



US Army Corps
of Engineers

Galveston District

Fiscal Year Annual Report of the Secretary of the Army on Civil Works Activities

Extract

Report of the Galveston District 1998

GALVESTON, TEXAS DISTRICT

Galveston District comprises drainage basins of all short streams arising in coastal plain of Texas and flowing into the Gulf of Mexico, including the entire basin of Buffalo Bayou, San Jacinto, San Bernard, Lavaca, Navidad, Mission, and Aransas Rivers. It embraces Agua Dulce, San Fernando, and Olmos Creek Basins draining into Baffin Bay, and coastal area south thereof to the Rio Grande and east of western Boundary of Starr County, Texas. It includes lower basins of major streams flowing into the Gulf of Mexico: Sabine River, Texas and Louisiana, downstream from U.S. Highway 190 crossing at Bon Wier,

Texas; Neches River downstream from Town Bluff gaging station; Trinity River downstream from Texas State Highway 19 crossing at Riverside, Texas; Brazos River downstream from confluence with Navasota River; Colorado River downstream from northern boundary of Fayette County; Guadalupe River downstream from confluence with San Marcos River; San Antonio River downstream from confluence with Escondido Creek; Nueces River downstream from confluence with Frio and Atascosa River.

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Navigation

1. AQUATIC PLANT CONTROL (SOUTHWESTERN DIVISION) 1965 ACT

Location. Navigable waters, tributary streams, connecting channels, and other allied waters in Texas.

Previous project. For details see page 699 of Annual Report for 1963.

Existing project. A comprehensive project to provide for control and progressive eradication of water-hyacinth, alligatorweed, Eurasian watermilfoil, hydrilla, and other obnoxious aquatic plant growths, from navigable waters, tributary streams, connecting channels, and other allied waters in Texas in the combined interest of navigation, flood control, drainage, agriculture, fish and wildlife conservation, public health, and related purposes, including continued research for development of the most effective and economic control measures. Control of hydrilla, water-hyacinth and alligatorweed continues in the Nueces River Basin, North Coastal Area, Guadalupe River Basin, Sabine River Basin, Trinity River Basin, Cypress Creek Basin, Neches River Basin, South Coastal Area, San Jacinto River Basin, Rio Grande Basin, Colorado River Basin and Brazos River Basin.

Local cooperation. Sec. 302, 1965 River and Harbor Act, amended by Water Resources Development Act of 1986, applies.

Operations during fiscal year. The cost-sharing program had been funded for \$31,000 for FY 98, but chemical control work by the State of Texas was curtailed for the year to await interpretation of herbicide labelling instructions by the Environmental Protection Agency. Mechanical control of waterhyacinth and hydrilla was accomplished by the State along segments of the Rio Grande river without Corps participation. The one year cost-sharing, cost-reimbursable contract, with options for an additional four years, was extended for option year three with the State of Texas in order to keep the contract in force.

2. BRAZOS ISLAND HARBOR, TX

Location. At extreme south end of coast of Texas, about 7 miles north of mouth of Rio Grande and about 5 miles east of Brownsville, Texas. (See National Ocean Survey Chart 11301.)

Previous project. For details see page 1017 of Annual Report for 1932.

Existing project. Provides for channel dimensions in various sections of the waterway as shown in Table 40-H.

Project also provides for dual jetties at the gulf entrance, a north jetty 6,330 feet long, a south jetty 5,092 feet long, and 1,000-foot extension to existing north jetty and for maintenance of 3rd fishing harbor constructed by local interests. Under ordinary conditions, mean tidal range is about 1.5 feet, and extreme range is about 2 feet. All depths refer to mean low tide. To some extent, height

of tides is dependent on the wind, and during strong "northers" in winter season, water surface in southern end of Laguna Madre may be raised 4 feet or more above mean low tide in the gulf. Total cost for new work was: Federal (Corps) \$16,013,607, exclusive of amount expended on previous projects, and non-Federal \$9,324,148, including \$5,337,869 contributed funds, \$796,380 relocations, and \$3,189,899 other costs, exclusive of amount expended on previous projects.

Widening Brownsville Channel from Goose Island to Brownsville turning basin and deepening southeast corner of Brownsville turning basin to 36 feet was completed in April 1980. The 1,000-foot extension to existing north jetty was deauthorized under Section 1001 of the Water Resources Development Act of 1986. The entrance channel was enlarged from 38 feet by 300 feet to 44 feet by 300 feet in FY 1992. Construction of an environmental mitigation site consisting of the creation of a 16 acre tidal wetland which included shoal grass and black mangroves, was completed in 1997. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. Fully complied with.

Terminal facilities. Numerous terminal facilities for bulk and liquid cargo are available. (See Port Series No. 26, revised 1991.) Facilities are adequate for existing commerce.

Operations during fiscal year. Maintenance: In addition to the routine maintenance, a claim in regards to the contract for dredging the entrance channel, awarded December 28, 1996, was settled at an increase Federal cost of \$97,747 and the non-Federal cost was decreased by \$26,775. (See Table 40-J for dredging operations.)

3. CORPUS CHRISTI SHIP CHANNEL, TX

Location. This project, formerly known as the Port Aransas-Corpus Christi Waterway, Texas, was changed to Corpus Christi Ship Channel, Texas, by 1968 River and Harbor Act. This is a consolidation of old improvements of Port Aransas, Texas, and channel from Aransas Pass to Corpus Christi, Texas. Aransas Pass is on southern portion of Texas Coast, 180 miles southwest of Galveston and 132 miles north of mouth of Rio Grande. Aransas Pass connects Corpus Christi Bay with the gulf. Waterway extends from deep water in the gulf through Aransas Pass jettied entrance, thence westerly 20.75 miles to and including a turning basin at Corpus Christi, thence westerly 1.75 miles through Industrial Canal to and including turning basin at Avery Point, thence westerly 4.25 miles to and including a turning basin near Tule Lake, thence northwesterly 1.8 miles to and including a turning basin at Viola, Texas. (See National Ocean Survey Charts 11308, 11309, 11311, and 11314.)

Previous project. For details see page 1861 of Annual Report for 1915.

Existing project. (See Table 40-H for existing project dimensions provided for in various channels and basins comprising this waterway.)

Project also provides for two rubblestone jetties at Aransas Pass entrance, extending into the gulf from St. Joseph and Mustang Islands, project lengths of which are 11,190 and 8,610 feet, respectively. Project further provides for a stone dike on St. Joseph Island about 20,991 feet long, connecting with north jetty and extending up this island to prevent a channel being cut around jetty. Project also provides for a breakwater at the entrance to the harbor area at Port Aransas, and for the realignment of the existing 12-foot by 100-foot project channel to Port Aransas. The breakwater consists of two overlapping sections. The one on the east side of the realigned entrance channel has a length of 830 feet and the second, located on the west side of the entrance channel, has a length of 1,290 feet. The channel to Port Aransas was relocated in the 300-foot clear distance between the overlapping sections. The portion of the channel remaining inside the breakwaters was widened to 150 feet. Under ordinary conditions, mean tidal range at Aransas Pass is about 1.1 feet and extreme range about 2 feet, and at Corpus Christi mean range about 1 foot and extreme about 1.5 feet. Heights of tides are dependent largely on strength and directions of winds, and during strong "northers" in the winter season water surface may be depressed as much as 3 feet below mean low tide. Estimated cost for new work is: Federal (Corps) \$74,938,515, including \$456,515 for Port Aransas Breakwaters and exclusive of amount expended on previous projects; and non-Federal \$18,977,431 (includes \$768 for Port Aransas Breakwaters) including \$7,644,435 contributed funds and value of useful work performed, \$3,320,228 lands, \$6,027,000 relocations and \$1,985,000 other cost. (October 1, 1992 base price.)

The Port Aransas-Corpus Christi 40-foot project was completed in 1966. The Jewel Fulton Canal was completed in 1963. The Port Aransas Breakwaters were completed in July 1973. Deepening deep-draft channels to 45 feet from Tule Lake Turning Basin through Viola Turning Basin was completed in 1989, and constructing a mooring area at Port Ingleside with dolphins has been deferred. Entrance and jetty channels have been dredged to project depth and width, and dredging of channel from Harbor Island to and through the Chemical Turning Basin at 45-foot depth has been completed. Initial mooring dolphins were completed in May 1979. Disposal area levees, Area 1 and Rincon were completed in August 1984. First stage disposal area levees, South Shore, were completed in September 1984. Construction contract for mitigation terracing was completed in 1997. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. Fully complied with.

Terminal facilities. Terminal facilities on Harbor Island at head of Aransas Pass, Ingleside, Corpus Christi, La Quinta, Avery Point, and Viola, are considered adequate for existing commerce. (See Port Series, No. 25,

revised 1993, Corps of Engineers.)

Operations during fiscal year. Maintenance: Routine Maintenance. (See Table 40-J for dredging operations.)

4. DOUBLE BAYOU, TX

Location. Enters Trinity Bay on the east side about 30 miles north of Galveston and about 8.25 miles south of Anahuac, Texas.

Existing Project. Project provides for a channel 7 feet by 125 feet from the mouth of Double Bayou to the 7-foot contour in Trinity Bay, a length of 3.9 miles; and a channel, know as West Fork, 7 feet by 100 feet for a length of 2.0 miles. The project was completed in 1971.

Under ordinary conditions mean tidal range is about 0.5 feet and extreme range is about 1.2 feet. Height of tides is dependent largely on winds, and during strong north winds in the winter season, water surfaces may be depressed 1.5 feet below mean low tide. (See National Ocean Survey Chart 11326.)

Local cooperation. Fully Complied with.

Terminal facilities. Facilities are privately owned. At the mouth of the bayou is a timber wharf for loading oil barges. Between miles 1 and 1.5 above the mouth are a timber wharf, a boat slip, and a marine railway owned by the Brown and Root Corporation. At mile 3 above the mouth is a small depot for handling oyster shell. The facility consists of a timber bulkhead and hoppers for loading trucks. One-half mile above the mouth are several fishing vessel docks.

Operations during fiscal year. Maintenance: No work was incurred in Fiscal Year 1998. (See Table 40-J for dredging operations.)

5. FREEPORT HARBOR, TX

Location. Formed by improvement of Brazos River, Texas, from mouth to about 6 miles upstream to Freeport, Texas. (See National Ocean Survey Charts 11321 and 11322.)

Previous projects. For details see page 1860 of Annual Report for 1915, and page 872 of Annual Report for 1938.

Existing project. Existing project dimensions for various channels and basins are shown in Table 40-H on channel dimensions at end of chapter.

Existing project also provides for: Dual jetties and a diversion canal for the Brazos River, including a dam, a lock in the dam and necessary auxiliary equipment. Also provides for rehabilitation of southwest jetty and the relocation of the northeast jetty (about 640 feet to the northeast); realignment of the channel between the Jetty Channel and Brazosport Turning Basin; realignment of the channel between Brazosport Turning Basin and Upper Turning Basin; relocation of Upper Turning Basin; and public use facilities adjacent to the Freeport Jetties. The

30-foot channel from Upper Turning Basin to Stauffer Chemical Plant, including the turning basin, was deauthorized by Sec. 12 of PL 93-251. Construction of lock in diversion dam at local expense is considered inactive.

The 38-36 foot project was completed in 1962. New work consists of realigning, deepening and widening the Outer Bar and Jetty Channels; relocating the northeast jetty; rehabilitating the southwest jetty; realigning and deepening the harbor channel between the jetty channel and the Upper Turning Basin; relocating and enlarging the Upper Turning Basin; constructing a turning point near the northwesterly end of the jetty channel; enlarging Brazosport Turning Basin; deepening Brazos Harbor Channel; and enlarging and deepening Brazos Harbor Turning Basin, as authorized by the R&H Act of 1970. The initial contract for the 45 foot project, construction of 3,700 feet of the North Jetty, was awarded in May 1987. Project is essentially complete. Surfside Recreation area is under construction by the Local Sponsor. Navigation problems were identified by the Local Sponsor and pilots, and a contract to make channel adjustments to a bend near the project main turning basin was completed in 1998 to provide full utilization of the 45-foot channel. (See Table 40-G for total cost of existing project to September 30, 1998.)

Under ordinary conditions mean tidal range is about 1.5 feet and extreme range is about 2.5 feet. Except under extreme conditions, rises on river and in diversion channel do not cause greater variations in water surface than those caused by tidal action. Estimated cost of new work is: \$63,707,000 Federal (Corps) and \$470,000 Federal (USCG); and \$32,313,000 non-Federal, including \$21,302,000 contributed funds, \$300,000 contributed work, \$6,967,000 lands, \$3,174,000 levees and spillways, and \$570,000 relocations. (October 1, 1997 base price.)

Local cooperation. Fully complied with except for Section 101 of River and Harbor Act of 1970, under cost-sharing tenets of the Water Resources Development Act of 1986 and the Water Resources Development Act of 1996. Local Cooperation Agreement, executed June 26, 1986, along with Amendments 1, 2, 3, and 4 executed March 19, 1987; July 19, 1991; July 19, 1991; and July 15, 1997; respectively, require that local interest provide lands, easements, rights-of-way, including land for recreation, and dredged material disposal areas, presently estimated at \$10,141,000, modify or relocate utilities, roads, and other facilities, except railroad bridges, where necessary for construction of the project, presently estimated at \$570,000, contribute in cash one-half of the separable and joint costs allocated to recreation, presently estimated at \$530,000; and, during construction, pay 25 percent of the construction costs allocated to deep-draft navigation, including disposal facility construction, presently estimated at \$21,302,000.

Terminal facilities. Small privately owned wharves, two oil docks, one acid dock, two shell unloading docks and one caustic dock. Brazos River Navigation District

has one large dock with four transit sheds over rail facilities permitting all-weather work. Facilities considered adequate for existing commerce. (See Port Series No. 26, revised 1991, for additional facilities.)

Operations during fiscal year. New Work: The contract for bend easing, awarded July 15, 1997, completed in June 1998 at a FY 98 cost of \$3,676,128. Confined Placement Site No. 1 was designed and constructed by the Port of Freeport at a total cost of \$2,563,985, of which \$1,304,239 was the estimated Federal amount accrued in FY 1998. Funds in the amount of \$184,000 were also accrued in FY 98 for the Federal share of constructing Surfside Recreation Area.

Maintenance: Routine maintenance. A claim for an emergency dredging contract at Freeport's entrance and jetty channel, awarded January 5, 1997, was settled at a cost of \$68,993 for FY 1998. (See Table 40-J for dredging operations.)

6. GALVESTON HARBOR AND CHANNEL, TX

Location. A consolidation of authorized improvements at Galveston, Texas, which includes projects formerly identified as Galveston Harbor, Texas; Galveston Channel, Texas; and Galveston seawall extension. Entrance to Galveston Harbor is on Gulf of Mexico on the northern portion of the Texas Coast. Galveston Channel extends from a point in Galveston Harbor between Bolivar Peninsula and Fort Point to and along wharf front Galveston, Texas, and is about 5 miles long and 1,200 feet wide. (See National Ocean Survey Chart 11324/5.)

Previous projects. For details see page 1854 of Annual Report for 1915.

Existing project. Provides for channel dimensions in sections of the waterway shown in Table 40-H.

Also provided are: two rubble-mound jetties, the south one extending from Galveston Island and the north one extending from Bolivar Peninsula, for distances of 35,900 feet and 25,907 feet, respectively, into the Gulf of Mexico; a concrete seawall from the angle at Sixth Street and Broadway, in the city of Galveston, to the south jetty, and a 16,300-foot extension of the concrete seawall in a southwesterly direction from 61st Street; for 11 groins along the gulf shore between 12th Street and 61st Street; and for maintenance of seawall from the angle at 6th Street and Broadway to the south jetty. Under ordinary conditions, mean tidal range in Galveston Harbor is 1.6 feet on outer bar and 1.4 feet on inner bar with extreme ranges of 2.3 and 2.1 feet, respectively. Mean range in Galveston channel is about 1.3 feet and extreme range about 2 feet under ordinary conditions. Height of tides in both Galveston harbor and channel is dependent largely on the wind, and during strong "northers" water surface may be depressed 2 feet below mean low tide.

Existing project is complete. Dredging of Galveston channel to 36 foot depth was completed in November 1966. Dredging of the realigned entrance and Outer Bar Channel was completed in October 1967. Rehabilitation of the Beach Front Groins was completed June 1970. Dredging of Galveston channel to 40 feet was completed in March 1976. See Section 11. TEXAS CITY CHANNEL, TX regarding work authorized by Water Resources Development Act of 1986, Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX, and Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN under Houston-Galveston Navigation Channels, TX, for work also authorized by the Water Resources Development Act of 1996. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. Complied with.

Terminal facilities. None on Galveston Harbor, which is entrance channel leading to terminal facilities on Galveston, Texas City, and Houston Ship Channels. Galveston Channel terminal facilities are mostly on south side of channel. Principal wharves, owned by the city of Galveston, extend from 10th to 41st Street (see Port Series No. 23, revised 1996). A container ship terminal equipped with a crane capable of stacking containers three units high on the deck of any normal container ship has been completed and placed into operation by the city of Galveston at Piers 10 and 11, on the south side of Galveston Channel. The city of Galveston has also placed into operation a barge terminal equipped with two 35-ton and one 5-ton cranes for loading and unloading barges on Lash and Seabee ships at Pier 35 and a docking and holding area for Lash and Seabee barges on Pelican Island, directly across the channel from Piers 35 and 36. Present facilities are considered adequate for existing commerce.

Operations during fiscal year. New Work: See Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX.

Maintenance: Routine Maintenance. Also see Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX. (See Table 40-J for dredging operations.)

7. GULF INTRACOASTAL WATERWAY BETWEEN APALACHEE BAY, FL, AND MEXICAN BORDER

Location. Extends from a point on Sabine River about 3 miles below Orange, Texas, to Brownsville, Texas, about 421 miles; a navigation channel, about 7 miles long, in Colorado River, extending from Matagorda, Texas, to Gulf of Mexico; a tributary channel in San Bernard River, extending from Intracoastal Waterway crossing to State highway bridge some 30 miles above crossing; a tributary channel in Colorado River extending from Intracoastal

Waterway upstream 15.5 miles; a tributary channel extending about 14 miles from Intracoastal Waterway to Palacios, Texas; a tributary channel extending about 2 miles from Intracoastal Waterway to Rockport, Texas; a tributary channel extending about 6 miles from Intracoastal Waterway near Port Aransas, Texas, to town of Aransas Pass, Texas; a tributary channel about one-fourth mile long extending from Intracoastal Waterway near Port O'Connor, Texas, into Barroom Bay; a tributary channel extending about 38.8 miles from Intracoastal Waterway via Seadrift to a point in Guadalupe River 5.5 miles below Victoria, Texas; a harbor of refuge for small craft at Seadrift; a channel extending from gulf to Port Mansfield, Texas, about 11 miles; and a tributary channel in Arroyo, Colorado extending from Intracoastal Waterway to a point near Harlingen, Texas, about 31 miles; side channels in vicinity of Port Isabel, Texas, and a small boat basin at Port Isabel, Texas, and a tributary channel extending from Intracoastal Waterway main channel at a point in West Galveston Bay into Offatts Bayou about 2.2 miles with a west turnout (weye connection) 12 feet deep and 125 feet wide between Offatts Bayou Channel and the Gulf Intracoastal Waterway. (See National Ocean Survey Charts 11302, 11303, 11305, 11306, 11308, 11309, 11314, 11315, 11317, 11319, 11322, 11326, and 11331.)

Previous project. For details see page 1859 of Annual Report for 1915. (West Galveston Bay and Brazos River Canal, Texas.)

Existing project. Existing project dimensions provided for in main channel of waterway: A channel 12 feet deep (below mean low tide) and 125 feet wide from the Sabine River to Brownsville, Texas. Relocation of channel 12 feet deep by 125 feet wide in Matagorda Bay, miles 454.3 to 471.3, relocation of channel 12 feet deep by 125 feet wide in Corpus Christi Bay, miles 539.4 to 549.7 (mileage is west of Harvey Lock, Louisiana); and alternate channel, 12 feet deep (below mean low tide) and 125 feet wide via Galveston Channel and Galveston Bay to the Galveston causeway; maintenance of existing channel 12 feet deep by 125 feet wide through Lydia Ann Channel, between Aransas Bay and Aransas Pass; provisions of such passing places, widening of bends, locks and guard locks, railway bridges over artificial cuts as are necessary, and the tributary channels shown in tabulation. The authorized channel 16 feet deep and 125 feet wide from Sabine River to Houston Ship Channel is inactive. (See Table 40-I on existing project dimensions provided for in tributary channels.)

Removal of the railroad bridge across the canal at Mud Bayou was completed and operation and care of the facility was discontinued on April 14, 1969. Deepening the existing 6 foot by 60 foot side channels at Port Isabel to 12 feet was completed February 22, 1972, Offatts Bayou channel was completed January 1974. Relocation of main channel across Corpus Christi Bay was completed in September 1976. The 14 foot by 175 foot Channel to Aransas Pass was completed in April

1979. Dredging Chocolate Bayou Channel was completed in January 1981. Construction of a saltwater barrier in Chocolate Bayou was completed in February 1981. The 12 foot by 125 foot channel relocation route in Matagorda Bay has been deauthorized. The Harbor of Refuge at Seadrift, Texas, has been placed in the inactive category. **Mouth of Colorado River:** Construction of jetties at mouth of Colorado River was completed in 1986. Construction of a navigation channel from the Gulf to the GIWW and an impoundment basin were fiscally completed in 1991. Construction of Tiger Island Dam and recreation facilities were also completed in 1991. Construction of the recreation facilities at Jetty Park was completed in 1992. Construction of the diversion dam and connecting channel was completed in 1993. Construction of the oyster culch was completed in 1995. **Brazos River Floodgates- Major Rehabilitation:** Major rehabilitation of the East Floodgate Guidewalls was completed in 1997. **Sargent Beach:** Work authorized by the Water Resources Development Act of 1992 for construction of a concrete-pile and concrete block revetment structure which extends 8 - miles to protect the Gulf Intracoastal Waterway was completed in 1998.

Active authorized work remaining consists of the following: (1) Work authorized by the Water Resources Development Act of 1988 for enlarging the existing Channel to Victoria from a depth of 9 feet and width of 100 feet to a depth of 12 feet and width of 125 feet. (2) Sargent Beach, financial completion of work authorized by the Water Resources Development Act of 1992 for construction of a concrete-pile and concrete-block revetment structure which extends for an estimated 8 miles to protect the Gulf Intracoastal Waterway. (3) Brazos River Floodgates, financial completion of major rehabilitation of the East Floodgate Guidewalls. (4) Aransas National Wildlife Refuge, work authorized by the Water Resources Development Act of 1996 for construction of bank protection and a spill containment system through the critical habitat for the endangered whooping crane. (See Table 40-G for total cost of existing project to September 30, 1998.)

