

LA WORKPRODUCT 87

*Plant Materials*

QK  
163  
P65  
1986

PLANT MATERIALS RESEARCH LABORATORY  
AND VEGETATION FIELD TRIALS  
FINAL REPORT

BY

U.S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
3737 GOVERNMENT STREET  
ALEXANDRIA, LA 71302

FOR

LOUISIANA DEPARTMENT OF NATURAL RESOURCES  
COASTAL MANAGEMENT DIVISION  
P.O. BOX 44487  
BATON ROUGE, LA 70804-4487

NOVEMBER, 1986

9861 595 1986  
QK-163

## TABLE OF CONTENTS

	<u>Page</u>
Abstract	1
Tasks 1-4	2
Sites 1-3	3
Site 4	4
Appendix	
1. Conservation Field Trial Locations	5
2. Soil Series Descriptions	
Gentilly Series	6
Kenner Series	8
3. Deep Fresh Organic Marsh Shoreline Erosion Control Field Trial - Lake Salvadore	10
Observation and Evaluation	16
4. Deep Fresh Organic Marsh Erosion Control Field Trial - Continental Land and Fur Observation Report	19 23

ABSTRACT  
(Executive Summary)

Promising plant materials have been collected and transplanted to the Louisiana Marshlands Plant Materials Laboratory. Collections of smooth cordgrass (Spartina alterniflora) have been made from North Carolina to Corpus Christi, Texas. Currently 90 accessions of smooth cordgrass are under evaluation. Giant cutgrass (Zizianopsis miliacea) was collected in Louisiana and 51 accessions are currently being evaluated. Four field trial sites have been located for potential projects. Field trials have been conducted at two of these sites. While planting success was low on both sites, the information obtained is potentially rewarding and may have far-reaching applicability.

Work conducted through this contract has significantly broadened the knowledge and perspectives of the employees associated with these tasks.

In the cooperative agreement, there were four tasks identified for completion to meet the purpose and objectives of the agreement. The four tasks were completed during the course of the study. Following is an orderly synopsis of the work accomplished in each of these four tasks:

Task 1 - Collection of Plant Materials

Smooth cordgrass was collected from North Carolina to Corpus Christi, Texas, during the spring and early summer of 1986. Ninety (90) accessions were selected to be transplanted to the Louisiana Marshlands Plant Materials Laboratory. Collections were made from native stands that exhibited above average growth characteristics. Plant vigor is one of the most important characteristics in the selection process.

Giant cutgrass was collected in Louisiana and Texas. Collections were made from vigorous stands of native plants across the entire coastal zone and as far north as Opelousas, La. Fifty-one (51) accessions were selected to be transplanted to the plant materials laboratory.

Task 2 - Planting and Evaluating Plant Materials

The 90 accessions of smooth cordgrass have been replicated in six ponds (540 plots) and the 51 accessions of giant cutgrass have been replicated in four ponds (204 plots). Plot replications are on both organic and mineral soils to enable the evaluations of plants to fit specific sites.

Plots were established by planting in a line 15 feet long. They were separated by a 5 foot buffer zone between plots. Lines were established parallel to each other and 5 feet apart.

Current characteristics being evaluated on all plots include: Survival, insect and disease resistance, plant vigor, stems per plant, basal width, canopy width, height of foliage, height of seedheads, and amount of seed. The seed collection is now in progress and will continue through December 1986. The seed will be evaluated for germination during the winter of 1987.

The giant cutgrass plantings have shown exceptional growth. They have been pruned back to keep them within the confines of the plots. A need exists to transplant these plantings into larger plots prior to the spring growing season of 1987.

Task 3 - Location and Site Evaluation

and

Task 4 - Establishing Field Trials

Four field trial locations have been identified for establishing plant material field trials. See location map in Appendix 1.

The following is a site description and field trial objective:

