22	A												F	S	G						
T67	J	8/10/97	8:03			13	9.72	A												F	S	G						
T67	K	8/10/97	8:05			8.5	2.22	M					FA							F					W			
T67	L	8/10/97	8:06	210	4	1	2.22	M			V		AM		EL		NY			F								
T68	A	8/10/97	8:09		5	1	5.22	L			V		AM							F								
T68	B	8/10/97	8:10			4	12.22	M			V		AM							F								
T68	C	8/10/97	8:12			11	13.22	A												F								
T68	D	8/10/97	8:13			12	10.24	A												F	S							
T68	E	8/10/97	8:15			9	10.24	A												F								
T68	F	8/10/97	8:16			9	9.74	L					AM							F								
T68	G	8/10/97	8:16			8.5	6.24	L					AM							F								
T68	H	8/10/97	8:17			5	2.24	A												F								
T68	I	8/10/97	8:17		2	1	2.24	L			V		AM				NY			F								
T69	A	8/10/97	8:21	225	3	1	6.24	M			V		AM				NY			F								
T69	B	8/10/97	8:21			5	9.24	M			V		AM							F								
T69	C	8/10/97	8:23			8	13.24	A												F	S							
T69	D	8/10/97	8:24			12	10.24	A												F	S	G	C					
T69	E	8/10/97	8:26			9	8.24	A												F	S	G	C					
T69	F	8/10/97	8:27			7	6.74	A												F			C	W				
T69	G	8/10/97	8:27			5.5	4.24	H			V		AM							F								
T69	H	8/10/97	8:27			3	2.24	H		PE	V		AM							F								
T69	I	8/10/97	8:28			1	2.24	L			V		AM							F	S							
T69	J	8/10/97	8:28		8	1	2.21	L			V		AM							F	S	G						
T70	A	8/10/97	8:33	193	4	1	4.21	L			V		AM							F								
T70	B	8/10/97	8:34			3	5.21	L												F								
T70	C	8/10/97	8:35			4	7.21	L			V		AM	FA	EL					F								
T70	D	8/10/97	8:36			6	7.21	H						FA						F	S	G						
T70	E	8/10/97	8:37			6	9.21	H			V		AM							F								
T70	F	8/10/97	8:37			8	14.21	A												F								
T70	G	8/10/97	8:38			13	9.21	A												F								
T70	H	8/10/97	8:40			8	8.21	A												F			C					
T70	I	8/10/97	8:40			7	8.21	A												F						R		
T70	J	8/10/97	8:40			7	7.21	A												F						R		
T70	K	8/10/97	8:41			6	6.71	L					AM							F						R		
T70	L	8/10/97	8:41			5.5	5.71	A												F				W				
T70	M	8/10/97	8:42		1	4.5	1.68	M			V		AM							F		G						
T71	A	8/10/97	8:45		4	<1	5.68	H			V		AM							F	S							

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a A,H,M,L	Vegetation Species ^b																Sediment Characteristic ^c					
Element							PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R					
Transect	Point						Date	Time																				
T71	B	8/10/97	8:47			4.5	13.68	M			V		AM						F									
T71	C	8/10/97	8:48			12.5	15.18	A											F				W					
T71	D	8/10/97	8:49			14	11.68	A													G	C						
T71	E	8/10/97	8:51			10.5	10.18	A											F		G							
T71	F	8/10/97	8:52			9	9.68	A											F	S	G	C	W					
T71	G	8/10/97	8:52			8.5	9.18	L				AM	FA						F	S	G	C						
T71	H	8/10/97	8:53			8	7.68	H					FA						F	S	G	C						
T71	I	8/10/97	8:53			6.5	7.18	H					FA									C						
T71	J	8/10/97	8:54			6	5.18	L		V		AM							F	S	G	C						
T71	K	8/10/97	8:54			4	2.68	M		V		AM							F	S	G	C						
T72	A	8/10/97	8:59	192	4	1.5	10.14	M					FA						F	S								
T72	B	8/10/97	9:01			9	8.14	A											F	S	G							
T72	C	8/10/97	9:02			7	7.14	M			V	AM							F	S	G	C						
T72	D	8/10/97	9:04			6	7.14	M			V	AM							F				W					
T72	E	8/10/97	9:06			6	7.14	M			V	AM							F			C						
T72	F	8/10/97	9:06			6	6.14	M			V	AM							F			C						
T72	G	8/10/97	9:07			5	7.14	L			V	AM							F					R				
T72	H	8/10/97	9:07			6	6.14	M			V	AM							F	S								
T72	I	8/10/97	9:08			5	7.14	M/L			V	AM	FA						F									
T72	J	8/10/97	9:08			6	7.14	M			V	AM	FA						F									
T72	K	8/10/97	9:09			6	7.14	M					FA						F	S	G	C	W	R				
T72	L	8/10/97	9:09			6	7.64	L			V	AM							F				R					
T72	M	8/10/97	9:09			6.5	13.14	A											F				R					
T72	N	8/10/97	9:10			12	14.14	A											F				R					
T72	O	8/10/97	9:10			13	10.64	A											F				R					
T72	P	8/10/97	9:12			9.5	6.14	A											F	S	G							
T72	Q	8/10/97	9:13			5	3.64	A											F				W					
T72	R	8/10/97	9:14		3	2.5	5.14	H			V	AM							F	S	G	C						
T73	A	8/10/97	9:17	182	2	4	6.64	A											F									
T73	B	8/10/97	9:18			5.5	7.14	H			V	AM							F									
T73	C	8/10/97	9:18			6	12.14	M			V	AM							F									
T73	D	8/10/97	9:20			11	14.14	A												S	G							
T73	E	8/10/97	9:21			13	11.64	A													G			R				
T73	F	8/10/97	9:23			10	7.14	L					FA						F			C						
T73	G	8/10/97	9:24			6	7.14	M			V	AM							F									
T73	H	8/10/97	9:24			6	7.14	M			V	AM							F			C						
T73	I	8/10/97	9:25			6	6.64	L					FA						F									
T73	J	8/10/97	9:25			5.5	3.16	L				AM							F				R					
T74	A	8/10/97	9:30	171		2	8.16	H			V	AM							F									
T74	B	8/10/97	9:30			7	10.16	A											F				R					
T74	C	8/10/97	9:32			9	9.16	A											F			C						
T74	D	8/10/97	9:33			8	15.16	A											F			C						
T74	E	8/10/97	9:34			14	10.16	A											F				R					
T74	F	8/10/97	9:35			9	10.16	A											F				W					
T74	G	8/10/97	9:36			9	7.66	L				AM							F	S								
T74	H	8/10/97	9:36			6.5	5.16	L				AM							F									

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T74	I	8/10/97	9:37			4	2.16	L			V		AM							F						
T74	J	8/10/97	9:37			1	3.19	A												F			C			
T75	A	8/10/97	9:48	200	3	2	11.69	A												F			C			
T75	B	8/10/97	9:48			10	14.19	A												F						
T75	C	8/10/97	9:50			13	8.19	A													S	G				
T75	D	8/10/97	9:53			7	7.19	A												F			C			
T75	E	8/10/97	9:53			6	8.19	A												F			C			
T75	F	8/10/97	9:54			7	6.19	A												F			C			
T75	G	8/10/97	9:54			5	5.19	M			V		AM							F			C			
T75	H	8/10/97	9:55			4	2.69	L			V		AM							F				W		
T75	I	8/10/97	9:56			1.5	2.19	M			V		AM		EL					F						
T75	J	8/10/97	9:56			1	2.22	L			V									F						
T76	A	8/10/97	10:01	184	3	1	5.22	L			V		AM				NY			F						
T76	B	8/10/97	10:02			4	8.22	M			V		AM							F						
T76	C	8/10/97	10:03			7	12.22	A												F				W		
T76	D	8/10/97	10:04			11	15.22	M						FA						F			C	W		
T76	E	8/10/97	10:05			14	10.22	A													S	G				
T76	F	8/10/97	10:07			9	9.22	A												F			C			
T76	G	8/10/97	10:07			8	11.72	A												F			C			
T76	H	8/10/97	10:08		5	10	2.22	A												F						
T77	A	8/10/97	10:10	199	2	1	6.22	L			V		AM							F						
T77	B	8/10/97	10:11			5	7.22	A												F						
T77	C	8/10/97	10:12			6	13.22	H			V		AM							F						
T77	D	8/10/97	10:13			12	15.22	A												F						
T77	E	8/10/97	10:13			14	9.22	A													S	G	C			
T77	F	8/10/97	10:14			8	9.22	A														G	C			
T77	G	8/10/97	10:16			8	9.22	A												F			C			
T77	H	8/10/97	10:17			8	9.22	L						FA						F						
T77	I	8/10/97	10:18			8	8.72	A												F				W		
T77	J	8/10/97	10:18			7.5	8.22	M			V		AM							F			C	W		
T77	K	8/10/97	10:18			7	7.22	A													G			W		
T77	L	8/10/97	10:19			6	5.22	A												F						
T77	M	8/10/97	10:20		6	4	3.72	A												F				W		
T78	A	8/10/97	10:24	209	6	2.5	8.22	M			V		AM							F						
T78	B	8/10/97	10:24			7	17.22	A												F						
T78	C	8/10/97	10:25			16	19.22	A												NS						
T78	D	8/10/97	10:27			18	10.72	A												NS						
T78	E	8/10/97	10:28			9.5	5.72	A												F						
T78	F	8/10/97	10:29			4.5	5.72	L			V		AM							F						
T78	G	8/10/97	10:29			4.5	2.22	M			V		AM							F						
T78	H	8/10/97	10:29		3	1	2.16	M			V		AM							F						
T79	A	8/10/97	10:33		3	1	8.16	M			V		AM				PR			F						
T79	B	8/10/97	10:34			7	13.16	A												F		G				
T79	C	8/10/97	10:34			12	21.66	A												F		G				
T79	D	8/10/97	10:36			20	9.16	A												NS						
T79	E	8/10/97	10:37			8	10.16	H			V		AM							F						

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation													Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b												Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T79	F	8/10/97	10:37			9	9.66	M			V		AM								F		G			
T79	G	8/10/97	10:38			8.5	11.66	M			V		AM								F		G			
T79	H	8/10/97	10:38			10	11.66	L			V		AM								F					
T79	I	8/10/97	10:38			10	11.66	M			V		AM								F					
T79	J	8/10/97	10:39			10	12.16	M			V		AM								F					
T79	K	8/10/97	10:39			11	12.16	A													F				W	
T79	L	8/10/97	10:40			11	13.16	A													F					
T79	M	8/10/97	10:40			12	13.16	A													F					
T79	N	8/10/97	10:41			12	13.16	A													F					
T79	O	8/10/97	10:41			12	10.16	M						FA							F					
T79	P	8/10/97	10:43			9	7.16	A													F					
T79	Q	8/10/97	10:43			6	3.66	L			V		AM								F				W	
T79	R	8/10/97	10:44		4	2.5	1.93	M			V		AM								F					
T80	A	8/10/97	10:49	241	2.5	1	5.43	A													F					
T80	B	8/10/97	10:49			4.5	11.43	A													F				W	
T80	C	8/10/97	10:51			10	13.93	M			V		AM								F					
T80	D	8/10/97	10:51			13	8.93	A													F	S	G			
T80	E	8/10/97	10:52			8	8.93	H			V		AM								F					
T80	F	8/10/97	10:53			8	8.93	M			V		AM								F					
T80	G	8/10/97	10:53			8	8.93	M			V		AM								F					
T80	H	8/10/97	10:54			8	8.93	H			V		AM								F					
T80	I	8/10/97	10:54			8	8.93	M			V		AM								F					
T80	J	8/10/97	10:54			8	8.93	M			V		AM								F					
T80	K	8/10/97	10:55			8	8.93	M			V		AM								F				W	
T80	L	8/10/97	10:55			8	12.93	M			V		AM								F					
T80	M	8/10/97	10:55			12	16.93	L			V		AM								F					
T80	N	8/10/97	10:56			16	11.93	A													F					
T80	O	8/10/97	10:59			11	7.62	A													F					
T80	P	8/10/97	11:00			7	2.12	A													F		G			
T80	Q	8/10/97	11:00		3	1.5	1.62	M			V		AM		EL						F					
T81	A	8/10/97	11:03	256	3	1	8.62	M			V		AM								F					
T81	B	8/10/97	11:04			8	18.12	A													F					
T81	C	8/10/97	11:06			17.5	18.62	A													F					
T81	D	8/10/97	11:07			18	9.62	A													F					
T81	E	8/10/97	11:08			9	8.62	A													F					
T81	F	8/10/97	11:08			8	8.62	M			V		AM								F					
T81	G	8/10/97	11:08			8	7.62	A													F					
T81	H	8/10/97	11:09			7	7.62	L					AM								F	S				
T81	I	8/10/97	11:09			7	7.62	L					AM								F	S				
T81	J	8/10/97	11:09			7	11.12	A													F	S				
T81	K	8/10/97	11:10			10	11.62	H/L			V		AM	FA							F					
T81	L	8/10/97	11:10			11	9.62	A													F					
T81	M	8/10/97	11:11			9	4.62	A													F					
T81	N	8/10/97	11:12			4	2.62	M			V		AM								F					
T81	O	8/10/97	11:12		3	2	1.88	L			V		AM								F					
T82	A	8/10/97	11:16	232	3	1.5	4.88	A													F					