Mean tidal variation is 0.5 foot at Orange, 1 foot at Port Arthur, 1.3 feet in Galveston Bay, 1.5 feet at Freeport, 1 foot in Matagorda Bay, 1 foot in San Antonio Bay, 1 foot at Corpus Christi, 1.5 feet at Port Isabel, and 1.5 feet at Brownsville. Extreme ranges of tide under ordinary conditions are 1 foot at Orange, 1.5 feet at Port Arthur, 2 feet in Galveston Bay, 2 feet at Freeport, 1.5 feet in Matagorda and San Antonio Bays, 1.5 feet at Corpus Christi, 2 feet at Port Isabel, and 1.5 feet at Brownsville. Height of tides is dependent largely on wind. Strong north winds have depressed water surface as much as 2 feet below mean low tide.

Estimated cost for new work is:

Channel to Victoria - \$26,624,000 Federal

(Corps), \$422,000 Federal (Department of Transportation), \$58,000 Federal (U.S. Coast Guard), and \$6,361,000 non-Federal consisting of \$2,958,000 cash, \$1,643,000 lands, \$175,000 fender system, and \$1,585,000 levees and other associated costs. (October 1, 1998 base prices.)

Sargent Beach - \$29,460,000 Federal (Corps) and \$29,460,000 Federal (Inland Waterways Trust Fund). (October 1, 1997 base prices.)

Brazos River Floodgates (Major Rehabilitation) - \$2,750,000 Federal (Corps) and \$2,750,000 Federal (Inland Waterways Trust Fund). (October 1, 1995 base prices.)

Aransas National Wildlife Refuge - \$20,148,000 Federal (Corps). (October 1, 1998 base prices.)

Local cooperation. Fully complied with except for provisions of Section 101, 1968 River and Harbor Act and Water Resources Development Act of 1988. The Project Cooperation Agreement for Channel to Victoria was executed November 17, 1994.

Terminal facilities. There are terminal facilities at Aransas Pass, Port Arthur, Galveston, Port Isabel, and Brownsville. See Port Series No. 22 (revised 1988), Port Series No. 23 (revised 1996), Port Series No. 25 (revised 1983) and Port Series No. 26 (revised 1991), Corps of Engineers. Local interests constructed terminal facilities at Port Mansfield and Port Harlingen. There are numerous privately owned piers and wharves along the waterway. A 330-foot navigation district owned general cargo dock, a 770-foot private dock and a 760-foot private timber trestle have recently been completed at the upper end of the Channel to Victoria. Facilities are adequate for existing commerce.

Operations during fiscal year. New Work: -

Channel to Victoria - The contract for dredging Stations 600+00 to 835+00 and constructing levees was awarded February 6, 1998, and continued through FY 1998 at a cost of \$1,288,476.

Sargent Beach - The contract to construct a concrete and rock barrier along an eight mile reach of the Gulf Intracoastal Waterway at Sargent, Texas, awarded April 21, 1995, was completed in FY 1998 at a fiscal year cost of \$5,575,010 of which \$2,568,746 were Corps of Engineers funds and \$3,006,264 were Inland Waterways Trust funds.

Brazos River Floodgates - The major rehabilitation contract to replace the guidewalls at the east gate, awarded August 10, 1994, was financially completed in FY 1998 at a cost of \$7,931 of which \$3,966 were Corps of Engineers funds and \$3,965 were Inland Waterways Trust funds.

Aransas National Wildlife Refuge - A construction contract for placing concrete mats along Welder Flats, Reaches 1 through 19 of the Refuge area was awarded April 2, 1998 and continued through FY 98 at a cost of \$2,002,551.

Maintenance: -

Main Channel and Tributaries - Routine maintenance. The cost incurred for 1998 for Dredged

Material Management Plans was as follows - GIWW, Corpus Christi Bay to Port Isabel \$776,192; GIWW, High Island to Brazos River \$62,733; GIWW, Brazos River to Port O'Connor \$121,859; and GIWW, Port O'Connor to Corpus Christi \$114,450. (See Table 40-J for dredging operations.)

Aransas National Wildlife Refuge - No maintenance cost incurred for FY 1998

Brazos River Floodgates - The Brazos River Floodgates were operated and maintained at a cost of \$825,682. A contract to replace mooring facilities was awarded September 26, 1997 and incurred an estimated cost of \$1,092,247 in FY 98.

Channel to Victoria - A contract for constructing bank stabilization and drainage structure Stations 490+72 to 493+77 was awarded September 26, 1997 and completed in FY 98 at a cost of \$210,542. An archaeological service contract was awarded in FY 97 for Channel to Victoria Barge Canal, Calhoun County, Texas. The project consists of conducting full-scale data recovery (field excavations and extensive post-artifact processing, analysis, and project report preparation) investigations at prehistoric archaeological site 41CL59. Site 41CL59 is an extensive prehistoric shell and earth midden with an occupation dating beginning about 400 B.C. and continuing up until A.D. 1000. The site measures 700 meters long by 100 meters wide, and is 10 to 25 feet thick, sandwiched stratigraphically within the adjoining terrace bluff overlooking the Barge Canal and the former Guadalupe River floodplain. Vast amount of lithics (stone dart and arrow points, knives, scrapers, awls, etc.), special perforated shell tools, ceramics, along with an extensive collection of faunal and floral material have been recovered from the site. In addition, rich features associated with the later historic Indian period and early Texan ranching settlers have also been recovered from this site. The project is being conducted by the Corps in compliance with Section 106 of the National Historic Preservation Act and 36 CFR Part 800 regulations. The field work was initiated in FY 97 and continued through FY 98 at a cost of \$200,002.

Colorado River Locks - The Colorado River Locks were operated and maintained at a cost of \$1,029,594. A contract to rehabilitate the east and west locks and boat basin, awarded September 26, 1997, incurred a cost of \$2,994,504 for FY 98.

Channel to Port Mansfield - In September 1997 a contract was awarded to repair the north and south jetties. The contract was completed in March 1998 with a fiscal year cost of \$803,578. (See Table 40-J for dredging operations.)

8. HOUSTON-GALVESTON NAVIGATION CHANNELS, TX

Location. Houston Ship Channel connects Galveston Harbor, at a point opposite Port Bolivar, with city of Houston, Texas, extending 50 miles northwesterly

across Galveston Bay through San Jacinto River and Buffalo Bayou to a turning basin at head of Long Reach with light-draft channel 5 miles long from turning basin to Jensen Drive, Houston. The entrance to Galveston Harbor and Channel is on Gulf of Mexico on the northern portion of the Texas Coast. Galveston Channel extends from a point in Galveston Harbor between Bolivar Peninsula and Fort Point to and along wharf from Galveston, Texas and is about 5 miles long and 1,200 feet wide. (See National Ocean Survey Charts 11324/5, 11327, 11328, and 11329.)

Existing project. See Section 6, GALVESTON HARBOR AND CHANNEL, TX and Section 9, HOUSTON SHIP CHANNEL, TX for project prior to October 1998. New authorized project provides for enlarging the Houston Ship Channel to a depth of 45 feet over a width which varies between 650 and 1,112 feet, and deepening the Galveston Harbor Channel to 47 feet over its original 800-foot width and 10.5 mile length; and extending the channel an additional 3.9 miles to the 47-foot bottom contour in the Gulf of Mexico along existing alignment. A dredged-material disposal plan, which would utilize confined or beneficial uses of dredged material in the bay and/or offshore disposal and 118 acres of Oyster mitigation is also provided in the project. Estimated cost for new work is: \$322,048,000 Federal (Corps) which includes \$81,352,000 for deferred environmental construction; \$3,390,000 Federal (U.S. Coast Guard); and \$116,422,000 non-Federal consisting of \$57,765,000 cash, \$689,000 lands, and \$50,000 relocations for general navigation features; \$8,387,000 for berthing areas; and \$49,531,000 cash for environmental restoration which includes \$27,117,000 for deferred environmental construction. (October 1, 1998 base price.)

The plan for construction consist of nine reaches as follows: (1) Offshore Entrance Channel Extension, (1A) Offshore Jetty and Entrance Channel, (2) Galveston Channel, (3) Lower Bay, (4) Upper Bay, (5) Mid Bay, (6) Goat Island, (7) Upper Bayou, (8) Lower Bayou, and (9) Oyster Reef Mitigation. The first construction contract to dredge the Entrance Channel Extension was awarded August 7, 1998, and dredging began in December 1998.

Local cooperation. Complied with for the completed work. For the Houston-Galveston Navigation Channels project, authorized by the Water Resources Development Act of 1996, the cost-sharing and financing concepts reflected in the Water Resources Development Act of 1986, as amended, apply. Local interests are required to provide lands, easements, rights-of-way, roads and other facilities, except railroad bridges; pay one-half of the separable and joint costs allocated to recreation; and pay 25 percent of the costs allocated to deep-draft navigation, during construction including in-kind work in connection with construction; and pay an additional 10 percent of the costs allocated to navigation within a period of 30 years following completion if not offset by credit allowed for lands, easements, rights-of-way, and relocations.

The Port of Houston Authority and the City of Galveston are the sponsors for the project. A Project Cooperation Agreement with the Port of Houston Authority was executed on June 10, 1998. The Project Cooperation Agreement with the City of Galveston is pending.

Terminal facilities. See Section 6, GALVESTON HARBOR AND CHANNEL, TX and Section 9, HOUSTON SHIP CHANNEL, TX.

Operations during fiscal year. New Work: Construction contract for dredging the Entrance Channel Extension was awarded August 7, 1998 and incurred an estimated cost of \$500,000 for FY 98. A construction contract for dredging Lower Bay was awarded September 4, 1998, but work had not begun in FY 98. Also see Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

Maintenance: See Section 6, GALVESTON HARBOR AND CHANNEL, TX and Section 9, HOUSTON SHIP CHANNEL, TX for maintenance of existing channels. (See Table 40-J for dredging operations.)

9. HOUSTON SHIP CHANNEL, TX

Location. Connects Galveston Harbor, at a point opposite Port Bolivar, with city of Houston, Texas, extending 50 miles northwesterly across Galveston Bay through San Jacinto River and Buffalo Bayou to a turning basin at head of Long Reach with light-draft channel 5 miles long from turning basin to Jensen Drive, Houston. (See National Ocean Survey Charts 11324/5, 11327, 11328, and 11329.)

Previous project. For details see page 1856 of Annual Report for 1915.

Existing project. Provides for channel dimensions in sections of the waterway shown in Table 40-H.

Also provides for certain cut-offs, for easing sharp bends, an earthen dam across the upper end of Turkey Bend, and for off-channel silting basins as deemed necessary by the Chief of Engineers. Construction of 26,000 linear feet of pile dike to protect the channel in upper Galveston Bay was deauthorized by Sec. 12 of PL 93-251. The 40-foot project was completed in March 1966. Dredging a channel in Greens Bayou to Mile 1.57 was completed in 1970. Dredging Greens Bayou, Mile 1.57 to Mile 2.73, has been deauthorized. See Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX and Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN under Houston-Galveston Navigation Channels, TX, for work authorized by the Water Resources Development Act of 1996. (See Table 40-G for total cost of existing project to September 30, 1998.)

Mean tidal range under ordinary conditions is 0.6 foot to 1.3 feet in lower part of Galveston Bay; 0.6 foot to 1.3 feet in upper bay; and 0.5 to 1 foot in San Jacinto River and Buffalo Bayou. Extreme ranges under ordinary conditions are about 2 feet, 1.2 feet and 1 foot,

respectively. Freshets caused rises of over 12 feet in Buffalo Bayou; however, this condition has not occurred since completion of Addicks and Barker Dams for flood control on upper watershed of Buffalo Bayou. Height of tides is dependent largely on the wind, and during strong "northers" in winter season the water surface may be depressed 2 feet below mean low tide.

Local cooperation. Fully complied with for Houston Ship Channel. Local Cooperation Agreement for assumption of maintenance on Bayport Ship Channel was executed April 6, 1993. Local Cooperation Agreements for assumption of maintenance on Barbour Terminal Channel and Greens Bayou Channel were both executed on February 8, 1994.

Terminal facilities. City of Houston and Port of Houston Authority operate modern terminals which supplement privately owned wharves, piers, and docks, as described in Port Series No. 24 (revised 1989), Corps of Engineers. Facilities are considered adequate for existing commerce.

Operations during fiscal year. New Work: See Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX.

Maintenance: Routine maintenance included mosquito control spraying at a cost of \$47,773. (See Table 40-J for dredging operations.) See Section 8, HOUSTON-GALVESTON NAVIGATION CHANNELS, TX and Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

10. MATAGORDA SHIP CHANNEL, TX

Location. This is a consolidation of shallow draft channel improvements of "Channel from Pass Cavallo to Port Lavaca, Texas," and deep draft channel improvements authorized under "Matagorda Ship Channel, Texas." Bar at Pass Cavallo is 125 miles southwest of Galveston entrance and 54 miles north of Aransas Pass. It connects Matagorda Bay with the gulf. Project extends across Matagorda Bay and Lavaca Bay to towns of Port Lavaca and Point Comfort. These two towns are on opposite sides of Lavaca Bay and both are about 26 miles northwest from Pass Cavallo. (See National Ocean Survey Chart 11316.)

Existing project. Existing project dimensions provided for in various channels and basins are listed in Table 40-H on channel dimensions.

Project also provides for dual jetties at entrance, south jetty extending 6,000 feet to 24-foot depth in the gulf and north jetty extending 5,900 feet to 24-foot depth. Under ordinary conditions mean tidal range is about 1 foot and extreme range about 2 feet. Height of tide is dependent largely on the wind, and during strong "northers" in winter season the water surface may be depressed 2 feet below mean low tide. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. Fully complied with.

Terminal facilities. Privately owned facilities at Port Lavaca, municipally owned facilities at mouth of Lynn bayou, privately owned and publicly owned facilities at Point Comfort, Texas. These facilities are considered adequate for present commerce. Facilities at Point Comfort consist of a channel, turning basin with wharfs, oil dock and loading equipment, all owned by Aluminum Company of America; and a wharf built by local interest at Point Comfort turning basin.

Operations during fiscal year. Maintenance: Routine maintenance. (See Table 40-J for dredging operations.)

11. SABINE-NECHES WATERWAY, TX

Location. This is a consolidation of old improvements of "Harbor at Sabine Pass and Port Arthur Canal" and "Sabine-Neches Canal, including Sabine River to Orange and Neches River to Beaumont, Texas." Sabine Pass is on Gulf of Mexico about 58 miles east of Galveston and 280 miles west of Southwest Pass, Mississippi River. It connects Sabine Lake with gulf. Port Arthur canal extends 7 miles from near upper end of Sabine Pass to Port Arthur docks at mouth of Taylors Bayou. Near its upper end, Sabine-Neches canal joins and extends to mouths of Neches and Sabine Rivers. Waterway next extends up Neches River to Beaumont and up Sabine River to Orange. (See National Ocean Survey Charts 11341, 11342, and 11343.)

Previous projects. For details see page 1863 of Annual Report for 1915, page 985 of Annual Report for 1916, and page 873 of Annual Report for 1926.

Existing project. Existing project dimensions provided for in various channels and basins are set forth in Table 40-H on channel dimensions. Project also provides for two stone jetties at Sabine Pass entrance from the gulf, western jetty to be 21,905 feet long and eastern jetty 25,310 feet long. Project further provides for removal of guard lock in Sabine-Neches Canal, construction of suitable permanent protective works along Sabine Lake frontage owned by city of Port Arthur to prevent dredged material from entering Sabine Lake and to prevent erosion of material deposited, reconstruction of Port Arthur Bridge, and relocation of Port Arthur field office. Mean tidal variation at entrance is about 1.5 feet, at Port Arthur about 1 foot, and at Orange and Beaumont about 0.5 foot. Prolonged north winds during winter season have depressed water surface as much as 3.4 feet below mean low tide while tropical disturbances have caused heights as much as 8 feet above mean low tide.

Existing project is complete. Removal of obstructive bridge at Port Arthur was completed May 1969. The high level fixed bridge across Sabine-Neches Canal was completed October 1970. Deepening project to 40 feet was completed April 1972. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. Complied with.

Terminal facilities. See volume 2, Port Series No. 22 (revised 1988), Corps of Engineers. Facilities are considered adequate for present commerce.

Operations during fiscal year. Maintenance: Routine Maintenance. The contract to rehabilitate Placement Area No. 11, awarded June 17, 1996, was completed in FY 98 at a fiscal year cost of \$783,928. A contract for archeology investigations of Channel to Red Bluff incurred a fiscal year cost of \$35,993 for FY 98. Mosquito control spraying was performed in FY 98 for \$16,089. (See Table 40-J for dredging operations.)

12. TEXAS CITY CHANNEL, TX

Location. Texas City is on the mainland of Texas on west side of Galveston Bay, about 10 miles northwest of city of Galveston. (See National Ocean Survey Charts 11324/5.)

Previous projects. For details see page 1856 of Annual Report for 1915.

Existing project. Provides for channel 40 feet deep, 400 feet wide and about 6.75 miles long, from Bolivar Roads to a turning basin at Texas City, 40 feet deep, 1,000 feet to 1,200 feet wide and 4,253 feet long; and an Industrial Canal, 40 feet deep and 300-400 feet wide extending a distance of 1.7 miles southwestward from the south end of Texas City Turning Basin, and a turning basin, 40 feet deep, 1,000 feet wide and 1,150 feet long.

Project also provides for easing the approach to the turning basin; a pile dike 28,200 feet long, parallel to and north of the channel; and a rubble-mound dike, 27,600 feet long, along the southerly side of the pile dike.

The 40-foot channel was completed in June 1967. Widening the Texas City Turning Basin; realigning the Texas City Turning Basin to a location 85 feet easterly from its present position; and enlargement through widening and deepening of the Industrial Canal and basins was initiated in July 1980 and completed in June 1982. The only work remaining is deferred construction consisting of widening the Industrial Canal from 250 feet to 300 feet at 40 foot depth.

Work authorized by Water Resources Development Act of 1986 would modify the project by providing for deepening the Texas City Turning Basin to 50 feet, enlarging the 6.7-mile long Texas City Channel to 50 feet by 600 feet, deepening the existing 800-foot wide Bolivar Roads Channel and Inner Bar Channel to 50 feet, deepening the existing 800-foot wide Outer Bar and Galveston Entrance Channel to a 52-foot depth for 4.1 miles at a width of 800 feet and an additional reach at a width of 600 feet to the 52 foot contour in the Gulf of Mexico. Establishment of 600 acres of wetland and development of water-oriented recreational facilities on a 90-acre enlargement of the Texas City Dike are also proposed. The project is currently in the "deferred" category. (See Table 40-G for total cost of existing project to September 30, 1998.)

Under ordinary conditions mean tidal range is about 1.3 feet and extreme range is about 2 feet. Height of tide is dependent largely on the wind and during strong "northers" water surface may be depressed 2 feet below mean low tide. Estimated cost for new work is \$123,300,000 Federal (Corps), excluding expenditures on previous projects, and \$74,393,700 non-Federal, including \$62,027,741 contributed funds, \$248,000 work contribution, \$427,959 lands, \$10,737,000 levees and spillways, \$6,000 for removal of barge mooring facilities from Shoal Point (formerly known as Snake Island), \$561,000 for berthing areas, and \$386,000 relocations. (October 1, 1988 base price.)

Local cooperation. Fully complied with for completed work. For work authorized by the Water Resources Development Act of 1986, as amended, local interests are required to provide lands, easements, rights-of-way, and disposal areas; relocate utilities, roads, and other facilities, except railroad bridges; provide berthing areas; pay one-half of the separable and joint costs allocated to recreation; and bear all costs of operation, maintenance and replacement of recreation facilities, and, during construction, pay 25 percent of the costs allocated to deep-draft navigation to a depth of 45 feet plus 50 percent of the costs allocated to deep-draft navigation deeper than 45 feet; pay an additional 10 percent of the costs allocated to deep-draft navigation within a period of 30 years following completion if not offset by credit allowed for lands, easements, rights-of-way, relocations and disposal areas; and pay 50 percent of the costs incurred for operation and maintenance below the 45-foot depth.

Terminal facilities. Privately owned terminal facilities are on the mainland at inner end of this channel and are considered adequate for existing commerce. A deep-draft channel and turning basin extend about 1.9 miles southwestward from south end of Texas City Turning Basin have been constructed by local interests. See Port Series No. 23 (revised 1996), Corps of Engineers.

Operations during fiscal year. New Work: See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

Maintenance: Routine Maintenance. (See Table 40-J for dredging operations.)

13. TRINITY RIVER AND TRIBUTARIES, TX

Location. The main stem of the Trinity River is formed at Dallas by the confluence of the West Fork and the Elm Fork at river mile 505.5. The mouth of the Trinity is about one-half mile west of Anahuac, Texas. (See Geological Survey base map, Texas, scale 1:500,000.)

Previous project. For details of abandoned locks and dam construction see page 986 of Annual Report for 1933.

Existing project. See individual detailed reports on Anahuac Channel, Channel to Liberty and Wallisville

Lake. Project includes the existing Federal project designated as "Mouth of Trinity River, Texas," which was completed in 1907 at a cost of \$80,000 (no cost to local interest). Project is not being maintained. (See Table 40-G for total cost of existing project to September 30, 1998.)

Local cooperation. See individual detailed reports on Channel to Liberty and Wallisville Lake. There is no local cooperation required for Anahuac Channel.

Terminal facilities. Privately owned wharves and piers at Anahuac, Moss Bluff, Wallisville, and Liberty, Texas, are adequate for existing commerce.

13A. ANAHUAC CHANNEL, TX

Location: Extends from 6-foot depth in Galveston Bay to Anahuac, Texas, opposite mouth of Trinity River 38 miles north of Galveston, Texas. (See National Ocean Survey Chart 11323.)

Existing project. No project dimensions authorized by 1905 River and Harbor Act. A 6- by 80-foot channel, 16,000 feet long was dredged in 1905. At present a 6- by 100-foot channel is maintained. Under ordinary conditions tidal range is 0.6 to 1.2 feet. Height of tide is dependent largely on wind. Strong north winds depress water surface 1.5 feet below mean sea level. Latest published map is in House Document 440, 56th Congress, 1st Session. Project was completed in 1911.

Local cooperation. None required.

Terminal facilities. Privately owned wharves and piers are the only terminal facilities at Anahuac.

Operations during fiscal year. Maintenance: No work was incurred during the fiscal year.

13B. CHANNEL TO LIBERTY, TX

Location. Improvement is located in Galveston Bay and tidal reach of lower Trinity River. (See Geological Survey Maps for Anahuac, Cove, Moss Bluff, and Liberty, Texas.)

Previous projects. For details see page 986 of Annual Report for 1932.

Existing project. Provides for a 6-foot channel from Anahuac to Liberty which was completed in 1925. A navigable channel from the Houston Ship Channel near Red Fish Bar in Galveston Bay to Liberty, Texas, with depth of 9 feet and width of 150 feet, extending along the east shore of Trinity Bay to the mouth of the Trinity River at Anahuac, thence in the river channel to a turning basin at Liberty, Texas, and a protective embankment along the west side of the channel in Trinity Bay.

The 6-foot Channel to Liberty was completed in 1925. The 9-foot Channel to Liberty has been dredged from junction with Houston Ship Channel to a point one mile below Anahuac, Texas. Work remaining consists of dredging a 9- by 150-foot channel from one mile below Anahuac, Texas to Liberty, Texas.

