ORIGINAL

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September 15, 1999

Ms. Janet M. Smith
Field Supervisor
United States Department of the Interior
Green Bay Field Office
1015 Challenger Court
Green Bay, WI 54311-8331

N

Mr. Robert Martini
FERC Relicensing Manager
Department of Natural Resources
P. O. Box 818
Rhinelander, WI 54501

Dear Ms. Smith and Mr. Martini:

Subject: Nekoosa Papers Inc. -041 -045 -039
FERC Projects 2255, 2291, and 2292
Centralia, Port Edwards, and Nekoosa Projects
Purple Loosestrife Monitoring

Attached is a report for purple loosestrife monitoring as required by Article 408 for projects 2255 and 2291, and by Article 407 for project 2292. A single report for the three projects has been prepared.

The survey is required on an annual basis, but the reporting is due on a biennial basis. However, we have chosen to send the reports as they are received. The survey was performed substantially as described in the plan submitted to the FERC Secretary on January 13, 1997, and as approved by FERC on July 16, 1997. The 1999 survey was performed during July and August during blooming of the plant.

The one exception of the actual survey to the plan was that NPI contracted Dr. Robert W. Freckmann from the University of Wisconsin-Stevens Point to conduct the survey as opposed to using trained NPI employees.

If there are any questions, please feel free to contact me at (715) 886-7481.

Sincerely,

9909210331-3

Robert W. Gause
Manager of Environmental Affairs

RWG:kd

cc: Federal Energy Regulatory Commission, Chicago Regional Office, 230 South Dearborn Street, Room 3130, Chicago, IL 60604

Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426

PURPLE LOOSESTRIFE MONITORING SURVEY FOR 1999

prepared September 10, 1999 for

Nekoosa Papers, Inc.,
a subsidiary of Georgia-Pacific Corporation

by

Flark Associates, Inc.
8221 100th Street South
Wisconsin Rapids, Wisconsin 54494

Principal Investigator: Robert W. Freckmann, Ph. D.
Professor of Biology and Curator of Vascular Plants
University of Wisconsin – Stevens Point

BACKGROUND:

During July and August, 1997, Flark Associates, Inc. conducted a survey for the occurrence of *Lythrum salicaria* L., purple loosestrife, within the project boundary lands as designated on the Nekoosa Papers, Inc. Project Boundary Location Drawings Numbers DC 305, DC 306, DC 307, DJ 2894, DJ 2740, and DN 2341. During that period the principal investigator covered on foot most of the west side of the Wisconsin River from Wisconsin Rapids through to the boundary area south of Nekoosa, as well as most of the east side of the Wisconsin River and the islands accessible by bridges. The smaller islands and outcroppings were surveyed by boat. The principal investigator made general notes on the vegetation and took black and white or color photographs at various locations to document either the general nature of the vegetation in areas free of purple loosestrife at that time, or to show representative areas of purple loosestrife infestations as of 1997. The locations of the purple loosestrife plants were marked on the Project Boundary Location Drawings and on a reduced photocopy of these drawings. The results of this survey were summarized in a report prepared on September 4, 1997 and submitted to Georgia-Pacific.

During July and August, 1998, the principal investigator conducted a survey for purple loosestrife within the same project boundary lands which were surveyed in 1997. One of the objectives of the 1998 survey was to duplicate the coverage of 1997 to eliminate variation due to methods so that the results would reflect actual changes in purple loosestrife distribution. The investigator carried copies of the drawings submitted with the previous report and marked 1998 purple loosestrife occurrences directly on these 1997 drawings. He also revisited sites where photographs were taken in 1997 and took new photographs for comparison. Any major changes in the vegetation at any site from

1997 to 1998 were noted. One addition was made in the 1998 survey. Several purple loosestrife populations were examined to determine whether the populations consisted of plants of all the same style length or of two or three style lengths, and to note indications of maturing seed. The only major part of the 1997 survey which was not repeated in 1998 was the survey by boat between the Nekoosa dam and the Port Edwards hydro-electric plant. This part of the Wisconsin River was surveyed by binoculars from shore in 1998.

In July and August 1999 the same principal investigator surveyed the same areas as those covered in 1997 and 1998, following the same survey procedures as used in 1998. Most of the photographs taken in 1999 show approximately the same areas as those in the 1997 and 1998 photographs. The maps included in the 1998 report have been duplicated with symbols added to indicate either new purple loosestrife population discovered in the 1999 survey or the absence in 1999 of purple loosestrife populations present in 1998.

DESCRIPTIONS OF THE PURPLE LOOSESTRIFE POPULATIONS IN 1999:

As noted in the 1997 report, much of the land shown on drawing DC-305 is residential and neither the neighborhood nor the vegetation appears to have changed during the past two years. Purple loosestrife plants had been uprooted at four locations on the west bank of the Wisconsin River during the 1997 survey. Two of these sites were free of purple loosestrife in 1998, but new plants were found at the other two sites. One well-established population in 1997 appeared to be unchanged in 1998 and three new populations were noted in 1998.

All of the new populations in 1998 consisted of only long-styled plants. The flowers of purple loosestrife are composed of 5, 6, or 7 erect clawed petals surrounded by the same number of sepals, and these combine to form a tube. Nectar is produced at the base of this tube. Most insects visiting the flowers probe head-downward for the nectar while their head, thorax, and abdomen typically contact anthers or stigmas. A purple loosestrife plant can have one of three arrangements of anthers and stigmas. A short-styled plant has the stigma at a level which is apt to contact the head of a typical pollinator and pick up any pollen present on the insect's head. Half of the 10-14 anthers are on medium length filaments and tend to deposit pollen on the thorax of the insect; the other half of the anthers are on long filaments and tend to deposit pollen on the abdomen. A medium-styled plant has stigmas at a level where it tends to contact the thorax, and anthers on short and long filaments where they tend to deposit pollen on the head and abdomen. A long-styled plant can pick up pollen from the abdomen and deposit pollen on the head and thorax. Pollinators visiting flowers of the same style lengths tend to pick up pollen on the same parts of the body and transfer little to the stigmas. Therefore, isolated populations of plants with the same style length produce little seed; populations with two or three style lengths are apt to be the main sources of purple loosestrife seed.

Only the population on the west bank opposite Pete Rogers' Island had two style lengths – long and medium.

