Development and Presentation of Landscape Archetectural Schemes

APPENDIX H

RAISING CELL1,

CONFINED DISPOSAL FACILITY

U.S. Army Engineer District, Buffalo • 1776 Niagara Street • Buffalo New York 14207

FIGURES

1.1 Vicinity Map

2.1 Toledo Harbor Map

2.2 PACDF Plan

2.3 Site Photos

4.1 Scheme A

4.2 Scheme B

4.3 Scheme C

5.1 Schematic Site Plan

1. INTRODUCTION

The Buffalo District of the United States Army Corps of Engineers (USACE) currently is studying the feasibility of raising a section of the Port Authority Confined Disposal Facility (PACDF) at Toledo Harbor, Ohio (See Figure 1.1). The purpose of this action is to address the need for additional disposal capacity for materials dredged from authorized federal navigation channels serving the Harbor. The proposed plan is to excavate material from the interior of PACDF Cell 1, and then use that material to build a new berm (also referred to as the cross dike), which would cross Cell 1. In order to minimize negative aesthetic impacts resulting from this project, the Buffalo District, through the services of URS Greiner Consultants, Inc. (URSG) seeks to develop and present three alternative schemes and one preferred scheme for developing the slope and foreground of the southeastern section of the proposed new berm.

The objective of the schemes shall be to:

a. Visually screen the interior of Cell 1 from the Harbor View Beach Area
b. Maximize the use of indigenous plant species
c. Provide food and cover for wildlife
d. Provide opportunities for recreation

2. SITE DESCRIPTION AND LOCATION

Toledo Harbor is located on the western end of Lake Erie at Maumee Bay, Ohio. The PACDF is located immediately to the east of the lake approach channel (See Figure 2.1). This PACDF is composed of three "Cells." Cell 1 and Cell 2 are operated and maintained by the USACE, while Cell 3 is operated and maintained by the Toledo Harbor Port Authority.

The southeast border of Cell 1, shown in Figures 2.1 and 2.2, is the area included in the alternative development schemes. It is composed of the southeastern slope of the proposed new berm (generally facing Harbor View Beach), and its frontage. The frontage is that area which runs from the southeastern edge of Cell 2 up to, and including, the toe of the southeastern side of the berm. The development would continue to the nearshore slope of the berm to its top elevation. The new berm would run along the entire southern side of Cell 1, a length of about 4,200 feet. The height and slope of the berm will be determined by physical constraints, costs and development applications. The berm height will be no more than about 16 feet placed in two applications of 8 feet each.

On February 11, 1998, representatives of URSG, together with representatives of the USACE visited the PACDF. Figure 2.3 presents the photographs taken on that date. Photo A was taken at the northeast corner of Cell 1 looking southwest along the perimeter road toward the Toledo Edison Plant. Photo B was taken from the Ohio Department of Natural Resources (ODNR) parking lot east of the Toledo Edison Plant looking toward the southeast side of Cell 1.

Casual observation of the site by URSG representatives revealed that the site is heavily populated by deer, waterfowl, and various types of songbirds. The site currently is closed to public access and hunting is not permitted.

Photo A

Photo B

FIGURE 2.3 Site Photos

3. CONSULTATIONS AND RESEARCH

Suitability of Dredged Materials for Sustaining Plant Growth

Casual observation of the PACDF reveals that the dredged material currently is sustaining pioneer plant species. Species observed growing in the dredged material by URS Greiner representatives included Black Willow *(Salix spp.)*, Common Reed Grass *(Phragmites australis)*, and Marsh Smartweed *(Polygonum hydropiperoides)*. These species are all volunteers (they have not been planted) and appear to all be growing with considerable vigor where the ground level has been left free of recent disturbance.

In 1985, a study was conducted to determine the capacity of dredged material to be reused in golf course and parkland construction (Dannenberger, Dr. K.D. November 1985). Two types of dredged material were used; silty and sandy. The study concluded that chemical analysis of both material samples fell within an acceptable range for pH, calcium, magnesium, cation exchange capacity, and soluble salts. The material was noted to be low in phosphorus and potassium, however these levels can be easily adjusted with fertilizers. Tests of the material to support turfgrass also were performed. The silty material was not used for this test since it was found to be unacceptable due to certain physical properties; it became very hard when dried and was then difficult to break up and re-wet. The sandy material, however, was found to support turf equally as well as native soil in the study area.

In 1998, a study was conducted to determine the use of dredged material to create a manufactured soil for use on landscaping projects (Sturgis, T.C., Lee, C.R., and Banks, Jr. H.C. 1998). The study compared the use of 100% dredged material and various blends of dredged material, cellulose and biosolids to germinate seeds and grow different types of plants. One of the blended materials performed the best, however the 100% dredged material was capable of germinating seeds and growing plants.