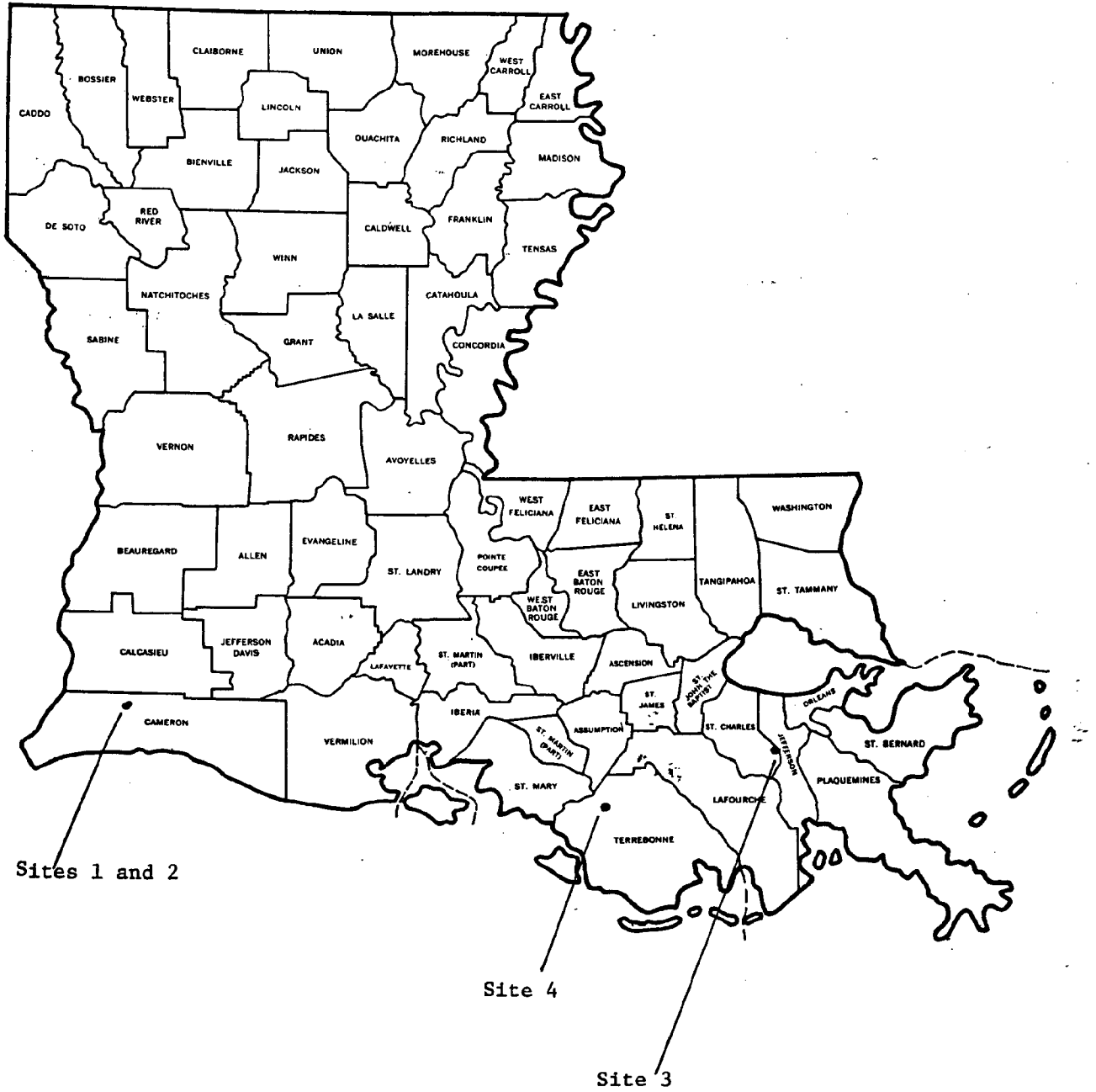
Site 1. Cameron Parish, Black Lake Area - This is an area under water control, owned by Amaco, which is predominantly open water. Soil salinities are above optimum for good vegetative growth. The landowner has agreed to a water management program to dissipate and flush the salt in this area. A planting of smooth cordgrass seed is to be initiated in the spring of 1987. The seeding work will be done in the northwest corner of this management area. The objective is to determine seeding rates and dates for smooth cordgrass. Soils in this area are Gentilly series. (See Appendix 2.

Site 2. Cameron Parish, Black Lake area - Planting of smooth cordgrass plants are to be made on an area within the same water controlled area as Field Trial Site 1, during the spring of 1987. The major plantings will be on the south side of the management area. Additional plantings will be in the central portion of this management unit. The objective is to determine the maximum spacing needed to colonize an open water area. Soils in this area are the Gentilly series.

Site 3. Jefferson Parish, Lake Salvadore area - Plantings of smooth cordgrass and giant cutgrass were made in conjunction with ground cover material and wave-stilling devices. Plant survival was extremely poor in these plantings. This is possibly due to planting in a saturated soil. The soils on this site are the Kenner series. (See Appendix 2). At the time of planting, the root zone was completely saturated. However, the use of various synthetic fabrics for ground cover and wave-stilling has shown potential possibilities for future work in the marsh -- in particular, detritus accumulation. (See appendix 3. for a detailed field trial plan of operation and observations).

Site 4. Terrebonne Parish, Turtle Bayou area -  
Plantings were made with giant cutgrass seed, giant  
cutgrass plants, combine run domestic rice and  
presprouted domestic rice seed. Wire cages were placed  
around plots in three locations to prevent possible  
damage by furbearers feeding in the area. These  
plantings were conducted on a Kenner soil in a deep  
organic marsh. The soil was saturated with water at

the time of planting. There was no plant survival  
noted when observations were made late in the growing  
season. The saturated soil condition is apparently the  
major limiting factor. Future work on saturated vs  
partial or nonsaturated soils needs to be done. (See  
appendix 4 for a detailed field trial plan of operations and  
observations).



CONSERVATION FIELD TRIAL LOCATIONS





Established Series  
Rev. SDM:WLC  
3/84

### GENTILLY SERIES

The Gentilly series consists of very poorly drained, very slowly permeable slightly to moderately saline soils that formed in thin accumulations of herbaceous plant remains and semifluid clayey alluvium over consolidated clayey deposits. Slopes are less than 1 percent.

TAXONOMIC CLASS: Very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents.

TYPICAL PEDON: Gentilly muck--slightly saline marsh.  
(Colors are for moist soil unless otherwise stated.)

