Gulf Coast Ecosystem Restoration Council
Finding of No Significant Impact
McFaddin National Wildlife Refuge Shoreline Breakwater Project - Implementation

The Gulf Coast Ecosystem Restoration Council (Council) hereby adopts the Anahuac & McFaddin National Wildlife Refuges Gulf Intracoastal Waterway (GIWW) Breakwaters Final Environmental Assessment (EA) dated October 2022 (Finding of No Significant Impact signed December 6, 2023). The Council adopts the EA in order to address requirements of the *National Environmental Policy Act* (42 U.S.C. §§ 4321 et seq.) (NEPA) associated with the approval of implementation funding for the McFaddin National Wildlife Refuge Shoreline Breakwater Project (McFaddin Breakwater project) sponsored by the Texas Commission on Environmental Quality (TCEQ) and located within the McFaddin National Wildlife Refuge along the shoreline of the GIWW in Chambers County and Jefferson County, Texas.

The Council has reviewed the EA and determined that it addresses the environmental effects of the McFaddin Breakwater project to be funded. On May 22, 2025, the Council opened a public comment period on this proposed project and the associated environmental compliance documentation. This public notice also sought comment on the Council's proposals to approve funding for other Council activities sponsored by the TCEQ under the Council's Funded Priorities List (FPL) 3b. The public comment period was 30 days and ended on June 21, 2025. The Council received multiple comments which can be reviewed in the RESTORE Council Proposed FPL 3b Amendment Bundle Response to Public Comments dated July 11, 2025.

The Council has determined that approval of funding for the McFaddin Breakwater project would not result in a significant effect on the human environment. The following is a brief description of the activity to be funded, the EA being adopted by the Council, and contact information pertaining to this action.

Funded Activity

The Council is approving a total of $4,237,070 in implementation funding for the McFaddin Breakwater project, which is part of the Texas Chenier Plain Ecosystem Restoration Program sponsored by the TCEQ. This funding was originally budgeted for in Category 2 for the Chenier Plains Program set forth in FPL 3b. Since the publication of FPL 3b, all environmental compliance necessary for a Council vote to approve implementation funding for the McFaddin Breakwater project has been completed. FPL 3b was developed pursuant to the *Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012* (RESTORE Act) (33 U.S.C. § 1321(t) and *note*).

The McFaddin Breakwater project will construct approximately one mile of segmented rock breakwaters within the McFaddin National Wildlife Refuge located along the shoreline of the GIWW. The constructed breakwaters will prevent shoreline erosion and further loss of coastal emergent wetlands and allow for

sediment accretion and re-establishment of emergent wetlands in previously eroded areas thus protecting adjacent coastal marsh and prairie grasslands.

More information on the RESTORE Act and FPL 3b can be found at www.restorethegulf.gov.

Environmental Assessment Adopted

The EA is hereby incorporated by reference into this Council finding, consistent with the Council's NEPA Procedures (80 FR 25680-25691 (May 5, 2015)). Prepared pursuant to NEPA, the EA analyzes the environmental impacts and cumulative effects of and alternatives for the McFaddin Breakwater project. The U.S. Fish and Wildlife Service (USFWS) has received authorization for the project under permit SWG-2020-00644 pursuant to Section 404 of the *Clean Water Act* and 10 of the *Rivers and Harbors Act* of 1899. Additional environmental compliance coordination was completed for the the *Fish and Wildlife Coordination Act* (FWCA), the *Endangered Species Act* (ESA), the *Magnuson-Stevens Fishery Conservation and Management Act* (MSA), and the *National Historic Preservation Act* (NHPA) in coordination with the USFWS, National Marine Fisheries Service (NMFS), the State Historic Preservation Office, and the Texas Historical Commission.

Environmental Conditions

In addition to NEPA, the Council has an independent responsibility to comply with all other applicable Federal laws. The Council has received concurrence on adoption of the EA with respect to the McFaddin Breakwater project from the Federal agencies with responsibility for administering the laws applicable to this action. To ensure compliance with FWCA, ESA, MSA, NHPA, and other relevant laws, the Council will require that the sponsor of the project adhere to all applicable conditions in the USACE permit authorization and the associated environmental compliance documents. Compliance with these conditions is mandatory and serves to limit the environmental effects of an action to those that are insignificant, discountable or beneficial, and do not result in take or adverse effects to designated critical habitat. The TCEQ is also responsible for ensuring that any contractors that may work on this project are aware of and comply with all of these environmental compliance requirements.

Finding of No Significant Impact

Based on an independent review of the information and analysis provided in the EA, the Council hereby issues this Finding of No Significant Impact (FONSI) for the McFaddin Breakwater project. The EA is incorporated herein by reference. In making this determination, the Council has coordinated with the TCEQ, the sponsor of the activity. The Council has authorized the Executive Director of the Council to execute the FONSI on its behalf.

Determination by Responsible Official

I have determined that this activity would not have a significant effect on the human environment.

Mary S. Walker
Executive Director, Gulf Coast Ecosystem Restoration Council

(Signature) MARY WALKER Digitally signed by MARY WALKER Date: 2025.07.18 14:09:53 -05'00'

For Further Information

For further information, please contact Heather Young, Senior Advisor for Ecosystem Restoration and Environmental Compliance, Gulf Coast Ecosystem Restoration Council, at (504) 252-7716 or by e-mail at heather.young@restorethegulf.gov.

FINDING OF NO SIGNIFICANT IMPACT
AND DECISION TO CONSTRUCT EIGHTEEN SHORELINE PROTECTION BREAKWATERS IN THE GIWW WITH NO LAND BASED SUPPORT, ANAHUAC AND MCFADDIN NATIONAL WILDLIFE REFUGES

Consistent with the United States Fish and Wildlife Service's (USFWS or Service) Texas Chenier Plain Refuge Complex *Final Environmental Impact Statement, Comprehensive Conservation Plan and Land Protection Plan* (USFWS, 2008), USFWS is proposing to construct structural protection (rock breakwaters) along shorelines of the Anahuac and McFaddin National Wildlife Refuges (NWRs) within the Gulf Intracoastal Waterway (GIWW). Seven separate breakwaters would be constructed in the GIWW along the southern boundary of Anahuac National Wildlife Refuge (ANWR) beginning at Brant Island to just south of the point where Jackson Ditch empties into the GIWW at Horseshoe Bend. Fourteen separate breakwaters would be constructed in the GIWW along the McFaddin National Wildlife Refuge (MNWR) shoreline (two along the northern shoreline and twelve along the southern shoreline) beginning approximately 0.25 mile east of State Highway 124 in Galveston County near High Island, with the most eastward breakwater being located approximately 1.7 miles west of the mouth of Salt Bayou. The breakwaters will be placed in key locations that are experiencing erosion from wave action, tidal scour, and other natural processes, in addition to influences from boating traffic along the GIWW. The breakwaters along the ANWR shoreline would total approximately 4,661 feet in length and the breakwaters along the MNWR shoreline would total approximately 76,150 feet in length.

Selected Action

Alternative A – Construct 21 GIWW Shoreline Protection Breakwaters with No Land-Based Support [Proposed Action Alternative]:

ANWR GIWW Breakwaters

The proposed rock breakwaters would be constructed within the GIWW in 7 separate segments at varying distances from the shoreline of the ANWR as shown in the drawings in **Appendix A**. Water depths would vary at the breakwater locations but would not exceed 1.5 feet. The waterward toe of the breakwaters would be located a minimum of 10 feet from the construction setback for the GIWW and would not interfere with navigation. The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.0 feet, which is an average of 4.5 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side-slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. The breakwater will transition back to natural ground at the termination point on a 45-degree angle.

Table 1 below provides the area, length, and volume of material for each of the seven ANWR breakwater segments.

TABLE 1. ANWR BREAKWATER SIZES AND FILL VOLUMES

Breakwater Number	Area of Fill (acres)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	0.213	523	1,334	741.11
#2	0.696	1,618	4,406	2447.78
#3	0.41	991	2,581	1433.89
#4a	0.123	283	755	419.44
#4b	0.132	318	795	441.67
#5a	0.243	561	1,598	887.78
#5b	0.169	367	1,240	688.89
Total	**1.986**	**4,661**	**12,709**	**7,060.56**

Table 2 provides the legal descriptions of the locations of each of the ANWR breakwater segments.

Table 2. ANWR Breakwater Legal Descriptions

Breakwater #	GEO ID	Owner Name	Legal Description	County
1	00036-00100-00100-470001	UNITED STATES OF AMERICA	36 TR 1-1 L BARROW	Chambers
2	00036-00100-00100-470001	UNITED STATES OF AMERICA	36 TR 1-1 L BARROW	Chambers
2	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
3	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
4A	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
4B	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
5A	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
5B	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers

MNWR GIWW Breakwaters

The proposed rock breakwaters would be constructed within the GIWW in 14 separate segments at varying distances from the shoreline as shown in the drawings in **Appendix B**. Water depths would vary at the breakwater locations but would not exceed 1.5 feet. The breakwaters would be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.0 feet, which is an average of 4.5 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side-slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average,

because the existing grade is shallower at the shoreward toe of the breakwaters. The breakwater will transition back to natural ground at the termination point on a 45-degree angle.