Although no new populations were detected in the area covered by the DC-305 drawing in 1999, two plants with short-styled flowers were found. Because no short-styled plants were seen here in 1998, these may indicate that some new plants have come into these populations in the past year.

The area in drawing DC-306 included only two large populations of purple loosestrife in 1997 and 1998. These populations showed no obvious change in 1999. The population on the west bank opposite Garrison Island includes plants of all three style lengths and may be a major source of seed. The other population is associated with the Centralia dam and includes mostly long-styled plants with some medium-styled individuals. This population seems to be unchanged over the three years of the survey. Three small populations were removed in 1997 and have not returned in 1998 or 1999. Furthermore, three new plants which appeared on the Masonic Lodge grounds on the south bank of Boles Creek and the River in 1998 were no longer present in 1999. However, the new plant noted on an inaccessible rock outcropping near Edwards Island in 1998 is still present. In 1997 one plant was seen and removed from the east bank of the Wisconsin River at the mouth of a small stream and no plants were seen here in 1998. Now, in 1999, two small purple loosestrife plants were noted and removed from the Wisconsin River bank slightly north of the 1997 site.

The hiking and biking trail area in DC-307 continues to be free of purple loosestrife.

In 1998 the purple loosestrife population on the headwaters dam in DJ-2894 was conspicuously reduced from 1997, but short and long-styled plants were common on soil amid concrete structures west of the dam. The populations noted in the 1997 survey on the west bank above the Port Edwards hydro-electric plant were also essentially unchanged in 1998. But in 1999, with the River level down and construction work on the dam, the purple loosestrife populations of the previous two years are now greatly reduced. The construction activity has eliminated most of the vegetation, including all but a few small loosestrife plants. However, because this remnant population still includes both short and long-styled plants, it represents a possible source of seed to recolonize this area after construction. Also notable is the almost total elimination of the purple looosestrife from the west bank above the Port Edwards hydro-electric plant, possibly due to desiccation of the plants following the drop in water level.

The total population of purple loosestrife in most of the area shown on DN-2740 does not appear to show any net change from 1997 through 1999. The plants are moderately common, but scattered, with at least two new small populations on the north bank of the River near the parking lot. Removal of plants in 1997 and 1998 does not seems to have had any effect on the populations, probably because there are many small areas of open disturbed ground on the banks, islands, and small rock outcropping where purple loosestrife can become established. However, the wetland between the bend of

the River and state highway 73 has changed in the past year from scattered purple loosestrife to dominance by that species. Previously this was a fairly disturbed area dominated by narrow-leaved cattail, *Typha angustifolia* L., with reed canary-grass, *Phalaris arundinacea* L, on the slope. This was the only area where loosestrife changed from scattered occurrence to dominance between 1998 and 1999.

In 1998 the purple loosestrife density or distribution in the Nekoosa area indicated on drawing DN-2341 was essentially unchanged from 1997, except on the west bank of the River north of the highway 173 bridge. Here the loosestrife had almost vanished, apparently as a result of the growth of black locust and sumac, which have shaded it. Although in 1999 a few small plants were noted on the west bank where the black locust, sumac, and other woody vegetation was not as dense, in general, purple loosestrife is much less abundant on the west bank, probably because of desiccation following the drop in the water level in the river. Down river from the Nekoosa dam purple loosestrife appears to be increasing slowly as new plants appear on some of the small outcroppings in the river.