312932

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a A,H,M,L	Vegetation Species ^b														Sediment Characteristic ^c					
Element		Date	Time						PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
Transect	Point																											
T82	B	8/10/97	11:16			4.5	13.38	L			V		AM							F				W				
T82	C	8/10/97	11:18			13	9.38	A												F				W				
T82	D	8/10/97	11:19			9	8.38	A												F								
T82	E	8/10/97	11:20			8	9.38	M			V		AM							F								
T82	F	8/10/97	11:20			9	9.38	L			V		AM							F								
T82	G	8/10/97	11:20			9	10.38	H			V		AM							F								
T82	H	8/10/97	11:21			10	10.88	L			V		AM							F								
T82	I	8/10/97	11:21			10.5	20.88	A												F								
T82	J	8/10/97	11:22			20	14.38	A												NS								
T82	K	8/10/97	11:23			14	14.38	A												F				W				
T82	L	8/10/97	11:24			14	1.38	A												F				W				
T82	M	8/10/97	11:25		2	1	1.3	L			V		AM							F								
T83	A	8/10/97	11:38	210		1	10.8	M			V		AM							F	S							
T83	B	8/10/97	11:39			10	20.8	A												F								
T83	C	8/10/97	11:40			20	13.3	A												NS								
T83	D	8/10/97	11:42			13	10.8	L						FA						F								
T83	E	8/10/97	11:43			10	6.3	L						FA						F		G						
T83	F	8/10/97	11:43			6	4.31	L			V		AM							F								
T83	G	8/10/97	11:45		4	4	3.31	M			V		AM	FA						F								
T84	A	8/10/97	11:50	159	3	3	10.81	H			V		AM							F	S	G						
T84	B	8/10/97	11:51			10	22.81	A												F	S	G						
T84	C	8/10/97	11:52			22.5	14.31	A												F			C					
T84	D	8/10/97	11:53			14	7.31	A												F				W				
T84	E	8/10/97	11:54			7	1.31	A												F								
T84	F	8/10/97	11:54		3	1	1.41	H			V		AM							F								
T85	A	8/10/97	12:30	139	6	1	7.41	M			V		AM							F								
T85	B	8/10/97	12:32			7	11.41	A												F		G						
T85	C	8/10/97	12:32			11	19.41	A												F				W				
T85	D	8/10/97	12:33			19	13.41	A														G	C					
T85	E	8/10/97	12:35			13	7.41	A												F			C					
T85	F	8/10/97	12:36			7	4.91	L			V		AM							F								
T85	G	8/10/97	12:36			4.5	6.41	M			V		AM							F								
T86	A	8/10/97	12:40		2	6	7.41	H			V		AM							F	S	G	C					
T86	B	8/10/97	12:40			7	25.41	A												F	S	G	C					
T86	C	8/10/97	12:41			25	15.41	A												NS								
T86	D	8/10/97	12:42			15	10.91	A												NS								
T86	E	8/10/97	12:43			10	7.91	A												F				W				
T86	F	8/10/97	12:43			7.5	4.41	A												F				W				
T86	G	8/10/97	12:44		3	4	1.36	M			V		AM							F								
T87	A	8/10/97	12:47	136	4	1	4.36	A												F	S							
T87	B	8/10/97	12:48			4	8.36	H			V		AM							F								
T87	C	8/10/97	12:48			8	12.36	A												F				W				
T87	D	8/10/97	12:49			12	13.36	A												F		G						
T87	E	8/10/97	12:50			13	8.36	A												F				W				
T87	F	8/10/97	12:51			8	7.36	A												F								
T87	G	8/10/97	12:52			7	6.36	A												F	S	G	C					

312933

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation													Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a	Vegetation Species ^b												Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T87	H	8/10/97	12:53			6	2.36	L			V		AM							F	S	G	C			
T87	I	8/10/97	12:53		2	2	4.36	H			V		AM							F	S	G				
T88	A	8/10/97	12:58	124		4	7.36	A																	R	
T88	B	8/10/97	12:59			7	10.81	A																	R	
T88	C	8/10/97	13:01			10	27.31	A																	R	
T88	D	8/10/97	13:01			27	12.81	A												NS						
T88	E	8/10/97	13:03			12.5	9.31	A												F				W		
T88	F	8/10/97	13:03			9	2.31	A												F						
T88	G	8/10/97	13:03		4	2	1.31	H			V		AM							F						
T89	A	8/10/97	13:07	143	5	1	15.31	L		PE	V		AM							F						
T89	B	8/10/97	13:08			15	17.31	A												F						
T89	C	8/10/97	13:10			17	11.31	A														G				
T89	D	8/10/97	13:11			11	8.31	A												F						
T89	E	8/10/97	13:12			8	7.81	A												F						
T89	F	8/10/97	13:12			7.5	6.31	A												F				W		
T89	G	8/10/97	13:13		2.5	6	1.27	A												F						
T90	A	8/10/97	13:16	266	3	1	6.27	A												F						
T90	B	8/10/97	13:17			6	12.27	A												F	S					
T90	C	8/10/97	13:18			12	19.27	A												F						
T90	D	8/10/97	13:19			19	14.27	A												F	S	G				
T90	E	8/10/97	13:20			14	6.27	A												F						
T90	F	8/10/97	13:21			6	1.27	L			V		AM							F						
T90	G	8/10/97	13:21			1	1.27	A												F						
T91	A	8/10/97	13:26	214	5	1	1.77	H										TR		F						
T91	B	8/10/97	13:28			1.5	2.27	H										TR		F						
T91	C	8/10/97	13:29			2	2.29	H										TR		F						
T91	D	8/10/97	13:30			2	2.29	H										TR		F						
T91	E	8/10/97	13:32			2	4.29	M										TR		F						
T91	F	8/10/97	13:32			4	10.79	A												F						
T91	G	8/10/97	13:34			10	21.29	A												F			C			
T91	H	8/10/97	13:35			21	14.29	A												F	S					
T91	I	8/10/97	13:37			14	11.29	A												F						
T91	J	8/10/97	13:38			11	4.29	A												F						
T91	K	8/10/97	13:38			4	2.29	A												F						
T91	L	8/10/97	13:39		4	2	1.34	L			V		AM							F						
T92	A	8/10/97	13:50	194	2	1	2.34	A												F						
T92	B	8/10/97	13:51			2	5.34	L			V		AM							F						
T92	C	8/10/97	13:51			5	7.84	M			V		AM							F						
T92	D	8/10/97	13:53			7.5	10.84	A												F						
T92	E	8/10/97	13:53			10	19.34	A												F						
T92	F	8/10/97	13:54			19	11.84	A												F	S	G				
T92	G	8/10/97	13:55			11.5	10.84	A												F						
T92	H	8/10/97	13:56			10	6.34	L					AM							F						
T92	I	8/10/97	13:56			6	3.84	M						FA						F						
T92	J	8/10/97	13:57			3.5	2.43	L						FA	EL					F				W		
T93	A	8/10/97	14:01	206	3	2	6.43	A												F						

312934

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R	
T93	B	8/10/97	14:02			6	7.43	H			V		AM								F					
T93	C	8/10/97	14:02			7	13.43	L					AM	FA							F					
T93	D	8/10/97	14:03			13	18.43	A													F					
T93	E	8/10/97	14:04			18	12.43	A													F	S				
T93	F	8/10/97	14:07			12	6.43	A													F					
T93	G	8/10/97	14:07			6	2.93	A													F					
T93	H	8/10/97	14:08		3	2.5	1.43	H							EL						F					
T94	A	8/10/97	14:11	226		1	2.93	M								PR					F					
T94	B	8/10/97	14:12			2.5	3.93	H							EL						F					
T94	C	8/10/97	14:12			3.5	6.43	H							EL						F					
T94	D	8/10/97	14:13			6	8.43	M			V		AM		EL						F					
T94	E	8/10/97	14:14			8	11.46	A													F					
T94	F	8/10/97	14:15			11	14.46	A													F					
T94	G	8/10/97	14:16			14	12.46	A													F	S	G		W	
T94	H	8/10/97	14:18			12	8.46	A													F					
T94	I	8/10/97	14:18			8	2.96	A													F					
T94	J	8/10/97	14:18		4	2.5	2.46	L			V		AM								F					
T95	A	8/10/97	14:26	216	2.5	2	5.46	L			V		AM								F					
T95	B	8/10/97	14:27			5	7.46	H			V		AM								F					
T95	C	8/10/97	14:28			7	15.46	A													F					
T95	D	8/10/97	14:29			15	15.99	A													F					
T95	E	8/10/97	14:30			15.5	12.49	A													F	S				
T95	F	8/10/97	14:31			12	12.49	A													F					
T95	G	8/10/97	14:32			12	12.49	A													F					
T95	H	8/10/97	14:32			12	11.49	A													F					
T95	I	8/10/97	14:32			11	9.99	A													F					
T95	J	8/10/97	14:33			9.5	6.49	A													F					
T95	K	8/10/97	14:33			6	2.49	M			V		AM								F					
T95	L	8/10/97	14:34			2	2.49	M			V		AM								F					
T95	M	8/10/97	14:34		4	2	1.49	A													F					
T96	A	8/10/97	14:38	227	2	1	3.99	L								PR					F					
T96	B	8/10/97	14:39			3.5	10.99	H			V		AM								F					
T96	C	8/10/97	14:39			10	16.49	A													F					
T96	D	8/10/97	14:41			16	9.49	A													F					
T96	E	8/10/97	14:43			9	8.49	A													F					
T96	F	8/10/97	14:43			8	7.99	A													F		G			
T96	G	8/10/97	14:43			7.5	6.99	M			V		AM								F					
T96	H	8/10/97	14:44			6.5	6.49	H			V		AM								F					
T96	I	8/10/97	14:44			6	6.93	H			V		AM								F					
T96	J	8/10/97	14:45			6.5	6.43	M			V		AM								F			W		
T96	K	8/10/97	14:45			6	6.43	M			V		AM								F					
T96	L	8/10/97	14:46			6	5.43	H			V		AM								F					
T96	M	8/10/97	14:46			5	3.43	M			V		AM								F					
T96	N	8/10/97	14:47		4	3	1.35	M			V		AM								F					
T97	A	8/10/97	15:00	241	2.5	1	7.35	A													F					
T97	B	8/10/97	15:00			7	6.35	A													F					

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel	Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b											Sediment					
Element				Width	to Shore	of Water	Depth	Density ^a												Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T97	C	8/10/97	15:01			6	7.35	M			V		AM							F					
T97	D	8/10/97	15:01			7	8.35	M			V		AM							F					
T97	E	8/10/97	15:02			8	15.35	L			V		AM							F			C		
T97	F	8/10/97	15:03			15	14.35	A												F			C		
T97	G	8/10/97	15:05			14	12.35	A												F	S	G			
T97	H	8/10/97	15:07			12	9.35	A												F					
T97	I	8/10/97	15:07			9	4.35	A												F					
T97	J	8/10/97	15:07			4	1.35	M			V		AM							F					
T97	K	8/10/97	15:08		2.5	1	15.35	M			V		AM							F					
T98	A	8/10/97	15:11	165	2	15	10.85	A															C		
T98	B	8/10/97	15:14			10	8.32	A												F					
T98	C	8/10/97	15:15			8	8.32	M			V		AM							F					
T98	D	8/10/97	15:15			8	8.32	L			V		AM							F					
T98	E	8/10/97	15:15			8	6.32	A												F	S	G			
T98	F	8/10/97	15:16			6	8.32	H			V		AM							F					
T98	G	8/10/97	15:16			8	6.82	A												F					
T98	H	8/10/97	15:17			6.5	8.32	L			V		AM							F		G			
T98	I	8/10/97	15:17			8	8.32	A												F					
T98	J	8/10/97	15:18		7	8	1.32	A												F	S	G			
T99	A	8/10/97	15:23	246	2	1	9.32	L			V		AM							F					
T99	B	8/10/97	15:24			9	14.32	A												F					
T99	C	8/10/97	15:27			14	7.82	A												F		G	C		
T99	D	8/10/97	15:28			7.5	7.32	A													S	G	C		
T99	E	8/10/97	15:28			7	6.32	A														G			
T99	F	8/10/97	15:29			6	6.32	L			V		AM										C		
T99	G	8/10/97	15:29			6	5.82	H			V		AM							F					
T99	H	8/10/97	15:29			5.5	4.32	H			V		AM							F					
T99	I	8/10/97	15:30			4	4.32	A														G	C		
T99	J	8/10/97	15:31			4	4.32	M			V		AM	FA						F					
T99	K	8/10/97	15:31			4	5.32	M			V		AM	FA						F					
T99	L	8/10/97	15:32			5	6.32	M						FA					TR	F					
T99	M	8/10/97	15:32			6	7.32	M						FA					TR	F					
T99	N	8/10/97	15:33			7	6.32	A												F					
T99	O	8/10/97	15:34			6	5.32	M						FA						F					
T99	P	8/10/97	15:34			5	4.82	M						FA						F					
T99	Q	8/10/97	15:35			4.5	5.32	L						FA	EL					F	S				
T99	R	8/10/97	15:35			5	2.32	M			V		AM							F					
T100	A	8/10/97	15:40		3	2	5.32	H						FA						F					
T100	B	8/10/97	15:41			5	6.32	H/M			V		AM	FA						F					
T100	C	8/10/97	15:41			6	6.32	A												F	S				
T100	D	8/10/97	15:42			6	6.32	A												F				W	
T100	E	8/10/97	15:43			6	5.32	H	PA		V		AM							F					
T100	F	8/10/97	15:43			5	7.32	M			V		AM							F					
T100	G	8/10/97	15:44			7	7.32	M			V		AM							F					
T100	H	8/10/97	15:44			7	6.32	H			V		AM							F					
T100	I	8/10/97	15:44			6	6.39	H			V		AM							F					