The navigational setback for the GIWW encroaches on or against the shoreline in the proposed location for one of the breakwaters (Breakwater# 12). The US Army Corps of Engineers granted a variance to construct a traditional breakwater as close to the shoreline as possible in this area. Total encroachment would be 29.93 horizontal feet and approximately 0.945 acres.

Table 3 provides the area, length, and volume of material for each of the fourteen breakwater segments.

TABLE 3. MNWR BREAKWATER SIZES AND FILL VOLUMES

Breakwater Number	Area of Fill (acres)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	1.055	2138.68	6634	3902.35
#2	2.487	5135.58	15916	9362.35
#3	7.497	16120.76	55955	32625.88
#4	1.582	3427.05	10008	5887.06
#5	7.405	16279.04	54423	32045.29
#6	0.661	1394.85	4105	2414.71
#7A	0.201	1100	558	328.10
#7B	0.211	450	1609	946.09
#8	1.442	3208.45	10533	6255.29
#9	0.521	1004.04	3527	2074.71
#10	9.327	18702.81	60734	35725.88
#10A	0.807	1777.55	5589	3287.65
#11	1.104	2233.03	7049	4146.47
#12	1.539	3179	11705	6885.29
Total	**35.838**	**76,150.84**	**248,345**	**145,887.10**

Table 4 provides the legal descriptions of the locations of each of the MNWR breakwater segments. Lands not owned by the USFWS are listed in blue in **Table 4**. The USFWS will obtain landowner approval prior to construction of breakwaters in these areas. Breakwaters would not be constructed in any areas for which approval is not granted by the landowner.

TABLE 4. MNWR BREAKWATER LEGAL DESCRIPTIONS

Breakwater ID	GEO ID	Owner Name	Legal Description	County
1	0041-0001-0001-000	USA-US FISH & WILDLIFE SRVC	ABST 41 P BIGLIN SUR TR 1-1 707.000 ACRES	Galveston

Breakwater ID	GEO ID	Owner Name	Legal Description	County
2	00353-00300-00100-450001	BARROW, REUBEN HAL & MILLIE EDDY	353 TR 3-1 C C SCHOOL	Chambers
2	00462-00100-00100-450001	UNITED STATES OF AMERICA US FISH & WILDLIFE SERVICE	462 TR 1-1 A L WYNNE	Chambers
3	00462-00100-00100-450001	UNITED STATES OF AMERICA US FISH & WILDLIFE SERVICE	462 TR 1-1 A L WYNNE	Chambers
3	00355-00100-00300-300001	SALT GRASS PARTNERS LTD	355 TR 1-3 C C SCHOOL	Chambers
3	300397-000-002000-00000-5	SALT GRASS PARTNERS LTD	TR 1 CHAMBERS CO (TRACT 15C) 397 SCHOOL LAND 48.290	Jefferson
3	300708-000-002000-00000-3	SALT GRASS PARTNERS LTD	TR 3 708 S R HILL 326.710 (TRACT 15C)	Jefferson
3	300398-000-001000-00000-4	SALT GRASS PARTNERS LTD	TR 1 CHAMBERS CO (TRACT 15C) 398 SCHOOL LAND 1427.43	Jefferson
3	300554-000-002000-00000-1	SALT GRASS PARTNERS LTD	554 CT&MC TR 3 53.719 AC (TRACT 15C)	Jefferson
4	300708-000-002000-00000-3	SALT GRASS PARTNERS LTD	TR 3 708 S R HILL 326.710 (TRACT 15C)	Jefferson
4	300445-000-001000-00000-3	SALT GRASS PARTNERS LTD	TR 1 445 MRS S A PACE 558.145 (TRACT 15C)	Jefferson
5	300434-000-001000-00000-7	SALT GRASS PARTNERS LTD	TR 1 434 MRS A J COBB 422.065 (TRACT 15C)	Jefferson
5	300445-000-001000-00000-3	SALT GRASS PARTNERS LTD	TR 1 445 MRS S A PACE 558.145 (TRACT 15C)	Jefferson
5	300430-000-001000-00000-5	SALT GRASS PARTNERS LTD	TR 1 MRS S M (TRACT 15 C) 430 BAZINETT 175.68	Jefferson
5	300426-000-001000-00000-3	U S FISH & WILDLIFE	TR 1 426 T F ADAMS 1205.27 LOT 1	Jefferson
5	300436-000-004000-00000-9	SALT GRASS PARTNERS LTD	TR 2 436 S J ERWIN 253.355 (TRACT 15C)	Jefferson
6	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
7	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
8	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
8	300560-000-000500-00000-9	CHEVRON ENVIROMENTAL MGMT CO	AB 285 T&NO TR 5 14.430 AB 528 L B PIPKIN TR 2 140 560 W J BRYAN TR1 276.256	Jefferson
9	300560-000-000500-00000-9	CHEVRON ENVIROMENTAL MGMT CO	AB 285 T&NO TR 5 14.430 AB 528 L B PIPKIN TR 2 .140 560	Jefferson

Breakwater ID	GEO ID	Owner Name	Legal Description	County
			W J BRYAN TR1 276.256	
10	300285-000-005000-00000-0	UNITED STATES OF AMERICA	TR 6 AB 285 T&NO 76.159AC	Jefferson
10	300336-000-001000-00000-4	UNITED STATES OF AMERICA	ABS 336 282 521 899 TR 1 & ABS 283 529 TR 2 T&NO 502.079AC H/F	Jefferson
10A	300282-000-002000-00000-9	U S FISH & WILDLIFE	TR 3 282 T&NO 591.67 LOT 3	Jefferson
10A	300336-000-002000-00000-3	U S FISH & WILDLIFE	PT TR 3 336 T&NO 65.000 S PASS	Jefferson
11	300789-000-002000-00000-3	ENGLAND GARY L & KURT A	TRS 3 & 5 789 T&NO 375.26 LOT 3	Jefferson
12	300303-000-001000-00000-4	U S FISH & WILDLIFE	TR 2 303 T&NO 255.44 LOT 2	Jefferson

Elements Common to Both ANWR and MNWR Breakwaters

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting, middle, and ending points of the rock breakwaters. Beacon design is indicated on the attached drawings in Appendices A & B for the ANWR and MNWR GIWW breakwaters. Upon receipt of a USACE permit, DU will submit a Private Aids to Navigation marking determination request to the USCG in accordance with 33 CFR Part 66 Subpart 66.01. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored in a long line just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Up to two shallow water spud barges will be utilized for construction, one spud barge containing a long-reach excavator and potentially another loaded with riprap if it is not feasible to work directly from the deck barge on which the rock is delivered. The shallow water barge(s) will be transported to the breakwater locations using a tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge. No dredging would be necessary for barge access to the breakwater locations.

Geotextile fabric will be placed in the footprint of the breakwaters prior to placement of riprap using either the long-reach excavator or small Jon boats. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to

wetland areas. Project construction is expected to take approximately 3 months for the ANWR Breakwaters and approximately 6 months for the MNWR Breakwaters.

Other Alternatives Considered and Analyzed

Alternative B – No Action Alternative:

Under the No Action Alternative, no breakwaters would be constructed; therefore, the ANWR and MNWR shorelines would remain unprotected from tidal scour and wave action and continue to erode rapidly over time. Saltwater will eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area. Saltwater intrusion into more interior wetland areas results in the conversion and/or loss of wetlands, which provide habitat for a variety of species, including but not limited to several species of migratory and nesting birds and offer protection from storm surge for interior marsh areas. The no-action alternative was not selected because of the continued loss of wetlands and wildlife habitat that would occur as a result of natural processes under this alternative.

Summary of Effects of Selected Action

An Environmental Assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework that 1) explored a reasonable range of alternatives to meet project objectives, 2) evaluated potential issues and impacts to the refuge, resources and values, and 3) identified mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with two alternatives: Proposed Action and No Action. It is incorporated as part of this finding.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic effects:

- Minor, short-term adverse impacts on water quality, wildlife and aquatic species, and visitor use and experience in localized areas during construction due to presence of crews and equipment.
- Long-term beneficial indirect and cumulative impacts to vegetation, soils, wildlife and aquatic species, threatened and endangered species, wetlands and water resources due to preservation and potentially enhancement and/or creation of wetland habitat.

Measures to mitigate and/or minimize adverse effects have been incorporated into the selected action. These measures include:

- Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.
- The permittee will instruct all personnel associated with the project of the potential presence of sea turtles and manatees in the project area.

- The permittee and all personnel associated with the project will be informed that there are civil and criminal penalties for harming, harassing, or killing sea turtles and/or manatees, which are protected under the Endangered Species Act.
- Vessel operators and crews will maintain a vigilant watch for protected species to avoid striking them and project activities would adhere to Vessel Strike Avoidance Measures and Reporting for Mariners (Revised: February 2008) and Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised: March 23, 2006).
- As a general condition of operations, trash would be contained within work vessels and taken out daily to prevent trash from entering waterways and being ingested and/or resulting in entanglement of protected species.
- If dead or injured protected species are observed, either related or unrelated to the project, they will be reported to USFWS, the National Marine Fisheries Service's Protected Resources Division (727-824-5312), and the local authorized sea turtle stranding/rescue organization.