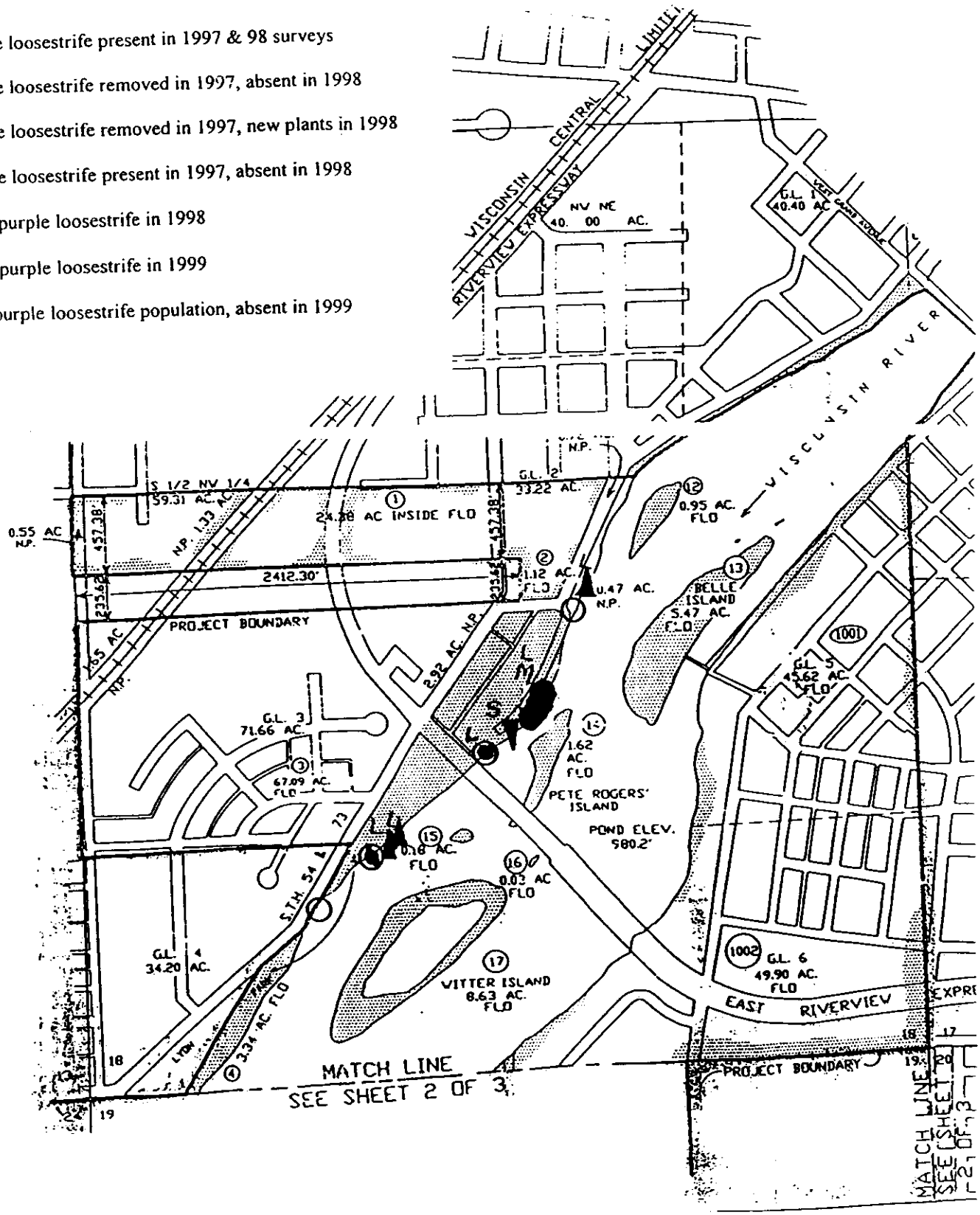
CONCLUSIONS

The opinion of the principal investigator remains the same as that expressed in the 1998 report: that purple loosestrife is not as abundant in the Wisconsin Rapids – Port Edwards – Nekoosa area as it is in most wetlands and along most rivers and roadsides in the more developed or ecologically disturbed areas in central Wisconsin.

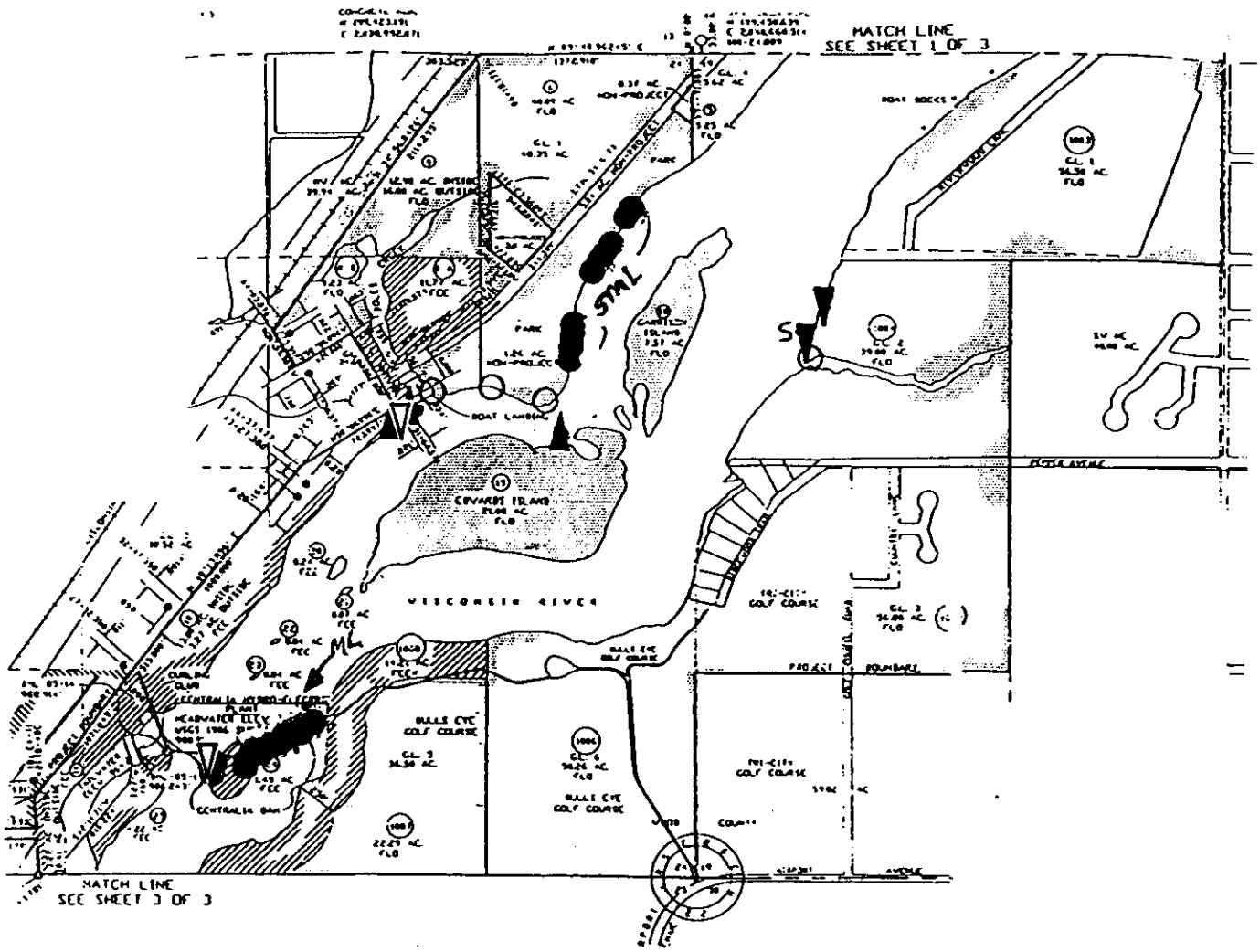
In general, the net abundance of purple loosestrife appears to have remained about the same in 1998 as that noted in the 1997 survey, and if any change took place by August, 1999, it is that there is a slight reduction in the total number of plants. The obvious areas of reduction in purple loosestrife are at the construction sites where vegetation has been disturbed, on banks where lowered water levels have desiccated or at least weakened the plants, and where trees and shrubs have grown large enough to shade the purple loosestrife. However, some of the reduction is probably temporary because purple loosestrife can move into disturbed areas quickly. Perhaps the most striking observation over the three years of this survey is how effective intact native vegetation and deep shade from trees and shrubs are in preventing purple loosestrife colonization, as shown by areas along the east bank of the Wisconsin River which are free from purple loosestrife. Control of purple loosestrife in these areas, therefore, should be relatively easy if these areas remain undisturbed. It is probably fortunate that much of the Wisconsin River bank in the Wisconsin Rapids – Port Edwards – Nekoosa area is owned by parks or relatively few private owners, making it easier to control disturbance of the river banks. On the other hand, control of purple loosestrife on the small outcroppings in the Wisconsin River and in places on the dams where soil accumulates could be exceedingly difficult because these habitats are nearly inaccessible and are frequently disturbed by waves, currents, and fluctuations on water levels, thereby renewing the open, disturbed habitats conducive to purple loosestrife establishment.