Based upon these studies, and casual observation of the PACDF, there is no reason to conclude that the dredged material will not support supplemental plantings. However, additional studies will be required to determine if soil supplements will improve the physical properties of the silty dredged material, since once it is formed into a berm it will be subject to more frequent drying than when left in a virtually flat condition inside the PACDF.

Fishing Near the PACDF

The PACDF and the outflow from Toledo Edison are reported to be popular fishing areas (Goedde L.E. 1998). Fisherman park their vehicles at an Ohio Department of Natural Resources (ODNR) parking area and walk between a Toledo Edison fence and the lakeshore for approximately ¼mile. Although ODNR has developed plans for improving fishing access in the area, they never were implemented (Goettke T.W. 1998).

Boating Near the PACDF

The public has requested improved boating access in this area. ODNR, in collaboration with

the City of Oregon, has prepared construction plans for a boat launch immediately south of the Toledo Edison Plant. This proposed ramp is within an area of very shallow water which will limit the type of craft which can be launched. A boat launch facility near the PACDF which would be suitable for a wide variety of craft could expect heavy usage (Goettke T.W. 1998).

Birdwatching Near the PACDF

The wide variety of birds which occupy the site attract occasional birdwatching individuals and groups. Birdwatching activities could easily be enhanced with improved access . Currently, public access is by special arrangement only.

4. DEVELOPMENT SCHEMES A, B, AND C

URSG prepared three schemes for developing the south side of PACDF Cell 1 based upon the objectives, site evaluations, consultations, and research described above. The three schemes represent a continuum from the least developed and lowest cost to the most developed and greatest cost. The elements on the plans are not intended to be mutually exclusive i.e. then elements may be mixed and matched to develop a preferred concept.

Scheme A

Scheme A (Figure 4.1) is the scheme with the least development and the least cost. It provides tree and shrub plantings to create a visual buffer for the Harbor View Beach area, while benefitting wildlife with the additional cover and food. To preserve existing trees, no additional fill will be placed near the existing trees (this will prevent the temporary denuding of the site while proposed plantings become established). Trees and shrub plantings should be placed in groves to create a natural appearance. Planting in groves also allows new plantings to be secured with inexpensive wire fencing to prevent damage from deer. Minor amounts (1 to 2 feet) of fill (dredged material) will be placed where new groves are proposed to help dry out these areas and allow a wider variety of tree and shrub species. Surface drainage structures will be installed to allow excess water to drain off and prevent ponding.

Currently, much of the site is covered with the highly invasive, non-native Common Reed Grass *(Phragmites australis)*. Though *Phragmites* provide some allopathic benefit and some cover for wildlife, the drainage methods described above, supplemented with some chemical control, will help prevent it from overtaking the new plantings.

Plantings on the lakeshore side of the existing PACDF perimeter dike will be provided to soften the rigid unvaried appearance of the dike. Tree plantings of the lower face of the proposed cross dike will further screen the new dike. An observation tower may be constructed to provide a viewing area for USACE operations personnel and for birdwatching.

An emphasis should be placed on selecting native plants and plants which benefit wildlife (food and cover), are hardly, and provide visual variety (see Appendix C for a list of suggested trees and shrubs). Once the plantings are established, there will be no maintenance required.

Scheme B

This scheme (Figure 4.2) includes plantings which are similar to Scheme A, except that existing trees will not preserved. This is due to the fill proposed for the area between the existing perimeter dike and the proposed cross dike. The additional fill provides two benefits. It extends the life of the PACDF by utilizing a significant volume of dredged material and it eliminates the low wetland conditions inherent in Scheme A, allowing a wider variety of plantings to be placed for screening.

The disadvantage to placing the fill is that all of the existing trees and shrubs which have grown in will be lost, creating a sudden visual impact. This impact may be mitigated by informing the public, especially the people who used the Harbor View Beach area, about the reason for the vegetation removal and sharing the vision for the completed plantings with them.

Scheme B also differs from A by allowing and enhancing public access. A parking area is shown at the southwest corner of Cell 1. This would require that an arrangement be made with Toledo Edison for vehicle access. Assuming that vehicle access would be permitted, this access would open up a huge amount of shoreline and access road (4,200 feet). The existing one-lane roadway at the top of the perimeter dike would be open to access, but not by vehicles (except for maintenance). Site users would include fishermen, walkers, joggers, bicyclers, and birdwatchers. A fishing platform will provide handicapped accessible fishing near the parking. It also may improve fishing by providing the underwater structure which certain fish species seek out. Fencing and gates will be used to exclude the public from areas beyond the cross dike.