While refuges, by their nature, are unique protected areas for conservation of fish, wildlife and habitat, the proposed action will not have a significant impact on refuge resources and uses for several reasons:

- The action will result in beneficial impacts to the human environment, including the biodiversity and ecological integrity of the refuge, as well as the wildlife-dependent recreational opportunities and socioeconomics of the local economy, with only negligible adverse impacts to the human environment as discussed above.
- The adverse direct effects of the proposed action on air, water, soil, habitat, wildlife, aesthetic/visual resources, visitor use and experience are expected to be minor and short-term. The benefits to long-term ecosystem health that these efforts will accomplish far outweigh any of the short-term adverse impacts discussed in this document.
- The action would not adversely impact any threatened or endangered species; or any Federally-designated critical habitat.
- The action will not adversely impact any cultural or historical resources;
- There is no scientific controversy over the impacts of this action and the impacts of the proposed action are relatively certain.
- The proposal is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988, conversely, it should have beneficial effects on wetlands and floodplains.

Public Review

The proposal has been thoroughly coordinated with all interested and/or affected parties.

USFWS contacted/consulted with the appropriate tribal representations and provided them with an opportunity to comment on the project. No response was received from any of the tribes.

Hard copies of the Draft ANWR and MNWR GIWW BWs EA were mailed out to 59 interested parties on May 31, 2022, and the Draft EA was emailed to an additional 13 recipients on April 4, 2022, marking the beginning of the 30-day comment period, which ended on May 4, 2022. USFWS extended the comment period by one week beyond the 30 days to account for any potential

delays due to mail delivery of the hard copies. Recipients of the Draft EA included but were not limited to federal, state, and local government representatives/officials, libraries, and public interest groups.

Two comments were received during the comment period:

1. The THC commented that the discussion of Alternative A on page 22 needed to be revised as it implied that the THC made a recommendation of no adverse effects but alternately then asked for an underwater survey. This comment was addressed by revising the discussion to describe the THC consultation process more accurately as outlined in the comments submitted by the agency.
2. Michelle Falgout, County Engineer for Jefferson County, Texas, commented that the discussion of Alternative A on Page 24 related to socio-economic impacts seemed to be contradictory. This section states: "The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project, since labor and materials would be utilized locally, as much as possible. The construction labor force would need temporary housing and meals in the nearby towns of Port Arthur and Winnie." Ms. Falgout said that if labor and materials were utilized locally, there would be no need for temporary housing. To address this comment, the paragraph was revised as follows: "The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project due to crew expenditures (lodging, supplies, meals, etc.) in the nearby towns of Port Arthur and Winnie during project construction."

Finding of No Significant Impact

Based upon a review and evaluation of the information contained in the EA as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to construct eighteen shoreline protection breakwaters in the GIWW along the shorelines of the ANWR and MNWR with no land based support does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102 (2) (c) of the National Environmental Policy Act of 1969 (as amended). As such, an EIS is not required.

Decision

The Service has decided to construct eighteen shoreline protection breakwaters in the GIWW with no land-based support. Construction it tentatively scheduled to begin in September 2023.

The action is consistent with applicable laws and policies.

Approved by:

_____

Regional Director, Region 2
U.S. Fish and Wildlife Service

FINAL ENVIRONMENTAL ASSESSMENT

Anahuac & McFaddin National Wildlife Refuges
GIWW Breakwaters

Prepared by:

DESCO Environmental Consultants, LP
Magnolia, TX

for:

U.S. Fish and Wildlife Service
Texas Chenier Plain NWR Complex
Anahuac, TX

October 2022

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Final Environmental Assessment for Anahuac and McFaddin National Wildlife Refuges Gulf Intracoastal Waterway Breakwaters

1.0 INTRODUCTION

This Environmental Assessment (EA) was prepared to evaluate the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

2.0 PROPOSED ACTION

Consistent with the United States Fish and Wildlife Service's (USFWS or Service) Texas Chenier Plain Refuge Complex *Final Environmental Impact Statement, Comprehensive Conservation Plan and Land Protection Plan* (USFWS, 2008), USFWS is proposing to construct structural protection (rock breakwaters) along shorelines of the Anahuac and McFaddin National Wildlife Refuges (NWRs) within the Gulf Intracoastal Waterway (GIWW). Seven separate breakwaters would be constructed in the GIWW along the southern boundary of Anahuac National Wildlife Refuge (ANWR) beginning at Brant Island to just south of the point where Jackson Ditch empties into the GIWW at Horseshoe Bend. Fourteen separate breakwaters would be constructed in the GIWW along the McFaddin National Wildlife Refuge (MNWR) shoreline (two along the northern shoreline and twelve along the southern shoreline) beginning approximately 0.25 mile east of State Highway 124 in Galveston County near High Island, with the most eastward breakwater being located approximately 1.7 miles west of the mouth of Salt Bayou. The breakwaters will be placed in key locations that are experiencing erosion from wave action, tidal scour, and other natural processes, in addition to influences from boating traffic along the GIWW. The breakwaters along the ANWR shoreline would total approximately 4,661 feet in length and the breakwaters along the MNWR shoreline would total approximately 76,150 feet in length.

The proposed action included in this final EA differs slightly from the proposed action described in the draft EA as a result of minor changes made to the ANWR breakwater alignments to protect the interests of private landowners and/or to assure access to private lands in the vicinity of the breakwaters. Modifying breakwater alignments for these reasons is consistent with the original intent of the proposed action. Private lands along the ANWR breakwater alignment were identified in Section 5.1.1 of the draft EA, which stated that the USFWS would obtain landowner approval prior to construction of breakwaters in these areas, and breakwaters would not be constructed in any areas for which approval was not granted by the landowner. The breakwaters were modified, as necessary, where no acceptable agreements with private landowners could be obtained.

Changes to the breakwater alignment reduced the overall length and project footprint of the ANWR breakwaters; however, the breakwater design remains the same. That being the case, no major revisions are necessary to the EA based on the revised alignment. The USFWS believes that all potential effects of the current alignment were assessed as part of evaluation of the original alignment, which included a much larger area of potential effect.

3.0 BACKGROUND

ANWR is a 38,698.63-acre coastal refuge located approximately 14 miles southeast of Anahuac, Texas. The eastern extension of Galveston Bay, known as East Bay, forms a portion of the southern boundary of ANWR with the GIWW forming the rest of the boundary to the south and east. MNWR encompasses 58,946 acres and is located approximately 11.5 miles west of Sabine Pass, Texas. MNWR is divided by the GIWW in the middle, with the southern portion bordered by the Gulf of Mexico and the northern portion bordered by private lands north of the GIWW.

ANWR and MNWR are both part of the Texas Chenier Plain National Wildlife Refuge Complex (Refuge Complex). The Refuge Complex contributes to the conservation of wildlife and their habitats in the Texas Gulf Coast Ecosystem. The individual NWRs in the Refuge Complex encompass a diversity of habitats: aquatic habitats (open water and near shore Gulf habitats), freshwater to saline marshes, riparian habitats, coastal woodlots, rice fields, native prairies, cheniers and coastal beach and dune habitats. These areas host a multitude of plant, invertebrate and vertebrate species including over 300 bird species, 75 species of freshwater fish, and 400 species of salt and brackish water fish and shellfish. The Refuge Complex protects quality habitats for migrating, wintering, and breeding waterfowl; shorebirds; and waterbirds, and provides strategic and crucial resting areas for neotropical migratory songbirds migrating across the Gulf of Mexico.

Natural processes such as tidal ingress and egress, wave action, storms, and hurricanes have resulted in erosion and land loss along the refuge shorelines in the GIWW. Shoreline erosion is a natural process; however, a severe sediment deficit in the Gulf's littoral system resulting from altered hydrologic regimes (i.e. construction of navigation channels, jetties, and upstream dams on rivers) has greatly accelerated rates of shoreline retreat. Rising sea levels and land subsidence are also causative factors in the accelerated loss of coastal habitats as is wave action produced by shipping traffic in the GIWW, which poses a major threat to wetland and upland habitats on both NWRs.

Shoreline erosion along the GIWW is resulting in loss of salty prairie habitat and threatens interior marshes with saltwater intrusion. Increased saltwater intrusion negatively impacts plant productivity and diversity in both ANWR and MNWR marshes.

ANWR and MNWR suffered detrimental effects from Hurricane Harvey in 2017, which resulted in damage to wetlands and infrastructure. The USFWS received funding appropriated for Hurricane Harvey Recovery under Bipartisan Budget Act of 2018 (Public Law 115-123) to protect refuge shoreline and reconstruct water management infrastructure, and the proposed action has been approved by the Department of Interior (DOI) and the USFWS.

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The primary authority in establishing ANWR (February 27, 1963) and MNWR (May 1, 1980) was the Migratory Bird Conservation Act (MBCA) of 1929 (16 U.S.C. 715d), "…for use as an inviolate sanctuary, and for any other management purposes, for migratory birds." Both refuges are administered by the USFWS as units of the National Wildlife Refuge System. Lands or certain interests in lands added to the ANWR and MNWR since their original establishment were also acquired under the authority of the MBCA, with the same establishment purpose. Lands have been added to the NWRs under three additional authorities, with the following purposes:

> "… the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions…" 16 U.S.C. 3901(b), 100 Sta. 3583 (Emergency Wetlands Resources Act);
>
> "…suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species…" 16 U.S.C. 460K-1 (Refuge Recreation Act); and,
>
> "…for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon,…" 16 U.S.C. 661-667e (Fish and Wildlife Coordination Act).