DRWG DC - 305

- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998
- New purple loosestrife in 1999
- Old purple loosestrife population, absent in 1999



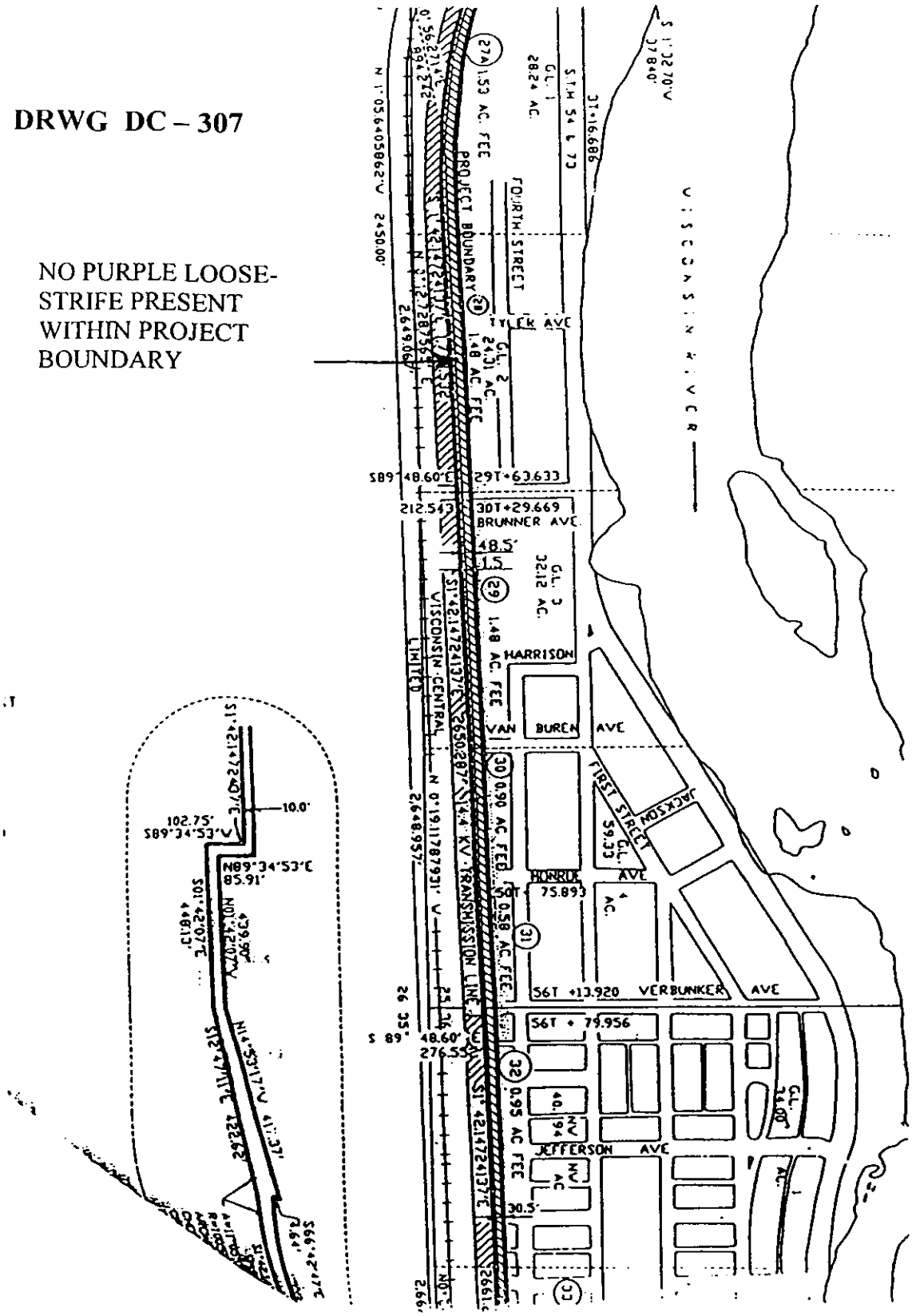
DRWG DC – 306



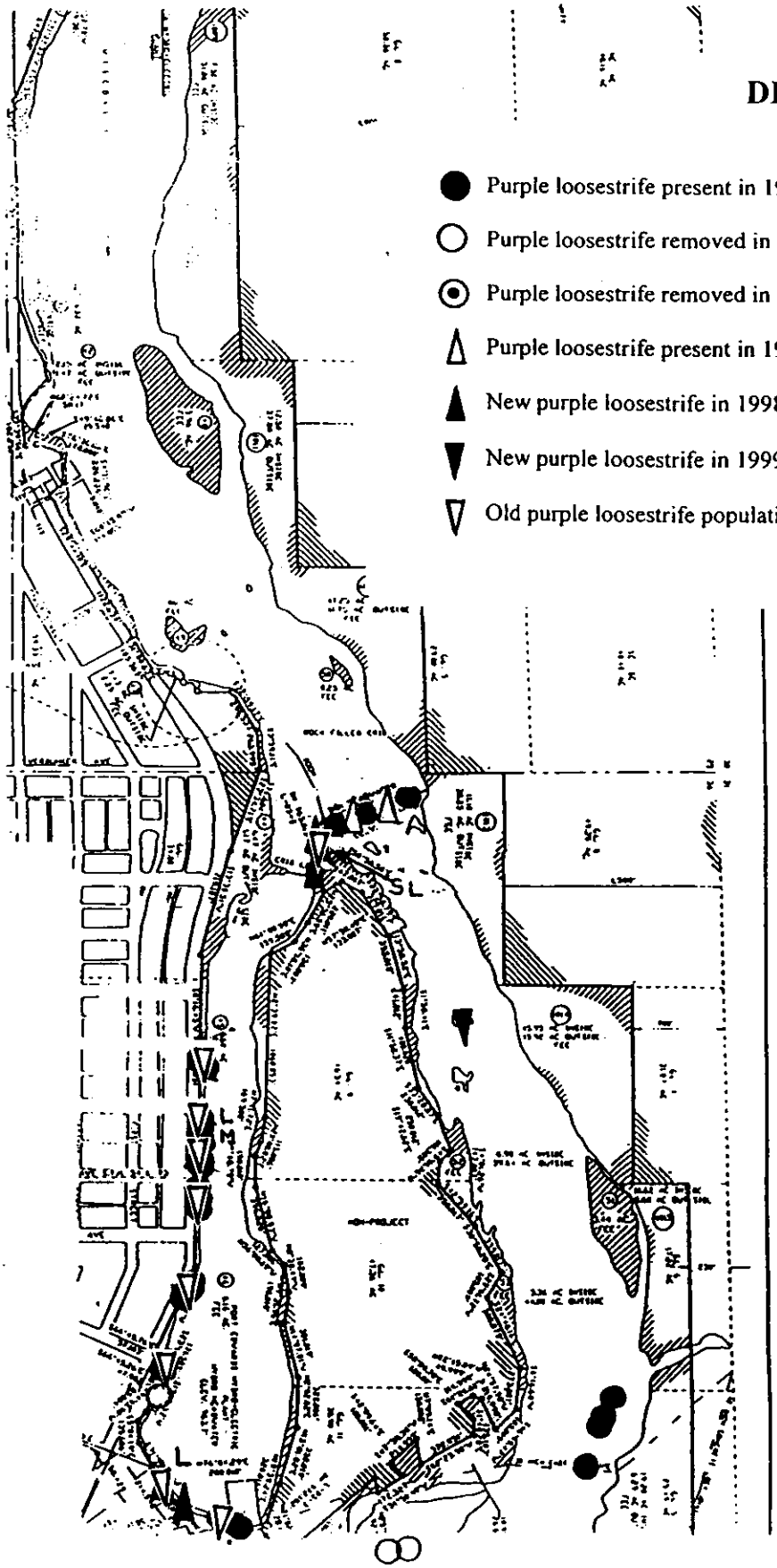
- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998
- New purple loosestrife in 1999
- Old purple loosestrife population, absent in 1999