312936

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a	Vegetation Species ^b														Sediment Characteristic ^c					
Transect	Point	Date	Time						A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R		
T100	J	8/10/97	15:45			6	6.39	H				V		AM							F							
T100	K	8/10/97	15:47			6	6.39	M				V		AM							F	S	G					
T100	L	8/10/97	15:47			6	7.89	M				V		AM							F	S	G	C				
T100	M	8/10/97	15:48			7.5	8.39	L				V		AM							F	S	G	C				
T100	N	8/10/97	15:48			8	8.39	A													F	S	G	C				
T100	O	8/10/97	15:48			8	8.39	M				V		AM							F	S	G	C				
T100	P	8/10/97	15:49			8	8.39	M				V		AM							F	S	G	C				
T100	Q	8/10/97	15:51			8	8.39	A													F	S	G	C				
T100	R	8/10/97	15:51			8	9.89	M				V		AM							F							
T100	S	8/10/97	15:52			9.5	7.39	A													F	S	G	C				
T100	T	8/10/97	15:55			7	8.39	A													F	S	G					
T100	U	8/10/97	15:55			8	9.89	H				V		AM							F							
T100	V	8/10/97	15:56			9.5	12.39	A													F							
T100	W	8/10/97	15:56			12	15.39	A													F							
T100	X	8/10/97	15:57			15	12.39	A													F							
T100	Y	8/10/97	15:57		4	12	3.39	A													F							
T100	Z	8/10/97	15:58		2	3	1.93	A													F							
T101	A	8/10/97	16:07	236	2	1.5	6.43	A													F							
T101	B	8/10/97	16:08			6	7.43	A													F							
T101	C	8/10/97	16:09			7	7.43	A													F	S	G					
T101	D	8/10/97	16:10			7	8.43	H				V		AM							F	S	G					
T101	E	8/10/97	16:11			8	11.43	A													F							
T101	F	8/10/97	16:11			11	8.43	A													F	S	G					
T101	G	8/10/97	16:12			8	6.43	M				V		AM							F	S	G					
T101	H	8/10/97	16:12			6	8.43	M				V		AM							F	S	G	C				
T101	I	8/10/97	16:13			8	12.43	M				V		AM								S	G	C				
T101	J	8/10/97	16:13			12	9.49	A														S	G	C				
T101	K	8/10/97	16:15			9	8.49	A														S						
T101	L	8/10/97	16:15			8	8.49	A													F	S	G					
T101	M	8/10/97	16:18			8	7.99	A													F	S	G					
T101	N	8/10/97	16:18			7.5	7.49	A													F	S	G					
T101	O	8/10/97	16:18			7	7.49	A													F	S	G					
T101	P	8/10/97	16:19			7	8.49	A													F	S	G					
T101	Q	8/10/97	16:19			8	8.49	A													F					W		
T101	R	8/10/97	16:20			8	7.99	A													F	S	G					
T101	S	8/10/97	16:20			7.5	6.49	A													F	S	G					
T101	T	8/10/97	16:20		1.5	6	3.49	A													F	S	G					
T101	U	8/10/97	16:21		1	3	2.99	A													F							
T102	A	8/10/97	16:27	240	1.5	2.5	6.49	H				V		AM							F							
T102	B	8/10/97	16:27			6	8.48	A													F	S	G					
T102	C	8/10/97	16:30			8	8.48	A														S	G					
T102	D	8/10/97	16:31			8	8.48	A														S	G					
T102	E	8/10/97	16:31			8	8.48	A														S	G					
T102	F	8/10/97	16:32			8	6.48	A														S	G					
T102	G	8/10/97	16:33			6	7.98	L				V		AM								S	G					
T102	H	8/10/97	16:35			7.5	9.48	H				V		AM								S	G					

312937

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name		Channel		Distance	Depth	Adjusted	Vegetation	Vegetation Species ^b												Sediment					
Element		Width	to Shore	of Water	Depth	Depth	Density ^a													Characteristic ^c					
Transect	Point	Date	Time	(yard)	(yard)	(ft)	(ft)	A,H,M,L	PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R
T102	I	8/10/97	16:35			9	8.48	A													S	G			
T102	J	8/10/97	16:36			8	7.98	L			V		AM								S	G			
T102	K	8/10/97	16:37			7.5	6.98	H			V		AM							F					
T102	L	8/10/97	16:38			6.5	8.48	H			V		AM							F					
T102	M	8/10/97	16:38			8	8.48	H			V		AM							F	S	G			
T102	N	8/10/97	16:39			8	10.98	A												F	S	G			
T102	O	8/10/97	16:39			10	4.98	A												F					
T102	P	8/10/97	16:40			4.5	4.98	H			V		AM							F	S	G			
T102	Q	8/10/97	16:40			4.5	6.48	H			V		AM							F					
T102	R	8/10/97	16:41			6	8.48	H			V		AM							F					
T102	S	8/10/97	16:42			8	8.48	H			V		AM							F					
T102	T	8/10/97	16:42			8	4.98	H			V		AM							F					
T102	U	8/10/97	16:42			4.5	7.48	H			V		AM							F					
T102	V	8/10/97	16:43			7	14.48	L			V		AM							F					
T102	W	8/10/97	16:44			14	8.48	A												F				W	
T102	X	8/10/97	16:44		3	8	1.43	A												F					
T103	A	8/10/97	16:50			1	6.43	L										PV		F					
T103	B	8/10/97	16:53			6	5.43	H			V		AM							F					
T103	C	8/10/97	16:53			5	6.43	H			V		AM							F					
T103	D	8/10/97	16:55			6	8.43	H			V		AM							F					
T103	E	8/10/97	16:55			8	6.43	A												F					
T103	F	8/10/97	16:56			6	7.93	M			V		AM							F					
T103	G	8/10/97	16:56			7.5	6.43	H			V		AM							F					
T103	H	8/10/97	16:57			6	6.43	M			V		AM							F					
T103	I	8/10/97	16:57			6	6.43	M			V		AM							F	S	G			
T103	J	8/10/97	16:58			6	7.93	H			V		AM							F					
T103	K	8/10/97	16:58			7.5	7.43	H			V		AM							F					
T103	L	8/10/97	16:59			7	8.93	A												F	S	G			
T103	M	8/10/97	16:59			8.5	8.36	A													S	G			
T103	N	8/10/97	17:00			8	8.36	A													S	G			
T103	O	8/10/97	17:00			8	8.36	L			V		AM								S	G			
T103	P	8/10/97	17:01			8	6.36	H			V		AM								S	G			
T103	Q	8/10/97	17:01			6	6.36	H			V		AM							F					
T103	R	8/10/97	17:02			6	6.36	M			V		AM								S	G			
T103	S	8/10/97	17:02			6	6.36	A													S	G			
T103	T	8/10/97	17:02			6	6.86	A													S	G			
T103	U	8/10/97	17:03			6.5	8.36	L			V		AM								S	G			
T103	V	8/10/97	17:03			8	9.36	M			V		AM								S	G			
T103	W	8/10/97	17:03			9	9.36	A													S	G	C		
T103	X	8/10/97	17:04			9	9.36	A													S	G			
T103	Y	8/10/97	17:04			9	9.36	A													S	G			
T103	Z	8/10/97	17:04			9	9.36	A													S	G			
T103	AA	8/10/97	17:05			9	8.36	A													S	G			
T103	AB	8/10/97	17:05			8	8.36	A													S	G			
T103	AC	8/10/97	17:06			8	8.36	L			V		AM								S	G	C		
T103	AD	8/10/97	17:06		2	8	3.13	A													S	G			

TABLE A-1. VEGETATION CHARACTERIZATION

Station Name				Channel Width (yard)	Distance to Shore (yard)	Depth of Water (ft)	Adjusted Depth (ft)	Vegetation Density ^a A,H,M,L	Vegetation Species ^b														Sediment Characteristic ^c					
Transect	Point	Date	Time						PA	PE	V	N	AM	FA	EL	PR	NY	PV	TR	F	S	G	C	W	R			
T104	A	8/10/97	10:48		2	2.2	5.93	H			V		AM			PR						F						
T104	B	8/10/97	10:51			5	4.93	A														F	S	G				
T104	C	8/10/97	10:51			4	5.93	M			V		AM			PR						F	S	G	C	W	R	
T104	D	8/10/97	10:53			5		A														F	S				R	

Note: NR - not recorded

^a Vegetation density: A - absent, L - low, M - medium, H - high, N - not seen.

^b Vegetation species: PA - *Potamogeton angustifolius*, PE - *Potamogeton epihydrous*, V - *Vallisneria americana*, N - *Najas* sp., AM - periphyton, FA - filamentous algae, EL - *Elodea canadensis*, PR - *Potamogeton richardsonii*, NY - *Nymphaea odorata*, TR - *Trapa natans*, PV - *Peltandra virginica*.

^c Sediment observations were qualitative, but sediments were characterized approximately according to the following criteria:

- F - fine ≤ 0.5 mm
- S - sand 0.6–2.0 mm
- G - gravel 2.1–15.0 mm
- C - cobble > 16 mm
- W - wood woody material of all sizes
- R - rock large rocks or bedrock

^d An unknown plant species was observed at point T1 I.

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS*

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T1A	697011.49	1190936.85	T7E	698218.29	1189498.77	T12G	698817.49	1188114.77
T1B	697045.05	1190974.21	T7F	698239.83	1189513.07	T12H	698851.95	1188133.17
T1C	697078.43	1191043.41	T7G	698262.04	1189522.25	T12I	698885.70	1188147.06
T1D	697093.55	1191108.73	T7H	698282.78	1189535.97	T12J	698906.30	1188157.11
T1E	697151.26	1191145.56	T7I	698454.82	1189625.65	T13A	698644.83	1187727.15
T1F	697161.28	1191209.48	T7J	698486.49	1189626.92	T13B	698673.04	1187751.94
T1G	697218.84	1191230.12	T7K	698476.80	1189666.46	T13C	698709.72	1187762.75
T1H	697258.24	1191281.00	T7L	698505.15	1189690.68	T13D	698746.71	1187768.89
T1I	697281.64	1191340.68	T7M	698531.18	1189716.06	T13E	698781.16	1187774.93
T2A	697194.54	1190687.44	T7N	698561.43	1189740.76	T13F	698816.77	1187783.62
T2B	697225.98	1190740.36	T7O	698589.73	1189761.67	T13G	698851.88	1187793.31
T2C	697258.75	1190781.74	T7P	698622.41	1189798.28	T13H	698885.27	1187801.03
T2D	697274.17	1190830.69	T8A	698254.78	1189226.19	T13I	698915.10	1187820.47
T2E	697318.10	1190859.30	T8B	698280.52	1189227.64	T13J	698948.11	1187849.93
T2F	697367.64	1190875.09	T8C	698295.39	1189245.99	T14A	698691.86	1187414.83
T2G	697407.31	1190907.34	T8D	698322.10	1189244.93	T14B	698745.88	1187399.86
T2H	697442.98	1190944.71	T8E	698346.89	1189250.49	T14C	698809.29	1187395.09
T2I	697487.21	1190969.67	T8F	698369.54	1189268.65	T14D	698864.48	1187391.33
T2J	697519.37	1191008.57	T8G	698388.73	1189277.59	T14E	698919.03	1187388.17
T3A	697420.60	1190478.29	T8H	698411.15	1189292.24	T14F	698973.87	1187392.57
T3B	697445.92	1190520.09	T8I	698596.55	1189259.61	T14G	699026.26	1187402.89
T3C	697468.71	1190556.26	T8J	698629.87	1189261.00	T14H	699080.18	1187413.09
T3D	697511.96	1190586.41	T8K	698663.05	1189275.04	T14I	699132.21	1187422.06
T3E	697537.19	1190615.67	T8L	698692.70	1189278.22	T14J	699191.77	1187431.31
T3F	697556.93	1190656.94	T8M	698719.46	1189282.24	T15A	697955.16	1191542.03
T3G	697588.97	1190690.33	T8N	698737.91	1189292.85	T15B	697956.62	1191581.64
T3H	697627.62	1190710.03	T8O	698760.91	1189307.04	T15C	697973.62	1191662.35
T3I	697657.43	1190738.50	T9A	698403.08	1188927.40	T15D	697951.90	1191686.16
T3J	697691.17	1190760.15	T9B	698451.17	1188946.79	T15E	697939.16	1191711.60
T4A	697677.22	1190216.30	T9C	698496.61	1188962.65	T16A	698785.36	1191203.53
T4B	697711.20	1190244.20	T9D	698537.78	1188986.97	T16B	698823.64	1191227.70
T4C	697736.31	1190284.18	T9E	698583.47	1189004.00	T16C	698867.84	1191239.38
T4D	697784.56	1190296.10	T9F	698629.04	1189022.42	T16D	698908.89	1191254.32
T4E	697819.28	1190326.26	T9G	698670.06	1189044.60	T16E	698983.52	1191383.85
T4F	697841.77	1190396.42	T9H	698712.52	1189069.11	T17A	699165.41	1190169.16
T4G	697890.47	1190369.81	T9I	698750.51	1189097.74	T17B	699203.07	1190174.97
T4H	697906.68	1190407.94	T9J	698787.65	1189133.66	T17C	699232.43	1190186.42
T4I	697917.37	1190475.02	T10A	698457.23	1188630.20	T17D	699264.27	1190200.68
T4J	697971.64	1190449.13	T10B	698511.36	1188645.52	T18A	699471.78	1189029.03
T5A	697850.79	1189999.13	T10C	698553.66	1188649.76	T18B	699522.10	1189064.42
T5B	697886.83	1190036.16	T10D	698603.14	1188648.99	T18C	699574.54	1189103.51
T5C	697919.97	1190083.11	T10E	698650.60	1188657.70	T18D	699616.96	1189073.99
T5D	697969.74	1190099.69	T10F	698694.31	1188664.64	T18E	699661.45	1189092.83
T5E	698016.14	1190117.86	T10G	698734.64	1188669.86	T19A	699566.25	1188153.89
T5F	698049.43	1190153.52	T10H	698772.77	1188671.68	T19B	699619.82	1188154.71
T5G	698080.73	1190189.91	T10I	698806.96	1188684.28	T19C	699670.26	1188142.75
T5H	698100.67	1190232.21	T10J	698840.50	1188694.98	T19D	699726.17	1188139.13
T5I	698136.99	1190259.53	T11A	698495.73	1188345.83	T19E	699768.86	1188147.68
T5J	698152.17	1190300.24	T11B	698537.56	1188354.89	T20A	698681.78	1187123.60
T6A	698034.86	1189751.69	T11C	698580.71	1188365.17	T20B	698700.03	1187117.83
T6B	698069.07	1189785.06	T11D	698624.59	1188377.53	T20C	698718.46	1187125.02
T6C	698112.63	1189816.77	T11E	698665.99	1188387.15	T20D	698738.60	1187118.04
T6D	698159.96	1189831.91	T11F	698706.79	1188398.19	T20E	698758.85	1187115.44
T6E	698207.79	1189841.69	T11G	698746.85	1188408.40	T20F	698778.63	1187109.16
T6F	698249.12	1189860.92	T11H	698787.52	1188412.14	T20G	698800.31	1187102.66
T6G	698288.56	1189888.12	T11I	698826.96	1188424.17	T20H	698820.18	1187091.78
T6H	698320.82	1189922.95	T11J	698874.41	1188449.15	T20I	698836.66	1187076.13
T6I	698337.05	1189963.02	T12A	698573.07	1188038.04	T20J	698855.63	1187063.53
T6J	698360.70	1189982.46	T12B	698615.22	1188063.06	T20K	698873.85	1187050.33
T7A	698121.66	1189477.13	T12C	698657.59	1188071.66	T20L	698894.91	1187037.90
T7B	698145.65	1189479.64	T12D	698693.67	1188082.93	T20M	698913.27	1187029.08
T7C	698174.33	1189474.90	T12E	698732.92	1188094.20	T20N	698932.78	1187020.62
T7D	698194.65	1189489.24	T12F	698771.76	1188103.64	T20O	698952.16	1187016.80