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSAA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is:

"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

The proposed breakwaters would help to achieve this mission by preserving and potentially enhancing and/or creating wetland habitat along the shoreline of the GIWW.

4.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this proposed action is to protect the ANWR and MNWR shorelines along the GIWW from erosion due to tidal scour, wave action, and other natural and anthropomorphic processes. This coastline has eroded over time, resulting in the loss of valuable wetlands that

provide habitat for a variety of species, including but not limited to several species of migratory and nesting birds, and offer protection from storm surge for interior areas.

The need of the proposed action is to help prevent or slow further erosion in order to protect/conserve valuable assets/resources of importance to the management of the Refuge further inland, including but not limited to infrastructure and valuable wetland habitat, to meet the Service's priorities and mandates as outlined by the NWRSAA 16 U.S.C. 668dd(a)(4)) as follows:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans; and
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out.

Left unprotected, the ANWR and MNWR shorelines would continue to erode over time and saltwater will eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area.

5.0 ALTERNATIVES CONSIDERED

5.1 Alternative A – Construct Seventeen GIWW Shoreline Protection Breakwaters with No Land-Based Support [Proposed Action Alternative]:

Ducks Unlimited prepared engineering drawings (**Appendices A & B**), which provide more details regarding the Proposed Action Alternative.

5.1.1 ANWR GIWW Breakwaters

The proposed rock breakwaters would be constructed within the GIWW in 7 separate segments at varying distances from the shoreline of the ANWR as shown in the drawings in **Appendix A**. Water depths would vary at the breakwater locations but would not exceed 1.5 feet. The waterward toe of the breakwaters would be located a minimum of 10 feet from the construction setback for the GIWW and would not interfere with navigation. The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.0 feet, which is an average of 4.5 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side-slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. The breakwater will transition back to natural ground at the termination point on a 45-degree angle.

Table 1 below provides the area, length, and volume of material for each of the seven ANWR breakwater segments.

TABLE 1. ANWR BREAKWATER SIZES AND FILL VOLUMES

Breakwater Number	Area of Fill (acres)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	0.213	523	1,334	741.11
#2	0.696	1,618	4,406	2447.78
#3	0.41	991	2,581	1433.89
#4a	0.123	283	755	419.44
#4b	0.132	318	795	441.67
#5a	0.243	561	1,598	887.78
#5b	0.169	367	1,240	688.89
Total	**1.986**	**4,661**	**12,709**	**7,060.56**

Table 2 provides the legal descriptions of the locations of each of the ANWR breakwater segments. Land ownership is shown on **Map 1** in **Appendix C**.

Table 2. ANWR Breakwater Legal Descriptions

Breakwater #	GEO ID	Owner Name	Legal Description	County
1	00036-00100-00100-470001	UNITED STATES OF AMERICA	36 TR 1-1 L BARROW	Chambers
2	00036-00100-00100-470001	UNITED STATES OF AMERICA	36 TR 1-1 L BARROW	Chambers
2	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
3	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
4A	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
4B	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
5A	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers
5B	00104-00100-00100-440001	UNITED STATES OF AMERICA	104 TR 1-1 J H GROGAN	Chambers

5.1.2 MNWR GIWW Breakwaters

The proposed rock breakwaters would be constructed within the GIWW in 14 separate segments at varying distances from the shoreline as shown in the drawings in **Appendix B**. Water depths would vary at the breakwater locations but would not exceed 1.5 feet. The breakwaters would be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.0 feet, which is an average of 4.5 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side-slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average,

because the existing grade is shallower at the shoreward toe of the breakwaters. The breakwater will transition back to natural ground at the termination point on a 45-degree angle.

The navigational setback for the GIWW encroaches on or against the shoreline in the proposed location for one of the breakwaters (Breakwater# 12). The US Army Corps of Engineers granted a variance to construct a traditional breakwater as close to the shoreline as possible in this area. Total encroachment would be 29.93 horizontal feet and approximately 0.945 acres.

Table 3 provides the area, length, and volume of material for each of the fourteen breakwater segments.

TABLE 3. MNWR BREAKWATER SIZES AND FILL VOLUMES

Breakwater Number	Area of Fill (acres)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	1.055	2138.68	6634	3902.35
#2	2.487	5135.58	15916	9362.35
#3	7.497	16120.76	55955	32625.88
#4	1.582	3427.05	10008	5887.06
#5	7.405	16279.04	54423	32045.29
#6	0.661	1394.85	4105	2414.71
#7A	0.201	1100	558	328.10
#7B	0.211	450	1609	946.09
#8	1.442	3208.45	10533	6255.29
#9	0.521	1004.04	3527	2074.71
#10	9.327	18702.81	60734	35725.88
#10A	0.807	1777.55	5589	3287.65
#11	1.104	2233.03	7049	4146.47
#12	1.539	3179	11705	6885.29
Total	**35.838**	**76,150.84**	**248,345**	**145,887.10**

Table 4 provides the legal descriptions of the locations of each of the MNWR breakwater segments. Lands not owned by the USFWS are listed in blue in **Table 4** and indicated in **Maps 2-4** in **Appendix C**. The USFWS will obtain landowner approval prior to construction of breakwaters in these areas. Breakwaters would not be constructed in any areas for which approval is not granted by the landowner.

TABLE 4. MNWR BREAKWATER LEGAL DESCRIPTIONS

Breakwater ID	GEO ID	Owner Name	Legal Description	County
1	0041-0001-0001-000	USA-US FISH & WILDLIFE SRVC	ABST 41 P BIGLIN SUR TR 1-1 707.000 ACRES	Galveston

Breakwater ID	GEO ID	Owner Name	Legal Description	County
2	00353-00300-00100-450001	BARROW, REUBEN HAL & MILLIE EDDY	353 TR 3-1 C C SCHOOL	Chambers
2	00462-00100-00100-450001	UNITED STATES OF AMERICA US FISH & WILDLIFE SERVICE	462 TR 1-1 A L WYNNE	Chambers
3	00462-00100-00100-450001	UNITED STATES OF AMERICA US FISH & WILDLIFE SERVICE	462 TR 1-1 A L WYNNE	Chambers
3	00355-00100-00300-300001	SALT GRASS PARTNERS LTD	355 TR 1-3 C C SCHOOL	Chambers
3	300397-000-002000-00000-5	SALT GRASS PARTNERS LTD	TR 1 CHAMBERS CO (TRACT 15C) 397 SCHOOL LAND 48.290	Jefferson
3	300708-000-002000-00000-3	SALT GRASS PARTNERS LTD	TR 3 708 S R HILL 326.710 (TRACT 15C)	Jefferson
3	300398-000-001000-00000-4	SALT GRASS PARTNERS LTD	TR 1 CHAMBERS CO (TRACT 15C) 398 SCHOOL LAND 1427.43	Jefferson
3	300554-000-002000-00000-1	SALT GRASS PARTNERS LTD	554 CT&MC TR 3 53.719 AC (TRACT 15C)	Jefferson
4	300708-000-002000-00000-3	SALT GRASS PARTNERS LTD	TR 3 708 S R HILL 326.710 (TRACT 15C)	Jefferson
4	300445-000-001000-00000-3	SALT GRASS PARTNERS LTD	TR 1 445 MRS S A PACE 558.145 (TRACT 15C)	Jefferson
5	300434-000-001000-00000-7	SALT GRASS PARTNERS LTD	TR 1 434 MRS A J COBB 422.065 (TRACT 15C)	Jefferson
5	300445-000-001000-00000-3	SALT GRASS PARTNERS LTD	TR 1 445 MRS S A PACE 558.145 (TRACT 15C)	Jefferson
5	300430-000-001000-00000-5	SALT GRASS PARTNERS LTD	TR 1 MRS S M (TRACT 15 C) 430 BAZINETT 175.68	Jefferson
5	300426-000-001000-00000-3	U S FISH & WILDLIFE	TR 1 426 T F ADAMS 1205.27 LOT 1	Jefferson
5	300436-000-004000-00000-9	SALT GRASS PARTNERS LTD	TR 2 436 S J ERWIN 253.355 (TRACT 15C)	Jefferson
6	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
7	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
8	300358-000-001000-00000-8	PHELAN ELEVEN B LLC 1%	PT TR 1 358 T&NO 243.390 LOT 1	Jefferson
8	300560-000-000500-00000-9	CHEVRON ENVIROMENTAL MGMT CO	AB 285 T&NO TR 5 14.430 AB 528 L B PIPKIN TR 2 140 560 W J BRYAN TR1 276.256	Jefferson
9	300560-000-000500-00000-9	CHEVRON ENVIROMENTAL MGMT CO	AB 285 T&NO TR 5 14.430 AB 528 L B PIPKIN TR 2 .140 560	Jefferson

Breakwater ID	GEO ID	Owner Name	Legal Description	County
			W J BRYAN TR1 276.256	
10	300285-000-005000-00000-0	UNITED STATES OF AMERICA	TR 6 AB 285 T&NO 76.159AC	Jefferson
10	300336-000-001000-00000-4	UNITED STATES OF AMERICA	ABS 336 282 521 899 TR 1 & ABS 283 529 TR 2 T&NO 502.079AC H/F	Jefferson
10A	300282-000-002000-00000-9	U S FISH & WILDLIFE	TR 3 282 T&NO 591.67 LOT 3	Jefferson
10A	300336-000-002000-00000-3	U S FISH & WILDLIFE	PT TR 3 336 T&NO 65.000 S PASS	Jefferson
11	300789-000-002000-00000-3	ENGLAND GARY L & KURT A	TRS 3 & 5 789 T&NO 375.26 LOT 3	Jefferson
12	300303-000-001000-00000-4	U S FISH & WILDLIFE	TR 2 303 T&NO 255.44 LOT 2	Jefferson

5.1.3 Elements Common to Both ANWR and MNWR Breakwaters

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting, middle, and ending points of the rock breakwaters. Beacon design is indicated on the attached drawings in Appendices A & B for the ANWR and MNWR GIWW breakwaters. Upon receipt of a USACE permit, DU will submit a Private Aids to Navigation marking determination request to the USCG in accordance with 33 CFR Part 66 Subpart 66.01. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored in a long line just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Up to two shallow water spud barges will be utilized for construction, one spud barge containing a long-reach excavator and potentially another loaded with riprap if it is not feasible to work directly from the deck barge on which the rock is delivered. The shallow water barge(s) will be transported to the breakwater locations using a tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge. No dredging would be necessary for barge access to the breakwater locations.