Oa1--10 to 6 inches; dark gray (10YR 4/1) muck; massive; nonsticky, (flows easily between fingers when squeezed leaving small residue); about 18 percent fiber, 8 percent rubbed; about 70 percent mineral; medium acid; abrupt smooth boundary. (4 to 16 inches thick)

Oa2--6 to 0 inches; very dark gray (10YR 3/1) muck; massive; nonsticky, (flows easily between fingers when squeezed leaving small residue); about 12 percent fiber, 5 percent rubbed; about 65 percent mineral; many coarse yellowish brown herbaceous plant stems and roots; medium acid; abrupt smooth boundary. (0 to 12 inches thick)

Cg1--0 to 10 inches; gray (5Y 5/1) clay; common medium prominent dark yellowish brown (10YR 3/4) mottles; weak medium subangular blocky structure; slightly sticky, (flows with slight difficulty between fingers when squeezed leaving small residue); neutral. (0 to 20 inches thick)

Cg2--10 to 30 inches; gray (5Y 5/1) clay; common medium prominent dark brown (7.5YR 4/4) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; nonsticky, (flows easily between fingers when squeezed leaving small residue); neutral. (15 to 40 inches thick)

Cg3--30 to 70 inches; greenish gray (5GY 5/1) clay; common medium distinct olive (5Y 4/4) mottles; massive; very sticky, very plastic, (will not flow between fingers when squeezed); mildly alkaline. (10 to 50 inches thick)

TYPE LOCATION: Orleans Parish, Louisiana; about 14 miles northeast of New Orleans, 1 mile north of U. S. Highway 90, 270 feet west of U. S. Highway 11.

RANGE IN CHARACTERISTICS: Soil salinity ranges from low to moderate. The COLE is estimated to be more than 0.09 in mineral horizons, but because the soil is continuously saturated it does not crack to a depth of 20 inches. All layers at depths of 8 to 20 inches below the mineral surface have an n value of more than 0.7. The mineral layer within the 10- to 40-inch control section has between 60 to 90 percent clay content.

The O horizons are 4 to 16 inches thick and consists of muck, mucky peat, peaty muck, or peat. It is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), dark brown (10YR 3/3; 7.5YR 3/2), or black (10YR 2/1). The mineral fraction of

the O horizons are dominantly clay. It is medium acid to mildly alkaline but becomes strongly or very strongly acid after drainage.

The C horizon is a gray (10YR 5/1; N 5/0; 5Y 5/1), dark gray (10YR 4/1; N 4/0; 5Y 5/1), greenish gray (5GY 5/1), or dark greenish gray (5GY 4/1), clay or silty clay with brownish and/or olive mottles. It is neutral or mildly alkaline but becomes medium acid to very strongly acid in the upper part after drainage. Depth to underlying layers with n-values of 0.7 or less ranges from 20 to 40 inches below the mineral surface.

**COMPETING SERIES:** These are the Barbary, Larose, and Scatlake series in the same family and the Allemands, Capers, Fausse, Harris, Johnston, Kenner, Lafitte, Maurepas, and Sharkey series. Allemands, Kenner, Lafitte, and Maurepas soils have organic layers more than 16 inches thick. Barbary soils lack both histic epipedons and underlying layers with n-values of 0.7 or less. Capers soils contain more than 1 percent sulphur in the upper 50 inches of the sola. Fausse soils have n-value of 0.7 or less in some subhorizons in the 8 to 20 inch section. Harris soils have mollic epipedons and contain less than 60 percent clay in the 10 to 40 inch control section. Johnston soils are more acid and are loamy in the 10 to 40 inch control section. Larose soils have C horizons which have n values of more than 0.7 throughout. Scatlake soils have n-values of greater than 0.7 throughout. Sharkey soils lack organic surface layers and they crack to a depth of 20 inches in most years.

**GEOGRAPHIC SETTING:** Gentilly soils are in marshlands in the lower Mississippi River delta and coastal areas that are dominantly slightly to moderately saline. Typically they occur on subsiding distributaries of the Mississippi River. The underlying firm clays probably consolidated before subsidence. Mean annual precipitation is about 65 inches and the mean annual temperature is about 68 degrees F. near the type location. Slopes are less than 1 percent.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the competing Allemands, Barbary, Fausse, Lafitte, Maurepas, and Sharkey series.

**DRAINAGE AND PERMEABILITY:** Gentilly soils are very poorly drained. The water table is at the surface most of the time. Internal drainage is very slow to none. Permeability is very slow.

**USE AND VEGETATION:** The main use of these soils is wildlife habitat. Some areas have been diked and drained for development to urban uses. The dominant native vegetation is cattail, cutgrass, marshy cordgrass, big cordgrass, and seashore saltgrass.

**DISTRIBUTION AND EXTENT:** Coastal areas of Louisiana and possibly Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina. Extent is moderate.

**SERIES ESTABLISHED:** Orleans Parish, Louisiana; 1972.

National Cooperative Soil Survey  
U. S. A.

Established Series  
Rev. WLC:SDM  
3/81

## KENNER SERIES

The Kenner series consists of very poorly drained, very slowly permeable, organic soils. These soils formed in herbaceous plant remains stratified with clayey alluvium. They are in fresh or slightly saline marshes along the Gulf of Mexico. Slope is less than 0.1 percent.

**Taxonomic Class:** Euic, thermic Fluvaquentic Medisaprists.

**Typical Pedon:** Kenner muck--freshwater marsh.  
(Colors are for moist soil and are the same for broken, pressed, and rubbed conditions.)