Plantings in Scheme B will include the groves of trees and shrubs as described in Scheme A. In addition, there will be open grass areas to provide visual variation and a variety of wildlife habitat types. As in Scheme A, once the plantings are established, no maintenance will be required.

Scheme C

This is the most developed of the three schemes (Figure 4.2). Scheme C utilizes dredged material fill between the perimeter dike and the cross dike, similar to Scheme B, except that there is a much greater volume of fill placed to create irregular mounds which simulate natural landforms. Some areas will have the existing dredged material scraped away to create grassy meadows and wetland marshes, further enhancing the variation in appearance and habitat.

Scheme C also has a significant number of access and recreational enhancements. The one-lane road at the top of the perimeter dike will be widened on the inland side to allow two-way vehicle access to a turnaround at the northeast corner of Cell 1. Gates will prevent public access beyond the enhanced portion of Cell 1. Small parking areas will be scattered along the 4,200-foot section of roadway to evenly distribute the use by fisherman. Fishing platforms will be placed near each parking area. A pedestrian path will meander through the filled area, winding up the mounds, to viewing areas. An observation tower may be placed on one of the mounds further enhancing the viewing opportunities.

Summary of Schemes A, B, and C

On March 23, 1998 the three schemes described above were presented to USACE Buffalo District personnel. In general, the grading concept in Scheme C was preferred since it provides storage space for a significant amount of dredged material, thereby extending the life of the PACDF. Questions were raised regarding the need and maintenance of the recreational enhancements. It was agreed that the plans will require ODNR and City of Oregon input.

On March 26, 1998, the three schemes were presented to representatives of the ODNR at the PACDF who were enthusiastic about the proposed recreational enhancements. ODNR representatives expressed concern about the need for fishing and boating access (as described in Section 3 of this report). A proposed site at the northeast corner of Cell 1 for a boat launch was discussed. Another concern of ODNR was the lack of a site access road past the Toledo Edison property.

5. SCHEMATIC SITE PLAN

Based on ODNR and USACE Buffalo District's comments and preference for Scheme C, a Schematic Site Plan was developed (Figure 5.1). It contains all of the enhancements described under Scheme C in Section 4, plus a boat launch area and a site access road.

Access Road

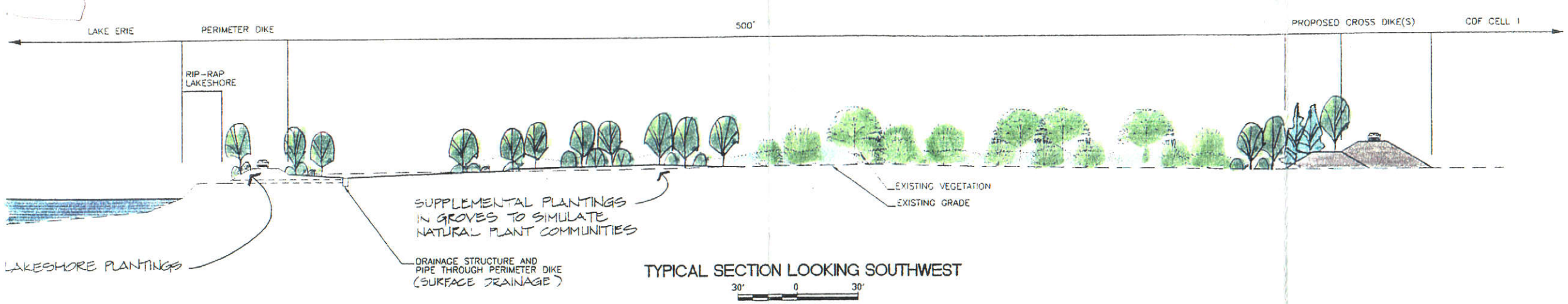
The proposed access road will use the existing entrance to the ODNR public parking area located south of the Toledo Edison property off Bay Shore Road. The road will leave the reconfigured parking area, cross a stream with a new bridge, and run between the Toledo Edison property fence and the lakeshore. Another bridge would be constructed across the Toledo Edison outlet stream and the existing road to PACDF Cell 1 would be widened providing two-lane public vehicle access to the site.

Boat Launch

The location for the boat launch ramp is at the northeast corner of Cell 1. This area is protected from the heaviest winds from the north and has a water depth which is adequate for a wide variety of water craft. Parking for 42 vehicles with trailers is shown. along with 17 regular vehicle spaces. A restroom/concession building with an overlook patio will provide services for park users.