DRWG DC – 307

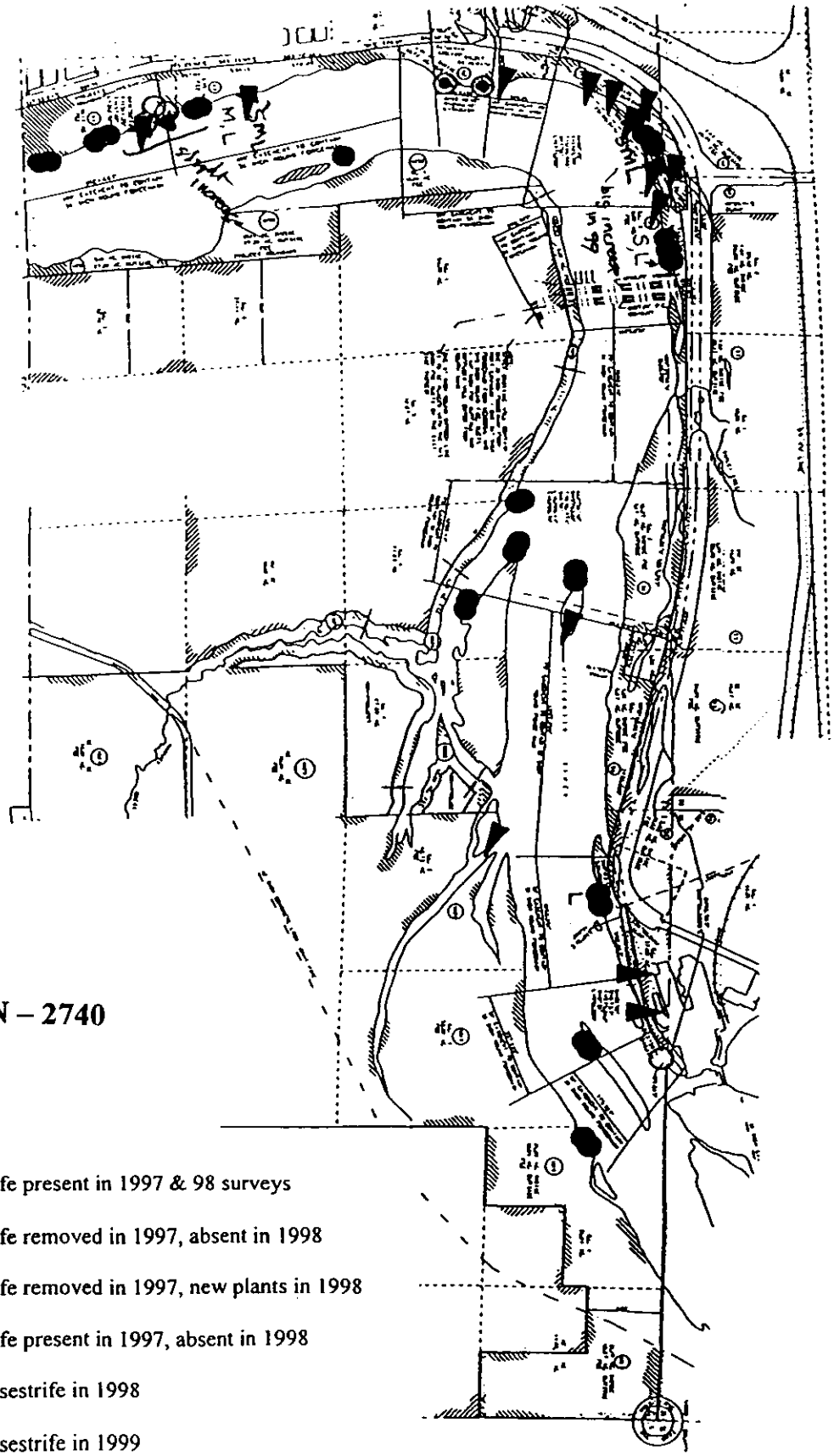
NO PURPLE LOOSE-STRIFE PRESENT WITHIN PROJECT BOUNDARY



DRWG DJ 2894



- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998
- New purple loosestrife in 1999
- Old purple loosestrife population, absent in 1999



DRWG DN – 2740

- Purple loosestrife present in 1997 & 98 surveys
- Purple loosestrife removed in 1997, absent in 1998
- Purple loosestrife removed in 1997, new plants in 1998
- Purple loosestrife present in 1997, absent in 1998
- New purple loosestrife in 1998
- New purple loosestrife in 1999
- Old purple loosestrife population, absent in 1999