Geotextile fabric will be placed in the footprint of the breakwaters prior to placement of riprap using either the long-reach excavator or small Jon boats. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to

wetland areas. Project construction is expected to take approximately 3 months for the ANWR Breakwaters and approximately 6 months for the MNWR Breakwaters.

5.2 Alternative B – No Action Alternative:

Under the No Action Alternative, no breakwaters would be constructed; therefore, the ANWR and MNWR shorelines would remain unprotected from tidal scour and wave action and continue to erode rapidly over time. Refuge infrastructure (i.e. access roads) would be damaged/lost to erosion and saltwater would eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area.

6.0 ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION

The refuge considered placing breakwaters in the same locations as proposed in Alternative A; however, the method of delivering riprap to the breakwater locations would be by truck/buggy from the landward side of the breakwater locations. This option was eliminated from analysis because the weight of the riprap, the equipment required to transport it, and the number of trips required to transport it would result in damage to refuge infrastructure (i.e. roadways) and wetlands adjacent to the GIWW as a result of compaction of substrate. This could lead to changes in hydrology in the area and increased erosion rates, likely resulting in conversion of wetland areas to open water.

7.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

The ANWR consists of approximately 38,698.63 acres (~60 square miles) in Chambers County, Texas and the MNWR consists of approximately 58,861 acres (~92 square miles) in Jefferson County, Texas (**See Figures 1 and 2**).

Figure 1: Anahuac NWR GIWW Breakwaters Project Area - Vicinity Map
Ducks Unlimited Texas Chenier Plain NWR Complex Hurricane Harvey Remediation

Chambers County, Texas

Legend

- Anahuac GIWW Breakwaters Project Area
- Anahuac National Wildlife Refuge

N

1:50,000

DESCO

0 0.25 0.5 Miles

Map Base: ESRI World Imagery
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: October 18, 2022

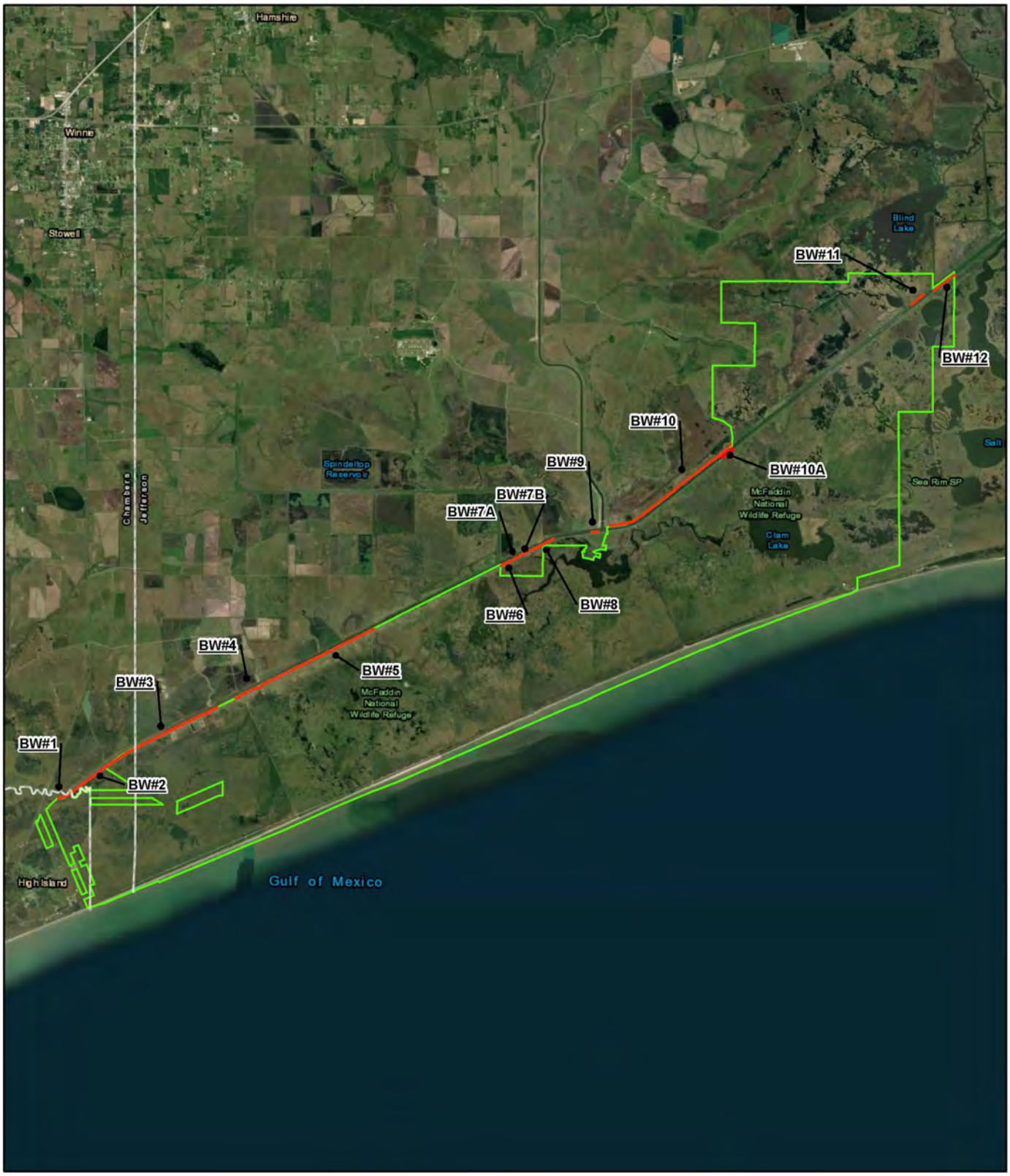

Figure 2: McFaddin NWR GIWW Breakwaters Project Area - Vicinity Map
Ducks Unlimited Texas Chenier Plain NWR Complex
Hurricane Harvey Remediation

Chambers County, Texas

Legend

- McFaddin GIWW Breakwaters
- McFaddin NWR Boundary

N

1:186,000

DESCO

0 1.5 3 Miles

Map Base: ESRI World Map
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: February 10, 2022

ANWR and MNWR are both part of the Western Gulf Coastal Plain. ANWR is comprised of a mix of habitats that include salty prairies; salty prairie shrubland; coastal prairies; salt and brackish low, intermediate, and high tidal marshes, in addition to smaller habitat types such as deep sand grassland, beaches, riparian hardwood forests, hardwood flatwoods, and invasive species or disturbed areas such as salt cedar shrubland and Chinese tallow forest, woodlands or shrublands. The proposed action is located in or adjacent to Brant Island and along the shoreline of the GIWW to the east-northeast. Habitat within this area can be described as Chenier Plain: Salt and Brackish Low Tidal Marsh, Gulf Coast: Salty Prairie, or Open Water (Elliot et. al, 2014).

Habitats on MNWR are dominated by fresh and intermediate tidal marshes and salt and brackish low tidal marshes. In addition, other habitats such as fresh and intermediate tidal shrub wetlands; hardwood fringe forests; live oak fringe forests; salt and brackish high tidal coastal marshes; deep sand grasslands; coastal prairie pondshores; salty prairies; and disturbed areas such as Chinese tallow forests and salt cedar shrublands round out the makeup of habitats on the refuge.

The proposed action begins approximately 0.25 miles east of State Highway 124 in Galveston County near High Island, with the most eastward breakwater being located approximately 1.7 miles west of the mouth of Salt Bayou (see Figures 1 and 2). Habitat within this area can be described as Chenier Plain: Salt and Brackish Low Tidal Marsh, Chenier Plain: Fresh and Intermediate Tidal marsh, Gulf Coast: Salty Prairie, Native Invasive: Common Reed, Non-native Invasive: Saltcedar Shrubland, or Open Water. (Elliot et. al, 2014).