Summary of Schematic Site Plan

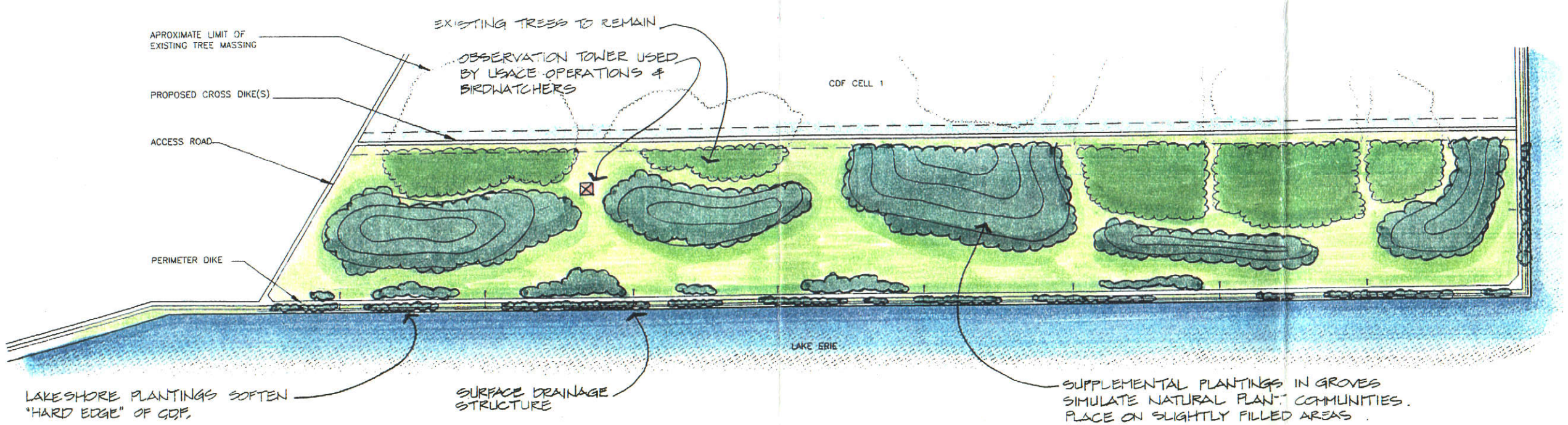
The schematic site plan was presented to representatives of the City of Oregon in April of 1998. The City will be proceeding with the construction of their boat launch south of Toledo Edison, regardless of progress on the PACDF Cell 1 boat launch. The city expressed concern about perceptions by the public that contaminants may be in the dredged material and that any development may cause controversy. The City also raised the question of ownership and maintenance responsibility of the development area.



TYPICAL SECTION LOOKING SOUTHWEST

30' 0 30'

SCALE: 1" = 30'



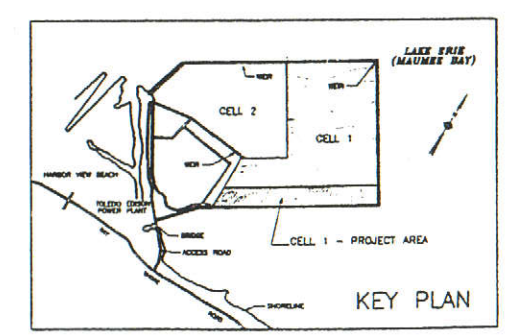
SITE PLAN

200' 0 200'

SCALE: 1" = 200'

SCHEME A

SCHEME A WILL PROVIDE A BENEFIT TO WILDLIFE AND A VISUAL BUFFER FOR THE CITY OF OREGON BY PLACING SUPPLEMENTAL PLANTINGS AMONG THE EXISTING PLANT GROWTH & TREES. SOME FACET OF CONTROL OF THE PHRAGMITES WILL BE NECESSARY. MINOR ADJUSTMENTS TO THE EXISTING GRADE WILL BE MADE.