Local cooperation. Fully complied with for portion of "Channel to Liberty" between Houston Ship Channel and 1 mile below Anahuac, Texas, as required by 1946 River and Harbor Act (H. Doc. 634, 79th Cong., 2nd Sess.), but not complied with for remaining portion of "Channel to Liberty" as required by River and Harbor Act of 1945 (H. Doc. 403, 77th Cong., 1st Sess.).

Terminal facilities. Privately owned wharves and docks at Anahuac, Wallisville, Texas Gulf Sulphur Co.'s slip, Moss Bluff and Liberty, Texas, are adequate for existing commerce.

Operations during fiscal year. Maintenance: Routine maintenance. (See Table 40-J for dredging operations.)

13C. WALLISVILLE LAKE, TX

Location. Dam is at river mile 3.9, about 4 miles northwest of Anahuac, Texas. (See National Ocean Survey Chart 11323.)

Existing project. Provides for construction of a dam and overflow spillway approximately 8 miles long to prevent salinity intrusion and create a 3,800 acre reservoir. The maximum pool elevation will be 2 feet above National Geodetic Vertical Datum. (The reservoir was reduced from 5600 acres with a maximum pool elevation of 4 feet N.G.V.D. by agreement to protect the endangered bald eagle.) Project provides for an 84 foot by 600-foot navigation lock to facilitate navigation on Channel to Liberty. The sill has a depth of minus 16 feet below National Geodetic Vertical Datum. Project also provides for two recreational areas; and three water control structures to control salinity intrusion and regulate freshwater flows to the saltwater marsh west of the river. Dam controls a drainage area of 1,262 square miles below Livingston Dam (non-Federal project at channel mile 99.2) and has a storage capacity of 14,000 acre-feet. Under ordinary conditions mean tidal range in bay is from 0.6 foot to 1.2 feet. Height of tide is dependent largely on wind. Strong northerly winds depress water surface 1.5 feet below mean sea level. Total estimated cost of authorized project is \$78,000,000 Federal (Corps). (October 1, 1997 base price.)

A contract for construction of access road, Big Hog intake structure, intake canal and access bridge was completed in October 1968. Work started in July 1970 on construction of the lock and dam, roads, diversion channel, and navigation channel. Work was suspended in February 1973 because of an injunction halting construction. Protective work on the lock and dam was permitted and was completed in April 1973. An exception to the injunction was granted for plugging oil wells which was completed in August 1973. Notice of appeal to the Court of Appeals for the Fifth Circuit was filed in April 1973. In August 1974, the Court of Appeals reversed the judgment and remanded the case with directions that a revised or supplemental statement be prepared and judged anew. Final supplement to the Environmental

Impact Statement for the modified project authorized in the Supplemental Appropriations Act, 1983 (PL 98-63) was submitted to the Environmental Protection Agency on September 21, 1983.

In March 1986, the Court rendered its Memorandum of order continuing the injunction and directing the Corps to recommence the administrative process at the time when the first departure from standard NEPA procedures occurred prior to the 1983 legislative action. The Corps and Local Sponsors perfected an appeal to the U.S. Court of Appeals and on May 11, 1987, the Court of Appeals ruled in favor of the Corps and dismissed the suit in its entirety.

The Energy and Water Development Appropriation Act of 1991 provided \$9,200,000 for the project and directive language for continuation of construction.

In the fall of 1989, a pair of bald eagles were discovered nesting at the project site which led to additional consultation under the Endangered Species Act. Solicitation of the contract for the non-overflow dam was postponed to allow for environmental coordination. An Environmental Assessment was prepared with a Finding of No Significant Impact (FONSI) which was signed in September 1991. Environmental documents were approved and construction was resumed.

Work remaining consist of design and construction of lock rehabilitation; gated navigation channel; controlled spillway and bridge; and three water control structures.

Local cooperation. Local interest must contribute an amount equal to cost allocated to water supply, one-half of cost allocated to salinity control and cost allocated to recreation less cost of basic facilities and less 15 percent of total project cost. Local interest reimbursement is estimated at \$10,500,000.

Operations during fiscal year. New Work: The architect/engineering contract, awarded April 4, 1994 to prepare plans and specifications and cost estimates for lock rehabilitation and construction of new facilities, completed the design in 1996 and continued through FY 1998 providing construction phase services at a cost of \$57,566. Architect/engineering contract awarded September 20, 1995, to design Structure A, provide construction phase services and reestablish property boundary lines, continued through Fiscal Year 1998 at a cost of \$35,643. The construction contract for lock rehabilitation and construction of new facilities was awarded December 22, 1995 and continued through FY 1998 at a cost of \$7,800,000. The contract includes rehabilitation and completion of the navigation lock, completion of the North and South navigation channels, construction of a new administration/resident office building, and electrical and mechanical equipment controls for the controlled spillway structure.

Maintenance: Ranger surveillance, administration of project, and administration of duck blind permit program were conducted. Routine maintenance included mosquito

control spraying at a cost of \$7,080.

**14. RECONNAISSANCE AND
CONDITION SURVEYS**

Reconnaissance and condition surveys were conducted in FY 1998 at a total cost of \$45,576. The surveys were on the following projects:

Channel to Red Bluff	Feb 98
Double Bayou	Mar 98
Clear Creek	Jun 98

**15. NAVIGATION WORK UNDER
SPECIAL AUTHORIZATION**

Navigation activities pursuant to Section 107, Public Law 86-645 (preauthorization):

Initial coordination for Section 107 navigation activities was performed in FY 98 at a cost of \$7,513.

Mitigation of shore damages attributable to navigation projects pursuant to Section 111, Public Law 90-483:

No mitigation of shore damages studies were performed in FY 98.

Shore Protection

**16. CORPUS CHRISTI BEACH, TX
(RESTORATION PROJECT)**

Location. Corpus Christi Beach, a shore area having a length of about 2 miles, is located on the west side of Corpus Christi Bay in Nueces County at Corpus Christi, Texas. (See National Ocean Survey Charts 11309 and 11311.)

Existing project. The plan of improvement provided for initial restoration of eroded areas of Corpus Christi Beach, over a shore length of 1.4 miles, located on the easterly side of Rincon Peninsula, with periodic nourishment as required. Construction was completed in March 1978. Periodic nourishment and construction of sand retention groin was completed in November 1985.

Local cooperation. Fully complied with.

Operations during fiscal year. Section 934 of Water Resources Development Act of 1986 provides for extension of nourishment period to 50 years for beach nourishment projects. A study to determine the appropriateness of such an extended nourishment period for the Federal beach nourishment project was completed. The study indicated that there was no economic justification for continued Federal participation in the program. The responsibility for beach monitoring and maintenance was transferred to the City of Corpus Christi in July 1990.

Flood Control

**17. BUFFALO BAYOU AND
TRIBUTARIES, TX**

Location. Improvements are on Buffalo Bayou watershed, a part of San Jacinto River watershed, in Harris County, west and northwest of city of Houston, Texas. (See Geological Survey quadrangle sheets for Harris County.)

Existing project. Provides for improvements of Buffalo Bayou and its tributaries above turning basin of Houston Ship Channel to control floods for protection of city of Houston, and prevent deposition of silt in turning basin of ship channel by construction of detention reservoirs, enlargement and rectification of channels and construction of control works.

Channel rectification on Brays Bayou with an improved channel length 25.4 miles was completed in March 1971. Channel rectification on White Oak Bayou was completed in 1976. Work remaining consists of rectification of approximately 22 miles of main stem of Buffalo Bayou.

See individual detailed reports on Addicks and Barker Reservoirs; and Brays, Greens, Halls, Hunting, Little White Oak, and Carpenters Bayous.

Local cooperation. Section 203, 1954 Flood Control Act applies. Local interests have accomplished all required local cooperation on Brays Bayou and White Oak Bayou. On Buffalo Bayou, local interests purchased interests that the United States had in 7 miles of rectified channel below Barker and Addicks Dams for \$256,651. Of the remaining required rights-of-way on Buffalo Bayou, local interests have acquired about 40 percent. About 53 percent of required bridge relocations and 3 percent of the required bridge relocations have been accomplished. Advance of \$4,400,000 by the Harris County Flood Control District was refunded in September 1956. Public Law 86-53 authorized reimbursement of \$38,726 to Galveston, Houston and Henderson Railroad Company for bridge alterations at Brays Bayou. Non-Federal contributions totaled \$63,661 for project betterment. Recreation development is subject to conditions of non-Federal cost-sharing under Federal Water Project Recreation Act of 1965.

See individual detailed reports on Addicks and Barker Reservoirs; and Brays, Greens, Halls, Hunting, Little White Oak, and Carpenters Bayous.

**17A. ADDICKS AND BARKER
RESERVOIRS, TX**

Location. Reservoirs are located in and west of the City of Houston in Harris and Fort Bend Counties, Texas.

Existing project. Construction of Barker Dam was complete in February 1945. Construction of Addicks Dam and 7.4 miles of channel rectification downstream from Addicks and Barker Dams was completed in October 1948.

Modification of Barker and Addicks Dams consisting of gating of two uncontrolled conduits in each dam, was complete in 1969. Major rehabilitation of Addicks and Barker Dams to prevent seepage through the embankment was completed in 1982.

Work under the Dam Safety Assurance program was initiated in Fiscal Year 1986. Work accomplished included raising approximately 32,400 feet of Addicks Dam 1 to 3 feet and raising approximately 57,600 feet of Barker Dam 3 to 5 feet and armor-plating low ends of both dams. A contract with the city of Houston for cost-sharing in the construction of recreation facilities was entered into in November 1981. The lease for approximately 10,534 acres of land and water areas was approved in February 1983.

Local cooperation. None required.

Operations during fiscal year. Recreation: Community Park West (Phase IB) and the velodrome were completed in November 1986. Grading and clearing for an archery range was performed by the City of Houston in March and April 1987. Work on Community Park West (Phase 4) by the City of Houston was completed in 1992, as was the development of Community Park 2 (soccer fields, ball fields, and parking lots) by Harris County Precinct 3 in Cullen-Barker Park. Additional playground equipment was installed in Bear Creek Park, Addicks Reservoir, by Harris County Precinct 3. The Fort Bend County YMCA built a pavilion, archery range, and nature trails in Barker Reservoir. Maintenance and improvements of these recreation areas continues.

Maintenance: Construction contract for repairs and rehabilitation to Barker ditch and dam outfall was awarded April 9, 1997 and continued through FY 98 at a cost of \$1,336,989. Road repairs to Barker Dam and Addicks Dam for FY 98 cost \$292,237 and a decrease of \$17,237, respectively. A contract for rehabilitation and repairs to the outlet works at Addicks and Barker Dams was awarded September 15, 1997. Fiscal year costs for 1998 were \$1,080,206.

17B. BRAYS BAYOU, TX

Location. The project is located in the south-central portion of Buffalo Bayou, Harris County, TX.

Existing project. The authorized plan of improvement consists of 3 miles of stream improvements, 3 flood detention basins, and 7 miles of stream diversion channels. Aesthetic vegetation is included. Recreation facilities include trails, picnic facilities, sports fields, comfort stations and parking areas. The estimated cost for new work is \$243,665,000 Federal (Corps) and \$152,506,000 non-Federal consisting of \$21,940,000 cash contributions, and \$130,566,000 for lands and relocations (October 1998 base price).

Location cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges;

provide a cash contribution presently estimated at \$21,940,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). The Local Sponsor was authorized to develop the project and design and construct an alternative to the diversion component and be reimbursed for the Federal share by the Water Resources Development Act of 1996 (PL 104-303). See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

17C. GREENS BAYOU, TX

Location. The project is located in the north-central portion of Buffalo Bayou, Harris County, TX, and does not include the Halls Bayou tributary.

Existing project. The authorized plan of improvement consists of 25 miles of stream enlargements, 14 miles of stream clearing and 4 flood detention basins. Aesthetic vegetation and mitigation is included. Recreation facilities include trails, picnic facilities, sports fields, launches, ramps, comfort stations and parking areas. The estimated cost for new work is \$149,855,000 Federal (Corps) and \$93,776,000 non-Federal consisting of \$14,360,000 cash contributions, and \$79,416,000 for lands and relocations (October 1998 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$14,360,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

17D. HALLS BAYOU, TX

Location. Halls Bayou is a major tributary of Greens Bayou, located in the north-central portion of Buffalo Bayou, Harris County, TX.

Existing project. The authorized plan of improvement consists of 18 miles of stream improvements. Recreation facilities include trails, picnic facilities, boat ramps, a comfort station and parking areas. The estimated cost for new work is \$66,141,000 Federal (Corps) and \$50,321,000 non-Federal consisting of \$7,439,000 cash contributions, and \$42,882,000 for lands and relocations (October 1998 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads

and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$7,439,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). Project is awaiting Pre-construction Engineering and Design funds.

17E. HUNTING BAYOU, TX

Location. Hunting Bayou is located in Houston, approximately 4 to 5 miles from the central business district.

Existing project. The authorized plan of improvement consists of 14.3 miles of stream improvements. Recreation facilities include trails, picnic facilities, a comfort station and parking areas. The estimated cost for new work is \$65,313,000 Federal (Corps) and \$59,583,000 non-Federal consisting of \$6,675,000 cash contributions, and \$52,908,000 for lands and relocations (October 1998 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$6,675,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). The Local Sponsor was authorized to design and construct an alternative to the project and be reimbursed for the Federal share by the Water Resources Development Act of 1996 (PL 104-303). See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

17F. LITTLE WHITE OAK BAYOU, TX

Location. Little White Oak Bayou is a tributary of White Oak Bayou in north-central Houston.

Existing project. The authorized plan of improvement consists of 6.0 miles of stream enlargements. Recreation facilities include trails and picnic facilities. The estimated cost for new work is \$17,958,000 Federal (Corps) and \$17,957,000 non-Federal consisting of \$1,996,000 cash contributions, and \$15,961,000 for lands and relocations (October 1990 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$1,996,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). Project is awaiting Pre-construction Engineering and Design funds.

17G. CARPENTERS BAYOU, TX

Location. Carpenters Bayou is a tributary of Buffalo Bayou in northeastern Houston.

Existing project. The authorized plan of improvement consists of 9.7 miles of stream enlargements. Recreation facilities include trails and picnic facilities. The estimated cost for new work is \$3,900,000 Federal (Corps) and \$1,950,000 non-Federal consisting of \$370,000 cash contributions, and \$2,320,000 for lands and relocations (October 1990 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$370,000 and bear all costs of operation, maintenance, and replacement of flood control and recreation facilities.

Operations during fiscal year. New Work: The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). Project is awaiting Pre-construction Engineering and Design funds.

18. BUFFALO BAYOU, TX (LYNCHBURG PUMP STATION)

Location. The project is located 10 miles east of Houston, Texas near the entrance to the Houston Ship Channel.

Existing project. The Lynchburg Pump Station is to be protected by a flood barrier encircling the facility. A plan consisting of a combination sheet pile wall and earth levee is recommended. Total barrier length is approximately 2000 feet. The Crosby-Lynchburg Road will be rerouted to the top of the levee.

Local cooperation. The Coastal Water Authority, owned by the City of Houston, is the Local Sponsor of the project.

Operation during the fiscal year. The Detailed Project Study was underway throughout FY 1996 and completed in September 1996. An implementation plan in the amount of \$5,985,000 has been tentatively agreed upon by the Local Sponsor, subject to approval by higher authority of the Corps of Engineers. Construction could be initiated in late FY 1999 if funds are available.

19. CLEAR CREEK, TX

Location. The project is located about midway between the two metropolitan centers of Houston, Texas, on the north and Galveston-Texas City on the south in

Harris and Galveston Counties above and below existing Clear Lake.

Existing project. The authorized plan of improvement consists of an improved channel from Mile 3.8 to Mile 34.8 to contain within its banks all flood flows up to and including that of a 100-year flood. The selected plan provides channel enlargement and easing of bends within the existing stream from Mile 3.8 to Mile 26.05 to contain at least the 10-year frequency storm, and additional outlet with gated structure from Clear Lake to Galveston Bay, restriction of development in the residual 100-year flood plain and measures to mitigate environmental effects. In 1986, at the request of Brazoria County Drainage District No. 4, that portion of the project upstream of the Brazoria/Galveston County line, approximate improved Mile 19.1, was placed in the "inactive" category. Estimated cost for new work, excluding "inactive" portion, is \$70,063,000 Federal (Corps) and \$53,795,000 non-Federal consisting of \$6,192,000 cash contributions, \$22,600,000 for lands, and \$25,003,000 for relocations (October 1, 1998 base price).

Environmental interest groups and agencies, private citizens, and some local communities located near or adjacent to Clear Lake expressed opposition to the Clear Creek Flood Control Project as currently authorized and planned for upstream reaches. In general, the opposition to the project has been focused on environmental concerns in the upstream reaches and on induced flooding concerns downstream in Clear Lake. Construction has been delayed at the request of the Local Sponsor so that an alternative to the authorized project can be developed that will reduce above concerns and still provide flood protection to those that are critically affected by flood waters in the watershed.

Local cooperation. Local Sponsors for the project are Galveston and Harris counties. The Local Cooperation Agreement, executed June 30, 1986, requires local interests to provide lands, easements, rights-of-way, and material disposal areas; modify or relocate building, pipelines, utilities, roads and other facilities, except railroad bridges, where necessary in the construction of the project; make a cash contribution for mitigation measures consistent with the non-Federal share of total project costs without mitigation measures; pay five percent of the total costs allocated to flood control; and bear all costs of operation and maintenance of flood control facilities.

Operations during fiscal year. New Work: The construction contract for dredging the Second Outlet Channel, awarded July 23, 1996, was financially completed in FY 98. The District has been reviewing the Local Sponsor's alternative plan, which the Sponsor developed in 1997 during a reevaluation period involving public input. Studies of the hydrological impacts to Clear Lake and of contaminant impacts continued, and are scheduled for completion in December 1998.

20. CYPRESS CREEK, TX

Location. The project is located north of Houston, Texas in Harris County.

Existing project. The authorized plan of improvement consists of enlargement of the lower 29.4 miles of the Cypress Creek Channel, incorporating grassed side slopes and channel bottom and appropriate erosion control measures; application of floodplain management techniques in the residual floodplain; construction of project-oriented recreation features, including 11.5 miles of hike-and-bike trails and related facilities for health, safety, and public access; and habitat management measures on 844 acres of Harris County Parkway land, creation of wooded and brush habitat along 100 acres of the project right-of-way, acquisition of 329 acres of wildlife habitat along the creek, and creation of 35 acres of ponds and marshes. The authorized plan is no longer under consideration. The current plan is to buy out or raise houses where inhabitants are at or below the five year flood level. Estimated cost for the new plan is \$9,701,000 Federal (Corps) and \$3,234,000 non-Federal contribution. (October 1, 1998 base price.)

Local cooperation. Local Sponsor for the project is Harris County. The non-Federal share of the cost of non-structural flood control measures shall be 25 percent of the cost of such measures. The non-Federal interests for any such measures shall be required to provide all lands, easements, rights-of-way, and relocations necessary for the project, but shall not be required to contribute any amount in cash during construction of the project.

Operations during fiscal year. See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

21. LOWER RIO GRANDE BASIN, TX

Location. The project is located in Willacy, Hidalgo, and Cameron Counties. The basin is bounded on the east by the Gulf of Mexico, on the south by the Rio Grande which forms the international boundary between the United States and Mexico, on the west by Starr County, and on the north by Brooks and Kenedy Counties.

Existing project. See individual detailed reports on Arroyo Colorado, South Main Channel, and Raymondville Drain.

Local cooperation. See individual detailed reports on Arroyo Colorado, South Main Channel, and Raymondville Drain.

21A. ARROYO COLORADO, TX

Location. The project is located in Hidalgo and Cameron Counties, Texas.

Existing project. The authorized project will provide flood protection along Highway 83 and erosion protection for the banks of the Arroyo Colorado in the city of

Harlingen. The project consists of a gated water control structure, 1.4 miles of channel improvements, and stone armoring of selected reaches in Harlingen. The estimated cost for new work is \$5,851,000 Federal (Corps) and \$1,951,000 non-Federal consisting of \$1,848,000 cash and \$103,000 for lands and relocations (October 1, 1993 base prices).

The project has reached a stalemate as the Local Sponsor, the Hidalgo County Drainage District #1, can not provide required guarantee to hold and save the Government free from all damages arising from the construction, operation, maintenance, repair and replacement for the project, nor are they able to operate and maintain the project when completed. The International Boundary and Water Commission has complete jurisdiction over the project as it is one of the elements of the Rio Grande Floodway System. The Commission is interested in the project but only if additional funds to do operations and maintenance are provided. Legislative approval will be required to alter the current status.

Local cooperation. Local Sponsor, the Hidalgo County Drainage District #1, is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$1,848,000 and bear all costs of operation, maintenance, and replacement of flood control facilities.

Operations during fiscal year. None.

21B. SOUTH MAIN CHANNEL, TX

Location. The project is located in Hidalgo and Willacy Counties, Texas.

Existing project. The authorized project consists of channel improvements which will provide flood protection to the cities of McAllen, Edinburg, Edcouch, La Villa and Lyford, as well as the rural areas of Hidalgo and Willacy Counties north of U.S. Highway 83. The estimated cost for new work is \$124,509,000 Federal (Corps) and \$69,731,000 non-Federal consisting of \$9,712,000 cash and \$28,107,000 lands and \$31,912,000 relocations (October 1, 1998 base prices).

Local cooperation. Local Sponsors for the project are Hidalgo County Drainage District #1 and Willacy County Drainage District #1. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$9,712,000 and bear all costs of operation, maintenance, and replacement of flood control facilities.

Operations during fiscal year. New Work: See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

21C. RAYMONDVILLE DRAIN, TX

Location. The project is located in northern Hidalgo and Willacy Counties, Texas.

Existing project. The authorized project will provide a drainage outlet to the Laguna Madre for northern Hidalgo and Willacy Counties. The project consists of 43.8 miles of channel work, including enlargement of existing channels and construction of new channels, a 3.88-mile long levee, and diversion ditches along the west side of Raymondville. The estimated cost for new work is \$56,708,000 Federal (Corps) and \$19,521,000 non-Federal consisting of \$6,102,000 cash and \$6,142,000 lands and \$7,277,000 relocations (October 1, 1998 base prices).

Local cooperation. Local Sponsor for the project is Hidalgo County Drainage District #1 and Willacy County Drainage District #1. Local Sponsor is required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads and other facilities, except for railroad bridges; provide a cash contribution presently estimated at \$6,102,000 and bear all costs of operation, maintenance, and replacement of flood control facilities.

Operations during fiscal year. New Work: See Section 31, PRE-CONSTRUCTION ENGINEERING AND DESIGN.

22. SIMS BAYOU, TX

Location. The project is located in Harris County, in the southern portion of Houston, Texas.

