

**BENEFICIAL USE OF DREDGED MATERIAL
DISPOSAL HISTORY
ALONG SELECT NAVIGATIONAL CHANNELS IN LOUISIANA**

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INTRODUCTION

Beginning in the late 1970's, the U.S. Army Corps of Engineers (USACE) began placing dredged material in an effort to create and restore coastal habitats. In 1994, the Beneficial Use Monitoring Program (BUMP) was instituted to quantify the amount of new habitat created and to improve dredge disposal placement in order to maximize the beneficial use. As part of BUMP, the University of New Orleans- Coastal Research Laboratory (UNO-CRL) performed a cumulative landscape history of the BUMP monitored sites between 1985 and 2000 to determine the net amount of sub-aerial land created by the USACE. The study will be continued on a yearly basis to determine the net land created between the current year and base year of 1985.

DATA

The base year color infrared (CIR) photography used in the study was flown in December 1985 by the NASA- Ames Research Center. The photography was captured using a Wild RC10 camera at an altitude of 65,000 feet (1:65,000 scale).

For comparison, the current fiscal year (FY) CIR photography was used. The FY 2000 photography was flown by Aerial View Point in December of 2000 and January 2001. The photography was captured with a Wild RC30 camera at an altitude of 12,000 feet (1:24,000 scale).

METHODS

The CIR photography was first scanned at a resolution of 600 dpi, and then imported into Erdas Imagine file format. The photography was then geo-referenced and a CIR photo-mosaic was created. For the land water classification, an ISODATA algorithm was performed on the CIR photo-mosaic to separate the imagery into 85 unique spectral classes. These 85 classes were then examined for spectral homogeneity and assigned either a final class of land or water. The image was then recoded to produce a land-water image. This procedure was followed for both the 1985 and FY 2000 CIR mosaics.

Once a land-water image was finalized for a study site, a change detection matrix was computed and a change detection image created. From this image, the areas of direct land created due to dredged material disposal was delineated using information from the disposal history of each study site.

RESULTS

The goal of the study was to determine the amount of sub-aerial land created by the USACE. Since this study was a comparison of two time periods, the polygon delineations and acreage of BUMP created land represents a net change in the landscape based on current conditions. However, it was beyond the scope of the study to determine the amount of new land created by "BUMP assistance." The natural processes of re-working sediment placed into a system are numerous; making the determination of

BUMP assisted land creation difficult. Table 1 summarizes the results of the study and is followed by figures presenting the cumulative landscape change for each study site.

Table 1 Summary of BUMP created land by study site.

BUMP Study Site	BUMP Created (Acres)	BUMP Created (Hectares)	Figure Number
Atchafalaya- Avoca Island	1,066	432	1
Atchafalaya- Delta	2,924	1,184	2
Atchafalaya- Horseshoe Bend	1,256	508	3
Baptiste Collette	6,239	2,527	4
Barataria- Inland	141	57	5
Barataria- Bay	60	24	6
Barataria- Grand Terre	121	49	7
Calcasieu- Brown Lake	195	79	8
Calcasieu- Sabine	745	302	9
Freshwater Bayou	21	8	10
Houma- Navigation Canal	13	5	11
Houma- Wine Inland	48	19	12
Mermentau River	63	25	13
MRGO- Inland	289	117	14
MRGO- Jetties	319	129	15
MRGO- Breton Island	29	12	16
South Pass	396	161	17
Southwest Pass	3,096	1,254	18
Tiger Pass	347	140	19
Total	17,367	7,034	

**BENEFICIAL USE OF DREDGED MATERIAL DISPOSAL HISTORY
ATCHAFALAYA RIVER AND BAYOUS CHENE, BOEUF AND BLACK, LA
AVOCA ISLAND CUTOFF - BAYOU CHENE REACH**

Through FY 2000

The Atchafalaya River and Bayous Chene, Boeuf, and Black, Louisiana, project was authorized by the Rivers and Harbors Act of 1968, House Document 155, 90th Congress, 1st Session. It provided for the improvement of a channel 20 feet deep over a bottom width of 400 feet from the vicinity of the U.S. Highway 90 crossing over Bayou Boeuf to the Gulf of Mexico via the Gulf Intercoastal Waterway (GIWW), Bayou Chene, the Avoca Island Cutoff Bayou Drainage channel, the Lower Atchafalaya River, and the existing project across Atchafalaya Bay. This Act also provided for a 20 by 400 foot channel in Bayou Black and the GIWW from the major shipyard on Bayou Black at U.S. Highway 90 to Bayou Chene. Construction of the final reach, Bayou Chene and Avoca Island Cutoff commenced on October 23, 1980 and was completed on September 28, 1981.