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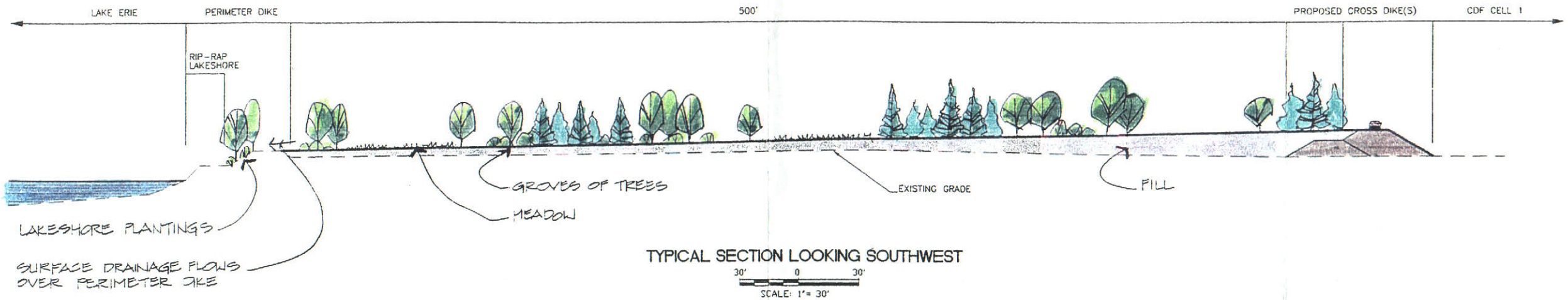
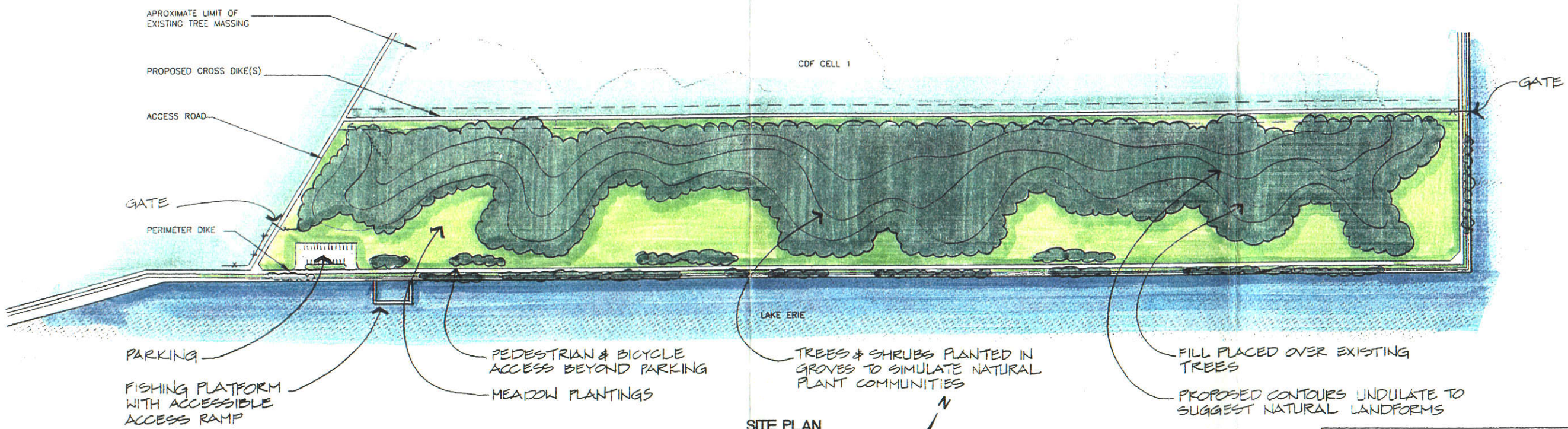
PLANTING SCHEME A



TYPICAL SECTION LOOKING SOUTHWEST

30' 0 30'
SCALE: 1"= 30'

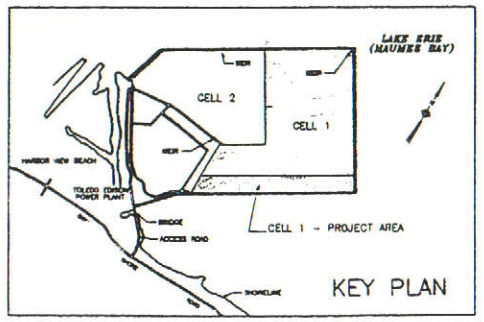


SITE PLAN

200' 0 200'
SCALE: 1"= 200'

SCHEME B

THIS SCHEME WILL PROVIDE THE PLANTINGS IN SCHEME A PLUS FEATURES FOR RECREATIONAL PURPOSES SUCH AS, FISHING ACCESS, NATURE TRAIL WALKING AND BICYCLE ACCESS. THE GRADES WILL BE ALTERED BY FILLING BETWEEN THE PERIMETER DIKE AND THE PROPOSED CROSS DIKE. THIS SCHEME WILL REQUIRE THE ADDITION OF MORE DREDGED FILL.