DRWG DN - 2341

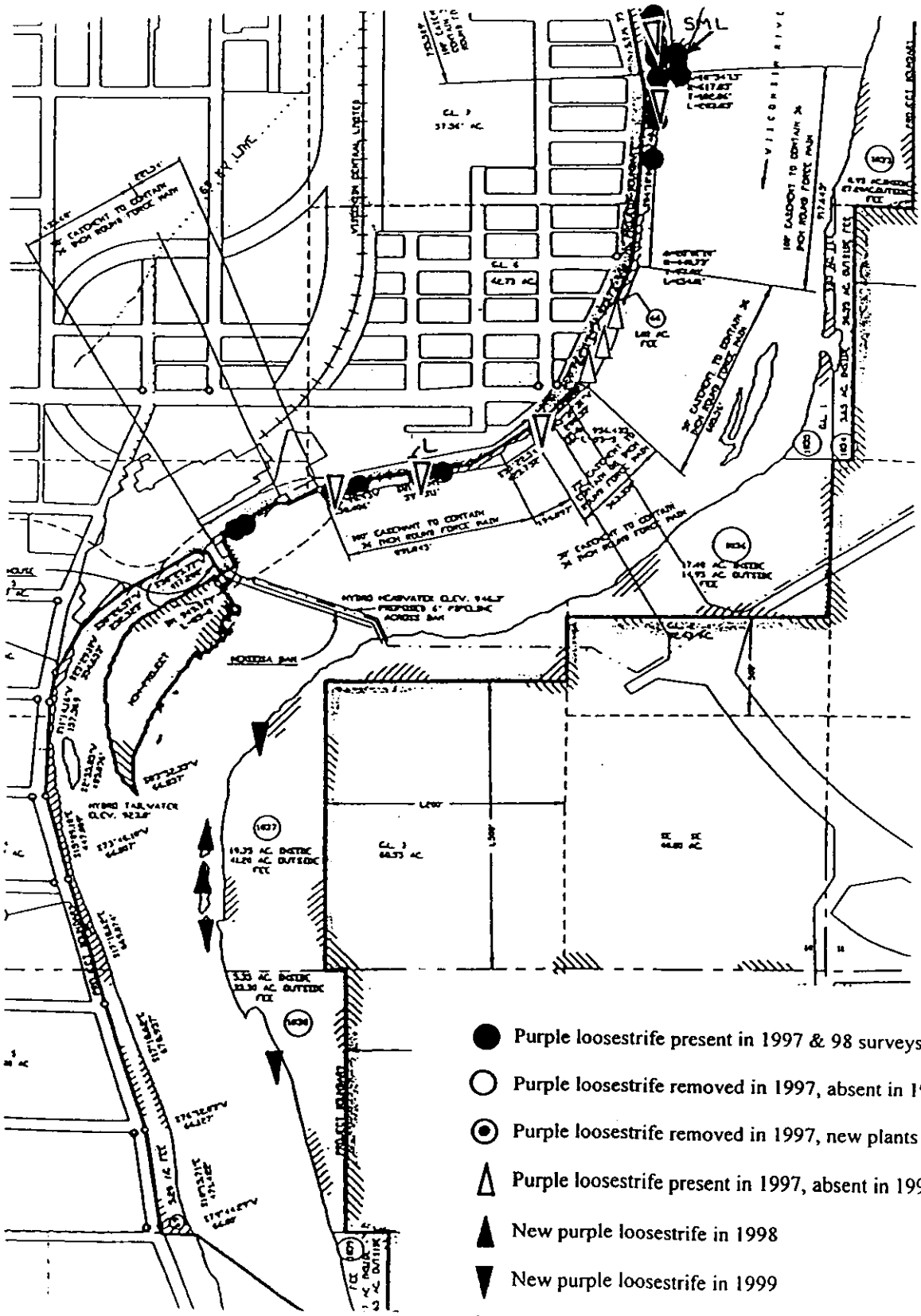

Purple loosestrife present in 1997 & 98 surveys
Purple loosestrife removed in 1997, absent in 1998
Purple loosestrife removed in 1997, new plants in 1998
Purple loosestrife present in 1997, absent in 1998
New purple loosestrife in 1998
New purple loosestrife in 1999
Old purple loosestrife population, absent in 1999

Fig. 1 Peter Rogers Island, 1998. No purple loosestrife.

Fig. 2. Peter Rogers Island, 1999. No purple loosestrife.

Fig. 3 West side of Witter Island south of bridge, 1998. No purple loosestrife.

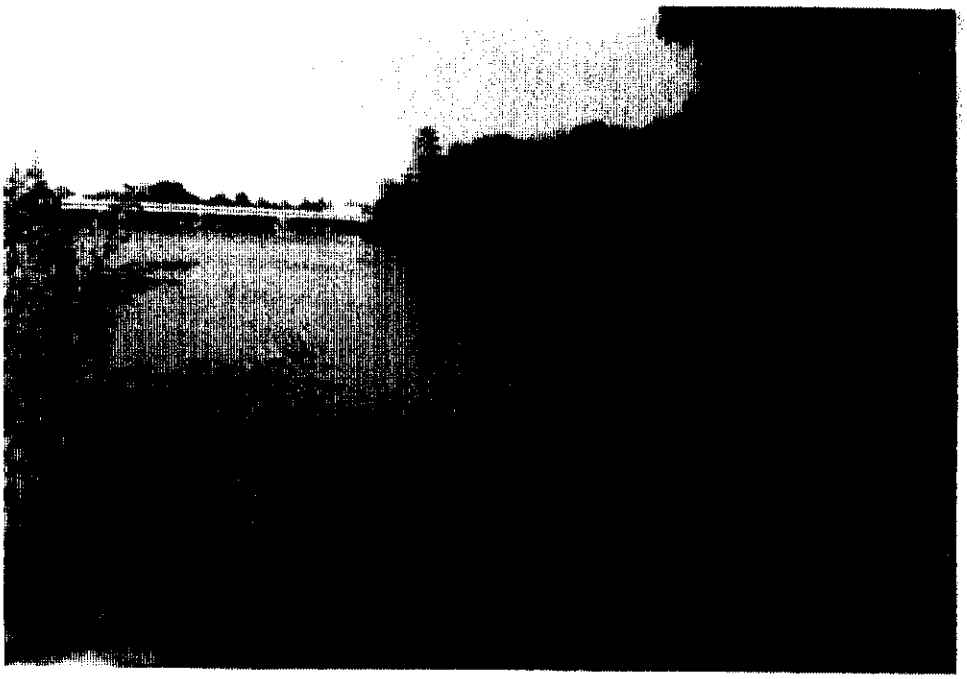


Fig. 4. West side of Witter Island south of bridge, 1999. No purple loosestrife.