For more information regarding the affected environment, please see Chapter 3: Affected Environment in Volume 1 of the Texas Chenier Plain Refuge Complex *Final Environmental Impact Statement Comprehensive Conservation Plan and Land Protection Plan*. (2008), which can be found here: https://ecos.fws.gov/ServCat/DownloadFile/1460?Reference=1485.

7.1 Wildlife and Aquatic Species

Description of Affected Environment

ANWR and MNWR are home to an incredible diversity of wildlife species that rest, nest, feed and migrate through the area. Between October and March, 27 species of ducks, including green-winged teal, gadwall, shoveler and northern pintail are likely to be present on the Refuges and huge flocks of snow geese feed in rice fields and moist soil units within the Refuge. During spring and fall migrations, warblers and other songbirds are present in small, wooded areas. Roseate spoonbills, great and snowy egrets, white-faced ibis and mottled ducks can be found throughout the year on the Refuge.

Alligators, river otters, raccoons, skunks, muskrats, and opossums are among some of the more common refuge residents. Bobcats are also frequently seen crossing the roads or slipping through the vegetation in the early morning hours.

Important commercial and recreational finfish and shellfish species in the area include brown shrimp, white shrimp, American oyster, and blue crab. The major gamefish include spotted sea trout, sand sea trout, and red fish or red drum. Other important recreational fishes include southern

flounder, black drum, Atlantic croaker, gafttopsail catfish, and sheepshead. Ancillary species include bay anchovy, gulf menhaden, striped mullet, and gizzard shad.

Description of Environmental Trends and Planned Actions

The proposed action is not the only action that the USFWS is planning to undertake for protection of resources/assets important to management of the Texas Chenier Plain Refuge Complex. The USFWS plans to repair interior levees and water control structures within both the ANWR and MNWR, and other refuges in the complex that were damaged due to Hurricane Harvey with funds appropriated for Hurricane Harvey Recovery under Bipartisan Budget Act of 2018 (Public Law 115-123) to protect refuge shoreline and reconstruct water management infrastructure. The Cattlewalk Levee, Lone Tree Levee, East Bay Bayou Levee, and associated water control structures will be repaired/replaced within ANWR and the Perkins Levee, White's Levee, and O-Ditch Levee, and their associated water control structures in MNWR, to restore their full function for management and/or protection of interior marsh areas. Breakwaters will also be constructed along the East Bay shoreline of the ANWR to slow and/or prevent further erosion.

Warming, whether it results from anthropogenic or natural sources, is expected to affect a variety of natural processes and associated resources. However, the complexity of ecological systems means that there is a tremendous amount of uncertainty about the impact climate change will have. ER 1100-2-8162 *Incorporating Sea Level Change in Civil Works Programs* (USACE, 2013) addresses climate research published by the Intergovernmental Panel on Climate Change, which predicts continued or accelerated climate change for the 21st century and possibly beyond, including a continued or accelerated rise in global mean sea level. Sea-level rise over time will impact coastal and estuarine zones, resulting in loss/conversion of habitat. Loss of habitat would affect both resident wildlife and migratory bird populations in the area.

Impacts on Affected Resource

Alternative A

The breakwaters would be constructed from and within open water habitat in the GIWW that is subject to heavy boat/barge traffic. While many wildlife species are known to occur within the NWRs, not many are expected to be present in the project area during operations. Direct impacts on any resident wildlife present within or adjacent to the project area will be short-term. Noise from construction and the presence of crews could temporarily displace wildlife into adjacent habitat and/or temporarily alter the normal behavior of certain species. Use of NWR habitats by migratory birds, including waterfowl, shorebirds, wading birds, and songbirds would likely be temporarily reduced within the immediate vicinity of the project area. In general, habitat exists for wildlife to emigrate from the immediate vicinity of the project area to similar adjacent habitats, which will be unaffected by project operations.

The proposed project is expected to result in the preservation, enhancement and/or creation of wetlands between the shoreline and the breakwater locations. As a result, there should be beneficial impacts to wildlife that utilize this habitat.

Alternative B
There would be no direct impacts to wildlife and aquatic species as a result of the No Action Alternative; however, the continued loss of habitat that would occur without implementing the proposed action would affect wildlife and aquatic species through loss and/or conversion of habitat.

7.2 Threatened and Endangered Species and Other Special Status Species

Description of Affected Environment
The USFWS ECOS-IPaC system species lists for each of the project areas indicates that the following federally listed threatened and endangered species have potential for occurrence in the project area:

- Attwater's greater prairie-chicken
- piping plover
- red knot
- eastern black rail
- green sea turtle
- hawksbill sea turtle
- Kemp's Ridley sea turtle
- leatherback sea turtle
- loggerhead sea turtle
- West Indian manatee

In addition, there are several birds of conservation concern with potential for presence in and around the project area.

The project area is outside of the known range of Attwater's Greater Prairie Chicken. Piping Plovers and Red Knots have been seen using the beach areas on the Texas Chenier Plain NWR Complex. Piping Plovers have also been observed utilizing mud flat areas along the GIWW. These species would not utilize the open water habitat within the project's area of potential effect (APE) but could be present on mudflats behind the breakwaters. The Eastern Black Rail is known to occur within the Texas Chenier Plain NWR Complex year-round and could be present in persistent emergent wetland areas adjacent to the project area during project construction. However, there is no suitable habitat within the project's APE.

There is no suitable sea turtle nesting habitat within the project area; however, juvenile Green and Kemp's Ridley sea turtles have the potential for occurrence in the project area during operations. The likelihood of presence is low and is greater in the summer months than in the winter months. Similarly, West Indian manatees also have the potential for occurrence in the project area; however, the likelihood is extremely low.

There is no designated critical habitat or proposed critical habitat for any protected species located within the ANWR or MNWR boundaries nor within the project area considered herein.

Description of Environmental Trends and Planned Actions

Environmental trends and planned actions as outlined under Section 7.1 Wildlife and Aquatic Species and Section 7.3 Vegetation would also apply threatened and endangered species.

Impacts on the Affected Resource

Alternative A

Because the breakwaters will be constructed completely within the water and rock would be barged in, there would be no effect to piping plovers, red knots, Attwater's greater prairie-chicken, eastern black rail, or their habitats.

There would be no effect to nesting sea turtles and there is a low likelihood of juvenile green and Kemp's Ridley sea turtles and/or manatees being present in the project area during operations. If individuals are present, death or injury could occur due to vessel strikes and/or placement of riprap; however, the likelihood of impacts would be minimized with crew education and implementation of NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (NOAA, 2006) and Vessel Strike Avoidance Measures and Reporting for Mariners (NOAA, 2008).

The creation of fish passages along the breakwaters will allow any transient species such as sea turtles to leave the area if they swim into the area behind the breakwaters or are pushed there during storm tide events.

For the reasons stated above, the proposed action may affect, but would not likely adversely affect sea turtles or other species under NMFS jurisdiction.

Birds of conservation concern could be temporarily displaced into adjacent suitable habitat due to construction noise and/or presence of crews in the area; however, there is a multitude of adjacent suitable habitat for them to utilize during construction. No nests would be destroyed or damaged as a result of construction because work would be confined to the water.

USFWS Intra-Service Section 7 consultation requirements were satisfied on March 1, 2021. DESCO submitted NMFS Endangered Species Act Section 7 Checklists to NMFS on behalf of USFWS on November 13 and November 16, 2020 to initiate consultation with regard to sea turtles in the water. NMFS concluded that the proposed action is not likely to adversely affect listed species under NMFS's purview on February 18, 2021.

Alternative B

There would be no direct impacts to threatened, endangered, or other special status species as a result of the No Action Alternative; however, the continued loss of habitat that would occur without implementing the proposed action could indirectly affect these species through loss and/or conversion of habitat.

7.3 Vegetation (including vegetation of special management concern)

Description of Affected Environment

Vegetation habitats within ANWR and MNWR are dominated by a variety of marshes and wetlands, both fresh and saltwater influenced. These habitats are primarily vegetated with grasses such as *Spartina alterniflora* (smooth cordgrass), *S. patens* (marshhay cordgrass), and *S. spartinae* (gulf cordgrass)*; Schizahrium scoparium* (little bluestem)*; Panicum spp.;* and *Paspalum spp.;* as well as a mix of shrubs and forbs such as *Baccharis halimifolia (*baccharis)*;, Iva frutescens (*bigleaf sumpweed)*; Borrichia frutescens* (sea ox-eye daisy)*; Sagittaria spp.* (arrowheads)*; Ludwigia spp*. (water primroses)*; Solidago spp.* (goldenrods)*;* among many others (Elliot, 2014).

Description of Environmental Trends and Planned Actions

Similar environmental trends and planned actions described under Section 7.1 Wildlife and Aquatic Species would apply. Additionally, several hurricanes have impacted the Texas Coast and ANWR and MNWR. The most recent and significantly devastating storms were Hurricane Ike in 2008 and Hurricane Harvey in 2017. These hurricanes and others before them resulted in devastating impacts to Refuge infrastructure and introduced large volumes of salt water into interior fresh marsh areas, resulting in wetland impacts, conversion, and loss.

Impacts on Affected Resource

Alternative A

Direct impacts to the vegetation would be minimal as the breakwaters would be installed within the open water ecosystem, away from the shoreline. Creation of the breakwaters would protect the existing shoreline vegetation from erosion and over time natural recruitment of salt marsh vegetation would likely result in accretion of additional salt marsh habitat. Additionally, construction of the breakwaters under the proposed action will slow erosion due to natural process until such time that the sea level rises to a level that is higher than the top of the breakwaters.