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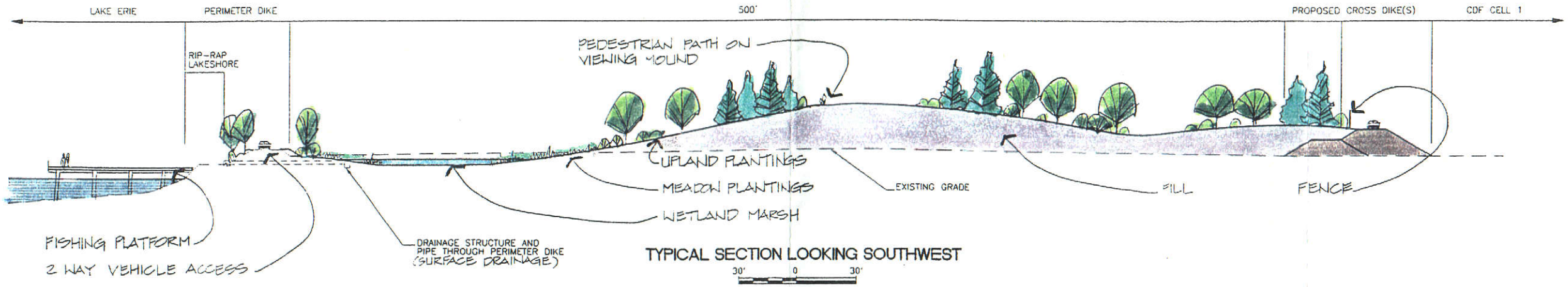
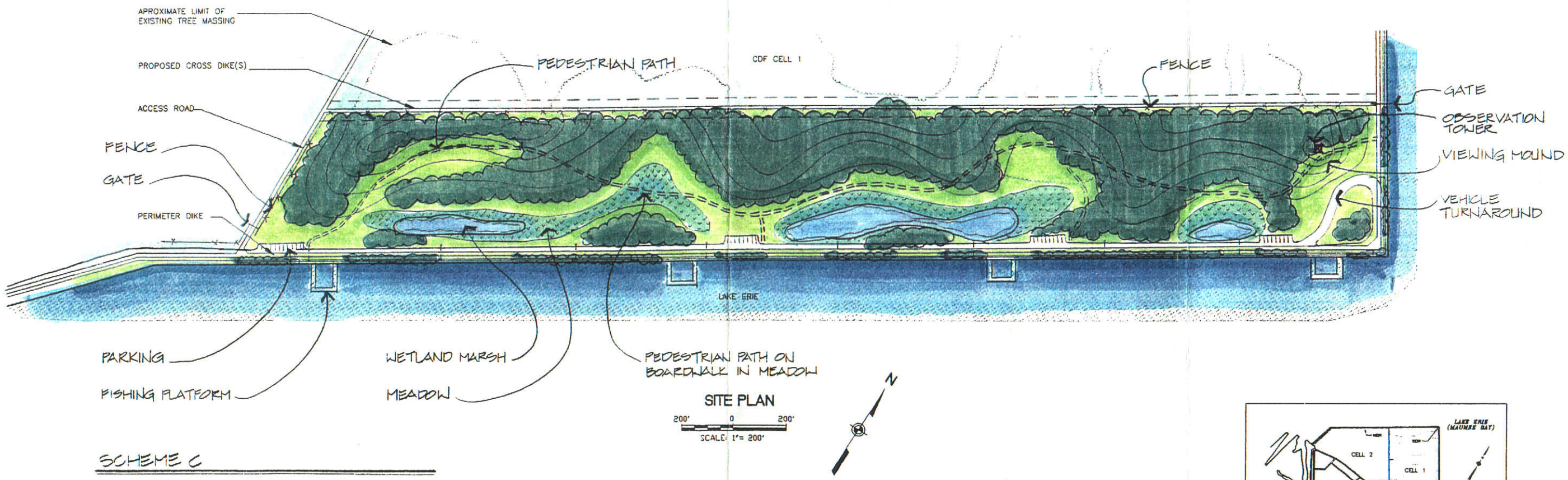
PLANTING SCHEME B

FIGURE 4.2



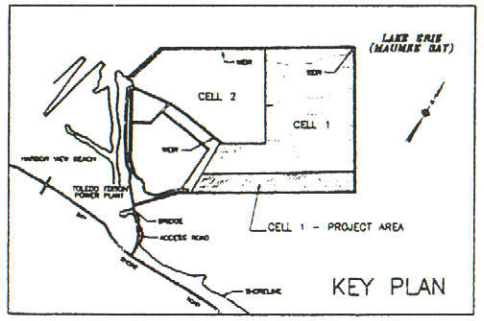
TYPICAL SECTION LOOKING SOUTHWEST

30' 0 30'
SCALE: 1"= 30'



SITE PLAN

200' 0 200'
SCALE: 1"= 200'



SCHEME C

THIS SCHEME WILL PROVIDE ALL THE ELEMENTS IN SCHEMES A & B PLUS ADDITIONAL RECREATION ENHANCEMENTS SUCH AS VEHICULAR ACCESS, A PEDESTRIAN PATH AND VIEWING MOUND. WETLAND MARSHES & MEADOWS VARY VIEWS AND HABITAT TYPES.