Oe1--0 to 12 inches; very dark gray (10YR 3/1) muck; about 40 percent fiber, 18 percent rubbed; weak fine granular structure; flows with difficulty between fingers when squeezed, leaves a large residue in hand; many coarse live roots; dominantly herbaceous fiber; about 45 percent mineral; neutral; abrupt smooth boundary. (6 to 14 inches thick)

IIC1g--12 to 19 inches; gray (5Y 5/1) clay; massive; flows easily between fingers when squeezed and leaves hand empty; few fine live roots; mildly alkaline; abrupt smooth boundary. (1 to 10 inches thick)

Oe1--19 to 23 inches; very dark grayish brown (10YR 3/2) muck; about 20 percent fiber, 3 percent rubbed; massive; flows easily between fingers when squeezed and leaves a small residue in hand; few fine live roots; dominantly herbaceous fiber; about 50 percent mineral; mildly alkaline; abrupt smooth boundary. (3 to 15 inches thick)

Oe2--23 to 38 inches; very dark gray (10YR 3/1) muck; about 15 percent fiber, 1 percent rubbed; massive; flows easily between fingers when squeezed and leaves hand empty; dominantly herbaceous fiber; about 50 percent mineral; mildly alkaline; abrupt smooth boundary. (6 to 30 inches thick)

IIC2g--38 to 42 inches; dark gray (5Y 4/1) clay; massive; flows easily between fingers when squeezed and leaves hand empty; mildly alkaline; abrupt smooth boundary. (1 to 10 inches thick)

Oe3--42 to 108 inches; black (10YR 2/1) muck; about 15 percent fiber, 2 percent rubbed; massive; flows easily between fingers when squeezed leaving a small residue in hand; dominantly herbaceous fiber; about 65 percent mineral; several 1/2 inch strata with a fiber content ranging from 10 to 30 percent; mildly alkaline.

**Type Location:** Jefferson Parish, Louisiana; about 2 1/2 miles southwest of waterway and 1/2 mile west of Bayou Segnette, near southwest end of sec. 92, T. 14 S., R. 22 E., 330 feet southeast of Lake Cataouatchie protection levee canal.

**Range in Characteristics:** Thickness of the organic material with thin mineral layers ranges from 51 to over 100 inches. Depth to thin mineral strata ranges from 12 to 51 inches. The sodium absorption ratio ranges from about 1 to 12 and the exchangeable sodium percentage ranges from about 1 to 14 in more than half the subsurface tier. Salinity of the control section is none or low. Reaction is extremely acid to neutral throughout. The more acid soils are under drained conditions.

The organic material in the surface tier (0 to 12 inches) is very dark gray (10YR 3/1), dark brown (10YR 4/3), very dark grayish brown (10YR 3/2), dark brown (7.5YR 3/2), or black (10YR 2/1). The rubbed fiber content ranges from 5 to 60 percent and the mineral content typically ranges from 40 to 70 percent. Some pedons have thin overwash mineral surface layers.

The organic material in the subsurface tier (12 to 36 inches) is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), dark brown (10YR 3/3; 7.5YR 3/2), or black (10YR 2/1). The rubbed fiber in the subsurface tier ranges from 1 to 8 percent.

Organic material in the bottom tier (36 to 51 inches) has the same color range as the subsurface tier or it has 5YR hue. Fiber content and reaction ranges of the bottom tier are also the same as for the subsurface tier.

The IIC layers in the control section are gray (5Y 5/1), dark gray (5Y 4/1), greenish gray (5GY 5/1) or dark greenish gray (5GY 4/1). After drainage they are dark gray (10YR 4/1), very dark gray (10YR 3/1), or black (10YR 2/1). They are typically clay, silty clay, or mucky clay and the mineralogy is montmorillonitic. The IIC layers before drainage are semifluid and flow easily between fingers when squeezed.

**Competing Series:** There are no other series in the same family. Similar soils are the Allemands, Belhaven, Dare, Dorovan, Lafitte, Mattamuskeet, Maurepas, Okeechobee, Pamlico, Ponzer, Pungo, Terra Ceia, and Tomaka series. Belhaven, Dare, Dorovan, Mattamuskeet, Pamlico, Ponzer, and Pungo series are extremely or strongly acid, undrained, in all parts of the control section. Allemands and Tomaka series as well as Belhaven, Mattamuskeet, and Ponzer soils have thick mineral layers above 51 inches. Lafitte, Maurepas, Okeechobee, and Terra Ceia soils lack thin mineral layers within the 12 to 51 inch control section. In addition, Lafitte soils have a sodium absorption ratio of 12 to 18 and an exchangeable sodium percentage of 8 to 27 in the subsurface tier. In addition, Okeechobee and Pungo soils have layers in the 12 to 51 inch section that have 10 to 33 percent rubbed fiber content.

**Geographic Setting:** Kenner soils are in large freshwater or slightly saline marshes of the lower Mississippi River delta and coastal areas. Elevations are approximately mean sea level or below. They are formed from herbaceous plant remains stratified with dominantly clayey alluvium. The climate is humid subtropical. Near the type location, the mean annual precipitation is about 65 inches and the mean annual temperature is about 68° F.