Existing project. The authorized plan of improvement provides for enlargement and rectification, with appropriate erosion control measures, of 19.3 miles of Sims Bayou to provide 25-year flood protection; environmental measures and riparian habitat improvement along the entire alignment; and recreational development to include 27 miles of hike-and-bike trails connecting to existing public parks, together with picnic, playground, and other leisure facilities. Estimated cost for new work is \$206,422,000 Federal (Corps) and \$104,891,000 non-Federal consisting of \$18,274,000 cash contributions, \$39,988,000 for lands, \$46,377,000 for relocations and \$292,000 for channels (October 1, 1998 base price).

Local cooperation. Local Sponsor for the project is Harris County Flood Control District. In accordance with the cost-sharing and financing concepts reflected in the Water Resources Development Act of 1986, local interests are required to provide lands, easements, and rights-of-way; modify or relocate buildings, pipelines, utilities, roads, and other facilities, except railroad bridges, where necessary for the construction of the project; pay one-half of the separable and joint costs allocated to recreation; and bear all costs of operation, maintenance and replacement of recreation facilities; and pay 5 percent of the costs allocated to flood control; and bear all costs of operation, maintenance and replacement of flood control facilities. The Local Cooperation Agreement for

flood control was executed on October 19, 1990. The recreation Local Cooperation Agreement is pending.

Operations during fiscal year. New Work: A construction contract for channel rectification from Interstate Highway 45 to Reveille Park, awarded January 28, 1994, was physically completed November 2, 1996, an incurred no cost for FY 98. Construction contract for channel rectification from Hemingway Drive to Reveille Park, awarded December 22, 1994, continued through FY 1998 at a cost of \$103,051. The construction contract for channel rectification from Swallow to Hemingway was awarded July 19, 1996, and continued in FY 1998 with a cost of \$1,902,973. Surveys were performed by contract in connection with plans and specifications for the Mykawa to Cullen reach and the Cullen to State Highway 288 reach at a cost of \$33,226 and \$46,601 respectively for FY 1998. An architect/engineering contract was awarded in FY 97 for preparation of the feature design memorandum on the Hiram Clarke to End reach. Cost incurred for FY 98 was \$6,953. Construction contract for channel rectification from Swallow to Mykawa was awarded November 20, 1997, and work continued through FY 98 at a cost of \$2,112,537. A contract to construct a new storm drain and repair seven storm drain outlets in the Reveille Park to I-45 reach was awarded September 18, 1997, and incurred a cost of \$124,970 in FY 98. A contract for flood damage repair for Reveille Park to I-45, awarded February 27, 1998, incurred a cost of \$69,970 for fiscal year 1998.

An Easement and Indemnity Agreement for modification of the Manchester Bulkhead was executed July 1, 1997. Remedial design and construction of the bulkhead at Manchester Terminal Corporation were completed June 8, 1998, and payment for \$1,488,367 was made in FY 98. An Easement and Indemnity Agreement for modification of the Valero Bulkhead was executed February 19, 1998. Design and construction of the bulkhead at Valero Refining Company was completed in March 8, 1999, and an accrual for \$1,140,875 was made in FY 98.

Reimbursement was made to the Local Sponsor, Harris County Flood Control District, for their work on the reach from Port Terminal Railroad to Interstate Highway 45, in the amount of \$300,000.

23. INSPECTION OF COMPLETED FLOOD CONTROL WORKS

Inspections of completed projects operated and maintained by local interests were made on the following projects. Fiscal year cost was \$158,207.

<u>Project</u>	<u>Date of Inspection</u>
Colorado River Flood Protection at Matagorda, TX	January 1998
Guadalupe River Removal of Log Jams, TX - Flood Control	January 1998

<u>Project</u>	<u>Date of Inspection</u>
Texas City Hurricane Flood Protection, TX	April 1998
Trout Creek Flood Protection at Kirbyville, TX	April 1998
Taylor's Bayou, TX - Flood Protection	May 1998
Port Arthur, TX-Hurricane Flood Protection	June 1998
Lavaca and Navidad Rivers, TX Flood Protection at Hallettsville Dam	August 1998
Galveston Harbor & Channel, TX - Seawall and Groins	September 1998

24. FLOOD CONTROL WORK UNDER SPECIAL AUTHORIZATION

Flood control activities pursuant to section 205 of 1970 Flood Control Act, Public Law 858, 80th Congress, as amended:

Initial coordination for Section 205 Flood Control activities was performed in FY 98 at a cost of \$9,585.

Construction of the flood protection project for Buffalo Bayou, Texas (Lynchburg Pump Station) is discussed in Section 18.

An initial appraisal for flood protection at Pin Oak Creek at Kirbyville, Texas was initiated in FY 98 at a fiscal year cost of \$4,648.

Emergency flood control – repair, flood fighting, and rescue work (Public Law 99, 84th Congress and antecedent legislation):

Disaster Preparedness cost for Fiscal Year 1998 was \$320,214. National Emergency Preparedness Program fiscal year cost was \$86,958. Emergency Operations FY 98 cost was \$69,499 for the District's response to Tropical Storm Frances, a system that dumped heavy rain on parts of Texas and Louisiana from September 11-12th, 1998. The tropical storm also brought surge levels to over five feet along the Texas coast and inland bays. Three counties were declared under a Federal Disaster Declaration: Galveston, Brazoria and Harris.

25. EMERGENCY STREAM BANK AND SHORELINE EROSION WORK AND SNAGGING AND CLEARING ACTIVITIES UNDER SPECIAL AUTHORIZATION

Stream bank and shoreline erosion activities pursuant to Section 14 of the 1946 Flood Control Act, Public Law 525, as amended:

Initial coordination for stream bank and shoreline erosion activities were performed in FY 98 at a cost of \$14,353.

Snagging and clearing activities for flood control pursuant to Section 208 of the Flood Control Act of 1954, Public Law 780, as amended:

No new feasibility studies of snagging and clearing activities for flood control improvements were performed in Fiscal Year 1998.

Environmental Restoration

26. PROJECT MODIFICATIONS FOR IMPROVEMENT OF ENVIRONMENT

Project modifications for improvement of environment activities pursuant to Section 1135 of the Water Resources Development Act of 1986, Public Law 99-662, as amended:

Construction of the environmental restoration project at Laguna Madre, Texas is discussed in Section 27.

Plans and specifications and environmental documentation were completed in FY 1996 for restoration of the wetlands at Barker Reservoir for a waterfowl habitat. Project title is Addicks and Barker Waterfowl Habitat Restoration, Texas. Project is awaiting approval of the Project Cooperation Agreement.

27. LAGUNA MADRE SEAGRASS PROJECT

Location. The project is located in Laguna Madre about 7 miles north of Port Isabel, Texas in Cameron County.

Existing project. The objective of the proposed project is to determine whether unconfined open-bay disposal operations can be modified to increase the seagrass colonization rate between dredging cycles and improve habitat value for estuarine fauna in the disposal area. The work consists of transplanting seagrass from nearby undisturbed seagrass meadows onto freshly deposited dredged maintenance material in two open-bay disposal areas near the Gulf Intracoastal Waterway. The transplanted seagrass and control sites will be sampled and monitored for various physical and biological parameters to determine the success of the demonstration project in restoring fish habitat in the disposal areas.

Local cooperation. The Local Sponsor for this project is the Texas Department of Transportation. A Project Cooperation Agreement was executed on October 6, 1994.

Operations during fiscal year. New Work: The project was financially completed in accordance with the applicable cost-sharing requirements. The cost incurred for FY 1998 was \$15,487.

General Investigations

28. SURVEYS

Fiscal year costs for reconnaissance studies were \$179,008 for navigation and \$29,042 for flood damage prevention. Reconnaissance and feasibility studies on review of authorized projects incurred costs of \$1,741,224 for FY 1998. Miscellaneous Activities for FY 98 include the following: Special Investigations at a cost of \$18,390; Interagency Water Resources Development at \$8,995; National Estuary Program at \$4,861; and National Marine Fisheries Service at a cost of \$34.

29. COORDINATION WITH OTHER AGENCIES

Cost for Coordination With Other Agencies was \$3,063 for FY 1998.

30. COLLECTION AND STUDY OF BASIC DATA

Floodplain management, technical services and quick responses were performed at a cost of \$39,666, \$79,531, and \$3,984, respectively.

Hydrologic studies cost \$9,242.

Floodplain management services were completed for the Alabama-Coushatta Indian Tribe at Big Sandy, Texas for a fiscal year cost of \$4,960.

31. PRE-CONSTRUCTION ENGINEERING AND DESIGN

Aransas National Wildlife Refuge, Texas – The project will provide erosion protection and limited spill containment for the existing alignment of the Gulf Intracoastal Waterway (GIWW) along a 31-mile reach of the GIWW which crosses the critical wintering habitat of the rare and endangered whooping crane. The project includes a 13.25-mile reach within the boundary of the Aransas National Wildlife Refuge. The dredged material management plan includes marsh creation with the beneficial uses of dredged material. Total planning and engineering costs were \$1,850,300. Planning and engineering studies were initiated in FY 1995 and completed in FY 1998. Fiscal year costs were \$274,404. The project was authorized by the Water Resources Development Act of 1996 and construction began in 1998. See Section 7, GULF INTRACOASTAL WATERWAY, TX, Aransas National Wildlife Refuge.

Houston-Galveston Navigation Channels, Texas – The project was authorized for construction by the Water Resources Development Act of 1996. The total project provides for enlarging the Houston Ship Channel to a depth of 45 feet and a width of 530 feet, and the Galveston Channel to a depth of 45 feet over a width

which varies between 650 and 1112 feet, and deepening the Galveston Harbor Channel to 47 feet over its original 800-foot width and 10.5 mile length, and extending the channel an additional 3.9 miles to the 47-foot bottom contour in the Gulf of Mexico along the existing alignment. Dredged material will be used for construction of environmental restoration sites to include approximately 118 acres of oyster cultch, 4,250 acres of marsh, and 12 acres of bird island. Total planning and engineering costs were \$19,042,800 Federal and \$1,020,000 non-Federal. Planning and engineering studies were initiated in FY 1990. Fiscal year costs were \$81,414 (Federal) and \$234,666 was expended from Sponsor contributed funds. The project was authorized by the Water Resources and Development Act of 1996 and construction began in 1998. See Section 8, HOUSTON GALVESTON NAVIGATION CHANNELS.

Brays Bayou, Texas – The project will provide for 3 miles of stream improvements, 3 flood detention basins, and 7 miles of stream diversion channels. Aesthetic vegetation is included. Recreation facilities include trails, picnic facilities, sports fields, comfort stations and parking areas. Total planning and engineering costs were \$4,004,061. Planning and engineering studies were initiated in FY 1990 and completed in FY 1998. Fiscal year costs were \$12,353. The project was authorized by the Water Resources Development Act of 1990 and construction funds were received in FY 1998. See Section 17B, BUFFALO BAYOU AND TRIBUTARIES, BRAYS BAYOU, TX.

Greens Bayou, Texas – The project will provide for 25 miles of stream enlargements, 14 miles of stream clearing and 4 flood detention basins. Aesthetic vegetation and mitigation is included. Recreation facilities include trails, picnic facilities, sports fields, launches, ramps, comfort stations and parking areas. Estimated planning and engineering cost is \$5,900,000. Planning and engineering studies were initiated in FY 1990. Fiscal year costs were \$912,515.

Cypress Creek, Texas – The project will provide for enlargement of the lower 29.4 miles of the channel. Project-oriented recreation features include 11.5 miles of hike-and-bike trails and related recreation facilities, habitat management measures on 844 acres of Harris County Parkway project land, creation of wooded and brush habitat along 100 acres of project right-of-way, acquisition of 329 acres of wildlife habitat, and creation of 35 acres of ponds and marshes. The authorized plan is no longer under consideration. The current plan is to buy out or raise houses where inhabitants are at or below the five year flood level. Estimated planning and engineering estimate is \$3,455,000. Planning and engineering studies were initiated in FY 1990. Fiscal year costs were \$221,524.

South Main Channel, Texas – The project consists of channel improvements which will provide flood protection to the cities of McAllen, Edinburg, Edcouch, La Villa and Lyford, as well as the rural areas of Hidalgo

and Willacy Counties north of U.S. Highway 83. Estimated planning and engineering estimate is \$6,650,000. Planning and engineering studies were initiated in FY 1990. Fiscal year costs were \$843,968.

Neches River and Tributaries, Salt Water Barrier, Texas – The project consists of a tainter gated salt water barrier structure, a gated navigation bypass channel, an access road and levee, and an auxiliary dam across an associated canal. Estimated planning and engineering estimate is \$5,780,000. A review of the project economics was completed in FY 1994. Fiscal year costs were \$1,455,003.

Texas City Channel, Texas - Work authorized by the Water Resources Development Act of 1986 would modify the existing 40-foot project by providing for deepening the Texas City Turning Basin to 50 feet, enlarging the 6.7 mile long Texas City Channel to 50 feet by 600 feet, deepening the existing 800-foot wide Bolivar Roads Channel and Inner Bar Channel to 50 feet, deepening the existing 800-foot wide Outer Bar and Galveston Entrance Channel to a 52-foot depth for 4.1 miles at a width of 800 feet and an additional reach at a width of 600 feet to the 52 foot contour in the Gulf Mexico. Establishment of 600 acres of wetland and development of water-oriented recreational facilities on a 90-acre enlargement of the Texas City Dike are also proposed. The project was placed in the deferred category in 1989 at the request of the project sponsor, the City of Texas City. By letter dated, March 10, 1997, the City of Texas City requested the project be reactivated. A project review and assessment was prepared to justify removal from the deferred category. The review was completed in FY 1998. Fiscal year costs were \$78. Estimated planning and engineering estimate is \$9,810,000.

Raymondville Drain, Texas - The project consist of 43.8 miles of channel work, including enlargement of existing channels, and construction of new channels, a 3.88-mile long levee, and diversion ditches along the west side of Raymondville, Texas. Estimated planning and engineering estimate is \$2,143,000. Planning and engineering studies were initiated in FY 1997. Fiscal year costs were \$21,098.

Hunting Bayou, Texas - The project was authorized for construction in the Water Resources Development Act of 1990 (PL 101-640). The authorized project provides for 14.3 miles of stream improvements, recreation trails, picnic facilities, a comfort station, access and parking areas. The Local Sponsor was authorized to design and construct an alternative to the project and be reimbursed for the Federal share by the Water Resources Development Act of 1996 (PL 104-303). The project is currently being reformulated and will be identified by the General Reevaluation Study. Estimated planning and engineering estimate is \$1,710,000. Planning and engineering studies were initiated in FY 1998. Fiscal year costs were \$31,164.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-A COST AND FINANCIAL STATEMENT

See Section in Text	Project	Funding	FY 95	FY 96	FY 97	FY 98	Total Cost To Sep. 30, 1998 ²⁵
1. Aquatic Plant Control (Southwestern Division) 1965 Act	New Work:	Approp.	224,000	30,000	-	31,000	4,533,600 ¹
		Cost	220,848	166,490	6,319	4,784	4,507,118 ¹
2. Brazos Island Harbor, TX	New Work:	Approp.	479,000	635,000	-	0	27,978,502 ²
		Cost	3,167,008	603,742	27,305	21,221	27,942,542 ²
	Maint:	Approp.	1,980,000	664,500	2,691,260	2,192,000	57,461,236 ³
		Cost	1,982,037	673,911	2,664,921	2,153,377	57,393,804 ³
	Major Rehab:	Approp.	-	-	-	-	2,170,080
		Cost	-	-	-	-	2,170,080
3. Corpus Christi Ship Channel, TX (Regular Funds)	New Work:	Approp.	-	250,000	89,280	-	77,474,639 ⁴
		Cost	21,919	115,789	340,542	12,089	77,472,463 ⁴
	Maint:	Approp.	5,241,800	2,510,000	(3,957)	4,988,000	119,199,591 ⁵
		Cost	4,873,769	2,876,195	75,970	3,836,430	118,044,094 ⁵
	Major Rehab:	Approp.	-	-	-	-	3,576,684
		Cost	-	-	-	-	3,576,684
(Contributed Funds)	New Work:	Contrib.	-	-	-	-	6,279,088
		Cost	10,033	-	149,887	-	6,143,152
4. Double Bayou, TX (Regular Funds)	New Work:	Approp.	-	-	-	-	226,558
		Cost	-	-	-	-	226,558
	Maint:	Approp.	-	-	433,050	-	1,845,128
		Cost	-	-	431,188	134	1,843,400
(Contributed Funds)	New Work:	Contrib.	-	-	154,569	-	256,894
		Cost	-	-	131,000	-	233,325
5. Freeport Harbor, TX	New Work:	Approp.	(800,000)	45,000	2,564,804	4,052,000	64,721,956 ⁶
		Cost	542,125	442,008	2,503,579	4,263,253	64,680,605 ⁶
	Maint:	Approp.	2,703,500	5,948,000	4,620,841	3,630,000	75,129,256 ⁷
		Cost	2,708,717	5,947,444	4,587,072	2,342,847	73,805,546 ⁷
	Minor Rehab:	Approp.	-	-	-	-	8,935
		Cost	-	-	-	-	8,935
6. Galveston Harbor and Channel, TX	New Work:	Approp.	-	-	-	-	29,096,392 ⁸
		Cost	-	-	-	-	29,096,392 ⁸
	Maint:	Approp.	4,667,200	315,000	4,263,430	4,333,000	111,884,918 ⁹
		Cost	4,710,615	321,195	4,246,903	4,319,309	111,853,336 ⁹
	Major Rehab:	Approp.	--	-	-	-	7,969,329
		Cost	-	-	-	-	7,969,329

GALVESTON, TEXAS, DISTRICT

TABLE 40-A COST AND FINANCIAL STATEMENT

See Section in Text	Project	Funding	FY 95	FY 96	FY 97	FY 98	Total Cost To Sep. 30, 1998 ²⁵	
7. Gulf Intracoastal Waterway between Apalachee Bay, FL and the Mexican Border (Galveston District) (Regular Funds)	New Work:	Approp.	3,866,194	14,196,800	12,270,830	9,978,000	126,843,127 ¹⁰	
		Cost	6,851,092	15,544,808	12,332,656	8,097,000	124,737,046 ¹⁰	
	(Inland Waterways Trust Fund)	New Work:						
		Approp	3,751,000	10,971,000	8,558,000	2,941,000	28,765,000	
	(Regular Funds)	Cost	4,144,554	11,108,145	8,649,381	3,122,015	28,607,566	
		Maint:						
	(Regular Funds)	Appr	27,826,450	15,516,954	24,577,401	27,841,900	432,702,747 ¹¹	
		Cost	28,655,473	15,409,003	24,582,562	26,035,524	430,682,649 ¹²	
	(Inland Waterways Trust Fund)	Major Rehab:						
		Approp.	1,946,000	(200,000)	250,000	-	3,430,638	
	(Regular Funds)	Cost	1,398,800	1,077,391	415,369	8,781	3,398,500	
		Major Rehab:						
	(Regular Funds)	Approp.	1,946,000	(200,000)	250,000	-	2,996,000	
		Cost	1,308,974	1,116,142	467,140	9,338	2,958,225	
(Regular Funds)	Minor Rehab:							
	Approp.	-	-	-	-	835,873		
(Regular Funds)	Cost	-	-	-	-	835,873		
	8. Houston-Galveston Navigation Channels, TX (Regular Funds)	New Work:						
Approp.		2,302,800	965,000	1,725,000	20,000,000	39,042,800		
(Contributed Funds)	Cost	2,363,701	1,226,177	1,654,890	2,753,710	21,710,187		
	New Work:							
(Contributed Funds)	Approp.	-	1,020,000	-	-	1,020,000		
	Cost	-	220,436	540,853	234,666	995,955		
9. Houston Ship Channel, TX (Regular Funds)	New Work:							
	Approp.	-	-	-	-	35,760,382 ¹³		
	Cost	-	-	-	-	35,760,382 ¹³		
	Maint:							
(Regular Funds)	Approp.	11,912,050	6,671,600	6,742,478	13,273,600	184,183,406 ¹⁴		
	Cost	11,989,150	6,669,239	6,739,949	12,579,485	183,474,529 ¹⁴		
10. Matagorda, Ship Channel, TX (Regular Funds)	New Work:							
	Approp.	-	-	-	-	18,058,777 ¹⁵		
	Cost	-	-	-	-	18,058,777 ¹⁵		
	Maint:							
(Regular Funds)	Approp.	147,500	3,855,000	1,406,029	2,757,000	62,740,007 ¹⁶		
	Cost	13,491	3,996,501	1,400,113	2,030,483	62,002,887 ¹⁶		
11. Sabine-Neches Waterway, TX (Regular Funds)	New Work:							
	Approp.	-	-	-	-	56,136,815 ¹⁷		
	Cost	-	-	-	-	56,136,815 ¹⁷		
	Maint:							
(Regular Funds)	Approp.	3,304,000	17,125,646	11,594,320	8,356,000	227,180,506 ¹⁸		
	Cost	3,425,495	17,118,474	11,587,144	7,940,843	226,743,449 ¹⁸		
12. Texas City Channel, TX	New Work:							
	Approp.	-	-	25,000	-	15,156,972 ¹⁹		
	Cost	-	-	24,922	78	15,156,972 ¹⁹		
	Maint:							
	Approp.	921,000	1,636,700	(50,596)	420,000	29,545,115 ²⁰		
	Cost	943,524	1,640,884	(52,144)	244,100	29,367,078 ²⁰		
(Regular Funds)	Major Rehab:							
	Approp.	-	-	-	-	726,158		
(Regular Funds)	Cost	-	-	-	-	726,158		

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-A COST AND FINANCIAL STATEMENT

See Section in Text	Project	Funding	FY 95	FY 96	FY 97	FY 98	Total Cost To Sep. 30, 1998 ²⁵
13. Trinity River and Tributaries, TX (Includes Wallisville)	New Work:	Approp.	1,000,000	5,000,000	12,000,000	9,200,000	71,123,676 ²¹
		Cost	3,010,334	8,853,079	11,989,713	8,902,679	70,522,251 ²¹
		Maint:					
		Approp.	1,654,000	1,178,100	739,714	880,000	22,104,328 ²²
		Cost	1,661,395	1,196,514	665,091	772,311	21,894,727 ²²
15. Corpus Christi Beach, TX (Restoration Project) (Contributed Funds)	New Work:	Approp.	—	—	—	—	2,120,641
		Cost	—	—	—	—	2,120,641
		New Work:					
		Approp.	—	—	—	—	2,038,345
		Cost	—	—	—	—	2,009,710
16. Buffalo Bayou and Tributaries, TX	New Work:	Approp.	704,000	820,837	1,493,500	3,420,310	68,271,071 ²³
		Cost	856,225	835,514	1,481,133	1,129,781	65,966,788 ²³
		Recreation:					
		Approp.	—	—	—	—	377,804
		Cost	—	—	174	—	377,797
		Maint:					
		Approp.	2,292,000	3,134,500	2,835,440	5,115,500	41,263,555
		Cost	2,246,100	3,169,504	2,825,098	4,604,711	40,660,067
		Major Rehab:					
		Approp.	—	—	—	—	12,475,000
		Cost	—	—	—	—	12,475,000
		Dam Safety:					
		Approp.	(79,300)	—	—	—	12,693,700
		Cost	2,136	—	—	—	12,693,700
17. Buffalo Bayou at Lynchburg, TX (Regular Funds) (Contributed Funds)	New Work:	Approp.	66,000	43,500	165,000	262,800	726,600
		Cost	87,634	64,056	96,969	279,578	675,341
		New Work:					
		Approp.	90,596	—	—	—	273,346
		Cost	62,275	118,879	161	—	253,286
19. Clear Creek, TX (Regular Funds) (Contributed Funds)	New Work:	Approp.	1,213,000	231,000	5,463,502	1,004,000	21,896,863
		Cost	1,178,005	758,944	5,526,988	928,246	21,800,983
		New Work:					
		Approp.	—	400,000	275,000	—	1,315,000
		Cost	—	10,000	523,381	(-530)	1,151,447
20. Cypress Creek, TX (Regular Funds) (Contributed Funds)	New Work:	Approp.	174,100	335,000	155,000	220,000	2,210,100
		Cost	258,497	324,518	162,349	221,524	2,208,400
		New Work:					
		Approp.	175,000	320,800	170,000	—	835,000
		Cost	235,257	305,072	189,180	—	834,935
21. Lower Rio Grande Basin, TX	New Work:	Approp.	1,631,500	711,663	962,000	850,600	6,273,663
		Cost	1,698,995	723,293	973,452	865,066	6,270,048
22. Sims Bayou, TX (Regular Funds) (Contributed Funds)	New Work:	Approp.	5,080,000	15,032,000	13,026,290	11,409,000	61,946,290
		Cost	8,042,245	15,144,932	12,855,241	9,552,099	59,867,872
		New Work:					
		Approp.	400,000	1,900,000	885,500	755,860	4,541,360 ²⁴
		Cost	632,223	1,615,661	1,146,701	398,575	3,877,752 ²⁴

GALVESTON, TEXAS, DISTRICT

TABLE 40-A COST AND FINANCIAL STATEMENT

See Section in Text	Project	Funding	FY 95	FY 96	FY 97	FY 98	Total Cost To Sep. 30, 1998 ²⁵	
28. Laguna Madre Seagrass (Regular Funds) (Contributed Funds)		New Work:						
		Approp.	103,000	94,000	-	(-1,560)	225,440	
		Cost	49,184	128,949	6,784	15,487	225,440	
		New Work:						
		Approp.	44,000	31,000	4,000	(-3,854)	75,146	
		Cost	19,275	55,725	3,994	(-3,848)	75,146	

¹ Excludes \$1,637,270 credit for contributed work.