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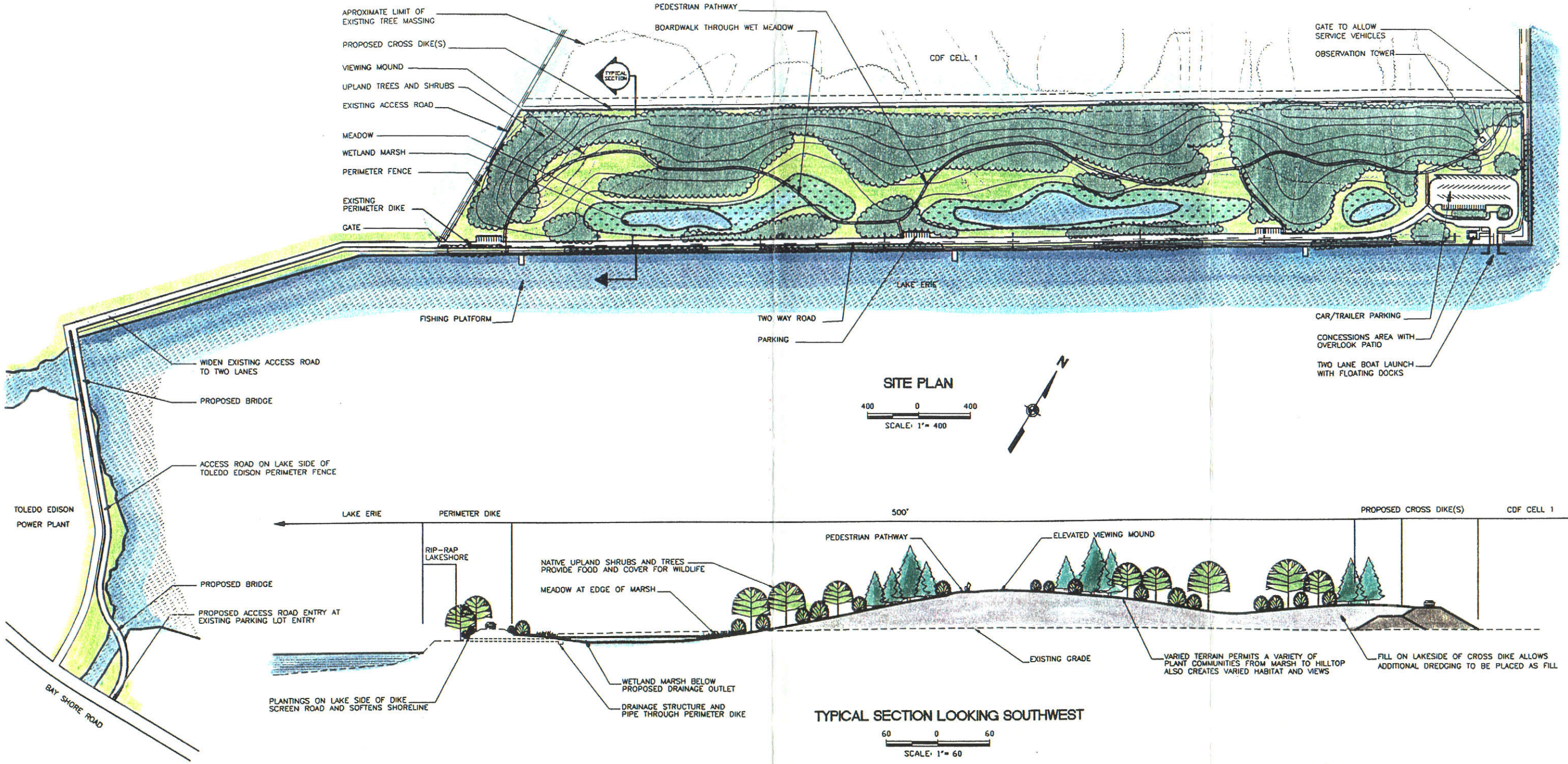
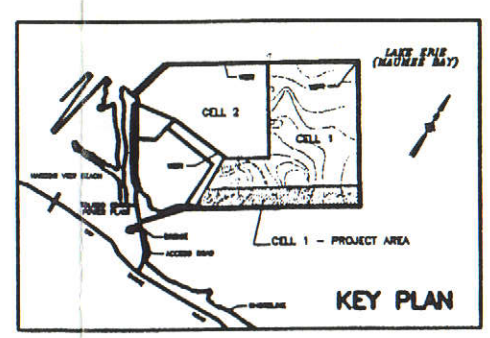
PLANTING SCHEME C





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SCHEMATIC SITE PLAN

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URS Greiner
Consultants, Inc.