Construction of the Avoca Island Cutoff-Bayou Chene reach of the navigational channel was performed during the Fiscal Year (FY) 1981, from November 13, 1980 to October 1, 1981. Approximately 17,754,281 cubic yards of dredged material were removed from the channel using a hydraulic cutterhead pipeline dredge. The material was placed in disposal area #5, located on the right descending bank of Bayou Chene on Avoca Island, to a maximum height of +3.0 feet Mean Low Gulf (MLG) for the creation of marsh and mounds for waterfowl habitat.

During the FY 1988 maintenance event (November 15, 1988 to February 15, 1989), approximately 873,000 cubic yards of dredged material were deposited for marsh creation into Avoca Island disposal areas #5 and #5A, located on the right descending bank of Bayou Chene. The dredged material was removed from the channel using a hydraulic cutterhead pipeline dredge, and was placed confined to a maximum elevation of +5.0 feet MLG.

During the FY 1989 maintenance event (May 24, 1989 to August 18, 1989), Bayou Chene curves #2, #4 and #5 were widened using a hydraulic cutterhead pipeline dredge. Material excavated from the curves was placed confined in disposal areas #5 and #5A for marsh creation. Dredged material was placed in mounds in area #5 to an elevation of 3.5 feet MLG. Dredged material in area #5A was placed to a maximum height of +5.0 feet MLG.

During the FY 1998 maintenance event (May 22, 1998 to October 12, 1998), approximately 3,827,625 cubic yards of dredged material were removed from the channel using a hydraulic cutterhead pipeline. Material was deposited confined in Avoca Island disposal areas #5 and #5A for marsh creation. Dredged material was placed to a maximum elevation of +4.5 feet MLG.

There was no maintenance of this reach of the waterway during FY 1999 and FY 2000.

Figure 1 illustrates the dredged material disposal history for the study area through FY 2000.

Atchafalaya Avoca Island Cutoff- Bayou Chene Reach Dredged Material Disposal History