² Includes \$675,855 for previous projects. In addition, \$10,500,076 expended from contributed funds, of which \$123,361 was for previous projects. Excludes \$874,258 expended from contributed funds for dock removal for the local sponsor.

³ In addition, \$1,352,092 expended from contributed funds and \$34,000 expended from contributed funds for Port Isabel. In addition \$573,225 expended from contributed funds from the City of South Padre Island for beneficial placement of dredged material on the South Padre Island Beach.

⁴ Includes \$1,372,534 for previous projects. Includes \$456,515 for Sec. 107 project for Port Aransas Breakwaters. In addition \$768 expended from contributed funds for Port Aransas Breakwaters.

⁵ Includes \$62,452 for previous projects. In addition, \$1,057,677 expended from contributed funds.

⁶ Includes \$147,098 for previous projects. In addition, \$20,811,568 expended from contributed funds. (\$581,615 on 45-foot project.)

⁷ In addition, \$229,311 expended from contributed funds.

⁸ Includes \$8,421,996 for previous projects. In addition, \$3,648,932 expended from contributed funds.

⁹ Includes \$86,126 for previous projects. In addition, \$2,963,102 expended from contributed funds.

¹⁰ Includes \$706,709 for previous projects. Includes Sec. 107 projects for Port Isabel Small Boat Basin (\$46,559); Port Isabel Side Channel (\$8,414); Offatts Bayou (\$356,466); and Channel to Aransas Pass (\$658,573). In addition contributed funds expended for Port Isabel Small Boat Basin (\$46,559); Offatts Bayou (\$49,665); Channel to Aransas Pass (\$347,950); Chocolate Bayou (\$658,310); Mouth of Colorado River (\$3,379,080); (\$421,340) Channel to Victoria; and (\$862,716) expended for the local sponsor's levee requirement on Channel to Victoria.

¹¹ Includes \$1,526,564 for previous projects. In addition \$22,672 contributed funds for main channel and \$126,450 contributed funds for Rollover Pass (beginning 1997). Includes following amounts for tributary channels separately funded starting in fiscal year 1987: Channel to Victoria \$15,940,750. Channel to Aransas Pass \$2,600. Chocolate Bayou Channel \$2,469,040. Includes following

amounts for tributary channels separately funded starting in fiscal year 1989: Channel to Harlingen \$6,625,315. Channel to Port Mansfield \$6,869,609. Also includes \$9,187,156 for Mouth of Colorado River, separately funded beginning in fiscal year 1992 and \$31,200 contributed funds for Channel to Harlingen beginning in fiscal year 1998.

¹² Includes \$1,526,564 for previous projects. In addition \$22,672 expended from contributed funds for main channel and \$114,091 contributed funds for Rollover Pass (beginning 1997) for the beneficial placement of dredge material at Rollover Pass. Includes following amounts for tributary channels separately funded starting in fiscal year 1987: Channel to Victoria \$15,699,768, Channel to Aransas Pass \$2,600, Chocolate Bayou Channel \$2,466,294. In addition \$955,574 was expended from contributed funds for Chocolate Bayou Channel. Also includes amounts for tributary channels separately funded starting in fiscal year 1989: Channel to Harlingen \$6,624,082. Channel to Port Mansfield \$6,823,141. Also includes an expended amount of \$9,184,765 for Mouth of Colorado River, separately funded in fiscal year 1992. In addition, includes \$28,140 contributed funds expended beginning in fiscal year 1998.

¹³ Includes \$4,105,157 for previous projects. In addition, \$2,591,939 expended from contributed funds, of which \$1,209,179 was for previous projects.

¹⁴ Includes \$1,213,142 for previous projects. In addition, \$534,641 expended from contributed funds for Houston Ship Channel, of which \$200,000 was for previous projects and \$125,000 expended from contributed funds for Greens Bayou Channel. Includes appropriated funds for tributary channels separately funded starting in fiscal year 1992: Greens Bayou Channel \$560,968. Barbour Terminal Channel \$1,410,360. Bayport Ship Channel \$6,508,375. Also, includes \$91,942 contributed funds for Bayport Ship Channel beginning in FY 1998. Expenditures for tributary channels separately funded starting in fiscal year 1992: Greens Bayou Channel \$560,731. Barbour Terminal Channel \$1,405,671. Bayport Ship Channel \$6,504,647. In addition \$91,942 expended from contributed funds for Bayport Ship Channel beginning in FY 1998.

¹⁵ In addition, \$12,259,619 expended from contributed funds and \$182,800 for contributed lands.

TABLE 40-A **COST AND FINANCIAL STATEMENT**

See Section in Text	Project	Funding	FY 95	FY 96	FY 97	FY 98	Total Cost To Sep. 30, 1998 ²⁵
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¹⁶ Starting in fiscal year 1990 includes an appropriation of \$2,333,885 and expenditures of \$2,280,600 for Channel to Red Bluff.

¹⁷ Includes \$5,180,832 for previous projects. In addition, \$2,680,942 expended from contributed funds, of which \$577,507 was for previous projects.

¹⁸ Includes \$2,379,677 for previous projects. In addition, \$5,169,188 expended from contributed funds and \$7,944 expended from contributed funds for real estate acquisition for the local sponsor.

¹⁹ Includes \$366,823 for previous projects. In addition, \$1,023,819 expended from contributed funds, of which \$99,000 was for mitigation measures.

²⁰ Includes \$195,083 for previous projects.

²¹ Includes \$1,966,306 for previous projects. In addition, \$66,000 expended from contributed funds.

²² Includes \$543,662 for previous projects.

²³ Includes \$4,400,000 of advanced funds repaid to Harris County Flood Control District. In addition, \$63,661 contributed funds expended for Brays Bayou and \$12,900 Federal funds and \$19,104 contributed funds expended for enlargement of Clodine Ditch.

²⁴ Excludes \$1,880,475 expended from contributed funds for real estate acquisition for the local sponsor.

²⁵ Includes funds (\$12,544,400) provided by the Jobs Act (P.L. 98-8, dated March 24, 1983) for projects listed in Table 15-I of Annual Report for 1985.

GALVESTON, TEXAS, DISTRICT

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
1.	Oct. 27, 1965	AQUATIC PLANT CONTROL Provides for control of progressive eradication of aquatic plant growth from the navigable waters and streams in the U.S.	H. Doc. 251, 89th Cong., 1st Sess.
	Nov. 17, 1986	Amended cost sharing requirements to provide for 50 percent Federal and 50 percent non-Federal participation in control operations.	Sec. 103(c), PL 99-662
2.	Jun. 3, 1930	BRAZOS ISLAND HARBOR, TX Jetties and jetty channel, inside channels and basins.	Rivers and Harbors Committee Doc. 16, 71st Cong., 2nd Sess.
	May 24, 1934 (PWA) Aug. 30, 1935	Local cooperation requirement modified to provide contribution of funds to cover cost of original dredging of all inside channels and basins.	Rivers and Harbors Committee Doc. 10, 71st Cong., 1st Sess.
	Aug. 26, 1937	Deepen jetty channel to 31 feet and inner channels and Brownsville and Port Isabel turning basins to 28 feet.	Rivers and Harbors Committee Doc. 32, 75th Cong., 1st Sess.
	Mar. 2, 1945	Enlarge Port Isabel turning basin.	H. Doc. 335, 76th Cong., 1st Sess.
	Mar. 2, 1945	Deepen entrance channel to 35 feet; deepen to 33 feet channel across Laguna Madre; deepen to 32 feet channels from Laguna Madre to turning basins at Brownsville and Port Isabel; widen turning basins; and dredging present shallow-draft channel south of Port Isabel from railroad bridge to Laguna Madre and connecting channel to Port Isabel turning basin.	H. Doc. 347, 77th Cong., 1st Sess.
	Jul. 24, 1946	Additional connecting channel between Port Isabel and Brownsville channels; and transfer shallow-draft channels at Port Isabel to GIWW.	H. Doc. 627, 79th Cong., 2nd Sess.
	May 17, 1950	Deepen to 38 feet in outer bar channels and 36 feet in all other authorized channels and basins; extend existing turning basins at Brownsville and Port Isabel; and construct small-boat basin with a connecting channel next to Brownsville ship channel.	H. Doc. 192, 81st Cong., 1st Sess.
	Jul. 14, 1960	Widen Brownsville Channel to 300 feet at a depth of 36 feet from former Goose Island passing basin to turning basin extension, thence at a width of 500 feet and same depth to turning basin proper, deepen to 36 feet in area in southeast corner of turning basin, maintain two existing basins of fishing harbor, and a connecting channel, and construct a third basin, with necessary connecting channel and extend Brazos Island Harbor north jetty seaward 1,000 feet. ²⁷	H. Doc. 428, 86th Cong., 2nd Sess. ¹
	Nov. 17, 1986	Enlargement of the entrance channel from deep water in the Gulf of Mexico to the Laguna Madre to a depth of 44 feet and a width of 400 feet; enlargement of the Turning Basin Extension to a point 800 feet beyond the grain elevator to a depth of 42 feet at widths varying from 325 to 400 feet; removal of Brownsville Navigation District Wharves 5, 6, and 9 to permit widening of the adjacent portion of the Turning Basin to 1,200 feet at a depth of 36 feet; construction of asphalt walkways with handrails on the crown of the North and South Jetties, and construction of park-type public use facilities at the inner end of the North Jetty.	Sec. 201, PL 99-662
	3.	Mar. 3, 1899	CORPUS CHRISTI SHIP CHANNEL, TX Acquisition of old curvey portion of north jetty previously constructed by private parties.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
3.	Jun. 13, 1902	CORPUS CHRISTI SHIP CHANNEL, TX (Continued) Complete north jetty in accordance with builder's plans.	Specified in Act.
	Mar. 3, 1905	Complete north jetty in accordance with builder's plans.	Specified in Act.
	Mar. 2, 1907	Connect old curve to St. Joseph Island, and construct south jetty.	Rivers and Harbors Committee Doc. 5, 59th Cong., 2nd Sess.
	Feb. 27, 1911	Dredge roadstead in Harbor Island Basin to 20 feet deep and construct 10,000 linear feet of stone dike on St. Joseph Island.	H. Doc. 1094, 61st Cong., 3rd Sess.
	Mar. 4, 1913 ²	Channel between jetties and Harbor Island Basin to 25 feet deep, extend jetties seaward, extend dike on St. Joseph Island 9,100 feet, and dredge approach channel 12 feet deep to town of Port Aransas.	H. Doc. 1125, 62nd Cong., 3rd Sess.
	Sep. 23, 1922	Dredging channel from Aransas Pass to Corpus Christi, 25 feet deep, 200 feet bottom width.	H. Doc. 321, 67th Cong., 2nd Sess.
	Jul. 3, 1930 ³	Deepen entrance channel from gulf to Harbor Island and provide an inner basin at Harbor Island of reduced area but greater depth.	H. Doc. 214, 70th Cong., 1st Sess.
	Jul. 3, 1930	Channel from Aransas Pass to Corpus Christi Channel with depth 30 feet.	Rivers and Harbors Committee Doc. 9, 71st Cong., 1st Sess.
	Aug. 30, 1935 ⁴	Enlarge all channels from gulf to western end of basin dredge by Humble Oil and Refining Co., at its docks on Harbor Island.	Committee Docs. 35, 72nd Cong., 1st Sess., and 40, 73rd Cong., 2nd Sess.
	Aug. 30, 1935	Maintain channel and maneuvering basin between breakwater and western shoreline of Corpus Christi Bay.	H. Doc. 130, 72nd Cong., 1st Sess.
	Aug. 30, 1935	Maintain 30-foot depth of approach channel, turning basin at Corpus Christi, Industrial Canal and turning basin at Avery Point.	Rivers and Harbors Committee Doc. 13, 74th Cong., 1st Sess.
	Aug 30, 1935	Maintain and deepen to 32 feet channel from deep water at Port Aransas to and including turning basin at Corpus Christi.	Rivers and Harbors Committee Doc. 63, 74th Cong., 1st Sess.
	Jun. 20, 1938	Extend main turning basin at Corpus Christi westward 2,500 feet at its present width and depth, deepen existing Industrial Canal and turning basin to 32 feet and extend this canal at a depth of 32 feet and general width of 150 feet, westward along Nueces Bay shore to a turning basin 32 feet by 900 feet, and 1,000 feet long near Tule Lake.	H. Doc. 574, 75th Cong., 3rd Sess.
Mar. 2, 1945	Provide depth of 34 feet in all project channels and basins from Port Aransas to and including Tule Lake turning basin, for a width of 250 feet from Port Aransas to breakwater at Corpus Christi, for a width of 200 feet in Industrial Canal and in channel between Avery Point and Tule Lake turning basins, and widen Avery Point turning basin to 1,000 feet.	H. Doc. 544, 78th Cong., 2nd Sess.	

GALVESTON, TEXAS, DISTRICT

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
CORPUS CHRISTI SHIP CHANNEL, TX (Continued)			
3.	Jun. 30, 1948	Deepen entrance channel to 38 feet from gulf to outer end of jetty; 38 feet decreasing to 36 feet thence to station 90 north jetty; and 36 feet in all other deep water channels and basins except 2,000-foot undredged part of inner basin at Harbor Island, and a width of 400 feet in channel from Port Aransas to Maneuvering basin at Corpus Christi.	H. Doc. 560, 80th Cong., 2nd Sess.
	Sep. 3, 1954	An anchorage basin 12 feet deep, from 300 to 400 feet wide, and 900 feet long in Turtle Cove at Port Aransas, Texas.	H. Doc. 654, 81st Cong., 1st Sess.
	Sep. 3, 1954 ⁵	Branch channel 32 feet by 150 feet, extending northerly from main channel in vicinity of Port Ingleside, along north shore of Corpus Christi Bay to Reynolds Metals Co. plant and turning basin 32 feet deep and 800 feet square near plant in general vicinity of LaQuinta, Texas.	H. Doc. 89, 83rd Cong., 1st Sess.
	Sep. 3, 1954	An entrance channel 36 by 400 feet on a tangent alignment from 400-foot channel in Corpus Christi Bay, near Corpus Christi breakwater to flared approach channel to Corpus Christi turning basin.	H. Doc. 487, 83rd Cong., 2nd Sess.
	Jul. 3, 1958	Deepen and widen LaQuinta Channel to 36 by 200 feet; enlarge LaQuinta turning basin to 36 by 800 by 1,000 feet; a flared entrance to channel; and widening at curves.	S. Doc. 33, 85th Cong., 1st Sess.
	Jul. 3, 1958	Deepen entrance channel to 42 feet from gulf to outer end of jetty; 40 feet in all other deep-water channels and basins except undredged northward extension to inner basin at Harbor Island and branch channel to LaQuinta; and widen Industrial Channel to 400 feet with flared entrances to Corpus Christi and Avery Point turning basins.	H. Doc. 361, 85th Cong., 2nd Sess.
	Jul. 3, 1958	Channel 40 by 200 feet extending 2.2 miles from Tule Lake turning basin to a turning basin 40 feet deep, 700 to 900 feet wide, 1,000 feet long at Viola, Texas.	H. Doc. 361, 85th Cong., 2nd Sess.
	Jul. 3, 1958	Depth of 12 feet and a width of 100 feet in locally dredged Jewel Fulton Canal from LaQuinta Channel to a turning basin 12 by 200 by 400 feet, and assumption of maintenance by United States.	H. Doc. 361, 85th Cong., 2nd Sess.
	Jul. 14, 1960 (As amended by Dec. 31, 1970)	Construction of a breakwater at entrance to harbor area at Port Aransas, and realignment of existing 12-foot by 100-foot project channel.	Sec. 107, PL 86-645
	Aug. 13, 1968	Provides for a project depth of 45 feet in the existing deep-draft channels and basins, for construction of a new deep-draft turning point, for construction of a deep draft mooring area and mooring facilities and for widening of the channels and basins at certain locations. The Act also deauthorized the undredged northward extension of Inner Basin at Harbor Island and the undredged west turnout (Wye connection) between the LaQuinta Channel and the main channel of the waterway.	S. Doc. 99, 90th Cong., 2nd Sess. ¹
	Oct. 22, 1976	Modified local cooperation requirements for 1968 Act. Shifted responsibility for cost of disposal areas and confinement works from sponsor to joint 75 percent Federal and 25 percent non-Federal responsibility.	Sec. 124, PL 94-587
	Sep. 15, 1994	Assume maintenance of 17 foot by 100 foot Jewel Fulton Canal, after construction by local interest.	Sec. 204, PL 99-662 as amended

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
4.	Mar. 3, 1899	DOUBLE BAYOU, TX A channel 6-feet deep and 100-feet wide through the bar at mouth of Double Bayou.	H. Doc. 387, 55th Cong., 2nd Sess.
	Jul. 14, 1960 (As amended Oct. 25, 1965)	7-foot by 125-foot channel from the 7-foot depth in Trinity Bay to the intersection of Double Bayou Channel with the channel to Liberty; and thence a 7- by 100-foot channel upstream for 2.0 miles.	Sec. 107, PL 86-645
5.	Mar. 3, 1899	FREEMPORT HARBOR, TX Dredging and other work necessary in judgment of Secretary of War for improving harbor; for taking over jetties and privately built works at mouth of river.	Specified in Act.
	Mar. 2, 1907	Examination authorized. Work later confined to maintenance of jetties.	H. Doc. 1087, 60th Cong., 2nd Sess.
	Feb. 27, 1911	Repairs to jetties and dredging.	Specified in Act.
	Mar. 4, 1913	Construct seagoing hopper dredge.	Specified in Act.
	Aug. 8, 1917	Purchase of one 15-inch pipeline dredge and equipment, its operation of 3 years, operation of seagoing dredge one-half time for 3 years, and repairs to jetties.	Specified in Act.
	Mar. 3, 1925 ⁶	Diversion dam, diversion channel, and necessary auxiliary works.	Rivers and Harbors Committee Doc. 10, 68th Cong., 2nd Sess.
	Jul. 3, 1930	Maintenance of diversion channel at expense of local interest.	Rivers and Harbors Committee Doc. 18, 70th Cong., 1st Sess.
	Aug. 30, 1935 ⁷	Deepening channels and basins.	Rivers and Harbors Committee Doc. 15, 72nd Cong., 1st Sess.
	Aug. 30, 1935	Maintenance of present project dimensions of channels and basins at Federal expense.	Rivers and Harbors Committee Docs. 15, 72nd Cong., 1st Sess., and 29, 73rd Cong., 2nd Sess.
	May 17, 1950	Deepen outer bar channel to 38 feet from gulf to a point within jetties, thence 36 feet in authorized channels to and including upper turning basin.	H. Doc. 195, 81st Cong., 1st Sess.
	Jul. 3, 1958	Relocate outer bar channel on straight alignment with jetty channel and maintain Brazos Harbor entrance channel and turning basin (constructed by local interests).	H. Doc. 433, 84th Cong., 2nd Sess.
Oct. 5, 1961	Modification of HD 1469. Revoking certain provisions of local cooperation.	PL 394, 87th Cong.	
Dec. 31, 1970	Relocation of entrance channel and deepen to 47 feet; enlargement to a depth of 45 feet and relocation of jetty channel and inside main channel; deepening to 45 feet of channel to Brazosport; enlargement of the widened area of Quintana Point to provide a depth of 45 feet with a 750-foot diameter turning area; Brazosport turning basin to 45 feet deep with a 1,000 foot turning area; a new turning basin with a 1,200 foot diameter turning area and 45 feet deep; deepening Brazosport channel to 36 by 750 feet diameter; flared approaches from Brazos Harbor Channel; relocation of north jetty and rehabilitation of south jetty.	H. Doc. 289, 93rd Cong., 2nd Sess. ²	
Nov. 17, 1986	Modified local cooperation requirements for the 1970 Act.	Sec. 101, PL 99-662	