**Geographically Associated Soils:** These are the competing Allemands series and the Barbary, Carlin, and Sharkey series. Carlin soils have water layers within the 12 to 51 inch control section. Barbary and Sharkey series are mineral soils.

**Drainage and Permeability:** Very poorly drained; the water table ranges from 1 foot above to 0.5 foot below the subsurface unless protected and pumped. Internal drainage is very slow to none. Very slow permeability; in mineral layers and rapid permeability in organic layers.

## Kenner Series

2

Use and Vegetation: The main use of these soils is wildlife habitat. Native vegetation is dominantly paille fine, cattail, common reed, bulrush, and cutgrass. A few areas are diked and drained by pumps, then used for urban development.

Distribution and Extent: Coastal areas of Louisiana and possibly Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina. Extent is moderate.

Series Established: Jefferson Parish, Louisiana; 1972, by prior correlation.

Remarks: Reaction of typifying pedon and the reaction ranges were determined by the Hellige-Troug field kit. Under the 1938 classification System, these soils would have been classified as Bog soils.

National Cooperative Soil Survey  
U. S. A.

DEEP FRESH ORGANIC MARSH SHORELINE EROSION CONTROL FIELD TRIAL - - LAKE SALVADOR

June 23-25, 1986

Louisiana Land and Exploration Co. - Jefferson Parish

People Involved:

Mike Materne (Soil Conservation Service)  
Bill Savant (Soil Conservation Service)  
Larry Phillips (Soil Conservation Service)  
Jack Cutshall (Soil Conservation Service)  
Gary Courat (La. Dept. of Natural Resources)  
George Nussenger (National Park Service)  
David Pendleton (H. H. Horil & Assoc., New Orleans)  
George Dobson (American Enka, Enka, North Carolina)  
David Bussey (American Excelsior Co., New Orleans)  
Murphy Ranatza (American Excelsior Co., New Orleans)

Background: The site selected for the field trial is typical of many lake shorelines in the deep fresh organic marsh. The eastern shoreline of Lake Salvador is eroding at an accelerated rate. There is a strip of marsh between the lake and the Bayou Segnete Waterway. The effects of tides and wind across the open water will greatly accelerate the erosion problem.

Objective: A conservation field trial was installed to test planting techniques and wave stilling materials on the highly erodible organic shoreline.

Procedure: Four products, (1) Enkamat 710, (2) Enkamat 720, (3) Durethene SB43444350-3/4 inch mesh, and (4) Durethene FNC450-1 1/2 inch mesh, were furnished by the manufacturers to be used as wave stilling materials. The fabric was attached to 20 feet 2 x 4's, which were driven to a depth of 15 feet into the lake bottom. The 2 x 4's were spaced about 8 feet apart. The wave stilling screens are parallel to the shoreline and about 20 feet out from the mean high tide (MHT) line. The fabric was attached to the 2 x 4's by using 14-inch nylon snap-ties. Snap-ties were secured at the top, bottom, and as needed in the middle of the fabric to provide a secure vertical screen. See Figure 1.

Shoreline stabilization behind the wave stilling screens consisted of five erosion control fabrics used alone, and in combinations, and a control. The erosion control fabrics are: (1) Enkamat 710, (2) Enkamat 720, (3) Rollite, (4) Holdgrow, and (5) Excelsior mat. All treatments were planted with smooth cordgrass (Spartina alterniflora) and giant cutgrass (Zizaniopsis miliacea). See figure 2 for plot design and plant spacing.

The fabric was placed on the soil surface, beginning at the MHT line and extending toward the open water. Concrete reinforcing rod, 1/4 inch in diameter, was cut into 5-foot lengths and a hook bent into one end. See Figure 3. These reinforcing rods were used to staple the fabric down. Three rows of staples were used to secure the fabric. The rows were at the overlap in erosion control fabrics and on each side of the fabric. See Figure 4.

The plants were obtained from native stands found in Jefferson Parish, La. They were dug up in clumps, transported to the site and separated for planting.

They were planted by cutting a slit in the material and planting through the slit into the soil below. The soils on this site are Kenner muck (map symbol 8). The Allemands muck soils (map symbol 2) have eroded away. A description of the Kenner muck soil follows.

Kenner muck. This level, very poorly drained, semifluid organic soil is in freshwater marshes. It is flooded or ponded most of the time. Areas of this soil range from 200 to 2,000 acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope is less than 0.5 percent.