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS*

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T20P	698973.43	1187013.83	T24H	698122.01	1185877.82	T27L	697586.32	1185093.97
T20Q	698993.36	1187010.49	T24I	698137.12	1185859.71	T27M	697592.39	1185072.62
T20R	699015.18	1187007.38	T24J	698155.06	1185846.04	T27N	697599.00	1185045.94
T20S	699037.87	1187005.29	T24K	698168.09	1185829.14	T27O	697603.75	1185021.77
T20T	699058.53	1187004.39	T24L	698182.54	1185813.34	T27P	697607.89	1184998.77
T20U	699079.12	1187003.83	T24M	698194.85	1185795.23	T27Q	697624.65	1184983.12
T20V	699099.10	1187003.40	T24N	698209.92	1185780.18	T27R	697645.64	1184968.99
T20W	699121.05	1187003.60	T24O	698227.91	1185765.63	T27S	697663.89	1184955.64
T20X	699127.70	1187000.63	T24P	698247.95	1185758.77	T27T	697681.46	1184943.92
T21A	698622.22	1186820.06	T24Q	698271.14	1185751.82	T27U	697699.54	1184936.31
T21B	698643.71	1186811.01	T24R	698301.63	1185744.06	T27V	697725.80	1184932.90
T21C	698665.96	1186818.02	T25A	697846.35	1185762.62	T28A	697269.64	1185057.78
T21D	698683.24	1186799.08	T25B	697861.77	1185748.92	T28B	697280.98	1185041.82
T21E	698702.14	1186786.48	T25C	697877.39	1185733.47	T28C	697297.42	1185022.87
T21F	698719.06	1186776.44	T25D	697893.33	1185720.12	T28D	697310.84	1185001.72
T21G	698739.92	1186771.77	T25E	697910.25	1185703.87	T28E	697321.53	1184982.91
T21H	698762.73	1186762.94	T25F	697929.49	1185688.51	T28F	697335.17	1184965.23
T21I	698784.01	1186756.50	T25G	697942.13	1185671.48	T28G	697346.91	1184944.41
T21J	698803.60	1186750.47	T25H	697947.02	1185652.37	T28H	697366.39	1184903.42
T21K	698823.77	1186746.65	T25I	697966.78	1185646.65	T28H-A	697360.00	1184919.50
T21L	698843.79	1186743.06	T25J	697978.38	1185629.27	T28I	697384.93	1184891.55
T21M	698862.85	1186736.28	T25K	697985.75	1185610.03	T28J	697400.04	1184872.25
T21N	698882.20	1186729.56	T25L	697998.87	1185594.22	T28K	697413.76	1184855.62
T21O	698900.25	1186724.25	T25M	698010.91	1185577.45	T28L	697429.94	1184841.53
T21P	698916.23	1186707.60	T25N	698023.50	1185559.82	T28M	697447.14	1184829.32
T22A	698388.47	1186431.46	T25O	698038.39	1185544.76	T28N	697451.64	1184808.70
T22B	698405.10	1186419.94	T25P	698055.05	1185530.91	T28O	697467.39	1184796.21
T22C	698421.28	1186408.80	T25Q	698065.82	1185512.80	T28P	697485.07	1184785.15
T22D	698433.22	1186383.51	T25R	698080.69	1185499.09	T28Q	697503.44	1184776.36
T22E	698450.83	1186363.37	T25S	698098.53	1185485.87	T28R	697519.79	1184763.74
T22F	698463.32	1186346.55	T25T	698121.02	1185481.08	T28S	697538.38	1184752.50
T22G	698480.23	1186331.43	T26A	697653.48	1185540.64	T28T	697555.62	1184740.50
T22H	698498.76	1186315.31	T26B	697673.95	1185529.02	T28U	697575.49	1184734.00
T22I	698517.05	1186300.13	T26C	697693.79	1185534.19	T29A	697073.43	1184820.80
T22J	698531.81	1186285.45	T26D	697709.23	1185517.66	T29B	697087.09	1184803.65
T22K	698547.28	1186272.34	T26E	697728.48	1185502.86	T29C	697104.84	1184790.49
T22L	698562.88	1186257.79	T26F	697750.96	1185489.35	T29D	697115.35	1184772.44
T22M	698581.85	1186250.45	T26G	697767.67	1185477.00	T29E	697137.22	1184759.14
T22N	698602.69	1186247.12	T26H	697781.21	1185461.80	T29F	697154.71	1184750.57
T22O	698623.06	1186249.00	T26I	697796.54	1185447.36	T29G	697174.32	1184743.20
T23A	698259.41	1186245.63	T26J	697811.78	1185431.44	T29H	697196.10	1184737.10
T23B	698272.87	1186230.43	T26K	697823.98	1185414.79	T29I	697221.09	1184730.11
T23C	698288.63	1186216.47	T26L	697836.65	1185399.11	T29J	697258.90	1184730.49
T23D	698299.38	1186195.43	T26M	697849.33	1185382.07	T29K	697280.48	1184732.59
T23E	698311.86	1186179.02	T26N	697863.80	1185363.12	T29L	697299.06	1184719.87
T23F	698321.89	1186161.13	T26O	697875.60	1185345.61	T29M	697318.26	1184714.70
T23G	698335.89	1186145.20	T26P	697886.13	1185327.60	T29N	697338.41	1184717.44
T23H	698349.26	1186130.12	T26Q	697896.96	1185309.59	T29O	697357.47	1184710.41
T23I	698359.00	1186110.78	T26R	697909.39	1185291.96	T29P	697375.56	1184702.32
T23J	698384.06	1186102.15	T26S	697922.12	1185275.20	T29Q	697389.90	1184687.73
T23K	698405.68	1186099.43	T26T	697934.36	1185258.16	T29R	697403.02	1184671.45
T23L	698428.47	1186094.04	T26U	697947.06	1185238.97	T29S	697417.18	1184656.39
T23M	698445.68	1186083.73	T27A	697453.59	1185296.95	T29T	697432.14	1184642.81
T23N	698459.38	1186069.29	T27B	697465.03	1185280.38	T29U	697449.56	1184631.77
T23O	698474.79	1186056.18	T27C	697481.66	1185268.84	T29V	697466.28	1184620.16
T23P	698497.80	1186048.48	T27D	697493.90	1185251.22	T29W	697484.41	1184611.47
T24A	698029.21	1185994.97	T27E	697505.90	1185232.23	T30A	696792.17	1184686.26
T24B	698042.18	1185977.82	T27F	697517.42	1185213.62	T30B	696806.88	1184669.53
T24C	698056.52	1185965.37	T27G	697533.59	1185193.25	T30C	696828.25	1184667.49
T24D	698069.35	1185947.08	T27H	697548.40	1185174.44	T30D	696843.30	1184651.18
T24E	698078.94	1185927.72	T27I	697561.46	1185155.09	T30E	696860.99	1184631.94
T24F	698091.74	1185908.99	T27J	697570.52	1185135.72	T30F	696879.04	1184618.23
T24G	698106.78	1185893.60	T27K	697578.58	1185115.89	T30G	696896.30	1184605.13

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS^a

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T30H	696910.99	1184590.68	T32J	696636.94	1184074.91	T35D	695981.74	1183415.45
T30I	696923.70	1184577.69	T32K	696655.87	1184061.84	T35E	695999.71	1183402.72
T30J	696939.35	1184564.94	T32L	696672.18	1184047.48	T35F	696012.99	1183387.16
T30K	696950.27	1184546.08	T32M	696695.80	1184037.72	T35G	696029.67	1183372.47
T30L	696963.38	1184531.13	T32N	696714.46	1184025.99	T35H	696043.99	1183356.93
T30M	696980.90	1184519.13	T32O	696717.86	1183999.90	T35I	696058.52	1183341.74
T30N	697003.90	1184513.26	T32P	696731.42	1184012.53	T35J	696078.38	1183335.15
T30O	697018.50	1184496.60	T32Q	696749.06	1184011.78	T35K	696097.34	1183328.63
T30P	697034.88	1184469.88	T32R	696768.43	1183995.75	T35L	696113.64	1183315.15
T30Q	697046.38	1184450.54	T32S	696788.26	1183985.71	T35M	696129.74	1183301.93
T30R	697066.05	1184442.73	T32T	696812.30	1183973.92	T35N	696148.36	1183287.86
T30S	697085.09	1184431.36	T32U	696832.64	1183963.38	T35O	696167.88	1183273.44
T30T	697100.05	1184414.70	T32U-A	696848.13	1183947.85	T35P	696186.79	1183253.40
T30U	697116.26	1184397.09	T32V	696867.38	1183933.31	T35Q	696193.54	1183229.63
T30V	697131.78	1184381.43	T32W	696888.42	1183925.51	T35R	696269.25	1183190.98
T30W	697144.62	1184364.79	T32X	696908.38	1183913.89	T35S	696452.73	1183122.88
T30X	697162.33	1184352.20	T32Y	696923.30	1183898.22	T35T	696469.65	1183111.39
T30Y	697172.96	1184334.19	T32Z	696937.93	1183883.03	T35U	696489.77	1183106.71
T30Z	697191.80	1184324.63	T32AA	696954.41	1183870.55	T35V	696498.94	1183103.74
T30AA	697210.72	1184315.22	T32AB	696975.05	1183864.92	T36A	695780.89	1183172.28
T30AB	697227.85	1184304.44	T32AC	696993.19	1183856.90	T36B	695800.01	1183161.99
T30AC	697245.26	1184293.65	T33A	696278.18	1183952.71	T36C	695823.99	1183165.71
T30AD	697262.05	1184282.26	T33B	696292.30	1183932.76	T36D	695843.39	1183153.34
T31A	696651.35	1184440.54	T33C	696311.08	1183919.29	T36E	695860.50	1183137.54
T31B	696672.08	1184435.73	T33D	696320.82	1183896.59	T36F	695874.65	1183120.79
T31C	696688.39	1184420.77	T33E	696331.30	1183876.65	T36G	695890.55	1183107.84
T31D	696702.35	1184402.33	T33F	696344.35	1183855.53	T36H	695906.97	1183095.10
T31E	696721.11	1184390.81	T33G	696361.76	1183824.08	T36I	695927.76	1183086.18
T31F	696736.77	1184376.51	T33H	696375.18	1183806.58	T36J	695950.32	1183082.03
T31G	696755.39	1184368.91	T33I	696389.88	1183789.84	T36K	695971.87	1183080.27
T31H	696773.40	1184359.34	T33J	696406.55	1183772.85	T36L	695994.62	1183073.54
T31I	696792.09	1184347.84	T33K	696418.32	1183754.99	T36M	696015.62	1183064.59
T31J	696806.81	1184330.09	T33L	696431.55	1183737.01	T36N	696040.28	1183056.92
T31K	696821.70	1184313.82	T33M	696448.08	1183718.75	T36O	696061.80	1183045.91
T31L	696843.01	1184294.46	T33N	696461.49	1183698.00	T36P	696160.57	1182995.88
T31M	696853.60	1184272.27	T33O	696474.40	1183673.08	T36Q	696331.04	1182947.35
T31N	696860.45	1184250.59	T33P	696553.76	1183605.52	T36R	696349.59	1182937.19
T31O	696865.63	1184228.02	T33Q	696715.87	1183528.84	T36S	696365.48	1182926.39
T31P	696875.71	1184207.08	T33R	696734.16	1183530.61	T36T	696383.73	1182922.43
T31Q	696879.50	1184174.08	T33S	696752.76	1183530.17	T36U	696399.61	1182923.79
T31R	696910.14	1184160.03	T34A	696097.61	1183708.46	T37A	695658.70	1182897.22
T31S	696928.07	1184162.39	T34B	696111.33	1183689.23	T37B	695688.48	1182887.02
T31T	696952.38	1184160.58	T34C	696135.63	1183685.37	T37C	695706.34	1182876.24
T31U	696973.37	1184159.07	T34D	696152.89	1183669.76	T37D	695724.36	1182865.33
T31V	696992.07	1184149.73	T34E	696163.11	1183648.11	T37E	695740.90	1182854.06
T31W	697011.21	1184137.75	T34F	696174.15	1183626.69	T37F	695758.95	1182843.63
T31X	697028.62	1184125.16	T34G	696190.89	1183610.23	T37G	695781.94	1182835.81
T31Y	697043.15	1184109.48	T34H	696210.99	1183606.75	T37H	695806.18	1182828.86
T31Z	697065.04	1184104.34	T34I	696227.97	1183587.80	T37I	695830.01	1182822.86
T31AA	697082.68	1184093.60	T34J	696248.02	1183580.26	T37J	695852.05	1182818.07
T31AB	697103.26	1184090.83	T34K	696270.97	1183571.08	T37K	695875.25	1182816.84
T31AC	697124.59	1184089.94	T34L	696293.07	1183560.08	T37L	695896.55	1182814.73
T31AD	697145.48	1184087.56	T34M	696311.47	1183544.64	T37M	695924.37	1182804.39
T31AE	697163.36	1184074.22	T34N	696323.43	1183521.98	T37N	695944.80	1182794.98
T32A	696462.55	1184185.79	T34O	696329.18	1183500.33	T37O	695964.23	1182784.08
T32B	696484.76	1184174.19	T34P	696337.66	1183476.73	T37P	695984.97	1182770.77
T32C	696502.21	1184162.41	T34Q	696569.53	1183342.73	T37Q	696103.37	1182748.51
T32D	696523.53	1184154.97	T34R	696586.14	1183330.04	T37R	696216.22	1182754.10
T32E	696537.94	1184140.11	T34S	696607.37	1183328.62	T37S	696239.93	1182756.66
T32F	696556.02	1184125.96	T34T	696626.94	1183322.02	T37T	696261.70	1182752.34
T32G	696575.85	1184113.60	T35A	695928.48	1183448.30	T37U	696283.46	1182752.53
T32H	696594.53	1184100.05	T35B	695946.57	1183436.40	T37V	696303.82	1182749.54
T32I	696615.19	1184086.25	T35C	695966.95	1183430.50	T37W	696325.22	1182751.33