GALVESTON, TEXAS, DISTRICT

TABLE 40-B **AUTHORIZING LEGISLATION**

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
6.	Aug. 5, 1886	GALVESTON HARBOR AND CHANNEL, TX Construct 2 rubblestone jetties at entrance to Galveston Harbor.	H. Doc. 85, 49th Cong., 1st Sess., and Annual Report, 1886, p. 1311.
	Jun. 13, 1902	A channel 1,200 by 30 feet from Bolivar Roads (outer end of old inner bar near Fort Point) at 51st Street. ⁸	H. Doc. 264, 56th Cong., 2nd Sess.
	Mar. 3, 1905	Purchase or construct hydraulic pipeline dredge.	Specified in Act.
	Mar. 2, 1907	Extension of jetties to present project length and construction and operation of a dredge.	H. Doc. 340, 59th Cong., 2nd Sess., and Rivers and Harbors Committee Doc. 11, 59th Cong., 2nd Sess.
	Mar. 2, 1907	Extension of Galveston Channel from 51st to 57th Sts., with depth of 30 feet and width of 700 feet.	H. Doc. 768, 59th Cong., 2nd Sess.
	Jun. 25, 1910 ⁹	Conditional extension of Galveston Channel between 51st and 57th Sts., 30 feet deep and 1,000 feet wide.	H. Doc. 328, 61st Cong., 2nd Sess.
	Jul. 27, 1916	Extend seawall at Galveston from angle at 6th St., and Broadway to vicinity of Fort San Jacinto.	H. Doc. 1390, 62nd Cong., 3rd Sess.
	Jul. 18, 1918	Deepen harbor channel to 35 feet and widen to 800 feet.	H. Doc 758, 65th Cong., 2nd Sess.
	Sep. 22, 1922	Further extension of seawall at Galveston to a junction with south jetty; and repairing seawall in front of Fort Crockett reservation.	H. Doc. 693, 66th Cong., 2nd Sess.
	Jan. 21, 1927	Deepen Galveston Channel to 32 feet; and maintain Galveston Harbor channels to dimensions of 800 feet wide, 35 feet deep on outer bar and 34 feet deep in inner bar. ¹⁰	H. Doc. 307, 69th Cong., 1st Sess.
	Aug. 30, 1935 ¹¹	Maintain State Highway Ferry Landing Channels to dimensions of 12 by 100 feet.	River and Harbors Committee Doc. 31, 72nd Cong., 1st Sess.
	Aug. 30, 1935	Construct 13 groins along gulf shore from 12th to 61st Sts. in city of Galveston at a limited cost of \$234,000 (10 groins constructed).	H. Doc. 400, 73rd Cong., 2nd Sess.
	Aug. 30, 1935	Deepen Galveston Channel to 34 feet (Bolivar Roads to 43rd St.).	Rivers and Harbors Committee Doc. 61, 74th Cong., 1st Sess.
	Aug. 30, 1935	Deepen Galveston entrance channel to 36 feet.	Rivers and Harbors Committee Doc. 57, 74th Cong., 1st Sess.
	Apr. 4, 1938	Completion of project for construction of 13 groins.	PL 463, 75th Cong.
	Jun. 30, 1948	Deepen Galveston Harbor to 38 feet from gulf to a point 2 miles west of seaward end of north jetty; thence 36 feet to Bolivar Roads; revoking authority for maintenance of ferry channels; and Galveston channel to 36 feet deep from Bolivar Roads to 43rd Street.	H. Doc. 561, 80th Cong., 2nd Sess.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
GALVESTON HARBOR AND CHANNEL, TX (Continued)			
6.	May 17, 1950	Deepen outer bar channel to 38 feet from gulf to a point within jetties, thence 36 feet in authorized channels to and including upper turning basin.	H. Doc. 195, 81st Cong., 1st Sess.
	Jul. 3, 1958	Dredge to a depth of 42 feet over the authorized width of 800 feet from the Gulf of Mexico to a point 2 miles west of the seawall and of the North jetty thence at a depth of 40 feet to the junction of the Houston Ship Channel, with widths of 800 feet to Bolivar Roads, thence decreasing to 400 feet at the junction with the Houston Ship Channel.	H. Doc. 350, 85th Cong., 2nd Sess.
	Jun. 23, 1971 (House Res.) Nov. 18, 1971 (Senate Res.)	Deepen Galveston Channel to 40 feet from Bolivar to 43rd Street.	H. Doc. 121, 92nd Cong.
	Oct. 12, 1996	Provides for navigation and environmental restoration improvements. The navigation improvements consist of deepening and widening the Entrance Channel to 47 feet deep and 800 feet wide; the Houston Ship Channel to 45 feet deep and 530 feet wide; and the Galveston Channel to 45 feet deep. The environmental restoration portion consist of initial construction of marsh habitat and a colonial waterbird nesting island through the beneficial use of new work dredged material, and incremental development (deferred construction) of additional marsh over the life of the navigation project through the beneficial use of maintenance materials dredged from Galveston Bay. The project is referred to as Houston-Galveston Navigation Channels.	Sec. 101 (30), PL 104-303
GULF INTRACOASTAL WATERWAY BETWEEN APALACHEE BAY, FL AND MEXICAN BORDER¹²			
7.	Mar. 2, 1907	Channel 4 by 100 feet from West Galveston Bay across Chocolate Bay to 4 feet of water in Chocolate Bay.	H. Doc 445, 56th Cong., 1st Sess.
	Mar. 3, 1925	Channel 9 by 100 feet, Sabine River to Galveston Bay, and a 20-inch pipeline dredge. Such passing places, widening at bends, locks or guard locks and railway bridges over artificial cuts as are necessary.	H. Doc. 238, 68th Cong., 1st Sess.
	Jan. 21, 1927	Channel 9 by 100 feet, Galveston Bay to Corpus Christi.	H. Doc. 238, 68th Cong., 1st Sess.
	Aug. 26, 1937	Maintenance of a flood-discharge channel in Colorado River.	S. Committee print, 75th Cong., 1st Sess.
	Jun. 20, 1938 ¹³	Channel 9 by 100 feet in San Bernard River, Texas.	H. Doc. 640, 75th Cong., 3rd Sess.
	Jun. 20, 1938	Channel in Colorado River, 9 by 100 feet, with basin.	H. Doc. 642, 75th Cong., 3rd Sess.
	Jun. 20, 1938	Channel 9 by 100 feet from Palacios through Trepalacios and Matagorda Bays.	H. Doc. 564, 75th Cong., 3rd Sess.
	Jun. 20, 1938	Channel 9 by 200 feet from main channel to harbor at Rockport and improve harbor to 9-foot depth.	H. Doc. 641, 75th Cong., 3rd Sess.
	Jun. 20, 1938	Channel 6 by 100 feet from main channel to Aransas Pass, Texas.	H. Doc. 643, 75th Cong., 3rd Sess.
	Mar. 23, 1939	Enlarge waterway to depth of 12 feet and a width of 125 feet from Sabine River to Corpus Christi.	H. Doc. 230, 76th Cong., 1st Sess.

GALVESTON, TEXAS, DISTRICT

TABLE 40-B

AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
		GULF INTRACOASTAL WATERWAY (Continued)	
7.	Jul. 23, 1942	Construct waterway from Corpus Christi to vicinity of Mexican border to provide a depth of 12 feet and width of 125 feet through-out.	PL 675, 77th Cong.
	Mar. 2, 1945	Channel 6 by 60 feet from GIWW to a point in Chocolate Bayou near Liverpool.	H. Doc. 337, 76th Cong., 1st Sess.
	Mar. 2, 1945 ⁹	Channel 6 feet deep and 60 feet wide from main channel near Port O'Connor, Texas, in Barroom Bay.	H. Doc. 428, 76th Cong., 1st Sess.
	Mar. 2, 1945	Enlarge channel from main channel to Aransas Pass, Texas, providing a depth of 9 feet and width of 100 feet.	H. Doc. 383, 77th Cong., 1st Sess.
	Mar. 2, 1945	Channel 12 by 125 feet from main channel to Red Fish Landing, Texas, with basin.	S. Doc 248, 78th Cong., 2nd Sess.
	Mar. 2, 1945 ¹⁴	Channel 12 feet deep and 125 feet wide from main channel to vicinity of Harlingen, Texas, via Arroyo Colorado with basin.	H. Doc. 402, 77th Cong., 1st Sess. (See PL 14, 79th Cong.)
	Jul. 24, 1946	Fill a portion of shallow-draft channel adjacent to Port Isabel Turning Basin, construct a channel to connect shallow-draft channel with main channel near shoreline of Laguna Madre, and enlarge shallow-draft channel west of this connection, all to 12-foot depth and bottom width of 125 feet.	H. Doc. 627, 79th Cong., 2nd Sess.
	Jul. 24, 1946	Reroute main channel to north shore of Red Fish Bay between Aransas Bay and Corpus Christi Bay; deepen tributary channel from Port Aransas to Aransas Pass, Texas, 12 feet and extended basin at same depth.	H. Doc. 700, 79th Cong., 2nd Sess.
	May 17, 1950	Deauthorized 6 by 60 foot channel in Chocolate Bayou and reauthorized the 4 by 100-foot channel.	H. Doc. 768, 80th Cong., 2nd Sess.
	May 17, 1950	Alternate channel across South Galveston Bay between Port Bolivar and Galveston causeway.	H. Doc. 196, 81st Cong., 1st Sess.
	May 17, 1950	"Red Fish Landing" changed to "Port Mansfield, Texas."	PL 516, 81st Cong.
	Jul. 12, 1952	Incorporate as part of Intracoastal Waterway a channel 9 by 100 feet from main channel via Seadrift to point on Guadalupe River 3 miles above Victoria, Texas, authorized by River and Harbor Act of 1945.	PL 527, 82nd Cong., 2nd Sess.
	Sep. 3, 1954 ¹⁵	Small craft harbor 9 by 200 by 1,000 feet at Seadrift with an entrance channel 9 by 100 feet.	H. Doc. 478, 81st Cong., 2nd Sess.
	Sep. 3, 1954	Widen tributary channel between Port Aransas and Aransas Pass, Texas, to 125 feet; straighten and widen to 125 feet connecting channel to Conn Brown Harbor, and maintain Conn Brown Harbor at Federal expense, all to 12 feet deep.	H. Doc. 376, 83rd Cong., 2nd Sess.
	Sep. 9, 1959	Improve channels and basins comprising channel to Port Mansfield constructed in part by Federal Government and in part by local interest; constructing turnout curves at Gulf Intracoastal Waterway intersection and bend easing at entrance to turning basin; construct parallel jetties at gulf entrance; maintenance of locally dredged jetty channel 16 by 250 feet; and maintenance of small craft basin.	S. Doc. 11, 86th Cong., 1st Sess.

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
GULF INTRACOASTAL WATERWAY (Continued)			
7.	Jul. 14, 1960	Entrance channel 7 feet deep by 75 feet wide from main channel to Gulf of Mexico to inside shoreline at Port Isabel, Texas, an inner channel 6 feet deep by 50 feet wide from entrance channel to East Harbor Basin, and an irregular-shaped harbor basin 6 feet deep having a surface area of about 7 acres.	Sec. 107, PL 645, 86th Cong.
	Jul. 14, 1960 (As amended Dec. 31, 1970)	Deepen the existing 6-foot channel at Port Isabel to 12 feet and removing the submerged bars at each end of the island to a depth of -12 feet MLT.	Sec. 107, PL 86-645
	Jul. 14, 1960 (As amended Dec. 31, 1970)	Deepening the existing channel to 12 by 125 feet, and extend southeasterly from the Gulf Intracoastal Waterway main channel in West Galveston Bay, into Offatts Bayou, a distance of 2.2 miles, and a west turnout 12 by 125 feet between the proposed Offatts Bayou Channel and the Gulf Intracoastal Waterway.	Sec. 107, PL 86-645
	Jul. 14, 1960 (As amended Dec. 31, 1970)	Deepening Aransas Pass tributary channel to 14 feet from mile 0 at Harbor Island to mile 6.1 at the city of Aransas Pass; widening to 175 feet between miles 3.5 and 4.6; and deepening Conn Brown Harbor, turning basin and connecting channel between Conn Brown Harbor and turning basin.	Sec. 107, PL 86-645
	Oct. 23, 1962 ¹⁶	Improve main channel 16 feet deep and 150 feet wide from Sabine River to Houston Ship Channel; with two relocations; relocate main channel in Matagorda Bay and Corpus Christi Bay; and maintaining existing Lydia Ann Channel.	H. Doc. 556, 87th Cong., 2nd Sess.
	Oct. 23, 1962	Deepen and widen channel to Palacios; construct two protective breakwaters; maintain and deepen existing basins; and deepen, enlarge and maintain existing approach channel to basin No. 2.	H. Doc. 504, 87th Cong., 2nd Sess.
	Oct. 23, 1962	Eliminates requirement of local interest to construct bridge at mile 29.2 turning basin at Victoria, and maintain turning basins at Victoria and Seadrift; provide: Federal construction of vertical-lift railroad bridge at Missouri-Pacific Railroad mainline crossing, mile 29.2; construction and future maintenance of basin near Victoria, Texas, and maintenance of basin constructed by local interests at Seadrift, Texas.	H. Doc. 288, 87th Cong., 2nd Sess.
	Oct. 27, 1965 ¹⁷	Modify existing Federal navigation project to provide a channel extending from Gulf Intracoastal Waterway through Chocolate Bay and Chocolate Bayou to project channel mile 8.2, thence to a turning basin near channel mile 13.2 and for salt water barrier in Chocolate Bayou about 3.7 miles upstream from basin (channel mile 16.9).	H. Doc. 217, 89th Cong., 1st Sess.
	Aug. 13, 1968	Entrance channel 15 feet deep and 200 feet wide at the mouth of Colorado River Channel protected by an east jetty 3,500 feet long extending to 12-foot depth and a west jetty 2,900 feet long extending to 5-foot contour; make channel 12 feet by 100 feet from gulf shore to Matagorda, including recreation facility, a turning basin 12 feet by 300 feet wide and 1,450 feet long, and a new diversion channel 250 feet wide and varying in depth from 20 to 23 feet including a closure dam across the present river channel.	S. Doc. 102, 90th Cong., 2nd Sess.
	Nov. 17, 1986	Modified 1968 authorization to provide that diversion features be constructed at Federal expense and operation and maintenance be shared 75 percent Federal and 25 percent non-Federal.	Sec. 812, PL 99-662
	Nov. 17, 1988	Enlarge existing Channel to Victoria from a depth of 9 feet and width of 100 feet to a depth of 12 feet and width of 125 feet.	Sec. 3, PL 100-676

GALVESTON, TEXAS, DISTRICT

TABLE 40-B **AUTHORIZING LEGISLATION**

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
GULF INTRACOASTAL WATERWAY (Continued)			
7.	Oct. 31, 1992	Provide 8 miles of erosion protection for the existing waterway in the vicinity of Sargent, Texas.	Sec. 101 (20), PL 102-580
	Oct. 12, 1996	Provides for erosion protection along a 31-mile reach of the Gulf Intracoastal Waterway which crosses the critical wintering habitat of the endangered whooping crane, including a 13.25 mile reach within the boundary of the Aransas National Wildlife Refuge. Also, provides for limited oil spill containment features and equipment to protect those areas from accidental hazardous spills.	Sec. 101 (29), PL 104-303
HOUSTON-GALVESTON NAVIGATION CHANNELS, TX			
8.	Oct. 12, 1996	Provides for navigation and environmental restoration improvements. The navigation improvements consist of deepening and widening the Entrance Channel to 47 feet deep and 800 feet wide; the Houston Ship Channel to 45 feet deep and 530 feet wide; and the Galveston Channel to 45 feet deep. The environmental restoration portion consist of initial construction of marsh habitat and a colonial waterbird nesting island through the beneficial use of new work dredged material, and incremental development (deferred construction) of additional marsh over the life of the navigation project through the beneficial use of maintenance materials dredged from Galveston Bay.	Sec. 101 (30), PL 104-303
HOUSTON SHIP CHANNEL, TX			
9.	Mar. 5, 1905	Easing or cutting off sharp bends and construction of a pile dike. ¹⁸	Rivers and Harbors Committee Doc. 35, 61st Cong., 2nd Sess.
	Mar. 2, 1919	A channel 30 feet deep, widen bend at Manchester and enlarge turning basin.	H. Doc. 1632, 65th Cong., 3rd Sess.
	Mar. 3, 1925	A light-draft extension of channel to mouth of White Oak Bayou. ¹⁹	H. Doc. 93, 67th Cong., 1st Sess.
	Jul. 3, 1930	Widen channel through Morgan Point and to a point 4,000 feet above Baytown and widen certain bends.	H. Doc. 13, 71st Cong., 1st Sess.
	Aug. 30, 1935 ¹¹	Deepen to 32 feet in main channel and turning basin, and a 400-foot width through Galveston Bay.	Rivers and Harbors Committee Doc. 28, 72nd Cong., 1st Sess.
	Aug. 30, 1935	Deepen to 34 feet in main channel and widen from Morgan Point to turning basin	Rivers and Harbors Committee Doc. 58, 74th Cong., 1st Sess.
	Mar. 2, 1945	Branch channel 10 by 60 feet behind Brady Island.	H. Doc. 226, 76th Cong., 1st Sess.
	Mar 2, 1945	Widen channel from Morgan Point to lower end of Fidelity Island with turning points at mouth of Hunting Bayou and lower end of Brady Island.	H. Doc. 226, 76th Cong., 1st Sess.
	Mar. 2, 1945	Widen channel from lower end of Fidelity Island to Houston turning basin and dredge off-channel silting basins.	H. Doc. 737, 79th Cong., 2nd Sess.
	Jun. 30, 1948	Deepen to 36 feet from Bolivar Roads to and including main turning basin at Houston, Texas, including turning points at Hunting Bayou and Brady Island.	H. Doc. 561, 80th Cong., 2nd Sess.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
		HOUSTON SHIP CHANNEL, TX (Continued)	
9.	Jul. 3, 1958 ²⁰	Deepen to 40 feet from Bolivar Roads to Brady Island, construct Clinton Island turning basin, a channel 8 by 125 feet at Five Mile Cut, and improve shallow-draft channel at Turkey Bend.	H. Doc. 350, 85th Cong., 2nd Sess. ¹
	Jul. 14, 1960	Barbour Terminal at Morgan Point.	Sec. 107, PL 86-645
	Oct. 27, 1965	Restoring existing locally dredged channel from mile 0 to 0.34 to 36 feet deep and dredging a 15-12 ft. channel from mile 0.34 to 2.81, in Greens Bayou. ²¹	H. Doc. 257, 89th Cong., 1st Sess.
	Nov. 17, 1986	Maintenance of Greens Bayou, Barbour Terminal Channel, and Bayport Ship Channel to forty-foot depths at Federal expense.	Sec. 819, PL 99-662
	Oct. 12, 1996	Provides for navigation and environmental restoration improvements. The navigation improvements consist of deepening and widening the Entrance Channel to 47 feet deep and 800 feet wide; the Houston Ship Channel to 45 feet deep and 530 feet wide; and the Galveston Channel to 45 feet deep. The environmental restoration portion consist of initial construction of marsh habitat and a colonial waterbird nesting island through the beneficial use of new work dredged material, and incremental development (deferred construction) of additional marsh over the life of the navigation project through the beneficial use of maintenance materials dredged from Galveston Bay. The project is referred to as Houston-Galveston Navigation Channels.	Sec. 101 (30), PL 104-303
		MATAGORDA SHIP CHANNEL, TX	
10.	Jun. 25, 1910	Channel to Port Lavaca, Texas 7 feet deep and 89 feet bottom width.	H. Doc. 1082, 60th Cong., 2nd Sess.
	Aug. 30, 1935	Extend 7-foot channel to shoreline of Lavaca Bay at mouth of Lynns Bayou.	Rivers and Harbors Committee Doc. 28, 74th Cong., 1st Sess.
	Aug. 26, 1937	Deepen and widen channel to present project dimensions.	Rivers and Harbors Committee Doc. 37, 75th Cong., 1st Sess.
	Mar. 2, 1945	Extend channel 6 by 100 feet from Port Lavaca via Lavaca Bay, Lavaca and Navidad Rivers to Red Bluff, a distance of 20 miles.	H. Doc. 314, 76th Cong., 1st Sess.
	Mar. 2, 1945	A harbor of refuge 9 feet deep near Port Lavaca and an approach channel 100 feet wide and equal depth.	H. Doc. 731, 79th Cong., 2nd Sess.
	Jul. 3, 1958	Deepen to 12 feet and widen to 125 feet Port Lavaca Channel and approach channel to harbor of refuge; deepen to 12 feet Port Lavaca turning basin and basins at harbor of refuge.	H. Doc. 131, 84th Cong., 1st Sess.
	Jul. 3, 1958	An entrance channel 38 by 300 feet, a channel 36 by 200 feet, 22 miles long across Matagorda and Lavaca Bays to Point Comfort, Texas, a turning basin 36 feet deep and 1,000 feet square at Point Comfort, and dual jetties at entrance from gulf.	H. Doc. 388, 84th Cong., 2nd Sess.
		SABINE-NECHES WATERWAY, TX	
11.	Jul. 25, 1912	Existing project dimensions of jetties, a 26-foot channel through Sabine Pass, Port Arthur Canal and Port Arthur turning basin; and a 26-foot turning basin at Port Arthur. A depth of 25-feet in Sabine-Neches Canal, Neches River to Beaumont and Sabine River to Orange, including cutoffs and widening channels.	H. Doc. 773, 61 st Cong., 2nd Sess.

GALVESTON, TEXAS, DISTRICT

TABLE 40-B

AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
		SABINE-NECHES WATERWAY, TX (Continued)	
11.	Sep. 22, 1922	Deepen channels to 30 feet from gulf to Beaumont, with increased widths and an anchorage basin in Sabine Pass.	H. Doc. 975, 66th Cong., 3rd Sess.
	Sep. 22, 1922	Deepen Port Arthur east and west turning basins and approach channel to 30 feet. Take over and deepen to 30 feet channel connecting west turning basin with Taylors Bayou turning basin. For a 30-foot depth in channel from mouth of Neches River to cutoff in Sabine River near Orange.	S. Doc. 152, 67th Cong., 2nd Sess.
	Mar. 3, 1925	Removal of guard lock in Sabine-Neches Canal.	H. Doc. 234, 68th Cong., 1st Sess.
	Jan. 21, 1927	Widen Sabine Pass and jetty channel, Port Arthur Canal, and Sabine-Neches Canal. For dredging 2 passing places in Sabine-Neches Canal, easing of bends, removal and reconstructing Port Arthur field office, extending Beaumont turning basin upstream 200 feet above new city wharves, and an anchorage basin in Sabine Pass.	H. Doc 287, 69th Cong., 1st Sess.
	Aug. 30, 1935 ¹¹	A depth of 32 feet in channels from gulf to Beaumont turning basin, including all turning basins at Port Arthur.	Rivers and Harbors Committee Doc. 27, 72nd Cong., 1st Sess.
	Aug. 30, 1935 ¹¹	Deepen channels to 34 feet with increased widths from gulf to Beaumont turning basin.	Rivers and Harbors Committee Doc. 12, 74th Cong., 1st Sess.
	Aug. 30, 1935	Construct suitable permanent protective works along Sabine Lake. Maintain Taylors Bayou turning basin.	Specified in Act.
	Aug. 26, 1937	Maintain channel from Sabine River to Orange Municipal wharf.	Rivers and Harbors Committee Doc. 3, 75th Cong., 1st Sess.
	Aug. 26, 1937	Dredging 500 feet from eastern end of Harbor Island and abandonment of channel south and west of Harbor Island.	Rivers and Harbors Committee Doc. 20, 75th Cong., 1st Sess.
	Jun. 20, 1938 ²²	Increased widths of channels from gulf to Beaumont turning basin and channel connecting Port Arthur west turning basin and Taylors Bayou turning basin, deepen Beaumont turning basin and Beaumont turning extension to 34 feet; and dredge a new cutoff from Smith's Bluff cutoff to McFadden Bend.	H. Doc. 581, 75th Cong., 3rd Sess.
	Oct. 17, 1940	Abandon Orange turning basin; dredge a channel 25 by 150 feet, suitably widened on bends to highway bridge, and dredge a cutoff channel opposite Orange.	S. Doc 14, 77th Cong., 1st Sess.
	Mar. 2, 1945	Extend Beaumont turning basin upstream 300 feet.	H. Doc. 685, 76th Cong., 3rd Sess.
	Mar. 2, 1945	Widen Port Arthur west turning basin to 600 feet.	S. Doc 60, 77th Cong., 1st Sess.
	Mar. 2, 1945	Dredge a channel from Beaumont turning basin to vicinity of Pennsylvania Shipyard.	S. Doc 158, 77th Cong. 2nd Sess.
	Jul. 24, 1946 ²³	Deepen Sabine Pass outer bar channel to 37 feet, Sabine Pass jetty channel to 36 feet at inner end, deepen to 36 feet Sabine Pass Channel, Port Arthur Canal, Port Arthur east and west turning basins, Taylors Bayou turning basin and channel from Port Arthur west turning basin to Taylors Bayou turning basin, deepen to 36 feet and widen to 400 feet Sabine-Neches Canal from Port Arthur Canal to mouth of Neches River except through Port Arthur Bridge; deepen Neches River channel from	H. Doc. 571, 79th Cong., 2nd Sess.