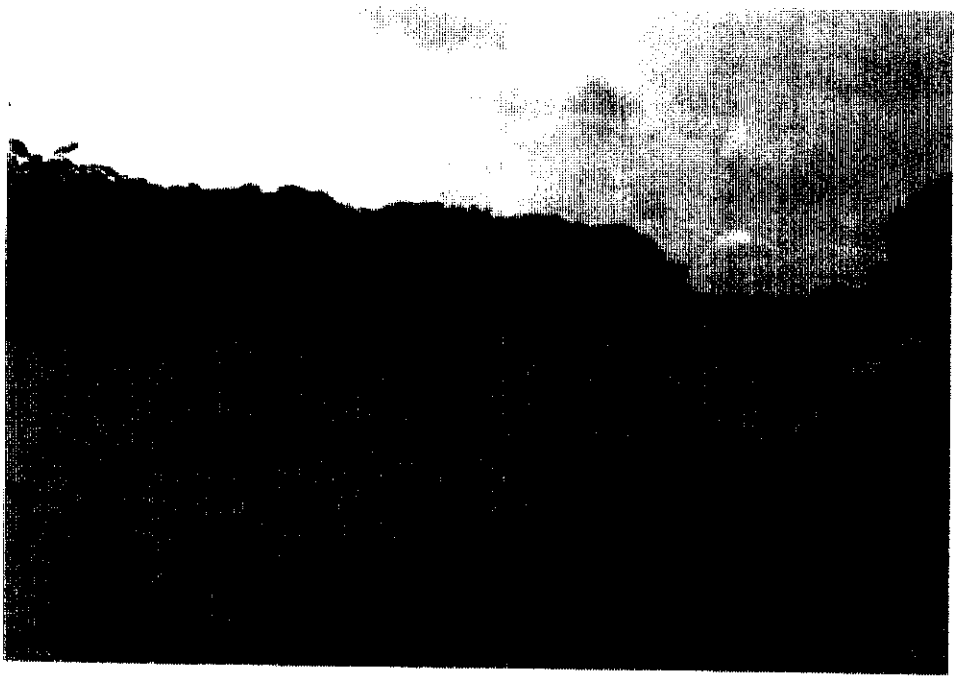


Fig. 5. West side of Witter Island, 1998. No purple loosestrife on island, a few on near bank of Wisconsin River.

Fig. 6. West side of Witter Island and near bank, 1999. No notable change.

Fig. 7. Rock outcropping in River east of Boles Creek, 1998, with purple loosestife.

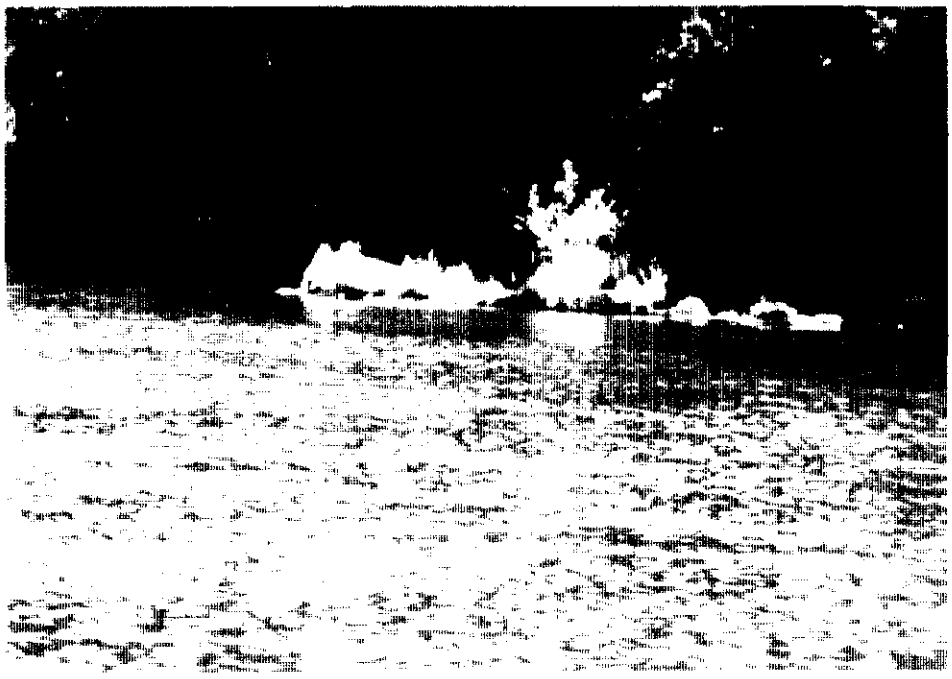


Fig. 8. Same rock outcropping, 1999. Purple loosestrife still present.

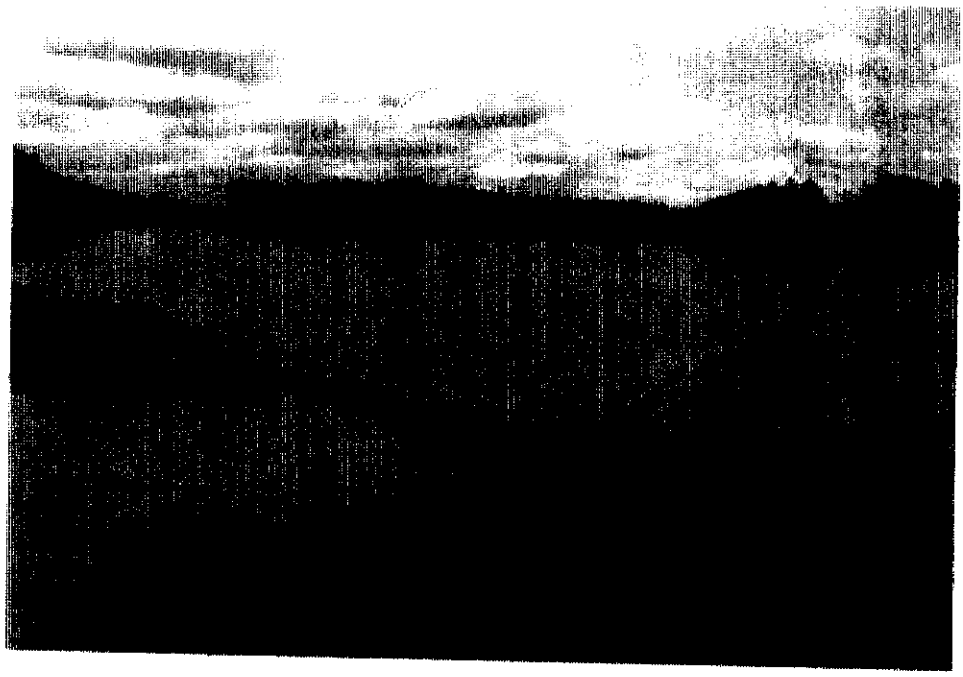


Fig. 9. North side of Centralia Dam, 1998.