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS^a

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T38A	695602.01	1182604.50	T41A	696312.90	1181683.82	T44F	696129.39	1180692.71
T38B	695623.61	1182608.60	T41B	696293.84	1181678.53	T44G	697921.79	1178417.65
T38C	695643.90	1182603.05	T41C	696276.87	1181668.06	T44G	697921.79	1178417.65
T38D	695664.03	1182597.37	T41D	696186.45	1181628.72	T44G	696235.25	1180717.19
T38E	695685.91	1182592.36	T41E	696111.53	1181589.18	T44H	696465.53	1180751.90
T38F	695708.34	1182587.69	T41F	696091.85	1181585.28	T44I	696486.75	1180752.22
T38G	695732.68	1182582.91	T41G	696071.39	1181587.88	T44J	696501.64	1180765.58
T38H	695755.48	1182576.43	T41H	696053.90	1181578.00	T44K	696517.68	1180778.01
T38I	695778.89	1182569.82	T41I	696033.84	1181575.53	T45A	696616.03	1180483.02
T38J	695803.85	1182565.92	T41J	696013.87	1181572.92	T45B	696597.61	1180473.95
T38K	695827.50	1182563.83	T41K	695994.21	1181566.41	T45C	696577.84	1180467.70
T38L	695853.19	1182561.76	T41L	695972.11	1181560.62	T45D	696560.36	1180456.75
T38M	695875.94	1182558.05	T41M	695951.86	1181554.63	T45E	696538.79	1180448.87
T38N	695899.86	1182554.14	T41N	695931.65	1181545.07	T45F	696436.59	1180420.77
T38O	696046.49	1182528.57	T41O	695911.33	1181535.31	T45G	696219.35	1180389.47
T38P	696216.25	1182528.24	T41P	695856.40	1181518.29	T45H	696166.01	1180390.09
T38Q	696235.81	1182532.45	T41Q	695835.66	1181513.64	T45I	696145.90	1180391.86
T38R	696256.69	1182530.68	T41R	695815.08	1181509.68	T45J	696125.53	1180392.90
T38S	696279.91	1182532.19	T41S	695794.81	1181502.09	T45K	696105.00	1180394.41
T39A	696222.88	1182243.51	T41T	695774.41	1181497.18	T45L	696085.79	1180388.64
T39B	696202.45	1182239.55	T41U	695754.56	1181493.36	T46A	696131.17	1180092.10
T39C	696181.21	1182241.79	T41V	695735.77	1181490.76	T46B	696152.07	1180089.72
T39D	696092.39	1182218.05	T41W	695717.78	1181487.57	T46C	696171.74	1180096.84
T39E	695966.22	1182197.98	T41X	695698.18	1181483.75	T46D	696315.28	1180112.95
T39F	695945.04	1182196.84	T42A	695785.70	1181189.75	T46E	696451.60	1180124.35
T39G	695924.52	1182199.09	T42B	695803.69	1181199.28	T46F	696567.45	1180122.20
T39H	695903.07	1182198.16	T42C	695826.24	1181207.50	T46G	696589.30	1180125.08
T39I	695881.75	1182200.06	T42D	695849.31	1181214.04	T46H	696610.33	1180127.57
T39J	695833.85	1182200.12	T42E	695869.79	1181219.43	T46I	696629.44	1180135.03
T39K	695812.01	1182201.75	T42F	695890.49	1181228.72	T46J	696648.10	1180145.04
T39L	695791.68	1182204.73	T42G	695911.92	1181237.68	T46K	696668.88	1180158.12
T39M	695773.58	1182213.82	T42H	695932.07	1181248.18	T46L	696691.77	1180169.12
T39N	695744.55	1182206.75	T42I	695950.61	1181260.49	T47A	696775.87	1179886.50
T39O	695721.35	1182208.37	T42J	695968.67	1181270.98	T47B	696753.93	1179877.06
T39P	695698.32	1182211.81	T42K	695987.91	1181280.86	T47C	696735.57	1179869.00
T39Q	695676.65	1182211.75	T42L	696006.75	1181291.36	T47D	696714.54	1179871.73
T39R	695656.13	1182213.13	T42M	696025.15	1181301.85	T47E	696692.11	1179868.49
T39S	695591.66	1182204.46	T42N	696044.61	1181314.19	T47F	696671.19	1179862.10
T39T	695573.39	1182211.06	T42O	696064.02	1181326.02	T47G	696650.57	1179854.76
T39U	695555.68	1182205.70	T42P	696184.90	1181372.39	T47H	696630.65	1179846.56
T40A	695592.16	1181905.30	T42Q	696344.24	1181388.11	T47I	696611.44	1179838.49
T40B	695611.41	1181910.33	T42R	696362.65	1181395.48	T47J	696592.05	1179831.16
T40C	695630.19	1181917.65	T42S	696372.51	1181402.33	T47K	696573.05	1179822.97
T40D	695657.53	1181919.72	T43A	696437.62	1181099.28	T47L	696553.90	1179814.29
T40E	695679.02	1181923.68	T43B	696416.54	1181091.90	T47M	696460.42	1179793.53
T40F	695700.37	1181927.38	T43C	696400.96	1181075.48	T47N	696293.03	1179772.76
T40G	695721.34	1181927.44	T43D	696330.23	1181038.02	T47O	696269.99	1179770.13
T40H	695742.84	1181928.23	T43E	696161.69	1180982.38	T47P	696246.54	1179773.61
T40I	695765.78	1181927.96	T43F	696114.90	1180977.10	T48A	696303.80	1179461.81
T40J	695787.76	1181929.49	T43G	696093.13	1180975.22	T48B	696334.67	1179461.73
T40K	695808.45	1181932.11	T43H	696070.92	1180974.42	T48C	696417.91	1179495.14
T40L	695830.85	1181931.57	T43I	696048.86	1180974.22	T48D	696585.78	1179531.51
T40M	695854.13	1181935.08	T43J	696026.80	1180973.90	T48E	696612.37	1179535.13
T40N	695877.03	1181938.18	T43K	696004.97	1180970.06	T48F	696632.47	1179540.30
T40O	695897.37	1181939.57	T43L	695982.23	1180966.82	T48G	696651.25	1179547.41
T40P	695917.88	1181941.58	T43M	695962.92	1180964.35	T48H	696669.46	1179555.95
T40Q	695937.74	1181944.66	T43N	695944.67	1180957.38	T48I	696688.68	1179563.88
T40R	695959.15	1181948.62	T43O	695925.19	1180951.74	T48J	696707.08	1179571.33
T40S	696055.22	1181954.80	T44A	696018.42	1180656.83	T48K	696726.91	1179581.49
T40T	696198.95	1181959.72	T44B	696037.84	1180663.95	T48L	696746.92	1179589.43
T40U	696217.86	1181961.10	T44C	696050.27	1180677.77	T48M	696766.22	1179595.55
T40V	696235.46	1181967.93	T44D	696078.04	1180681.18	T48N	696787.07	1179600.12
T40W	696249.67	1181975.22	T44E	696105.69	1180686.41	T48O	696806.18	1179610.14