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
11.		SABINE-NECHES WATERWAY, TX (Continued)	
		mouth to Beaumont turning basin to 36 feet widening to 350 feet from Smith's Bluff to Beaumont turning basin; deepen junction area on Neches River at Beaumont turning basin to 36 feet; and widen Sabine-Neches Canal between Neches and Sabine Rivers to 150 feet.	
	Jul. 24, 1946 ²⁴	Improve Cow Bayou, Texas, by construction of a channel 100 feet wide and 13 feet deep extending from navigation channel in Sabine River to a point 0.5 mile above county bridge at Orangefield, Texas, with a turning basin.	H. Doc. 702, 79th Cong., 2nd Sess.
	Jul. 24, 1946	Improve Adams Bayou, Texas, to provide a channel 12 feet deep and 100 feet wide extending from 12-foot depth in Sabine River to first county highway bridge across bayou.	H. Doc. 626, 79th Cong., 2nd Sess.
	May 17, 1950	Deepen to 36 feet and widen to 400 feet the Sabine-Neches Canal near Port Arthur bridge; reconstruct Port Arthur Bridge and relocate Port Arthur field office.	H. Doc. 174, 81st Cong., 1st Sess.
	Sep. 3, 1954 ²⁵	Rectification of certain reaches of existing Sabine Pass Channel, Sabine-Neches Canal, and Neches River and Sabine River Channel; widen to 350 feet entrance channel to Port Arthur turning basins; widen curve at junction of Port Arthur and Sabine-Neches Canals; relocate and enlarge Sabine Pass anchorage basin to 34 by 1,500 by 3,000 feet; widen to 200 feet Sabine-Neches Canal from mouth of Neches River to mouth of Sabine River and Sabine River Channel to upper end of existing project at Orange, except for channel around Harbor Island at Orange; deepen to 30 feet Sabine River Channel from cutoff near Orange municipal slip to upper end of project, except around Harbor Island; and enlarge area at entrance to Orange municipal slip to provide a maneuvering basin.	S. Doc. 80, 83rd Cong., 2nd Sess.
	Oct. 23, 1962 ²⁶	Improve outer bar channel to 42 and 40 feet for all inland channels to Port Arthur and Beaumont; width of 500 feet in Port Arthur Canal and 400 feet in Neches River Channel to Beaumont with three turning points in Neches River; a channel, 12 by 125 feet, extending in Sabine River to Echo; and replace an obstructive bridge at Port Arthur, Texas. Deauthorization of uncompleted portion of channel between Port Arthur west turning basin and Taylors Bayou turning basin and enlargement of entrance channel to Port Arthur turning basins.	H. Doc. 553, 87th Cong., 2nd Sess. ¹
		TEXAS CITY CHANNEL, TX	
12.	Mar. 4, 1913	A channel 300 by 30 feet and construct a pile dike 28,200 feet long north to channel.	H. Doc. 1390, 62nd Cong., 3rd Sess.
	Jul. 3, 1930	A harbor 800 by 30 feet at Texas City, and construct a rubblemound dike.	H. Doc. 107, 71st Cong., 1st Sess.
	Aug. 30, 1935 ¹¹	Extension of rubblemound dike to shoreline.	Rivers and Harbors Committee Doc. 4, 73rd Cong., 1st Sess.
	Aug. 30, 1935	Deepen channel and harbor to 32 feet.	Rivers and Harbors Committee Doc. 46, 73rd Cong., 2nd Sess.
	Aug. 30, 1935	Deepen channel and harbor to 34 feet.	Rivers and Harbors Committee Doc. 62, 74th Cong., 1st Sess.

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
TRINITY RIVER AND TRIBUTARIES, TX (Continued)			
13.	Jul. 24, 1946	Modification of the project to provide for a channel 9 feet deep and 150 feet wide from the Houston Ship Channel near Red Fish Bar in Galveston Bay extending along the east shore of Trinity Bay to the mouth of the Trinity River at Anahuac, including protective spoil embankment on the bay side of the channel in lieu of the 9 by 200-foot channel in Galveston and Trinity Bays.	H. Doc. 634, 79th Cong., 2nd Sess.
	Oct. 23, 1962	Provides for the multiple-purpose Wallisville Reservoir, including a navigation lock in the Wallisville Dam at Channel Mile 28.30 and advancement of the Channel to Liberty from one mile below Anahuac (Mile 23.2) to the Texas Gulf Sulphur Company's slip at Channel Mile 35.8, and incorporation into existing project Anahuac Channel and mouth of Trinity River projects.	H. Doc. 215, 87th Cong., 1st Sess.
	Oct. 27, 1965	Reevaluation of navigation benefits.	H. Doc. 276, 89th Cong., 1st Sess.
	Jul. 30, 1983	Modified Wallisville Reservoir by reducing the size to 5,600 acres and confining the reservoir to east side of Trinity River.	PL 98-63
CORPUS CHRISTI BEACH, TX (RESTORATION PROJECT)			
16.	Dec. 15, 1970 (House Res.) Dec. 17, 1970 (Senate Res.)	Restoration and periodic nourishment of 1.4 miles of beach.	H. Doc. 415, 91st Cong., 2nd Sess. (Sec. 201, PL 89-298)
BUFFALO BAYOU AND TRIBUTARIES, TX			
17.	Jun. 20, 1938	Barker and Addicks Reservoirs, Texas.	H. Doc. 456, 75th Cong., 2nd Sess.
	Sep. 3, 1954	Clearing, straightening, enlarging and lining of Buffalo, Brays, and White Oak Bayous.	H. Doc. 250, 83rd Cong., 2nd Sess. ¹
	Oct. 27, 1965	Extend upper limits of White Oak Bayou upstream about 2.1 miles from BRI RR bridge to mouth of Cole Creek.	H. Doc. 169, 89th Cong., 1st Sess.
	Nov. 28, 1990	Flood damage reduction improvements and recreational development for the Houston, Texas urban area, divided into six separable elements – Brays, Greens, Hunting, Halls, Carpenters and Little White Oak Bayous. Flood control improvements consist of 75.3 miles of stream enlargement, 14 miles of stream clearing, 7 flood detention basins, 7 miles of diversion channels and environmental revegetation. Recreation features consist of 14.7 miles of trails, 502 picnic facilities, 12 group pavilions, 2 boat launching ramps, 10 restrooms, play-grounds, exercise stations and parking facilities.	Sec. 101, PL 101-640
	Oct. 12, 1996	Authorizes non-Federal interests to undertake flood control projects in the United States, subject to obtaining any permits required pursuant to Federal and State laws in advance of actual construction. For the purpose of demonstrating the potential advantages and effectiveness of non-Federal implementation of flood control projects, the Secretary shall enter into agreements pursuant to this section with non-Federal interests for development of the following Buffalo Bayou projects: Brays Bayou, Hunting Bayou, and White Oak Bayou.	Sec. 211, PL 104-303

GALVESTON, TEXAS, DISTRICT

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
		BUFFALO BAYOU AND TRIBUTARIES, TX (Continued)	
17.	Oct. 12, 1996	The non-Federal interest for the Buffalo Bayou and tributaries authorized flood control projects, may be reimbursed by up to \$5,000,000 or may receive a credit of up to \$5,000,000 toward required non-Federal project cost-sharing contributions for work performed by the non-Federal interest at each of the following locations if such work is compatible with 1 or more of the following authorized projects: White Oak Bayou, Brays Bayou, Hunting Bayou, Garners Bayou (not authorized), and the Upper Reach of Greens Bayou.	Sec 350, PL 104-303
	Oct. 12, 1996	During any evaluation of economic benefits and costs that occurs after October 12, 1996, the Secretary shall not consider flood control works constructed by non-Federal interests within the drainage area of such projects prior to the date of such evaluation in the determination of conditions existing prior to construction of the following authorized projects: Buffalo Bayou Basin, Buffalo Bayou and Tributaries (Brays, Greens, Hunting, Halls, Little White Oak, and Carpenters Bayous), and Cypress Creek.	Sec. 575, PL 104-303
		CLEAR CREEK, TX	
19.	Aug. 13, 1968	Channel enlargement and rectification from upper end of Clear Lake at Mile 3.8 to improved channel Mile 34.8. ²⁸	H. Doc. 351, 90th Cong., 2nd Sess.
	Nov. 17, 1986	Modified local cooperation requirements of the 1968 authorization.	Sec. 1001, PL 99-662
		CYPRESS CREEK, TX	
20.	Nov. 17, 1988	Enlargement and rectification of lower 29.4 miles of Cypress Creek channel and recreational development.	Sec. 3, PL 100-676
		LOWER RIO GRANDE BASIN, TX	
21.	Nov. 17, 1986	Channel improvements to provide drainage protection for the area in Hidalgo and Willacy Counties north of U.S. Highway 83, and for the area between U.S. Highway 83 and the Rio Grande in Hidalgo County; and to provide flood protection for the cities of McAllen, Edinburg, Raymondville, Edcouch, La Villa, and Lyford.	Sec. 401, PL 99-662
		SIMS BAYOU, TX	
22.	Nov. 17, 1986	Enlargement and rectification, with appropriate erosion control measures of 19.31 miles of Sims Bayou; environmental measures and riparian habitat along entire alignment, and recreational development.	Sec. 401, PL 99-662
	Sep. 29, 1989	Amended the Water Resources and Development Act (WRDA) of 1986 authorization as project cost estimate had exceeded limit established in Section 902 of WRDA 1986.	Sec. 103, PL 101-101

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-B AUTHORIZING LEGISLATION

See Section in Text	Date Authorizing Act	Project and Work Authorized	Documents
	¹ Contains latest published maps.		
	² Extension of north jetty 1,950 feet and south jetty 1,265 feet considered inactive.		
	³ Dredging 2,000 by 650-foot northerly extension of inner basin deauthorized.		
	⁴ Included in Public Works Administration program September 6, 1933 and February 16, 1935.		
	⁵ West leg of Wye junction with main channel deauthorized.		
	⁶ Construction of lock in diversion dam at local expense considered inactive.		
	⁷ Dredging upper .5 mile of channel to vicinity of Stauffer Chemical plant was deauthorized under Sec. 12 of PL 93-251. Included in Public Works Administration program September 6, 1933.		
	⁸ Dredging 43rd to 51st Streets was deauthorized under Sec. 12 of PL 93-251.		
	⁹ Deauthorized under Sec. 12 of PL 93-251.		
	¹⁰ Deepening 43rd to 57th Streets was deauthorized under Sec. 12 of PL 93-251.		
	¹¹ Previously authorized September 6, 1933 by Public Works Administration.		
	¹² H. Doc. 230, 76th Cong., 1st Sess. and project documents contain latest published maps.		
	¹³ Dredging upper 3.5 miles was deauthorized under Sec. 12 of PL 93-251.		
	¹⁴ Dredging upper 5 miles was deauthorized under Sec. 1001 of PL 99-662.		
	¹⁵ Inactive.		
	¹⁶ Portion of 16-foot by 150-foot channel from Sabine River to Houston Ship Channel is inactive. Relocation of channel		
		in Matagorda Bay deauthorized under Sec. 12 of PL 93-251.	
		¹⁷ The 9 feet by 100 feet channel from Mile 8.2 to Mile 13.2 in Chocolate Bayou was deauthorized under Sec. 1001 of PL 99-662.	
		¹⁸ Construction of pile dike was deauthorized under Sec. 12 of PL 93-251.	
		¹⁹ Hill Street Bridge to mouth of White Oak Bayou was deauthorized under Sec. 12 of PL 93-251.	
		²⁰ Deepening channel to 40 feet from Southern Pacific Slip to Brady Island was deauthorized under Sec. 12 of PL 93-251.	
		²¹ The 12-foot channel from mile 1.65 to mile 2.81 deauthorized under Sec. 12 of PL 93-251.	
		²² Complete widening of channel between Port Arthur west turning basin and Taylors Bayou turning basin deauthorized by 1962 R&H Act.	
		²³ Complete deepening of channel between Port Arthur west turning basin and Taylors Bayou turning basin deauthorized by 1962 R&H Act.	
		²⁴ Channel extension above Cow Bayou turning basin near Orangefield was deauthorized under Sec. 12 of PL 93-251.	
		²⁵ Widening to 350 feet entrance channel to Port Arthur turning basin deauthorized by 1962 R&H Act.	
		²⁶ The 12-foot channel in Sabine River from Orange to Echo, Texas deauthorized under Sec. 12 of PL 93-251.	
		²⁷ Jetty extension was deauthorized under Sec. 1001 of PL 99-662.	
		²⁸ Portion of project upstream of Brazoria/Galveston County line, approximately mile 18.5, in inactive category.	

GALVESTON, TEXAS, DISTRICT

TABLE 40-C OTHER AUTHORIZED NAVIGATION PROJECTS

Project	For Last Full Report See Annual Report For	Cost to September 30, 1998	
		Construction	Operation and Maintenance
Aquatic Plant Control (1958 and 1962 River and Harbor Acts) ⁹	1967	38,252 ²	—
Bastrop Bayou, TX ³	1931	9,920	27,129
Cedar Bayou, TX	1996	681,263 ⁸	3,461,546 ⁹
Channel to Port Bolivar, TX	1995	133,925 ⁴	1,231,061 ⁵
Clear Creek and Clear Lake, TX	1982	66,934	537,139
Corpus Christi, TX, Channel to Navy Seaplane Base Encinal Peninsula	1968	1,194,344	26,467
Dickinson Bayou, TX	1954	33,942	57,553
East Bay (Hanna Reef), TX ⁶	1922	2,476	847
Greens Bayou Bridges, TX	1993	450,000	—
Johnson Bayou, LA ¹	1933	2,261	54,042
Little Bay, TX ⁷	1979	—	252,728
Neches River and Trib., Salt Water Barrier at Beaumont, TX (Advance Engineering & Design)	1984	1,503,843	—
Oyster Creek, TX	1922	6,942	7,556

¹ Channel adequate for existing commerce.
² Excludes \$1,672 work contribution.
³ Widening from 60 feet to 100 feet at 4-foot depth was deauthorized under Sec. 12 of PL 93-251.
⁴ Includes \$48,711 for previous projects.
⁵ Includes \$46,101 for previous projects.
⁶ Inactive category for maintenance.

⁷ Aransas County Navigation District, Rockport, TX, constructed project as authorized by 1950 River and Harbor Act (H. Doc. 114, 81st Cong., 1st Sess.) in 1955 under Department of Army permit.
⁸ Includes \$39,087 for previous projects. In addition \$25,000 expended from contributed funds.
⁹ Includes \$69,784 for previous projects.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-D OTHER AUTHORIZED FLOOD CONTROL PROJECTS

Project	For Last Full Report See Annual Report For	Cost to September 30, 1998	
		Construction	Operation and Maintenance
Arroyo Colorado, Rio Hondo, TX	1986	201,300	—
Baytown, TX ¹	1980	245,400	—
Buffalo Bayou at Piney Point, TX	1996	473,800 ⁹	—
Colorado River, Matagorda, TX ²	1963	273,757	—
Falfurrias, TX	1995	103,454	—
Freeport and Vicinity, Texas, Hurricane-Flood Protection ²	1984	29,285,042 ³	—
Guadalupe River at Victoria, TX	1996	532,187 ¹⁰	—
Guadalupe River (Remove Log Jams), TX ²	1978	505,749	—
Highland Bayou, TX ²	1984	12,254,390	—
Kirbyville, TX ²	1993	1,484,613 ⁴	—
Lavaca-Navidad River, TX:			
Hallettsville Project	1961	256,043	—
General channel project	1952	21,086	—
Mill Creek, TX ¹	1952	24,753	—
Port Arthur and Vicinity Hurricane-Flood Protection, TX	1997	61,400,292 ¹¹	—
San Diego Creek, Alice, TX ²	1963	135,175	—
State Highway 111 Bridge, Lake Texana, TX	1995	214,155 ⁵	—
Taylor's Bayou, TX	1997	37,413,209 ¹²	—
Texas City and Vicinity, Texas, Hurricane-Flood Protection ²	1993	38,882,400 ⁷	—
Tranquitas Creek, Kingsville, TX ²	1956	130,239	—
Three Rivers, TX ²	⁶	5,835,927	—
Upper White Oak Bayou, TX	1989	972,300	—
U.S. 190 Bridge, Sabine River, Merryville, LA ²	1993	500,000 ⁸	—
Vince and Little Vince Bayous, TX ²	1993	19,307,100	—

¹ Inactive.

² Completed.

³ In addition, \$8,695,438 expended from contributed funds, \$1,126,905 estimated value of contributed lands, and \$2,726,446 for relocations by local interests.

⁴ In addition, \$1,484,613 expended from contributed funds, estimated value of \$200,096 for contributed lands, and \$202,456 for relocations by local interests.

⁵ In addition, \$71,370 expended from contributed funds.

⁶ See Annual Report for 1983, Fort Worth District, page 16-12.

⁷ In addition, \$14,396,307 expended from contributed funds, estimated value of \$1,224,219 for contributed lands, and contributed work in the amount of \$1,070,806 by local interests. Work performed at 100% Local Sponsor expense was in the amount of \$320,347.

⁸ In addition, \$237,792 expended from contributed funds.

⁹ In addition, \$92,920 expended from contributed funds.

¹⁰ In addition, \$480,888 expended from contributed funds.

¹¹ In addition, \$16,976,675 expended from contributed funds.

¹² In addition, \$12,340,997 expended from contributed funds.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-F DEAUTHORIZED PROJECTS

Project	For Last Full Report See Annual Report For	Date and Authority	Federal Funds Expended	Contributed Funds Expended
Brazos River, TX, Velasco to Old Washington	1924	Sec. 1001 of PL 99-662 17 Nov 1986	216,989 ¹	223,010
Liberty Local Protection Project, TX	1971	Sec. 1001 of PL 99-662 17 Nov 1986	98,517	-----
Peyton Creek, TX	1975	Sec. 1001 of PL 99-662 17 Nov 1986	66,377	-----
Sabine River and Tributaries, TX (Echo to Morgan Bluff)	1971	Sec. 1001 of PL 99-662 17 Nov 1986	-----	-----

¹ Includes \$123,676 for previous projects.

GALVESTON, TEXAS, DISTRICT

TABLE 40-G TOTAL COST OF EXISTING PROJECTS

See Section in Text	Project	Funds	New Work	Maintenance	Rehabilitation	Total Cost to Sep. 30, 1998
2.	Brazos Island Harbor, TX	Regular	24,418,127	57,393,804	2,170,080	83,982,011
		Public Works	2,848,560	0	0	2,848,560
		Contributed	10,500,076	1,352,092	0	11,852,168
		Total cost of project	37,766,763	58,745,896	2,170,080	98,682,739
3.	Corpus Christi Ship Channel, TX	Regular	75,775,642	117,981,642	3,576,684	197,333,968
		Public Works	324,287	0	0	324,287
		Contributed	6,143,152	1,057,677	0	7,200,829
		Total	82,243,849	119,039,319	3,576,684	204,859,852
		Value of useful work performed	1,716,695	0	0	1,716,695
		Contributed land	276,720	0	0	276,720
		Total cost of project	84,237,264	119,039,319	3,576,684	206,853,267
5.	Freeport Harbor, TX	Regular	64,416,932	73,805,545	8,935	138,231,412
		Public Works	116,575	0	0	116,575
		Contributed	20,811,568	229,311	0	21,040,879
		Total	85,340,506	74,034,856	8,935	159,384,297
		Value of useful work performed	360,249	0	0	360,249
		Total cost of project	85,700,755	74,034,856	8,935	159,744,546
6.	Galveston Harbor and Channel, TX	Regular				
		Channel	11,920,187	111,241,926	7,373,356	130,535,469
		Seawall	8,754,209	512,163	595,973	9,862,345
		Public Works	0	13,121	0	13,121
		Contributed	3,648,932	2,963,102	0	6,612,034
		Total cost of project	24,323,328	114,730,312	7,969,329	147,022,969
7.	Gulf Intracoastal Waterway between Apalachee Bay, FL and the Mexican Border	Regular	123,563,860	429,156,085	3,398,500	556,118,445
		Public Works	466,477	0	0	466,477
		Inland WW. Trust Fund	28,607,566	0	2,958,225	31,565,791
		Contributed	4,920,904	1,120,477	0	6,041,381
		Total	157,558,807	430,276,562	6,356,725	594,192,094
		Value of useful work performed	395,000	0	0	395,000
		Contributed land	139,776	0	0	139,776
		Total cost of project	158,093,583	430,276,562	6,356,725	594,726,870
9.	Houston Ship Channel, TX	Regular	29,042,293	182,261,387	0	211,303,680
		Public Works	2,612,932	0	0	2,612,932
		Contributed	1,382,760	426,583	0	1,809,343
		Total cost of project	33,037,985	182,687,970	0	215,725,955
11.	Sabine-Neches Waterway, TX	Regular	49,592,331	224,363,772	0	273,956,103
		Public Works	1,363,652	0	0	1,363,652
		Contributed	2,103,435	5,169,188	0	7,272,623
		Total	53,059,418	229,532,960	0	282,592,378
		Value of useful work performed	32,000	0	0	32,000
		Contributed land	116,760	0	0	116,760
Total cost of project	53,208,178	229,532,960	0	282,741,138		
12.	Texas City Channel, TX	Regular	14,653,853	29,171,995	726,158	44,552,006
		Public Works	136,296	0	0	136,296
		Contributed	1,023,819	0	0	1,023,819
		Total cost of project	15,813,968	29,171,995	726,158	45,712,121
13.	Trinity River and Tributaries, TX	Regular	68,555,945	21,351,065	0	89,907,010
		Contributed	66,000	0	0	66,000
		Total cost of project	68,621,945	21,351,065	0	89,973,010