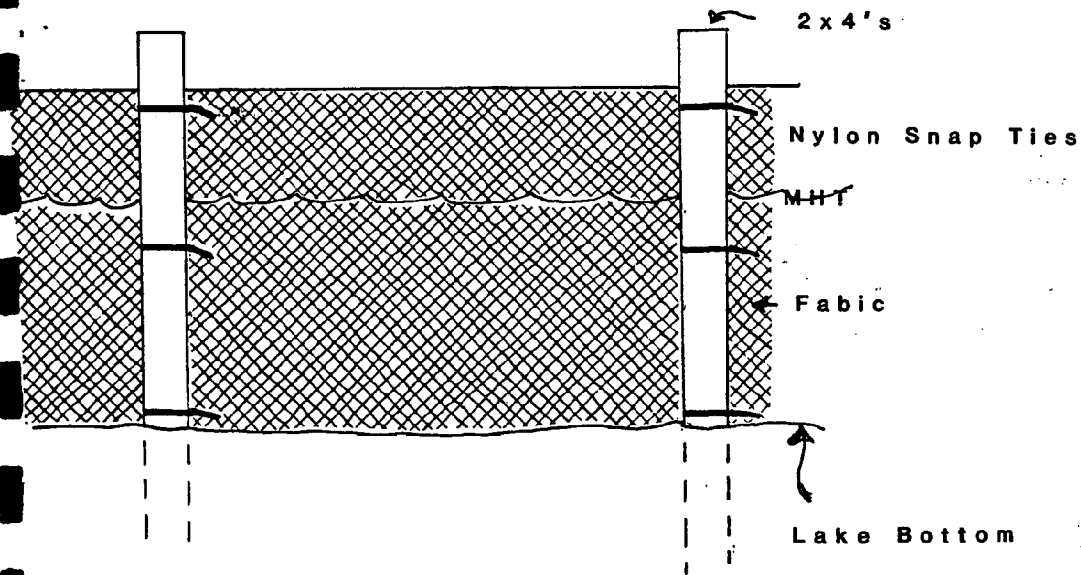
Typically, the surface layer is very dark gray, neutral muck about 12 inches thick. The underlying material to a depth of about 19 inches is gray, mildly alkaline, semifluid clay. To a depth of about 36 inches, it is very dark grayish brown and very dark gray, semifluid muck. To a depth of about 42 inches, it is dark gray, semifluid clay. To a depth of 99 inches or more, it is black, semifluid muck. In places, buried stumps and logs are in the underlying material.

The Kenner soil is almost continuously flooded by several inches of freshwater. During storms, floodwater is as deep as 2 feet. During nonflood periods, the seasonal high water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has low strength and poor trafficability. Permeability is rapid in the organic layers and very slow in the clayey layers. The total subsidence potential is very high.

Natural vegetation consists mainly of maidencane, cattail, alligatorweed, bulltongue, southern wildrice, pickerelweed, swamp knotweed, and common rush. Other less common plants are marshfern, common buttonbush, elephant ears, and water hyacinth.

Water salinity was 3.3 PPT on the day the field trial was installed.

Figure 1



Each treatment is about 80 feet long .

710	720	3/4"	1 1/2"
-----	-----	------	--------

Wave Stilling Screen Design  
(Viewed from the shoreline)

Figure 2

Plot Design Layout (from the shoreline)

710	720	710 over Holdgrow	710 over Rollite	710 over Excelsior	710 over Excelsior	Control
720	710	710 over Rollite		710 over Excelsior	710 over Excelsior	Control