Alternative B

There would be no direct impacts to vegetation as a result of the No Action Alternative; however, the continued loss of vegetation and habitat within this area would occur as a result of erosion from tidal scour and wave action resulting in loss of the valuable wetland habitat over time.

7.4 Geology & Soils

Description of Affected Environment

ANWR

The soils within and adjacent to the project area and along the shoreline are Harris clay, 0 to 1 percent slopes, frequently flooded, tidal; Ijam clay, 0 to 2 percent slopes, frequently flooded, tidal; and Veston fine sandy loam, 0 to 1 percent slopes, frequently flooded. These poorly drained soils are found on barrier flat landforms and marshes and are not considered to be prime farmland (NRCS 2019).

The geology at the sites is over portions of Alluvium, Fill and Spoil, and Water. Characteristics of Alluvium are "Clay, silt, and sand, organic matter abundant locally; includes point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits that are shown by line symbol." Fill and Spoil is characterized as "material dredged for raising land surface above alluvium and barrier-island deposits and for creating land. Dredged material along waterways" (TWDB 2019).

MNWR
The soils within and adjacent to the project area are Harris clay, 0 to 1 percent slopes, frequently flooded, tidal; Ijam clay, 0 to 2 percent slopes, frequently flooded, tidal; Leerco muck, 0 to 1 percent slopes, frequently flooded, tidal; and Neel clay, 2 to 5 percent slopes, occasionally flooded, tidal. These very poorly drained to moderately well drained soils are found on depressions, marshes, and flats and are not considered to be prime farmland (NRCS 2019).

The geology at the sites are over portions of Alluvium, Fill and Spoil, the Beaumont Formation, and Water. Characteristics of Alluvium are "Clay, silt, and sand, organic matter abundant locally; includes point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits that are shown by line symbol." Fill and Spoil is characterized as "material dredged for raising land surface above alluvium and barrier-island deposits and for creating land. Dredged material along waterways." The Beaumont Formation is delineated as "mostly clay, silt and sand; includes mainly stream channel, point-bar, natural levee, backswamp, and to a lesser extent coastal marsh and mud-flat deposits" (TWDB 2019).

Description of Environmental Trends and Planned Actions
As described under Section 7.1 Wildlife and Aquatic Species, the USFWS has numerous projects throughout the Complex to protect refuge shoreline and reconstruct water management infrastructure. Additional projects will restore areas to their full function for management and/or protection of interior marsh areas.

Impacts on Affected Resource

Alternative A
Direct impacts to the soils or geology along the shoreline would be minimal to non-existent as the project would be constructed from and within open water. Disturbance of the soil and geological substrate beneath the water surface would occur minimally from placement of riprap as the weight of the riprap would cause minor displacement of sediment and settling in the footprint of the breakwaters.

Sedimentation is expected to occur over time behind the breakwaters as natural vegetation recruitment takes place. This could result in the creation of wetland acreage behind the breakwaters where none currently exists.

Alternative B
There would be no direct impacts to the soils or geology under this alternative, however impacts would include continued erosion of the soils and geologic features along the shoreline in this area should the breakwaters not be constructed.

7.5 Water Resources

Description of Affected Environment

The breakwaters would be constructed in the GIWW, adjacent to the shorelines of ANWR and MNWR. The Texas portion of the GIWW is approximately 423 miles long from Brownsville to the Louisiana border and is part of the overall 1,300-mile dredged channel that eventually terminates at St. Marks, FL. It receives inflow from various rivers, creeks, bays, and other waterways that terminate at or intersect the GIWW. The major function of the GIWW is to provide access for the transportation of goods along to other waterways including the Gulf of Mexico and Mississippi Rivers, reaching inland domestic regions as well as foreign ports (Leatherwood, 2021). The portion of the GIWW affected by the breakwater project is identified and monitored by the Texas Commission on Environmental Quality (TCEQ) as water quality segment 0702 and is in the Neches-Trinity Coastal Basin. The closest TCEQ Surface Water Quality Monitoring Station (SWQMS) to the project is 17426 (TCEQ, 2021).

Description of Environmental Trends and Planned Actions

According to TCEQ, this GIWW segment is a category 5 Texas 303 (d) listed impaired waterbody. It has been listed since 2010 due to dioxin and PCBs in edible tissue and since 2012 for bacteria in water (recreation use) (TCEQ, 2020a).

The project area is under a Texas Department of State and Health Services (TDSHS) consumption advisory (ADV-50) for all species of catfish due to PCBs and dioxins in edible tissue. ADV-50 advises that women of childbearing age and children under 12 years of age do not eat any species of catfish and women past childbearing age and men only consume 1 meal per month (TDSHS, 2021).

It is also under TDSHS consumption advisory ADV-46 for gafftopsail catfish due to polychlorinated biphenyls (PCBs). ADV-46 advises adults should limit consumption to three eight-ounce meals per month and pregnant women, and children less than 12 years of age, should have a limit of one four-ounce meal per month (TDSHS, 2021). For this reason, Fish Consumption Use is not supported.

This GIWW segment is also listed by TCEQ as a water body with concern for water quality based on screening levels for chlorophyll-a, which exceeded its criteria in 2 out of 25 samples assessed (TCEQ, 2020b).

Impacts on Affected Resource

Alternative A

Temporary increases in turbidity would result from vessel travel within the project area and placement of riprap. These effects should be short term and minimal and should not adversely impact water resources, water use, or water quality.

Alternative B

Without shoreline protection, accelerated land loss would result in greater increases in turbidity/sedimentation over time. This could negatively impact water quality.

7.6 Wetlands

Description of Affected Environment

The intermediate, brackish and saline emergent coastal marshes found in ANWR and MNWR are classified as estuarine intertidal emergent wetlands (USFWS, National Wetlands Inventory). Freshwater wetland habitats within the project area include palustrine emergent marsh (fresh marsh and wet prairie), palustrine farmed wetlands (rice fields) and some natural "prairie wetlands." The *Texas Conservation Action Plan, Gulf Coast Prairies and Marshes Ecoregion Handbook* (TPWD, 2012) identified these wetlands as priority habitats for Species of Greatest Conservation Need (SGCN).

Fresh water from an occasional storm and the inflow from rivers and creeks helps the keep saltwater out of the freshwater marshes, as well as providing nutrients and sediments. Wetlands continue to be lost as a result of erosion and saltwater intrusion along the shoreline of both refuges.

Description of Environmental Trends and Planned Actions

Hurricanes and other weather systems are likely to impact the Refuge in the future with varying degrees and intensity and are expected to create additional damage to infrastructure and wetlands.

Impacts on Affected Resource

Alternative A

There would be no direct impacts on wetlands as a result of the proposed action, as all work would be conducted in and from open water. There would be positive impacts as a result of the proposed action. The breakwaters will prevent or slow further erosion of wetlands by protecting the shoreline from wave action and tidal scour. Additionally, accumulation of sediments behind the breakwaters is expected to result in the creation of wetland habitat, as evidenced as a result of creation of similar breakwaters in other areas along the ANWR shoreline.

Alternative B

There would be no direct impacts to wetlands as a result of the no action alternative. Left unprotected, the shoreline would, however, continue to erode over time resulting in greater losses of wetland habitat.

7.7 Floodplains

Description of Affected Environment

ANWR and MNWR are within the AE or VE flood zones, which are within 100-year floodplain and subject to flooding from coastal storm and weather events (FEMA NFHL, 2021). There are no additional environmental trends or planned actions that could impact floodplains.

Impacts on Affected Resource

Alternative A

There would be no direct impacts to floodplains as a result of the proposed action. All work would be conducted from and in open water. Construction of the breakwaters could result in positive

impacts on the floodplain by offering shoreline protection that could reduce the frequency of flooding in interior marsh areas and, thereby, slow erosion and/or wetland loss.

Alternative B
There would be no direct impacts as a result of the no action alternative. Left unprotected, the shoreline would, however, continue to erode over time, which could result in increased frequency of flooding and/or significantly change the hydrological regime of the area.

7.8 Visitor Use and Experience

Description of Affected Environment
ANWR and MNWR provide visitor use opportunities and experiences such as wildlife viewing, nature trails, saltwater and freshwater fishing, hunting, and special events. Approximately 170,000 annual visitors utilize the Chenier Plain refuge complex (USFWS, 2008).

Some of the best wade fishing in Texas can be found on the refuge shorelines along East Galveston Bay. Both refuges offer free access 24 hours a day.

Two boat ramps provide access to East Bay and Oyster Bayou at Anahuac NWR. In addition, a canoe launch access to East Bay Bayou is accessible via the Honeysuckle Trail. Several trails, including but not limited to, Willows Trail, Hackberry Trail, and the Woodlot Trail provide access to the natural areas within the refuge.

There are five miles of roadways within McFaddin NWR that allow access for wildlife and nature viewing, as well as hunting, fishing and crabbing (USFWS, 2018).

Description of Environmental Trends and Planned Actions
As described under Section 7.1 Wildlife and Aquatic Species, the USFWS will be constructing numerous projects throughout the Complex to protect refuge shoreline and reconstruct water management infrastructure. These projects will restore areas to their full function for management and/or protection of interior marsh areas, some of which are utilized by visitors/hunters. Additionally, the Anahuac Cattlewalk Levee restoration project will improve existing access for hunters on the ANWR.