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS^a

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T48P	696827.53	1179616.75	T51N	696777.12	1178537.96	T55I	698019.14	1178038.55
T48Q	696849.38	1179625.21	T51O	697425.70	1179134.68	T55J	697925.78	1177941.19
T48R	696867.04	1179636.66	T51P	697440.98	1179147.71	T55K	697908.16	1177934.74
T48S	696887.05	1179645.22	T51Q	697450.17	1179163.59	T56A	698139.01	1177752.59
T48T	696908.76	1179644.28	T51R	697461.75	1179181.09	T56B	698154.62	1177769.30
T49A	697011.71	1179368.42	T51S	697476.46	1179192.72	T56C	698234.53	1177813.37
T49B	696992.44	1179360.49	T52A	697024.74	1178336.29	T56D	698390.53	1177952.15
T49C	696973.71	1179348.65	T52B	697041.00	1178349.19	T56E	698403.03	1177969.82
T49D	696951.89	1179344.81	T52C	697066.07	1178358.91	T56F	698415.22	1177986.55
T49E	696932.39	1179339.17	T52D	697160.53	1178462.43	T56G	698429.84	1178001.87
T49F	696913.88	1179323.30	T52E	697293.97	1178614.48	T56H	698442.91	1178020.48
T49G	696893.76	1179313.78	T52F	697307.15	1178632.76	T56I	698450.62	1178038.87
T49H	696869.32	1179309.93	T52G	697314.43	1178651.63	T56J	698464.28	1178054.64
T49I	696847.31	1179305.00	T52H	697326.09	1178668.24	T57A	698698.19	1177815.89
T49J	696827.04	1179298.01	T52I	697345.05	1178683.45	T57B	698680.63	1177803.32
T49K	696804.34	1179292.34	T52J	697356.59	1178694.00	T57C	698687.43	1177784.12
T49L	696783.35	1179282.92	T52K	697683.56	1178958.97	T57D	698666.05	1177775.98
T49M	696763.60	1179278.14	T52L	697365.95	1178948.83	T57E	698646.69	1177765.96
T49N	696742.86	1179272.97	T52M	697644.68	1178942.70	T57F	698524.07	1177671.31
T49O	696723.91	1179266.86	T52N	697625.15	1178927.29	T57G	698355.91	1177556.60
T49P	696560.48	1179195.18	T52O	697605.11	1178915.22	T57H	698335.20	1177550.21
T49Q	696464.58	1179159.93	T52P	697586.29	1178904.25	T57I	698317.33	1177542.28
T49R	696444.90	1179151.27	T52Q	697569.35	1178888.64	T58A	698474.93	1177285.75
T49S	696423.71	1179149.39	T52R	697550.18	1178876.72	T58B	698493.55	1177294.42
T49T	697275.63	1179356.57	T52S	697535.95	1178863.36	T58C	698516.00	1177306.64
T49T	697275.63	1179356.57	T53A	697570.42	1178483.50	T58D	698525.09	1177326.42
T50A	696561.50	1178859.60	T53B	697561.53	1178461.07	T58E	698686.58	1177371.34
T50B	696578.76	1178870.95	T53C	697508.76	1178367.07	T58F	698900.94	1177497.73
T50C	696587.86	1178890.00	T53D	697461.05	1178243.47	T58G	698920.94	1177500.94
T50D	696672.10	1178922.25	T53E	697453.73	1178223.75	T58H	698937.14	1177515.04
T50E	696833.48	1178978.82	T53F	697442.76	1178206.89	T58I	698950.34	1177532.34
T50F	696857.64	1178991.68	T53G	697428.89	1178191.81	T58J	698969.72	1177550.59
T50G	696876.47	1179003.50	T53H	697415.89	1178176.63	T59A	699144.03	1177298.27
T50H	696893.77	1179014.81	T53I	697738.92	1178627.63	T59B	699137.39	1177278.77
T50I	696912.98	1179022.87	T53J	697760.01	1178632.54	T59C	699120.75	1177264.78
T50J	696930.30	1179033.62	T53K	697778.98	1178641.73	T59D	699101.88	1177256.54
T50K	696950.76	1179041.43	T53L	697795.22	1178649.31	T59E	698983.43	1177131.88
T50L	696969.85	1179051.33	T53M	697815.02	1178658.72	T59F	698787.03	1176998.10
T50M	696987.25	1179063.28	T53N	697832.40	1178670.56	T59G	698770.30	1176984.58
T50N	697005.00	1179073.38	T53O	697848.44	1178685.49	T59H	698750.10	1176980.19
T50O	697022.32	1179083.25	T53P	697861.32	1178691.67	T59I	698729.99	1176976.11
T50P	697039.74	1179093.99	T54A	697982.47	1178542.05	T59J	698709.71	1176967.90
T50Q	697057.34	1179103.74	T54B	697974.19	1178524.35	T59K	698692.31	1176956.20
T50R	697074.55	1179114.95	T54C	697964.95	1178504.09	T59L	698674.27	1176946.93
T50S	697092.31	1179127.04	T54D	697952.43	1178480.51	T59M	698654.60	1176943.24
T50T	697107.17	1179142.09	T54E	697942.70	1178457.59	T60A	698778.95	1176670.36
T50U	697129.36	1179157.02	T54F	697930.80	1178436.83	T60B	698805.82	1176678.63
T50V	697134.84	1179164.04	T54H	697906.83	1178402.86	T60C	698822.44	1176690.45
T50W	697339.97	1179296.13	T54I	697894.11	1178387.56	T60D	698847.49	1176695.71
T50W	697339.97	1179296.13	T54J	697882.97	1178370.32	T60E	698871.14	1176700.47
T51A	697186.88	1178876.80	T54K	697874.44	1178351.89	T60F	698899.07	1176707.62
T51B	697168.96	1178862.54	T54L	697871.16	1178331.81	T60G	699101.00	1176768.74
T51C	697153.88	1178848.91	T54M	697797.27	1178187.61	T60H	699308.21	1176892.71
T51D	697134.39	1178832.21	T54N	697677.05	1178074.44	T60I	699327.37	1176911.11
T51E	697136.74	1178806.75	T54O	697656.83	1178072.43	T60J	699340.77	1176928.62
T51F	697124.54	1178787.12	T55A	698206.18	1178333.01	T61A	699475.25	1176662.39
T51G	697111.70	1178770.73	T55B	698191.50	1178314.26	T61B	699457.64	1176651.26
T51H	697099.26	1178753.74	T55C	698180.61	1178295.53	T61C	699434.67	1176642.41
T51I	696963.69	1178652.44	T55D	698164.41	1178269.13	T61D	699412.26	1176637.74
T51J	696847.62	1178577.29	T55E	698148.23	1178248.83	T61E	699390.15	1176628.90
T51K	696821.31	1178559.09	T55F	698136.26	1178232.37	T61F	699189.30	1176552.14
T51L	696801.47	1178553.84	T55G	698124.12	1178215.11	T61G	699031.29	1176507.60
T51M	696780.72	1178539.44	T55H	698113.11	1178195.19	T61H	699004.13	1176494.24

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS*

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T61I	698977.67	1176490.26	T66E	699617.34	1175245.47	T72C	700529.35	1173508.74
T61J	698955.30	1176486.77	T66F	699637.18	1175252.37	T72D	700513.08	1173493.81
T61K	698934.98	1176485.11	T66G	699654.24	1175264.54	T72E	700492.64	1173486.28
T61L	698912.56	1176484.57	T66H	699677.17	1175272.99	T72F	700471.48	1173479.54
T61M	698887.61	1176487.51	T66I	699692.83	1175288.84	T72G	700451.92	1173469.52
T61N	698868.11	1176481.13	T66J	699711.48	1175300.64	T72H	700428.11	1173460.45
T61O	698845.84	1176477.72	T67A	699216.06	1174922.32	T72I	700411.88	1173450.71
T62A	698924.95	1176189.43	T67B	699232.61	1174921.73	T72J	700395.63	1173436.81
T62B	698943.42	1176182.30	T67C	699251.78	1174928.59	T72K	700377.87	1173423.76
T62C	698962.14	1176186.85	T67D	699344.69	1174932.93	T72L	700356.63	1173415.33
T62D	698980.75	1176191.88	T67E	699551.71	1174938.22	T72M	700333.98	1173409.04
T62E	698999.24	1176204.19	T67F	699574.30	1174932.08	T72N	700312.81	1173407.17
T62F	699019.31	1176205.46	T67G	699597.05	1174929.38	T72O	700251.70	1173376.48
T62G	699040.09	1176213.80	T67H	699618.10	1174930.78	T72P	700092.34	1173346.73
T62H	699061.57	1176220.55	T67I	699642.47	1174937.68	T72Q	700071.06	1173348.90
T62I	699086.55	1176220.03	T67J	699662.13	1174947.24	T72R	700048.60	1173357.80
T62J	699224.91	1176219.66	T67K	699792.87	1175021.78	T73A	700064.65	1173062.56
T62K	699466.15	1176282.18	T67L	699807.97	1175029.21	T73B	700085.50	1173061.54
T62L	699528.08	1176326.04	T68A	699884.11	1174752.13	T73C	700103.50	1173062.17
T62M	699544.46	1176339.34	T68B	699867.13	1174741.39	T73D	700125.76	1173053.26
T62N	699561.06	1176350.91	T68C	699847.55	1174735.27	T73E	700200.76	1173034.58
T63A	699644.92	1176049.94	T68D	699666.11	1174635.39	T73F	700507.60	1173051.96
T63B	699620.48	1176039.12	T68E	699439.62	1174502.32	T73G	700528.07	1173055.79
T63C	699593.68	1176030.38	T68F	699421.21	1174493.16	T73H	700547.94	1173058.88
T63D	699575.23	1176038.50	T68G	699403.19	1174483.29	T73I	700570.52	1173060.90
T63E	699548.31	1176039.35	T68H	699385.09	1174474.41	T73J	700582.90	1173064.05
T63F	699527.06	1176032.08	T68I	699367.94	1174472.91	T74A	700570.78	1172760.18
T63G	699328.41	1175983.05	T69A	699537.07	1174211.98	T74B	700549.38	1172754.26
T63H	699097.73	1175973.74	T69B	699556.58	1174220.31	T74C	700527.46	1172756.02
T63I	699076.44	1175977.41	T69C	699551.32	1174240.18	T74D	700463.68	1172748.29
T63J	699054.88	1175973.58	T69D	699773.86	1174320.06	T74E	700262.48	1172700.39
T63K	699033.35	1175976.07	T69E	699997.17	1174421.48	T74F	700133.56	1172698.54
T63L	699014.25	1175976.51	T69F	700021.93	1174431.30	T74G	700114.59	1172703.36
T63M	698992.63	1175977.27	T69G	700039.39	1174447.27	T74H	700094.01	1172708.04
T63N	698973.10	1175979.18	T69H	700050.58	1174463.14	T74I	700073.47	1172708.81
T64A	699043.35	1175677.14	T69I	700067.37	1174473.84	T74J	700062.30	1172712.89
T64B	699063.21	1175685.47	T69J	700077.91	1174478.19	T75A	700099.19	1172420.60
T64C	699080.07	1175694.60	T70A	700296.47	1174258.63	T75B	700121.54	1172420.32
T64D	699099.76	1175700.86	T70B	700276.35	1174243.86	T75C	700233.36	1172405.62
T64E	699115.65	1175711.93	T70C	700258.75	1174232.03	T75D	700530.86	1172445.87
T64F	699197.75	1175716.52	T70D	700239.72	1174223.48	T75E	700552.54	1172455.79
T64G	699541.68	1175756.45	T70E	700220.94	1174215.42	T75F	700572.89	1172455.70
T64H	699561.43	1175747.78	T70F	700201.15	1174203.44	T75G	700591.81	1172457.10
T64I	699581.04	1175778.74	T70G	700050.46	1174113.33	T75H	700611.93	1172457.93
T64J	699604.78	1175797.25	T70H	699883.10	1174012.65	T75I	700632.25	1172457.59
T64K	699626.28	1175803.03	T70I	699867.16	1173999.33	T75J	700638.47	1172457.38
T64L	699645.22	1175811.31	T70J	699850.93	1173987.31	T76A	700652.27	1172148.07
T64M	699658.15	1175826.88	T70K	699832.99	1173980.47	T76B	700625.30	1172149.16
T64N	699674.50	1175836.61	T70L	699813.76	1173973.01	T76C	700627.79	1172131.11
T65A	699690.38	1175537.60	T70M	699804.33	1173966.24	T76D	700606.32	1172139.76
T65B	699670.03	1175533.90	T71A	699997.50	1173730.22	T76E	700355.01	1172133.24
T65C	699649.46	1175528.12	T71B	700018.00	1173734.00	T76F	700179.27	1172102.85
T65D	699624.24	1175530.93	T71C	700027.73	1173751.88	T76G	700161.56	1172112.67
T65E	699594.00	1175527.49	T71D	700093.67	1173753.30	T76H	700142.69	1172117.97
T65F	699316.22	1175472.37	T71E	700349.12	1173809.58	T77A	700134.43	1171818.26
T65G	699136.79	1175510.17	T71F	700368.92	1173814.83	T77B	700155.72	1171819.80
T65H	699119.27	1175520.12	T71G	700393.14	1173820.04	T77C	700178.25	1171834.58
T65I	699101.96	1175532.13	T71H	700413.84	1173825.37	T77D	700196.67	1171822.42
T65J	699083.47	1175530.61	T71I	700431.14	1173832.53	T77E	700267.23	1171804.88
T66A	699146.32	1175230.45	T71J	700446.23	1173844.95	T77F	700423.72	1171763.63
T66B	699167.33	1175231.85	T71K	700463.85	1173851.66	T77G	700545.60	1171745.41
T66C	699188.72	1175223.75	T72A	700580.82	1173534.38	T77H	700627.89	1171760.12
T66D	699252.60	1175234.39	T72B	700560.60	1173524.08	T77I	700645.14	1171766.01