Plant Spacing

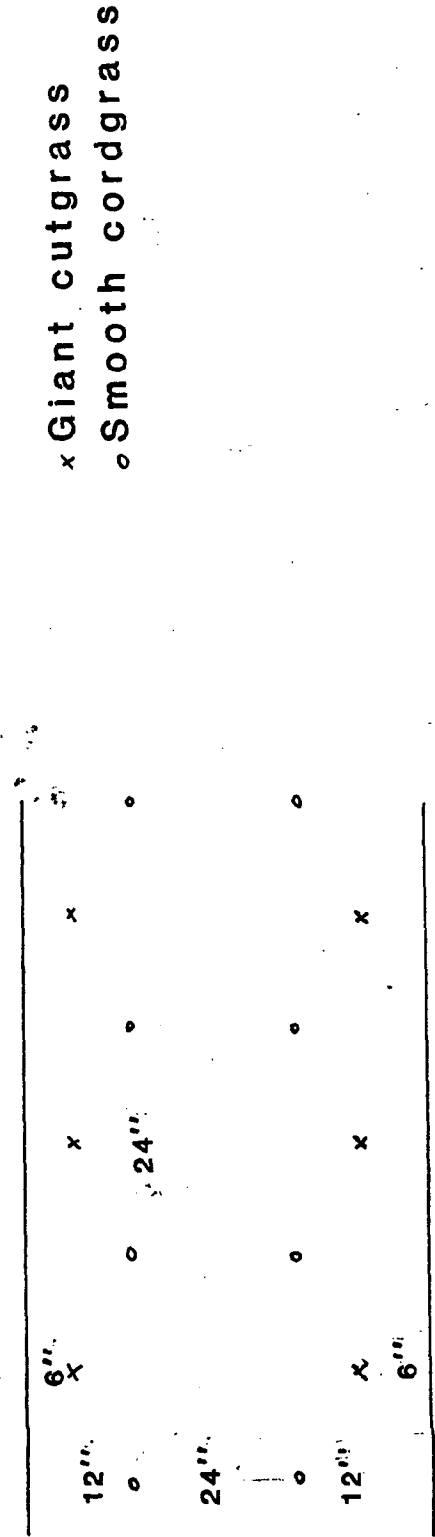




Figure 3

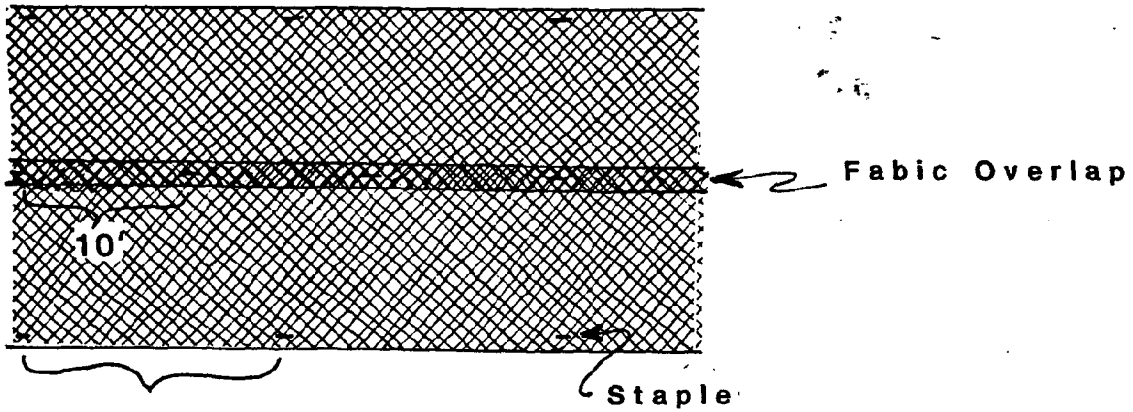


**Fabric Staples**

1/4" Concrete reinforcing rod  
5' long before bending

Figure 4

**Fabric Stapling Design**



LAKE SALVADOR  
SHORELINE EROSION CONTROL  
FIELD TRIAL

FIELD OBSERVATIONS AND EVALUATIONS

July 23, 1986

The first follow-up evaluation was made by Bill Savant and Larry Phillips. The following are general observations and comments concerning the trial.

Wave Stilling Screens

The posts are in place with no apparent failure or problems. Most of the nylon snap ties were in place with minimum failure or breakage.

Enka 7010 (Enka 710 in original report) The material pulled apart and/or broke around the snap tie fasteners. The entire section is down and is no longer functional.

Enka 7020 (Enka 720 in original report) Approximately 50% of this section is down with similar problems noted in the Enka 7010 section. In the places where the material remained standing, approximately 50% more accretion of detritus material has occurred as compared to adjacent areas without protection.

Durethene SB4344350 (3/4 inch mesh) This material appears to have good durability as a wave stilling device. Only one eight foot section was down due to apparent slippage of the snap ties on two adjacent posts. The material was pulled up in this section and additional ties added. Approximately 15.0 feet of detritus material had accreted behind this section from the shoreline. This was the best accretion rate observed in the trial at this time. The weight of organic material attached to the fence is apparently contributing to the slippage problem on the posts. This could be corrected using staples or nails just below the snap ties.

Durethene SMBE 5700 (1 1/2 inch mesh) (Identified as FNC 450 in original report) This material exhibited the best durability in the trial to date. The entire section was still in place with only minor slippage of the snap ties on the post being a problem. This could be corrected with nails or staples as previously suggested. Sediment accretion behind this section had occurred for approximately 5.0 feet from the shoreline since establishment. This represents about 33% of the accretion noted with the 3/4 inch mesh. However, the 1 1/2 inch test section was on the north end of the trial which may have influenced results slightly.

### Shoreline Stabilization or Ground Anchoring Materials

The following ground anchoring materials all appeared to perform equally in the trial. The reinforcing rod did an excellent job of anchoring these materials on the shoreline. Approximately 3 to 6 inches of organic material had deposited over these sections and the plants were still in place.

1. Enka 7010/7020
2. Enka 7020/7010
3. Enka 7010/Holdgrow - Rollite Combinations

All other combinations were apparently washed out by wave action.

### Vegetation

Plant survival was extremely poor for the entire trial area. The Enka materials did an excellent job of holding the plants in place. However, very few plants survived with only 25 to 30 smooth cordgrass and 12 to 15 giant cutgrass plants showing signs of growth. Some nutria damage had occurred, but this was not a major problem. The rapid accumulation of 3 to 6 inches of organic material over the plants may have been a problem.

On July 28, 1986, the entire area behind the wave stilling screens was replanted with smooth cordgrass. Four rows of smooth cordgrass plants were planted from the newly formed shoreline back to the old shoreline area. Plants were spaced on 2 foot centers. Most of these plants were washed out by severe thunderstorms and resulting wave action within one or two days after planting.

### August 28, 1986

#### Wave Stilling Screens

Observations indicate about the same general results observed on July 23, 1986.

The 1 1/2 inch Durethene material is still holding up well with approximately 5.0 feet of detritus build-up behind the screen.

Approximately 50% of the 3/4 inch Durethene material is down in the water due to breakage around the snap ties. Detritus accumulation has extended about 15.0 feet from the original shoreline behind the portion still in place.

Shoreline Stabilization or Ground Anchoring Materials

The Enka materials are still in place with approximately 6 inches of material deposited over them. The build-up of material in front of these sections has apparently resulted in less detritus reaching them except during above normal high tides.

Vegetation

Remaining vegetation observed included:

13 Smooth cordgrass plants

1 Giant cutgrass plant

Approximately 50% of the smooth cordgrass plants appear healthy, but little or no lateral growth is noticeable.

September 22, 1986

A follow-up check on vegetation indicates only 2 smooth cordgrass plants remain.