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-H CHANNEL DIMENSIONS

See Section in Text Project	Section of Waterway	Adopted Project Dimensions		Improved Project Dimensions			
		Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Length Feet Miles	
2. Brazos Island Harbor, TX	Outer Bar and Jetty Channel	44	400	44	400	2.5	
	Padre Island to Long Island	42	250	42	250	2.1	
	Long Island to Goose Island	42	250	42	250	9.6	
	Goose Island to Turning Basin Extension	42	300	42	300	3.2	
	Turning Basin Extension	42	325	42	375	1.3	
	Brownsville Turning Basin	36	1,200	36	660-1,200	2,670 0.5	
	Port Isabel Channel via East Turnout	36	200	36	200	1.4	
	West Wye, from Brownsville Channel	36	200	36	200	0.8	
	Port Isabel Turning Basin	36	200-1,000	36	200-1,000	1,300 0.2	
	Fishing Boat Harbor:						
	West Basin	15	370-305	15	370-305	1,470 0.3	
	Middle Basin	15	370-305	15	370-305	1,200 0.2	
	East Basin	15	370	15	370	1,470 0.3	
	Connecting Channel	15	270	15	265	1,230 0.2	
	Entrance Channel	15	100	15	100	770 0.1	
	3. Corpus Christi Ship Channel, TX	Aransas Pass Outer Bar Channel	47	700	47	700	1.8
		Aransas Pass Jetty Channel	45	600-730	45	600	1.0
		Inner Basin at Harbor Island Channel to Port Aransas	45	730-1,720	45	Irregular	1,550 -
		Port Aransas Turning Basin	12	100-150	12	100	0.1
Port Aransas Turning Basin		12	200-400 ²	12	200 ²	200 -	
Anchorage Basin at Port Aransas		12	300-400	12	300-400	900 0.2	
Inner Basin to Mile 8.5		45	600-500	45	600-500	8.5	
Mile 8.5 to LaQuinta Junction		45	500	45	500	3.6	
LaQuinta Junction to Corpus Christi Turning Basin		45	400	40-45	400	8.6	
Corpus Christi Turning Basin		45	800	45	1,000	5,423 1.0	
Industrial Canal		45	400	45	400	1.1	
Avery Point Turning Basin Channel to Chemical		45	975	45	1,000	1,150 0.2	
Turning Basin		45	400	45	350	0.6	
Chemical Turning Basin		45	1,200 ⁵	45	1,050 ⁵	1,690 0.3	
Tule Lake Channel		45	300	40	200	3.1	
Tule Lake Turning Basin		45	1,200	40	900	1,000 0.2	
Viola Channel		45	300-350	40	200-250	1.8	
Viola Turning Basin		45	1,200	40	700-900	1,000 0.2	
Channel to LaQuinta		45	300-400	45	300-400	5.6	
LaQuinta Turning Basin		45	1,200	45	1,200	800 0.1	
Turning Point at LaQuinta Channel Junction		45	1,250 ³	45	1,250 ³	1,250 0.2	
Jewel Fulton Canal		12	100	12	100	- 0.8	
Jewel Fulton Turning Basin		12	200	12	200	400 0.1	
Mooring Area at Ingleside:							
Mooring Area (a)		45	150	45	150	- 0.8	
Mooring Area (b)		45	150	-	-	- -	
4. Double Bayou, TX		Double Bayou Channel:					
		Mouth to 7-foot contour in Trinity Bay	7	125	7	125	- 3.9
		West Fork	7	100	7	100	- 2.0

GALVESTON, TEXAS, DISTRICT

TABLE 40-H

CHANNEL DIMENSIONS

See Section in Text	Project	Section of Waterway	Adopted Project Dimensions		Improved Project Dimensions				
			Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Length Feet Miles		
5.	Freeport Harbor, TX	Outer Bar Channel	47	400	47	300	- 3.0		
		Jetty Channel	45	400	45	200	- 0.8		
		Quintana Turning Basin	45	750 ⁴	-	-	- -		
		Channel to Brazosport Turning Basin	45	400	45	390	- 1.2		
		Brazosport Turning Basin	45	1,000 ⁴	45	1000	667 0.1		
		Channel to Upper Turning Basin	45	285-375	45	285-375	- 1.4		
		Upper Turning Basin	45	1,200 ⁴	45	1200 ⁴	800 0.1		
		Channel to Stauffer Chemical Plant	30	200	30	200	- 1.1		
		Stauffer Turning Basin	30	500	25	500	500 0.1		
		Brazos Harbor Channel	36	200	30	200	- 0.5		
		Brazos Harbor Turning Basin	36	750 ⁴	30	750 ⁴	675 0.1		
		6.	Galveston Harbor and Channel, TX	Entrance Channel	52	800	42	800	- 4.7
				Outer Bar Channel	52	800	42	800	- 1.7
				Inner Bar Channel	50	800	40	800	- 3.2
				Anchorage Basin	36	2,875 ¹	36	2,875	- 1.8 ¹
Bolivar Roads Channel	50			800	40	800	- 1.0		
Bolivar Roads Channel to 43rd St.	40			1,125	40	1,125	- 3.9		
9.	Houston Ship Channel, TX			Bolivar Roads to Morgan Point	40	400	40	400	- 26.2
		Morgan Point to Boggy Bayou	40	400	40	400	- 12.8		
		Boggy Bayou to Greens Bayou	40	300	40	300	- 2.4		
		Greens Bayou to Sims Bayou	40	300	40	300	- 5.3		
		Hunting Bayou Turning Point	40	900-1,000 ⁹	40	948-1,000 ⁹	1,375 -		
		Clinton Island Turning Basin	40	800 ⁹	40	965-1,070 ⁹	1,592 -		
		Sims Bayou to Southern Pacific Slip	40	300	40	300	- 0.6		
		Southern Pacific Slip to Houston Turning Basin	36	300	36	300	- 2.9		
		Houston Turning Basin	36	400-1,000	36	400-1,000	3,100 0.6		
		Upper Turning Basin	36	150	36	150	1,000 0.2		
		Brady Island Channel	10	60	10	60	- 0.9		
		Barbour Terminal Channel	40	300	40	300	- 3.1		
		Turning Basin	40	2,000	40	2,000	2,000 0.4		
		Bayport Ship Channel	40	300	40	300	- 3.8		
		Turning Basin	40	1,600	40	1,600	1,000 0.3		
		Anchorage Area	40	150	40	150	- -		
		Five-Mile Cut Channel	8	125	8	125	- 1.9		
		Light-Draft Channel:							
		Upper Turning Basin to Jensen Drive	10	60	10	60	- 4.1		
		Turkey Bend Channel	10	60	10	60	- 0.8		
		Greens Bayou Channel:							
		Mile 0 to Mile 0.36	40	175	40	175	- 0.3		
Mile 0.36 to Mile 1.57	15	100	15	100	- 1.3				

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-H CHANNEL DIMENSIONS

See Section in Text	Project	Section of Waterway	Adopted Project Dimensions		Improved Project Dimensions			
			Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Length Feet	Length Miles
10.	Matagorda Ship Channel, TX	Outer Bar and Jetty Channel	38	300	38	300	-	3.2
		Channel to Point Comfort	36	300-200 ⁶	36	300-200 ⁶	-	20.9
		Approach Channel to Turning Basin	36	200-300	36	200-300	-	1.1
		Turning Basin	36	1,000	36	1,000	1,000	0.2
		Channel to Port Lavaca	12	125	12	125	-	4.1
		Lynn Bayou Turning Basin	12	27-340	12	27-340	532	0.1
		Channel to Harbor of Refuge	12	125	12	125	-	1.9
		North-South Basin	12	300	12	300	1,682	0.3
		East-West Basin	12	250	12	250	1,750	0.3
		Channel to Red Bluff	6	100	6	100	-	20.2
11.	Sabine-Neches Waterway, TX	Sabine Bank Channel	42	800	42	800	-	14.7
		Sabine Pass Outer Bar Channel	42	800	42	800	-	3.4
		Sabine Pass Jetty Channel	40	800-500	40	800-500	-	4.1
		Sabine Pass Anchorage Basin	40	1,500	40	1,500	3,000	-
		Sabine Pass Channel	40	500	40	500	-	5.6
		Port Arthur Canal	40	500	40	500	-	6.2
		Entrance to Port Arthur Turning Basins	40	275-678	40	275-678	-	0.3
		Port Arthur East Turning Basin	40	420	40	370-547	1,765	0.3
		Port Arthur West Turning Basin	40	600	40	350-550	1,610	0.3
		Channel connecting Port Arthur West and Taylors Bayou Turning Basins	40	200-250	40	200-250	-	0.6
		Taylors Bayou Turning Basin	40	150-1,000	40	90-1,233	3,470	0.7
		Sabine-Neches Canal, Port Arthur Canal to Neches River	40	400	40	400	-	11.2
		Turning Point at Mile 19.5	40	900 ⁴	40	900 ⁴	-	⁸
		Neches River, Mouth to Maneuvering Area	40	400	40	400	-	18.3
		Turning Basin	40	1,000 ⁴	40	1,000	700	⁸
		Turning Point, Mile 31.1	40	1,000 ⁴	40	1,000	930	⁸
		Turning Point, Mile 36.6	40	1,000 ⁴	40	1,300	1,530	⁸
		Turning Point, Mile 40.3	40	1,000 ⁴	40	1,300	1,530	⁸
		Channel Extension, Mile 40.3	36	350	36	350	1,265	0.2
		Maneuvering Area at Beaumont Turning Basin	40	Irregular	40	Irregular	1,300	0.2
		Beaumont Turning Basin	34	500	34	160-535	1,500	0.3
		Beaumont Turning Basin Extension	34	350	34	300	-	0.4
		Beaumont Turning Basin Extension to End of Project Channel Vicinity	30	200	30	200	-	0.7
		Bethlehem Steel Company Sabine-Neches Canal, Neches River to Sabine River	30	200	30	200	-	4.4
		Sabine River Channel, Mouth to Foot of Green Ave.	30	200	30	200	-	9.5
		Orange Turning Basin	30	Irregular	30	Irregular	1,550	0.3
		Orange Municipal Slip	30	200	30	150-200	2,435	0.5
		Old Channel Around Harbor Island	25	150-200	25	150-200	-	2.4
		Channel to Echo ⁷	12	125	-	-	-	-
		Adams Bayou	12	100	12	100	-	1.7
Cow Bayou	13	100	13	100	-	7.0		
Orangefield Turning Basin	13	300	13	300	500	0.1		

GALVESTON, TEXAS, DISTRICT

TABLE 40-H CHANNEL DIMENSIONS

See Section in Text	Project	Section of Waterway	Adopted Project Dimensions		Improved Project Dimensions		
			Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Length Feet Miles
12.	Texas City Channel, TX	Texas City Channel	40	400	40	400	- 6.8
		Turning Basin	40	1,000-1,200	40	1,000	4,253 .8
		Industrial Barge Canal: ¹⁰					
		Channel from Texas City					
		Turning Basin to Mile 1.7	40	300-400	-	-	- -
		Turning Basin	40	1,000	-	-	- -
13.	Trinity River Channel, TX	Multiple Purpose Channel					
		to Fort Worth ¹¹	12	200	-	-	- -
		Channel to Liberty ¹²	9	150	6	100	- 41.4
		Anahuac Channel	6	100	6	100	- 5.8

¹ Average.

² Includes 100-foot channel width.

³ Includes 450-foot channel to Corpus Christi.

⁴ Diameter.

⁵ Includes 350-foot channel width.

⁶ 300-foot width through Matagorda Peninsula.

⁷ Deauthorized.

⁸ Included in channel length.

⁹ Includes 300-foot channel width.

¹⁰ Channel dredged 34 feet deep by 250-200 feet wide by 9,908 feet long and basin 34 feet deep by 1,000 feet wide by 1,150 feet long by local interests.

¹¹ Not constructed.

¹² 9-foot by 150-foot channel completed from Houston Ship Channel to a point one mile below Anahuac, a distance of 23 miles. Upper end not connected to river channel to prevent salt intrusion into river. River channel maintained at 6 by 100-foot from mouth to Liberty, Texas.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998
GULF INTRACOASTAL WATERWAY
APALACHEE BAY, FLORIDA TO MEXICAN BORDER
EXISTING PROJECT DIMENSIONS, PROVIDED
FOR IN TRIBUTARY CHANNELS

TABLE 40-I

Tributary Channel	Adopted Project Dimensions		Improved Project Dimensions			
	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Feet	Length Miles
Offats Bayou						
Main Channel	12	125	12	125	—	2.3
West Wye	12	125	12	125	2,200	0.4
Chocolate Bayou Channel	1					
12-Foot Channel via						
East Turnout	2	125	12	125	—	8.2
West Turnout	3	125	12	125	—	0.8
9-Foot Channel	4	100	—	—	—	—
Turning Basin	9	600	—	—	—	—
San Bernard River Channel	5	100	9	100	—	26.0
Colorado River Channel	6	100	9	100	—	15.5
Turning Basin	9	400	9	400	500	0.1
Siltng Basin	9	150	9	150	—	1.0
Mouth of Colorado River	7					
Navigation Channel, GIWW to Gulf	15-12	100-200-300	15-20	100-200-300	—	—
Turning Basin at Matagorda	12	350	—	—	—	—
Channel to Palacios	8	125	12	125	—	16.1
Turning Basin No. 1	12	200	12	200	635	0.1
Turning Basin No. 2	12	300	12	300	1,130	0.2
Connecting Channel	12	150-480	12	130-400	—	0.1
Channel to Barroom Bay	9	60	—	—	—	—
Channel to Victoria Main Channel via						
East Turnout	12	125	12	125	—	34.8
Turning Basin	12	600(AVG)	9	500(AVG)	800(AVG)	0.1
West Turnout Channel	12	125	12	125	—	0.8
Channel to Seadrift via South Turnout	9	100	9	100	—	2.0
Turning Basin	9	250	9	200	230	—
North Turnout Channel	9	100	9	100	—	0.5
Harbor of Refuge at Seadrift Channel	9	100	—	—	—	—
Basin	9	200	—	—	—	—
Channel to Rockport	9	200	9	200	—	2.1
Turning Basin	9	475	9	342(AVG)	1,225	0.2
Channel to Aransas Pass	14	175	14	125-175	—	6.1
Turning Basin	14	300	14	300	2,212	0.4
Channel to Conn Brown Harbor	14	125	14	0.2	125	—
Conn Brown Harbor	14	300	14	300	1,800	0.3
Channel to Port Mansfield	10					
Entrance Channel	16	250	16	250	—	0.8
Approach Channel to Hopper Dredge						
Turning Basin	16	100	16	100	—	0.4
Hopper Dredge Turning Basin	16	300	16	300	300	0.1
Channel Across Padre Island and						
Laguna Madre	14	100	14	100	—	7.7
Turnout Channels, East Side of Main						
Channel, GIWW						
North Turnout	12	100	12	100	—	0.6
South Turnout	12	100	12	100	—	0.6
Channel West Side of Main Channel,						
GIWW, to P.T. of Turnout Channels	14	100	14	100	—	0.6
Turnout Channels, West Side of Main						
Channel, GIWW						
North Turnout	12	200	12	200	—	0.6
South Turnout	12	200	12	200	—	0.6
Channel from P.T. of Turnout Channels to						
Approach						
Channel to Main Turning Basin	14	125	14	125	—	0.6
Approach Channel to Main Turning Basin	14	200	14	200	—	0.3
Main Turning Basin	14	400	14	400	1,250	0.2
Turning Basin Extension	14	1,000	14	1,000	580	0.1
Small Craft Basin	8	160	8	160	860	0.2
Shrimp Basin	12	350	12	350	1,450	0.3

**GALVESTON, TEXAS, DISTRICT
GULF INTRACOASTAL WATERWAY
APALACHEE BAY, FLORIDA TO MEXICAN BORDER
EXISTING PROJECT DIMENSIONS, PROVIDED
FOR IN TRIBUTARY CHANNELS**

TABLE 40-I

Tributary Channel	Adopted Project Dimensions		Improved Project Dimensions			
	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Depth in Feet (Below Mean Low Tide)	Bottom Width (Feet)	Feet	Length Miles
Channel to Harlingen via South Turnout from Main Channel, GIWW	12	125	12	125 ¹¹	-	25.8 ¹²
Turning Basin near Rio Hondo	12	400	12	400	500	0.1
North Turnout from Main Channel	12	200	12	200	-	0.7
Port Isabel Side Channels						
Main Channel	12	125	12	125-90	-	0.6
Main Channel	12	233-60	12	233-60	-	0.4
South Leg	12	125	12	125	-	0.2
Port Isabel Small Boat Harbor						
Entrance Channel	7	75	7	75	-	1.4
Harbor Channel	6	50	6	50	-	0.3
Boat Basin	6	Variable	6	72-501	1,308	0.2

¹ Includes the construction of a salt water barrier at Mile 16.9.

² Constructed 10 feet deep by 100 feet wide by local interests. East turnout channel constructed 150 feet wide.

³ Constructed by local interests.

⁴ Authorized to mile 13.2. Mile 8.2 to Mile 13.2 was deauthorized.

⁵ Authorized to Mile 31 above mouth (channel mile 29.41). Upper 3.4 miles was deauthorized under Section 12 of PL 93-251.

⁶ Includes a discharge channel from Matagorda, Texas, to the gulf which was dredged by local interests in 1939. (Maintenance will be discontinued upon completion of improvements authorized by R&H Act of 1968.)

⁷ Authorized by R&H Act of 1968. Also provides for a dam across the present discharge channel, a new 250-foot wide by 20 to 23-feet deep discharge channel into Matagorda Bay, and a 15-foot by 200-foot wide entrance channel with parallel jetties from the gulf shoreline into the Gulf of Mexico. East jetty to be 3,500 feet long and west jetty 2,900 feet long.

⁸ Includes two protective breakwaters at entrance to turning basins.

⁹ In the inactive category for maintenance.

¹⁰ Also provides for two stone jetties at the gulf entrance about 1,000 feet apart. (North jetty constructed 2,300 feet long and south jetty constructed 2,270 feet long.)

¹¹ South turnout is 200 feet wide.

¹² Authorized to mile 31. Mile 25.8 to Mile 31 was deauthorized.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 1998

TABLE 40-J DREDGING OPERATIONS

See Section in Text	Project	Description	Period	Cubic Yards of Materials	FY 98 Cost
2.	Brazos Island Harbor, TX (Maintenance)	Dredging Brownsville Ship Channel	June 16, 1998 to October 23, 1998	1,593,894	\$1,739,623
3.	Corpus Christ Ship Channel, TX (Maintenance)	Dredging Beacon 82 thru Viola Turning Basin	May 13, 1998 to September 30, 1998	1,327,700	\$3,302,802 ¹
5.	Freeport Harbor, TX (New Work)	Dredging Freeport Harbor - Bend Easing (45' project)	October 1, 1997 to June 28, 1998	1,178,668	\$2,379,010 ²
	(Maintenance)	Emergency Dredging Freeport Entrance Channel and Jetty Channels	October 1, 1997 to April 3, 1998	1,053,157	\$1,507,194
		Dredging Inside Channels, Freeport Harabor	August 31, 1998 to September 30, 1998	0	\$100,000 ³
		Dredging Entrance and Jetty Channels	September 23, 1998 September 30, 1998	711,000	\$300,000
6.	Galveston Harbor and Channel, TX (Maintenance)	Dredging Bolivar Roads to Pier B and Coast Guard Facility	October 1, 1997 to May 27, 1998	5,148,722	\$4,001,112 ⁴
7.	Gulf Intracoastal Waterway, TX				
	Channel to Victoria (New Work)	Dredging Channel to Victoria Stations 600+00 to 835+00	February 6, 1998 to September 30, 1998	144,460	\$1,159,628 ⁵
	(Maintenance)	Dredging Channel to Victoria	October 1, 1997 to July 19, 1998	963,000	\$5,201,665
	GIWW- Main Channel (Maintenance)	Dredging Port Isabel to Arroyo Colorado	July 8, 1998 to September 30, 1998	512,000	\$1,870,565
		Dredging GIWW Main Channel across Aransas Bay	July 20, 1998 to September 30, 1998	914,480	\$598,559
		Dredging Brazos River Crossing to Boggy Bayou	July 21, 1997 to June 29, 1998	219,877	\$480,632
		Emergency Dredging Colorado River and Basins	October 1, 1997 to January 27, 1998	200,386	\$537,139
	Channel to Harlingen (Maintenance)	Dredging Channel to Harlingen and Port Isabel Small Boat Harbor Channel	October 1, 1997 to July 14, 1998	810,000	\$1,820,796 ⁶
	Mouth of Colorado River (Maintenance)	Dredging Mouth of Colorado River	October 1, 1997 to June 29, 1998	238,790	\$886,293
8.	Houston-Galveston Navigation Channels, TX (New Work)	Dredging Entrance Channel	August 7, 1998 to September 30, 1998	0	\$500,000 ⁷

GALVESTON, TEXAS, DISTRICT

TABLE 40-I DREDGING OPERATIONS

See Section in Text	Project	Description	Period	Cubic Yards of Materials	FY 98 Cost
9.	Houston Ship Channel, TX (Maintenance)	Dredging Morgans Point to Carpenter Bayou	October 1, 1997 to July 14, 1998	1,979,017	\$2,969,586
		Dredging Sims Bayou Turning Basin and Light Draft Channel	October 1, 1997 to April 20, 1998	686,293	\$4,157,719
		Dredging Redfish Reef to Morgan Point	December 24, 1997 to May 20, 1998	2,619,308	\$3,949,561
10.	Matagorda Ship Channel, TX (Maintenance)	Dredging Matagorda Peninsula to Point Comfort	October 23, 1997 to September 30, 1998	3,007,300	\$1,802,117
11.	Sabine-Neches Waterway, TX (Maintenance)	Dredging Sabine-Neches Canal	January 9, 1998 to April 27, 1998	2,072,000	\$3,635,954 ⁸
		Dredging Sabine Pass, Jetty Channel and Outer Bar Channel	July 30, 1998 to October 7, 1998	1,785,240	\$1,962,720
12.	Texas City Channel, TX (Maintenance)	Dredging Texas City Channel Turning Basin Industrial Canal	September 17, 1998 to September 30, 1998	0	\$50,000 ⁹
13.	Trinity River and Tributaries, TX (Maintenance)	Emergency Dredging Channel to Liberty, Smith Point	July 21, 1998 to September 30, 1998	70,000	\$100,000

¹ In addition \$66,500 expended from contributed funds for borrow excavation.

² In addition \$1,297,118 expended from contributed funds.

³ Partial cost incurred in FY 98 for mobilization.

⁴ In addition \$78,545 expended from U.S. Coast Guard funds and \$640,519 expended from contributed funds for constructing levees for the Port of Galveston.

⁵ In addition \$128,848 expended contributed funds.

⁶ In addition \$28,140 expended from contributed funds.

⁷ An estimated expense for mobilization was entered in FY 98.

⁸ In addition \$126,396 expended from contributed funds to maintain levees.

⁹ An estimated expense for mobilization was entered