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS*

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T77J	700661.40	1171778.44	T82B	701310.03	1170128.55	T90B	700226.68	1167853.86
T77K	700680.11	1171785.63	T82C	701295.13	1170119.17	T90C	700201.50	1167858.80
T77L	700698.13	1171792.61	T82D	701104.52	1170143.85	T90D	699996.19	1167892.36
T77M	700714.12	1171803.56	T82E	701083.78	1170151.29	T90E	699825.42	1167950.53
T78A	700794.45	1171535.15	T82F	701062.65	1170151.57	T90F	699806.50	1167957.53
T78B	700774.23	1171525.60	T82G	701042.30	1170152.13	T90G	699793.49	1167965.06
T78C	700751.78	1171519.93	T82H	701019.00	1170151.92	T91A	699612.09	1167728.06
T78D	700463.07	1171417.91	T82I	700995.63	1170150.36	T91B	699634.59	1167732.65
T78E	700276.70	1171364.38	T82J	700889.15	1170156.95	T91C	699656.88	1167729.20
T78F	700255.77	1171366.15	T82K	700690.00	1170188.11	T91D	699682.90	1167723.23
T78G	700235.05	1171358.76	T82L	700669.22	1170190.68	T91E	699709.89	1167719.56
T78H	700230.96	1171354.52	T82M	700648.00	1170190.11	T91F	699730.97	1167707.47
T79A	700339.79	1171061.93	T83A	700695.26	1169889.94	T91G	699747.47	1167694.00
T79B	700359.60	1171064.41	T83B	700717.96	1169888.71	T91H	699837.69	1167637.83
T79C	700380.48	1171059.74	T83C	700799.62	1169860.26	T91I	700138.28	1167620.39
T79D	700485.69	1171072.96	T83D	701227.14	1169873.38	T91J	700158.75	1167624.35
T79E	700652.73	1171074.73	T83E	701246.87	1169878.16	T91K	700179.58	1167628.31
T79F	700674.00	1171080.99	T83F	701264.32	1169883.92	T91L	700180.13	1167629.01
T79G	700698.24	1171085.33	T83G	701283.40	1169887.86	T92A	700182.12	1167350.92
T79H	700718.95	1171080.89	T84A	701112.81	1169605.01	T92B	700157.41	1167352.65
T79I	700744.99	1171082.72	T84B	701089.58	1169643.26	T92C	700135.03	1167359.26
T79J	700763.51	1171087.87	T84C	700878.91	1169671.46	T92D	700113.11	1167355.90
T79K	700782.93	1171091.69	T84D	700710.97	1169662.18	T92E	700092.13	1167355.58
T79L	700804.40	1171095.27	T84E	700692.98	1169671.27	T92F	699916.97	1167364.33
T79M	700823.67	1171097.27	T84F	700673.65	1169677.12	T92G	699697.53	1167366.88
T79N	700847.60	1171095.79	T85A	700577.60	1169383.95	T92H	699678.94	1167374.27
T79O	700869.58	1171095.25	T85B	700597.21	1169373.22	T92I	699658.95	1167383.06
T79P	700985.74	1171132.75	T85C	700603.58	1169352.94	T92J	699636.19	1167390.98
T79Q	701002.08	1171142.88	T85D	700696.61	1169288.73	T93A	699610.11	1167084.56
T79R	701019.10	1171155.79	T85E	700896.56	1169230.18	T93B	699627.03	1167073.65
T80A	701160.60	1170905.42	T85F	700917.98	1169229.41	T93C	699644.69	1167062.13
T80B	701142.44	1170895.15	T85G	700938.87	1169231.07	T93D	699668.12	1167071.37
T80C	701121.09	1170883.59	T86A	700765.93	1168988.68	T93E	699824.92	1167009.88
T80D	701101.71	1170863.75	T86B	700747.00	1168994.11	T93F	700121.20	1166965.73
T80E	700965.79	1170798.05	T86C	700724.89	1168998.77	T93G	700141.16	1166969.86
T80F	700934.25	1170790.60	T86D	700657.74	1169053.71	T93H	700165.46	1166965.48
T80G	700915.93	1170784.36	T86E	700504.28	1169132.88	T94A	700199.15	1166681.12
T80H	700895.83	1170773.85	T86F	700492.68	1169148.95	T94B	700179.37	1166681.07
T80I	700875.31	1170762.34	T86G	700482.61	1169168.92	T94C	700158.49	1166680.14
T80J	700856.55	1170754.80	T87A	700317.14	1168933.48	T94D	700136.70	1166678.13
T80K	700837.04	1170746.33	T87B	700334.26	1168921.70	T94E	700132.79	1166657.70
T80L	700818.89	1170732.20	T87C	700345.48	1168895.67	T94F	700111.73	1166672.33
T80M	700800.24	1170720.62	T87D	700362.98	1168880.74	T94G	699918.11	1166690.88
T80N	700754.12	1170695.03	T87E	700421.22	1168797.79	T94H	699601.60	1166684.14
T80O	700535.02	1170624.93	T87F	700544.15	1168728.22	T94I	699581.84	1166688.47
T80P	700517.21	1170621.26	T87G	700559.74	1168716.35	T94J	699558.66	1166688.87
T80Q	700498.44	1170622.91	T87H	700578.88	1168719.13	T95A	699485.07	1166405.59
T81A	700593.71	1170348.57	T87I	700598.16	1168711.23	T95B	699504.56	1166410.76
T81B	700613.83	1170347.16	T88A	700432.82	1168455.46	T95C	699524.04	1166407.63
T81C	700635.98	1170350.03	T88B	700412.62	1168460.13	T95D	699549.23	1166401.25
T81D	700812.32	1170337.04	T88C	700394.52	1168461.32	T95E	699749.31	1166337.44
T81E	700960.01	1170362.58	T88D	700326.56	1168481.71	T95F	699970.39	1166302.28
T81F	700978.29	1170371.00	T88E	700159.22	1168558.62	T95G	699992.71	1166304.91
T81G	700999.83	1170376.05	T88F	700143.68	1168571.37	T95H	700012.85	1166307.65
T81H	701021.81	1170376.11	T88G	700132.21	1168589.36	T95I	700031.60	1166308.55
T81I	701055.46	1170382.75	T89A	699960.16	1168331.14	T95J	700051.05	1166311.16
T81J	701079.27	1170387.83	T89B	699980.16	1168317.35	T95K	700069.94	1166316.80
T81K	701100.09	1170393.61	T89C	700082.26	1168244.84	T95L	700091.88	1166320.72
T81L	701128.42	1170401.77	T89D	700250.21	1168172.88	T95M	700103.56	1166320.48
T81M	701267.19	1170436.78	T89E	700272.10	1168166.48	T96A	700043.43	1166005.99
T81N	701284.06	1170442.40	T89F	700290.36	1168158.40	T96B	700024.19	1166012.76
T81O	701305.01	1170450.28	T89G	700308.41	1168148.72	T96C	700002.54	1166016.56
T82A	701329.24	1170131.50	T90A	700249.14	1167856.16	T96D	699858.90	1166032.89

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS^a

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T96E	699568.52	1166056.15	T100O	699392.31	1164704.08	T103C	698960.10	1163821.62
T96F	699545.12	1166056.71	T100P	699356.15	1164703.28	T103D	698972.05	1163828.59
T96G	699523.56	1166059.78	T100Q	699329.58	1164706.90	T103E	698985.88	1163832.85
T96H	699501.10	1166064.96	T100R	699317.97	1164727.41	T103F	699013.84	1163848.93
T96I	699486.53	1166078.08	T100S	699293.08	1164727.49	T103G	699053.08	1163853.10
T96J	699470.07	1166090.42	T100T	699114.49	1164772.81	T103H	699075.90	1163850.73
T96K	699451.65	1166095.85	T100U	699093.39	1164777.48	T103I	699099.33	1163843.40
T96L	699434.22	1166106.16	T100V	699071.76	1164782.14	T103J	699125.93	1163836.21
T96M	699416.17	1166113.03	T100W	699048.03	1164782.82	T103K	699142.97	1163827.17
T96N	699401.26	1166113.71	T100X	699030.18	1164796.53	T103L	699164.30	1163821.28
T97A	699293.73	1165805.96	T100Y	699009.71	1164802.85	T103M	699190.46	1163817.74
T97B	699312.89	1165793.72	T100Z	698998.13	1164802.63	T103N	699301.21	1163766.79
T97B	699344.11	1165365.70	T101A	698945.07	1164510.54	T103O	699329.27	1163729.42
T97C	699329.45	1165780.37	T101B	698965.13	1164504.49	T103P	699348.75	1163722.91
T97C	699325.03	1165357.77	T101C	698999.67	1164488.42	T103Q	699376.49	1163717.21
T97D	699349.22	1165766.71	T101D	699016.97	1164497.64	T103R	699406.26	1163703.39
T97D	699296.81	1165348.79	T101E	699021.36	1164476.07	T103S	699431.61	1163702.78
T97E	699369.44	1165763.46	T101F	699045.10	1164462.96	T103T	699451.06	1163715.28
T97E	699274.23	1165351.89	T101G	699125.70	1164442.51	T103U	699474.48	1163712.49
T97F	699386.82	1165737.49	T101H	699149.08	1164427.05	T103V	699490.01	1163696.09
T97G	699713.00	1165588.10	T101I	699168.65	1164409.47	T103W	699512.04	1163690.13
T97H	699897.09	1165582.72	T101J	699190.57	1164399.87	T103X	699528.86	1163701.55
T97I	699919.29	1165592.03	T101K	699401.65	1164355.41	T103Y	699551.72	1163702.85
T97J	699940.34	1165593.04	T101L	699423.92	1164343.11	T103Z	699565.69	1163685.36
T97K	699950.98	1165591.45	T101M	699443.99	1164340.64	T104A	695347.25	1194204.73
T98A	699621.45	1165413.93	T101N	699467.49	1164335.39	T104B	695325.25	1194217.55
T98F	699252.68	1165352.93	T101O	699487.78	1164337.91	T104C	695299.00	1194218.01
T98G	699224.46	1165366.52	T101P	699510.22	1164346.62	T104D	695307.41	1194201.77
T98H	699208.11	1165377.57	T101Q	699533.41	1164351.42	T105A	694579.25	1191787.15
T98I	699186.87	1165380.62	T101R	699554.54	1164342.46	T106A	695519.51	1191549.69
T98J	699164.86	1165387.15	T101S	699572.70	1164329.12	T106B	695488.37	1191611.98
T99A	699062.40	1165071.72	T101T	699594.99	1164328.41	T106C	695444.77	1191686.72
T99B	699081.45	1165071.41	T101U	699611.10	1164340.24	T106D	695410.51	1191752.13
T99C	699370.98	1165026.69	T102A	699589.17	1164031.41	T106E	695376.25	1191808.49
T99D	699484.00	1164995.16	T102B	699568.99	1164026.07	T107A	695320.20	1191443.81
T99E	699504.62	1164995.73	T102C	699530.46	1164021.35	T107B	695313.97	1191484.29
T99F	699526.04	1164995.19	T102D	699519.67	1164035.39	T107C	695295.28	1191702.30
T99G	699547.23	1164989.63	T102E	699500.54	1164026.11	T107D	695282.61	1191777.69
T99H	699569.58	1164981.23	T102F	699475.74	1164029.93	T108A	695276.59	1191422.01
T99I	699601.17	1164984.32	T102G	699376.20	1164044.70	T108B	695276.59	1191474.95
T99J	699623.11	1164982.82	T102H	699358.98	1164056.44	T108C	695257.91	1191742.78
T99K	699642.50	1164979.96	T102I	699332.99	1164051.08	T109A	695208.08	1191372.18
T99L	699664.48	1164978.81	T102J	699181.42	1164097.16	T109B	695214.31	1191406.44
T99M	699685.93	1164981.69	T102K	699168.22	1164110.88	T109C	695220.54	1191459.38
T99N	699704.63	1164979.91	T102L	699150.52	1164119.71	T109D	695223.65	1191506.09
T99O	699723.42	1164984.72	T102M	699134.16	1164110.06	T109E	695226.77	1191549.69
T99P	699741.05	1164993.73	T102N	699113.81	1164108.44	T109F	695229.88	1191664.92
T99Q	699756.58	1165004.06	T102O	699102.17	1164126.48	T109G	695232.99	1191773.93
T99R	699772.58	1165008.33	T102P	699085.89	1164138.57	T110A	695127.11	1191372.18
T100A	699672.10	1164716.56	T102Q	699065.08	1164139.22	T110B	695142.68	1191425.12
T100B	699650.18	1164717.45	T102R	699043.12	1164128.95	T111A	695067.93	1191393.98
T100C	699630.60	1164709.73	T102S	699022.16	1164133.76	T111B	695099.08	1191440.69
T100D	699611.36	1164700.62	T102T	699002.41	1164125.89	T111C	695127.11	1191471.84
T100E	699594.52	1164711.40	T102U	698979.93	1164126.08	T112A	695052.36	1191434.46
T100F	699574.28	1164714.95	T102V	698960.20	1164134.67	T112B	695080.39	1191490.52
T100G	699554.21	1164713.21	T102W	698934.77	1164135.05	T112C	695095.96	1191537.24
T100H	699532.88	1164712.15	T102X	698917.69	1164148.62	T112D	695114.65	1191596.41
T100I	699510.83	1164703.20	T103A	698909.47	1163827.78	T112E	695139.56	1191655.58
T100J	699495.13	1164684.91	T103AA	699587.09	1163682.56	T112F	695164.48	1191720.98
T100K	699469.75	1164699.57	T103AB	699605.69	1163689.62	T112G	695186.28	1191773.93
T100L	699459.78	1164717.35	T103AC	699621.89	1163697.13	T113A	695018.11	1191418.89
T100M	699437.52	1164715.81	T103AD	699642.19	1163702.02	T114A	694968.28	1191428.24
T100N	699413.07	1164710.20	T103B	698934.38	1163830.50	T114B	694996.31	1191462.49

TABLE A-2. NEW YORK STATE PLANE COORDINATES OF VEGETATION OBSERVATION POINTS^a

Station ID	X Coordinate	Y Coordinate	Station ID	X Coordinate	Y Coordinate
T114C	695021.22	1191499.86	T124D	694746.81	1191876.29
T114D	695024.33	1191521.67	T125A	694516.70	1191912.94
T114E	695142.68	1191783.27	T125B	694564.43	1191914.32
T115A	694894.81	1191406.77	T125C	694604.20	1191914.32
T115B	694922.84	1191447.26	T125D	694635.29	1191917.08
T115C	694950.77	1191488.75	T125E	694687.99	1191920.19
T116A	694855.90	1191424.13	T125F	694740.94	1191926.42
T116B	694891.29	1191477.31	T125G	694782.08	1191930.91
T116C	694924.68	1191518.55	T125H	694815.62	1191932.29
T116D	694955.82	1191565.27	T125I	694856.11	1191935.76
T116E	695005.45	1191602.64	T125J	694900.42	1191936.12
T116F	695030.56	1191671.15	T125K	694941.27	1191934.39
T116G	695057.16	1191756.58	T125L	694985.58	1191934.03
T116H	695100.68	1191830.38	T126A	694516.70	1191962.77
T117A	694806.21	1191449.30	T126B	694681.76	1191956.54
T117B	694834.36	1191496.75	T127A	694510.83	1192020.87
T117C	694859.27	1191512.32	T127B	694570.00	1192023.99
T117D	694840.59	1191527.89	T127C	694610.49	1192027.10
T118A	694762.73	1191490.52	T127D	694663.43	1192027.10
T118B	694795.50	1191533.88	T127E	694747.52	1192030.21
T118C	694822.00	1191569.72	T127F	694894.96	1192031.59
T118D	694857.89	1191614.65	T127G	694943.72	1192033.33
T118E	694895.16	1191653.51	T128A	694507.71	1192073.81
T118F	694921.71	1191686.23	T129A	694537.62	1192110.94
T118G	694952.95	1191725.33	T129B	694495.26	1192132.99
T118H	694984.49	1191777.63	T129C	694573.11	1192136.10
T118I	695043.24	1191796.71	T129D	694607.37	1192136.10
T118J	695060.10	1191836.56	T129E	694644.74	1192136.10
T119A	694708.75	1191539.02	T129F	694685.23	1192136.10
T119B	694710.18	1191591.81	T129G	694728.83	1192136.10
T119C	694760.01	1191632.45	T129H	694772.43	1192139.22
T119D	694795.65	1191663.69	T129I	694822.26	1192139.22
T120A	694657.24	1191622.95	T129J	694878.32	1192139.22
T120B	694672.81	1191666.56	T129K	694934.38	1192142.33
T120C	694719.52	1191669.67	T130A	694924.68	1192222.39
T120D	694753.78	1191725.73	T131A	694491.78	1192272.22
T121A	694601.28	1191690.04	T131B	694535.38	1192272.22
T121B	694675.14	1191735.71	T131C	694588.33	1192272.22
T122A	694556.34	1191777.14	T131D	694927.79	1192275.33
T122B	694624.41	1191794.14	T132A	694538.50	1192318.93
T122C	694668.31	1191796.37	T132B	694585.21	1192318.93
T122D	694709.59	1191801.86	T133A	694582.10	1192437.28
T122E	694770.10	1191803.44	T134A	694554.07	1192508.91
T122F	694822.94	1191798.89	T134B	694650.61	1192512.02
T122G	694881.87	1191791.28	T135A	694625.70	1192549.39
T122H	694934.43	1191785.99	T136A	694616.36	1192599.22
T123A	694550.96	1191826.87	T137A	694585.21	1192649.05
T123B	694600.79	1191829.98	T137B	694635.04	1192649.05
T124A	694535.03	1191864.55	T138A	694607.01	1192686.42
T124B	694586.95	1191858.73	T138B	694644.39	1192714.45
T124C	694696.98	1191870.06	T139A	694650.61	1192786.08

^a Coordinates for T1 through T104 were determined onsite using DGPS. Coordinates for T105 through T139A were determined by digitizing observation points from a hand-drawn map.