DEEP FRESH ORGANIC MARSH EROSION CONTROL FIELD TRIAL  
CONTINENTAL LAND & FUR - TERREBONNE PARISH

June 10, 1986

Personnel Involved:  
Jack Cutshall (SCS)  
James Winston (SCS)  
Faye Talbot (SCS)  
Aubrey Theriot (Lafourche-Terrebonne SWCD)  
Dwayne Crawford (Conti. Land & Fur)

This field trial included five different sites which are identified on the attached vicinity map. Continental Land & Fur, Co. provided an air boat to facilitate the project implementation.

SITE 1

Giant cutgrass (Zizaniopsis miliacea) was collected from an existing stand on an isolated "island". Half of the island had a vegetative cover of American cupscale, Pennywort and Southern Wax myrtle. Water lettuce was growing around the perimeter of the main part of the island. Decumbant stems with rooted nodes of Giant cutgrass (Zizaniopsis miliacea) were collected and transplanted to (1) the open half of the island and (2) around the perimeter of the vegetative half of the island. Approximately 40 plants around the perimeter and 40 plants on the unvegetated part of the island were established.

Giant cutgrass (Zizaniopsis miliacea) seed collected at the Lake Charles field office in the spring of 1986 was broadcast seeded on that portion of the island which had little or no vegetation. Domestic rice was also broadcast seeded on the same area. The rice was pre-germinated by soaking in water for 24 hours, drained, and kept in a closed plastic bag for 24 hours. The rice had begun to sprout.

This site is on a Kenner, deep peat soil (soil map sheet #26, aerial map H-5).

#### SITE 2

This site was broadcast seeded with Giant Cutgrass (Zizaniopsis miliacea) which was collected at the Lake Charles field office in the spring of 1986. Domestic rice was also seeded. Half of the rice had been pre-germinated by soaking in water for 24 hours, drained, and kept in a closed plastic bag for 24 hours. The rice had begun to sprout. The other half was raw rice with no treatment after combining.

This site is located south of Lake Hackberry, on a mudflat void of perennial vegetation; except for isolated bulltongue plants. The soil type is an Allemands, muck (aerial map H-5). See attached vicinity map.

#### SITE 3

Plantings of Giant cutgrass (Zizaniopsis miliacea) decumbant stems with rooted nodes were made in a small area. Giant cutgrass seed collected at the Lake Charles field office was broadcast seeded over the area along with domestic rice. Half of the rice had been pre-germinated as described in Site 1 and the other was combined-run.

The Giant cutgrass cuttings were obtained from the south bank of Bayou Penchant. The site is a mudflat (extremely soft) containing a sparse stand of frog-fruit, pennywort, and dwarf spikeseed. The site is on the perimeter of a southern wax myrtle "float" that is used extensively as a heron rookery.

The soil is a Kenner, deep peat (soil map sheet #23).

#### SITE 4

Rooted Giant cutgrass (Zizaniopsis miliacea) plants were planted in two

parallel rows about 6' apart for approximately 100'. Plants were planted approximately 3' apart within the row. The planting were made off of each side of a air boat. Giant cutgrass seeds collected at the Lake Charles field office was broadcast seeded over the site. Domestic rice pre-germinated as described in Site 1 along with combine-run dry rice was also broadcast seeded.

Wire cages constructed with 2"x2" mesh wire approximately 2½' tall were placed over selected plants. One cage was 3' square and the other 2' in diameter. The purpose of these enclosures are to prevent grazing pressure by nutria, which are a problem in the area.

The site is located between an access trainasse and a southern wax myrtle "float". The site is a sparcely vegetated eroded mudflat. Associated plants are bushy bluestem, pennywort, dwarf spikesedge.

Soil type is a Kenner, deep peat (soil map sheet #23).

#### SITE 5

Seeding Giant Cutgrass (Zizaniopsis miliacea) plants were planted in two parallel rows about 6' apart for approximately 200'. Plants were planted approximately 3' apart within the row. The plantings were made off of each side of an air boat.

Giant cutgrass (Zizaniopsis miliacea) seeds collected in Terrebonne Parish during the spring of 1986 was broadcast seeded over the area. Both pre-germinated and dry domestice rice seed were planted on the site also.

Three cages using 2"x2" mesh wire were placed over selected plants to protect from grazing by nutria. Cages were as follows: 1) 3'x3'x2½' tall, 2) 2' diameter by 4' tall, 3) 2' diameter by 2½' tall.

This site is between a trainasse and southern wax myrtle "float".

Associated plants were pennywort and dwarf spikesege.

This site is a Kenner, deep peat (soil map sheet #23).



OBSERVATION REPORT  
Deep Fresh Organic Marsh Erosion Control  
Field Trial

October 8, 1986

The sites that had been seeded as well as those areas which were planted to giant cutgrass were checked for plant survival. None of the sites had any plants living. The giant cutgrass which was protected by enclosures was intact, but dead. There was no evidence of any plants established by seed.

Apparently the saturated soil condition produces an anaerobic condition in the root zone that prevents the establishment of transplanted stem cuttings, transplanted rooted plants, and the establishment of plants from seed.

Additional investigations are needed to compare sites with different moisture regimes to determine the maximum amount of water allowable for plant establishment. Seed technology is needed to determine how much moisture is needed to germinate giant cutgrass seed without exhibiting the establishment of the plant.



Scale 1:70000

Plat set

2 Alluvial Muck  
 8 Kampen Muck

NOAA COASTAL SERVICES CENTER LIBRARY



3 6668 14109 5473