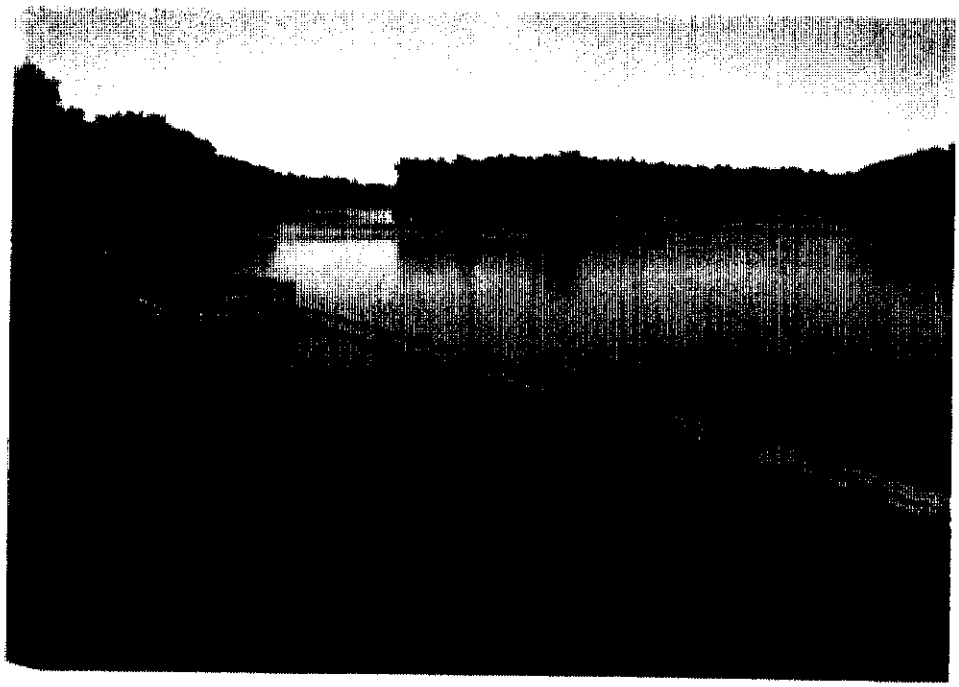


Figure 10. North side of Centralia Dam, 1999.

Fig. 11. Centralia Dam, 1998. Abundant purple loosestrife.

Fig. 12. Centralia Dam, 1999. Purple loosestrife slightly less abundant.

Fig. 13. Bicycle path, 1998. No purple loosestrife.

Fig. 14. Bicycle path, 1999. No purple loosestrife.

Fig. 15. South end of Witter Island, 1999. No purple loosestrife.

Fig. 16. River draw-down near Port Edwards Dam, 1999. Purple loosestrife dying from desiccation.

Fig. 17. Port Edwards Dam, 1998. Purple loosestrife common.

Fig. 18. Port Edwards Dam, 1999. Purple loosestrife less common.

Fig. 19. Port Edwards Hydro-plant drwadown. Purple loosestrife reduced.

Fig. 20. River draw-down near jct. of hwy.s 54 & 73. Purple loosestrife becoming desiccated.

Fig. 21. Wooded island and shore near Port Edwards Hydro-plant. No purple loosestrife.

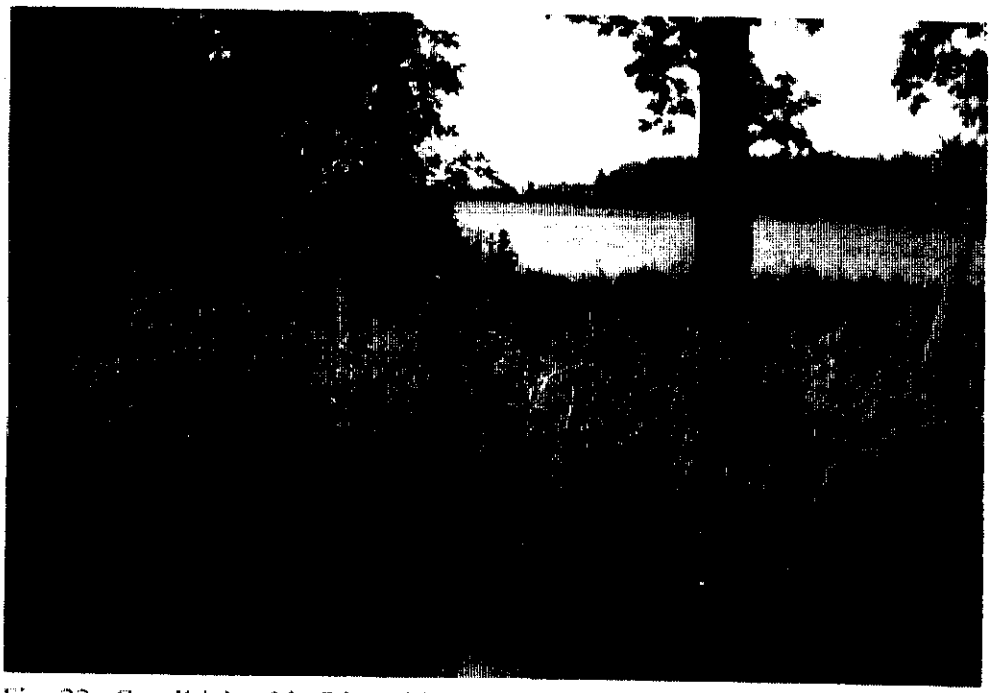


Fig. 22. Small island in Riverside Park with scattered purple loosestrife.

Fig.s 23 & 24. West bank of River north of Nekoosa bridge. Purple loosestrife almost eliminated by growth of sumac and black locust.