Appendix B

Output of Logistic Regression

TABLE B-1. LOGISTIC REGRESSION OUTPUT (SYSTAT)

B0 = Intercept

Iteration	Loss	Parameter Values
0	.1038585D+04	.1000D+00
1	.9942931D+03	-.3912D+00
2	.9942915D+03	-.3912D+00
3	.9942915D+03	-.3942D+00
4	.9942915D+03	-.3942D+00

Dependent variable is P - vegetation presence
Final value of loss function is 994.291

Parameter	Estimate	A.S.E.	Lower	<95%>	Upper
B0	-0.394	0.062	-0.515		-0.273

B1 = depth

Iteration	Loss	Parameter Values
0	.1496558D+04	.1000D+00 .1000D+00
1	.9351304D+03	.8896D-01-.4355D-01
2	.8520577D+03	.1330D+01-.1634D+00
3	.7808159D+03	.2027D+01-.3460D+00
4	.7757215D+03	.2191D+01-.3462D+00
5	.7754980D+03	.2213D+01-.3435D+00
6	.7754962D+03	.2202D+01-.3420D+00
7	.7754961D+03	.2204D+01-.3423D+00
8	.7754961D+03	.2204D+01-.3423D+00

Dependent variable is P - vegetation presence
Final value of loss function is 775.496

Parameter	Estimate	A.S.E.	Lower	<95%>	Upper
B0	2.204	0.163	1.884		2.523
B1	-0.342	0.021	-0.384		-0.300

Asymptotic Correlation Matrix of Parameters

	B0	B1
B0	1.000	
B1	-0.921	1.000

Difference in values of loss function = 218.795

Appendix C

**Fish Pop-Net and
Macroinvertebrate Station
Coordinates**

**TABLE C-1. NEW YORK STATE PLANE
COORDINATES OF FISH POP-NET AND
MACROINVERTEBRATE SAMPLING STATIONS**

Station ID ^a	X Coordinate	Y Coordinate
STTR	688664.47353	1075779.06540
STUN	686956.53962	1073210.38977
STVA	684261.11707	1071720.11604
GIUN	699754.78118	1167240.77937
GIUD	699801.20033	1167516.59994
GITR	699705.11045	1168155.64945
GIVA	701090.09595	1170857.27978
TIUN	695766.87928	1182812.31484
TIVA	696043.58543	1183333.15552

^a The station names are coded as follows:

The first two letters designate the area

- GI - Griffin Island
- TI - Northern Thompson Island Pool
- ST - Stillwater

The second two letters designate habitat type, as follows:

- TR - *Trapa natans*
- VA - *Vallisneria americana*
- UD - unvegetated deep water
- UN - unvegetated.

Appendix D

Pop-Net Data

TABLE D-1. RESULTS OF ALL POP-NET SAMPLES

Area ^a	Station Habitat ^b	#	Total Fish	Date Popped	Time Popped	Species Name	Wet Weight (g)	Length (mm)
GI	TR	1	6	9/18/97	9:53	Pumpkinseed	1.8	48
GI	TR	1		9/18/97	9:53	Pumpkinseed	2.3	47
GI	TR	1		9/18/97	9:53	Bluegill	2.7	55
GI	TR	1		9/18/97	9:53	Pumpkinseed	1.6	45
GI	TR	1		9/18/97	9:53	Pumpkinseed	1.3	44
GI	TR	1		9/18/97	9:53	Bluegill	1.1	40
GI	TR	2	21	9/18/97	10:00	Bluegill	0.8	37
GI	TR	2		9/18/97	10:00	Bluegill	1.6	45
GI	TR	2		9/18/97	10:00	Pumpkinseed	2.4	54
GI	TR	2		9/18/97	10:00	Pumpkinseed	2	50
GI	TR	2		9/18/97	10:00	Pumpkinseed	2.6	51
GI	TR	2		9/18/97	10:00	Pumpkinseed	2.2	51
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.4	45
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.2	44
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.7	47
GI	TR	2		9/18/97	10:00	Bluegill	0.7	35
GI	TR	2		9/18/97	10:00	Pumpkinseed	2.3	50
GI	TR	2		9/18/97	10:00	Bluegill	1.9	45
GI	TR	2		9/18/97	10:00	Bluegill	1.4	45
GI	TR	2		9/18/97	10:00	Pumpkinseed	2.6	52
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.9	50
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.7	45
GI	TR	2		9/18/97	10:00	Pumpkinseed	2	50
GI	TR	2		9/18/97	10:00	Pumpkinseed	1.5	45
GI	TR	2		9/18/97	10:00	Bluegill	0.8	38
GI	TR	2		9/18/97	10:00	Bluegill	0.9	39
GI	TR	2		9/18/97	10:00	Bluegill	1.6	48
GI	VA	2	0	9/19/97	9:28			
GI	UN	3	0	9/19/97	8:40			
ST	TR	1	0	9/22/97	8:21			
ST	TR	2	1	9/22/97	8:28	Bluegill	2	49
ST	TR	3	1	9/23/97	7:50	Pumpkinseed	8.9	75
ST	VA	1	20	9/22/97	7:54	Spottail	1.1	52
ST	VA	1		9/22/97	7:54	Spottail	0.8	49
ST	VA	1		9/22/97	7:54	Spottail	0.5	44
ST	VA	1		9/22/97	7:54	Spottail	0.7	47
ST	VA	1		9/22/97	7:54	Spottail	0.6	44
ST	VA	1		9/22/97	7:54	Spottail	0.5	42
ST	VA	1		9/22/97	7:54	Spottail	0.8	50
ST	VA	1		9/22/97	7:54	Spottail	0.3	37
ST	VA	1		9/22/97	7:54	Spottail	0.5	43
ST	VA	1		9/22/97	7:54	Spottail	0.7	45
ST	VA	1		9/22/97	7:54	Spottail	0.8	46
ST	VA	1		9/22/97	7:54	Spottail	0.7	44
ST	VA	1		9/22/97	7:54	Spottail	0.7	45
ST	VA	1		9/22/97	7:54	Spottail	1	51
ST	VA	1		9/22/97	7:54	Spottail	0.6	43

TABLE D-1. (cont.)

Area ^a	Station Habitat ^b	#	Total Fish	Date Popped	Time Popped	Species Name	Wet Weight (g)	Length (mm)
ST	VA	1		9/22/97	7:54	Spottail	0.8	45
ST	VA	1		9/22/97	7:54	Spottail	0.4	40
ST	VA	1		9/22/97	7:54	Spottail	0.8	46
ST	VA	1		9/22/97	7:54	Spottail	1.1	53
ST	VA	1		9/22/97	7:54	Rock bass	5.8	65
ST	VA	2	8	9/22/97	7:56	Spottail	1.2	49
ST	VA	2		9/22/97	7:56	Spottail	1.1	52
ST	VA	2		9/22/97	7:56	Spottail	0.9	47
ST	VA	2		9/22/97	7:56	Spottail	0.8	46
ST	VA	2		9/22/97	7:56	Spottail	1.1	48
ST	VA	2		9/22/97	7:56	Spottail	0.7	39
ST	VA	2		9/22/97	7:56	Yellow bullhead	27.8	131
ST	VA	2		9/22/97	7:56	Pumpkinseed	1	29
ST	VA	3	7	9/23/97	8:25	Bluegill	2.6	55
ST	VA	3		9/23/97	8:25	Bluegill	1.6	46
ST	VA	3		9/23/97	8:25	Bluegill	2	52
ST	VA	3		9/23/97	8:25	Pumpkinseed	2.6	55
ST	VA	3		9/23/97	8:25	Pumpkinseed	1.8	50
ST	VA	3		9/23/97	8:25	Tessellated darter	3	72
ST	VA	3		9/23/97	8:25	Tessellated darter	0.2	33
ST	UN	1	0	9/22/97	8:06			
ST	UN	4	0	9/23/97	8:15			
ST	UN	5	1	9/24/97	7:20	Tessellated darter	3	77
ST ^c	UN	6	0	9/24/97	7:28			
TI	VA	1	0	9/21/97	7:40			
TI	VA	2	2	9/20/97	7:41	Tessellated darter	1.1	50
TI	VA	2		9/21/97	7:41	Red breast	0.8	35
TI	UN	1	0	9/21/97	7:46			
TI	UN	2	0	9/21/97	7:47			
TI	UN	3	0	9/21/97	7:49			
GI	VA	6	0	9/24/97	9:17			
GI	TR	5	5	9/24/97	9:35	Chain pickerel	4.4	112
GI	TR	5		9/24/97	9:35	Largemouth bass	3	64
GI	TR	5		9/24/97	9:35	Largemouth bass	3.2	65
GI	TR	5		9/24/97	9:35	Bluegill	1	42
GI	TR	5		9/24/97	9:35	Bluegill	4.4	46
GI	UN	7	1	9/24/97	9:47	Pumpkinseed	1.3	44
TI	VA	5	8	9/25/97	8:02	Fall fish	1.6	55
TI	VA	5		9/25/97	8:02	Pumpkinseed	0.3	32
TI	VA	5		9/25/97	8:02	Pumpkinseed	0.4	31
TI	VA	5		9/25/97	8:02	Fall fish	1.4	57
TI	VA	5		9/25/97	8:02	Tessellated darter	1	55
TI	VA	5		9/25/97	8:02	Tessellated darter	1	55
TI	VA	5		9/25/97	8:02	Tessellated darter	0.4	44

TABLE D-1. (cont.)

Area ^a	Station Habitat ^b	#	Total Fish	Date Popped	Time Popped	Species Name	Wet Weight (g)	Length (mm)
TI	VA	5		9/25/97	8:02	Banded killifish	4.3	79
GI	UN	8	0	9/25/97	8:30			
GI	UN	9	0	9/25/97	8:34			
GI	VA	4	2	9/20/97	8:28	Rock bass	2.3	49
GI	VA	4		9/20/97	8:28	Pumpkinseed	1.3	45
ST ^c	VA	4	20	9/23/97	8:27	Rock bass	3.6	57
ST	VA	4		9/23/97	8:27	Rock bass	2.6	52
ST	VA	4		9/23/97	8:27	Bluegill	1	43
ST	VA	4		9/23/97	8:27	Red breast	0.4	31
ST	VA	4		9/23/97	8:27	Pumpkinseed	1.3	43
ST	VA	4		9/23/97	8:27	Pumpkinseed	1.3	45
ST	VA	4		9/23/97	8:27	Pumpkinseed	1.8	48
ST	VA	4		9/23/97	8:27	Bluegill	0.8	39
ST	VA	4		9/23/97	8:27	Spottail	0.2	37
ST	VA	4		9/23/97	8:27	Spottail	0.3	43
ST	VA	4		9/23/97	8:27	Spottail	0.4	42
ST	VA	4		9/23/97	8:27	Spottail	0.6	49
ST	VA	4		9/23/97	8:27	Spottail	0.3	41
ST	VA	4		9/23/97	8:27	Spottail	0.3	39
ST	VA	4		9/23/97	8:27	Spottail	0.7	48
ST	VA	4		9/23/97	8:27	Spottail	0.4	42
ST	VA	4		9/23/97	8:27	Spottail	0.4	40
ST	VA	4		9/23/97	8:27	Spottail	0.5	44
ST	VA	4		9/23/97	8:27	Spottail	0.4	42
ST	VA	4		9/23/97	8:27	Spottail	0.4	44
ST ^c	TR	4	0	9/23/97	8:00			

^a The station names are coded as follows:

GI - Griffin Island
 TI - Northern Thompson Island Pool
 ST - Stillwater

^b The habitat types are coded as follows:

TR - *Trapa natans*
 VA - *Vallisneria americana*
 UN - unvegetated.

^c Not a qualifying pop-net sample. Qualifying pop-net samples were the first three chronological samples from successful pop nets. Although STUN6, STVA4, and STTR4 were valid samples, they were not included in comparisons of fish communities because they were "extra." Only the first three pop-net samples at each station were included in comparisons in the text of this report.