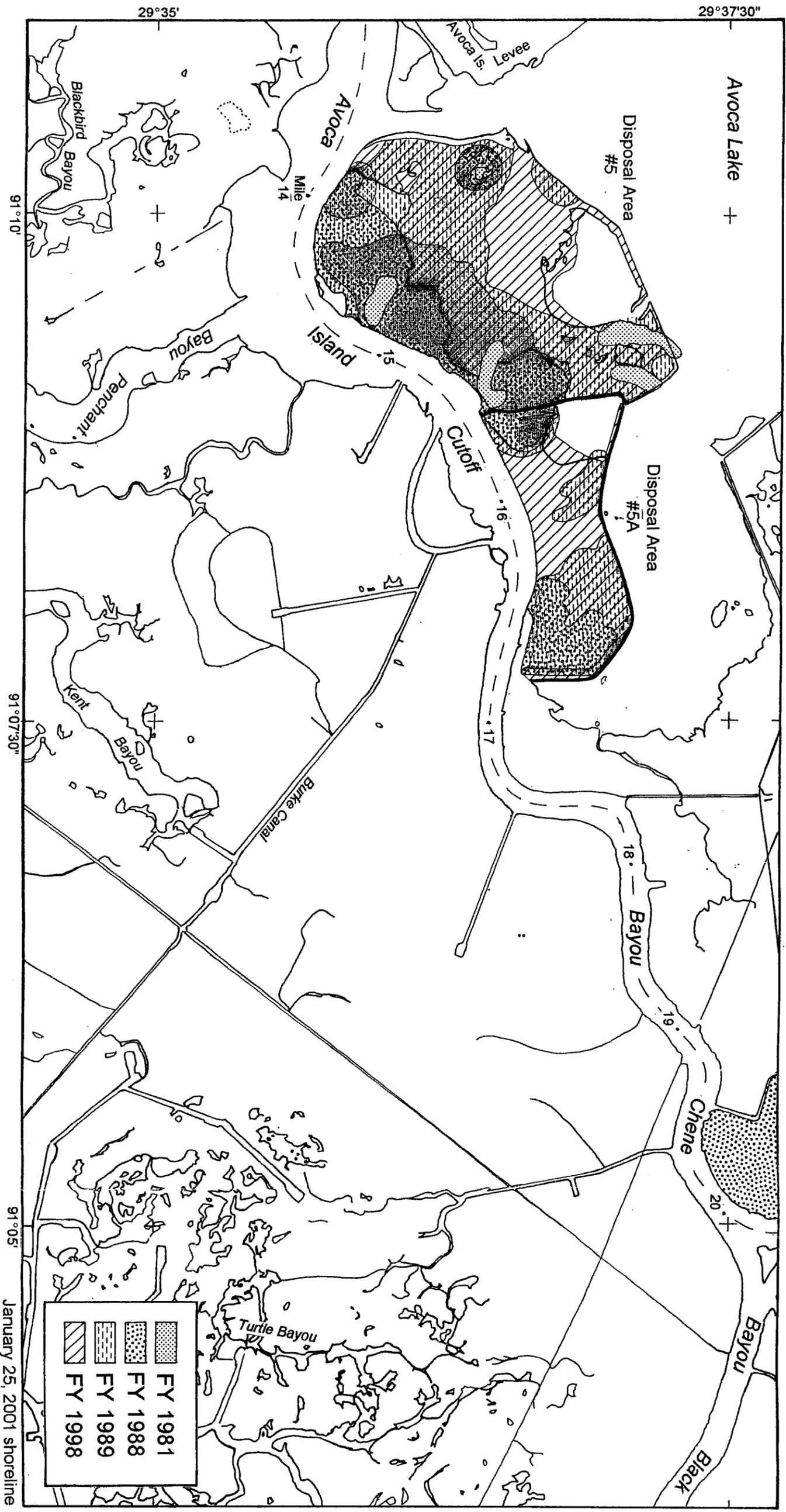
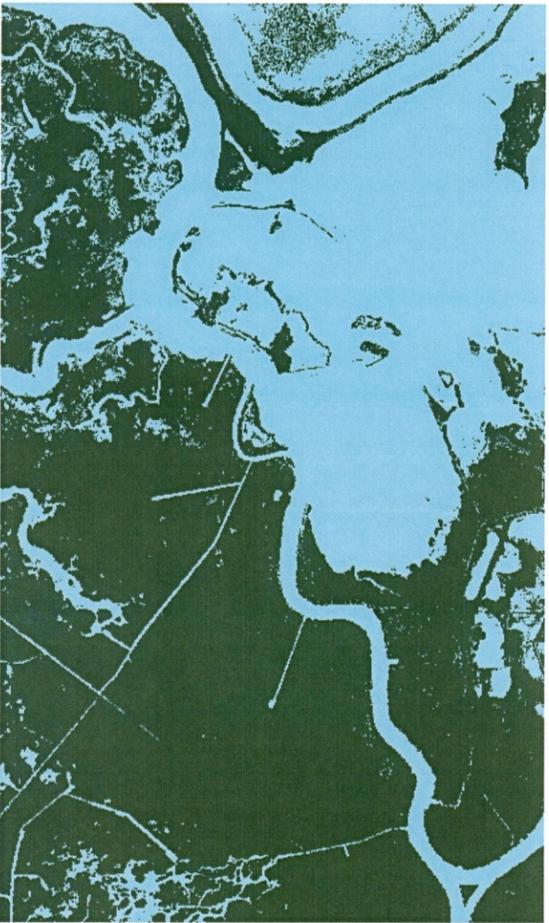
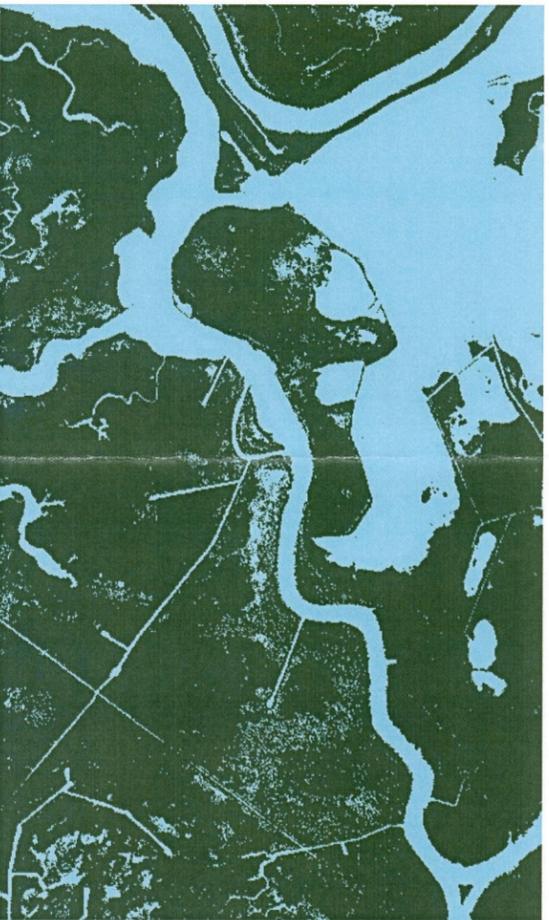


Figure 1. Dredged material disposal history and USACE-NOD disposal areas for the Atchafalaya River and Bayous Chene, Boeuf, and Black, Louisiana: Avoca Island Cutoff - Bayou Chene reach through FY 2000. Data from USACE-NOD and aerial photography.

1985 Land-Water Classification



2000 Land-Water Classification



Change Detection: 1985-2000



LEGEND

-  BUMP Created Land
-  Other New Land
-  Unchanged Land
-  Land Loss
-  Water

Figure 1 Cumulative Landscape Change for Atchafalaya- Avoca: 1,066 Acres