SCHEMATIC SITE PLAN
PERSPECTIVE

APPENDIX A

REFERENCES

Dannenberger, Dr. K.D. 1985. "Evaluation of Dredged Material for Golf Course and Parkland Construction, Toledo, Ohio." November. US Army Corps of Engineers Buffalo District.

Goedde L.E. 1998. Personal communication 3/26/98, Fish Management Supervisor, Ohio Department of Natural Resources.

Goettke T.W. 1998. Personal Communication 3/26/98, Assistant Administrator, Fish Management and Research, Ohio Department of Natural Resources.

Sturgis, T.C., Lee, C.R., and Banks, Jr. H.C. 1998. "Evaluation of Toledo Harbor Dredged Material for Manufactured Soil" Miscellaneous Paper EL-98- , US Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS

APPENDIX B

COST ESTIMATES

Scheme A

Subtotal	440,800
Plus 20% Contingency	88,160
Grand Total	**$528,960**

Scheme B

Subtotal	1,090,000
Plus 20% Contingency	218,000
Grand Total	**$1,308,000**

Scheme C

Subtotal	2,589,000
Plus 20% Contingency	517,800
Grand Total	**$3,106,800**

Schematic Site Plan

Subtotal	4,289,000
Plus 20% Contingency	857,800
Grand Total	**$5,146,800**

APPENDIX C

SUGGESTED PLANTINGS

Deciduous Trees

Deciduous trees should be placed in groves with a limited number of types. Spacings should vary but, on average, spacing should be approximately 15 feet on-center. Planting sizes also should vary ranging from 1¾-inch caliper to bare-root "whips".

Botanical Name	Common Name
Acer negundo	Box Elder
Acer rubrum	Red Maple
Acer saccharinum	Silver Maple
Amelanchier canadensis	Serviceberry
Betula nigra	River Birch
Betulifolia populifolia	Gray Birch
Celtis occidentalis	Hackberry
Crataegus crusgali	Cockspur Hawthorne
Fraxinus nigra	Black Ash
Fraxinus pennsylvannica	Green Ash
Liriodendron tulipifers	Tulip Poplar
Nyssa sylvatica	Black Tupelo
Populus deltoides	Eastern Cottonwood
Platanus occidentalis	Sycamore
Prunus serrulata	Black Cherry
Quercus bicolor	Swamp Oak
Quercus palustris	Pin Oak
Quercus rubra	Red Oak
Rhus glabra	Smooth Sumac

Evergreen Trees

Evergreen trees should be planted in groves and with the same spacing as the deciduous trees. Planting sizes should vary from small "tubelings" of about 1 foot in height to 4 feet in height.

Botanical Name	Common Name
Juniperus virginiana	Eastern Red Cedar
Picea abies	Norway Spruce
Picea glauca	White Spruce
Pinus strobus	White Pine
Pinus sylvestris	Scotts Pine
Thuja occidentalis	Northern White Cedar

Shrubs

Shrubs should be planted amongst the groves of trees or in separate groupings to simulate a natural plant community. Spacing will vary by type, however, the average spacing should be about 6 feet on-center. Planting size should vary from "tubelings" of a few inches in height to #1 containers.

Botanical Name	Common Name
Cornus mas	Cornelian Cherry
Cornus racemosa	Gray Dogwood
Cornus sericea	Red Twig Dogwood
Hamamelis virginiana	Common Witch Hazel
Lonicera fragrantissima	Winter Honeysuckle
Rhus aromatica	Fragrant Sumac
Rosa rugosa	Rugose Rose
Salix discolor	Pussy Willow
Viburnum dentatum	Arrow Wood Viburnum
Viburnum lentago	Nannyberry
Viburnum prunifolium	Black Haw Viburnum
Viburnum trilobum	Highbush Cranberry

Upland Seed Blend

For areas which will not be subject to innundation or soils which are frequently damp. Apply at a rate of 4 pounds per 1,000 square feet.

30% Creeping Red Fescue
30% Tall Fescue
20% Perennial Rye
15% Kentucky Bluegrass
5% White Clover

Meadow Seed

For areas with soils which are frequently damp or will be occasionally innundated. Apply at a rate of ½ pound per 1,000 square feet.

100% Canary Reed Grass (Pharalis arundinacea)