Impacts on Affected Resource

Alternative A
The presence of crews and noise from construction could temporarily disturb hunters, fishermen, and other visitors in the vicinity of the project area during construction; however, these impacts would be short-term and localized to the construction site, and there is a multitude of adjacent, undisturbed suitable open water and wetland habitat within both ANWR and MNWR available for recreational use. Project timing will be dependent on permit issuance; however, operations would ideally be conducted outside of the winter months when water levels are higher in the area and visitor use is lower. This timeframe would minimize the likelihood of interference with hunting, fishing, and wildlife viewing.

Alternative B
Implementation of the *No Action Alternative* would cause long-term negative impacts to wildlife recreational programs on Anahuac and McFaddin NWRs. The loss/conversion of wetland habitat and its effect on the wildlife species diversity would ultimately decrease the quality of wildlife dependent recreation. Waterfowl hunting would ultimately decline as the coastal marsh fragments convert to open water habitat and submerged aquatic vegetation disappears.

Fishing on the refuge would likely experience short term positive impacts as additional open water habitat is created but would likely collapse as open water habitat becomes more common. Open water habitat is the least used of any of the coastal fisheries habitat present on the Gulf Coast. Wildlife observation and photography would continue, but species diversity would be affected due to habitat loss/conversion.

7.9 Cultural Resources

Description of Affected Environment

ANWR
There are 8 sites (41FV128, 41CH212, 41CH363, 41CH362, 41CH354, 41CH355, 41CH361, 41CH360) recorded as prehistoric shell middens that are adjacent to the proposed breakwaters. Sites 41CH354 and 41CH355 are very close to the project location, however, both recorded site boundaries have eroded considerably since they were initially recorded in 1991 with site forms updated in 1998. 41CH354 was identified as a prehistoric shell midden with a coinciding historic component, and in 2002 it was determined Ineligible for the National Register (ATL # 8600021416). Site 41CH355 was listed as a prehistoric midden in 1991, however, in 1998 it was noted no further work was necessary as it was totally lost due to erosion along the waterway.

BOB Hydrographics performed a marine archaeological survey of the breakwater footprint plus a 50-meter buffer on October 12-16 (magnetometer survey) and November 9-12, 2020 (side-scan sonar) to identify any nautical archaeological resources of potential significance. No significant geophysical targets were found during the survey that would be potentially eligible for the State Antiquities Landmark or the National Register of Historic Places and no artifacts were collected.

MNWR
There are two known cultural resources sites (41CH386 and 41JF28) and one shipwreck (“Janet” #2024) in the vicinity of the project area. Sites 41CH386 and 41JF28 are both recorded as prehistoric shell middens. Site 41CH386 is located approximately 80 meters south of the project area between breakwaters 2 and 3, while 41JF28 is located 500 meters south of Breakwater 11 on the opposite side of the waterway. The shipwreck “Janet” (THC Shipwreck # 2024) is located in the GIWW approximately 2.5 miles southwest of the southern end of Breakwater 11 and 3 miles northeast of the northern end of Breakwater 10.

It should be noted that THC lists the positional accuracy of this shipwreck as 0.5 miles. Even with this locational ambiguity, this shipwreck resides well outside of the project area. Records describe the vessel type as “gas screw” sinking in 1943.

A documented shipwreck is located 2.5 miles to the closet breakwater, with a positional accuracy of 0.5 mile; therefore, it would not be impacted by the proposed action. Additionally, DESCO consulted with Bob Gearhart of BOB Hydrographics (BOB) regarding the probability of additional shipwrecks in the project area. BOB indicated that the affected sections of the GIWW appear to be located in a land cut (first dredged by 1934) that does not follow a historically navigable channel. The only deep water in the area resulted from dredging. Abandonment of old vessels does not seem likely in the absence of side channels, such as meander loops, and any loss of vessels necessarily would post-date 1934 and presumably would have been cleared (removed) to prevent obstruction of the GIWW.

Impacts on Affected Resource

Alternative A
There would be no excavation associated with construction of the rock breakwaters. Riprap would be placed on the existing bottom of the GIWW at the -1.5-foot contour within the mapped boundary of each of the shell middens. While this could potentially be considered an impact to an existing archeological site, the breakwaters would protect the integrity of the remainder of each site, as well as sites further inland by preventing further erosion of these areas. It is assumed that portions of the original sites are now submerged or washed away and there would be no adverse effects to these sites. For this reason, the project will have no negative effects on any archeological sites or historic properties and the project would proceed without any mitigation.

The USFWS submitted the ANWR GIWW Breakwaters project to the THC for review on 22 May 2020 (THC Tracking No. 202013325) to initiate Section 106 consultation. It was reviewed by THC staff and determined to have no adverse effects on terrestrial archeological sites and above-ground resources. Due to reported historic shipwrecks within the project area, an underwater archeological survey was requested, per agency policy. Underwater archeological investigations were conducted by Bob Hydrographics for portions of the proposed project area in November of 2020, under Antiquities Permit No. 9610 (THC Tracking No. 202104645). These investigations did not relocate the reported sites and the project was cleared to proceed within these areas.

The USFWS submitted the MNWR GIWW Breakwaters project to the THC for review in June of 2020 (Tracking 202015892) to initiate Section 106 consultation. THC staff reviewed it and determined the project posed no adverse effects to historic properties.

Alternative B
There would be no direct impacts to cultural resources as a result of the no action alternative. Left unprotected, cultural resource sites would be subject to continued erosion, resulting in a loss of cultural resources.

7.10 Refuge Management & Operations

Description of Affected Environment
Land management activities on the refuges are focused toward the “conservation and management of migratory birds and their habitats.” (USFWS, 2008).

Wetlands within the refuges are managed more heavily than others, with some of those management practices including water control structures and impoundments such as levees to control water movement within the wetlands in the refuges. In addition, approximately 500-700 acres of rice is organically farmed within the refuge system in wetland areas.

Approximately 500 acres of moist soil units within ANWR are managed for brood-rearing mottled ducks and other moist soil units are managed for migrational shorebirds.

In upland areas, former crop land has been allowed to lie fallow and return to its native prairie habitat. Some management occurs in these areas via grazing, mowing, invasive species removal, and prescribed burning.

Recreational uses of the ANWR and MNWR include fishing, wildlife observation, photography, education, and interpretation. Hunting is permitted on both refuges in designated Public Hunting Areas during state-specified season. Saltwater fishing and crabbing is popular year-round (USFWS, 2008).

Description of Environmental Trends and Planned Actions

Organic rice is produced on the ANWR because rice fields provide valuable wildlife and migratory bird habitat. Similarly, cattle grazing programs are implemented on both ANWR and MNWR to assist with vegetation management. These agricultural activities would continue to occur during and after construction of the proposed breakwaters.

Impacts on Affected Resource

Alternative A

There would be no direct impacts to land use as a result of the proposed action. Construction of the breakwaters will protect the ANWR and MNWR shorelines resulting in protection and potentially enhancement of Refuge habitats. Protection of assets/resources important to Refuge management will have positive, long-term effects on all land uses.

Alternative B

There would be no direct impacts to land use as a result of the proposed action. Left alone, the ANWR and MNWR GIWW shorelines would continue to erode, resulting in loss/conversion of habitat and long-term effects to land use.

7.11 Socioeconomics

Description of Affected Environment

MNWR is located approximately 30 miles from the city of Port Arthur, TX and ANWR is approximately 15 miles from the town of Winnie, TX. Port Arthur had a population of 54,280 in 2019 and a median household income of $36,557.00 between 2015 and 2019 (USCB 2021c). Winnie had a population of 2,788 (USCB 2021d) in and a median household income of $50,938.00 in 2019 (USCB 2021e). The percentage of persons in poverty in Port Arthur, TX between 2014 and 2018 is 27.5%, which is more than double the U.S. poverty rate of 11.8 percent (Semega et. al., 2019); whereas this statistic for Winnie is 8.2%, which is less than the national rate. The

predominant land uses in the vicinity of the refuge are grazing, hunting, fishing, wildlife viewing, and some oil and gas development. According to the USFWS, the MNWR saw 163,376 recreational visitors in 2017. Total expenditures from visitors were $3.7 million with non-residents accounting for $2.0 million or 53 percent of total expenditures. Expenditures on non-consumptive activities accounted for 58 percent of all expenditures, followed by fishing and hunting at 36 and 6 percent respectively (USFWS, 2019).

Impacts on Affected Resource

Alternative A
The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project due to crew expenditures (lodging, supplies, meals, etc.) in the nearby towns of Port Arthur and Winnie during project construction.

Alternative B
In the long-term, socioeconomic conditions would ultimately be affected due to the loss of potential revenue from the surrounding community if duck hunting diminished due to loss of associated habitat. Losses due to impacts to the fisheries resource would impact both the recreational and commercial fishing sectors of the environment. With a visitation rate of 4,700 hunters and 44,720 fishermen in 2017, a large portion of MNWR revenue would be lost under this alternative. Impacts due to the loss of cattle grazing within the NWRs due to salinity increases and conversion of emergent marsh to open water habitat would occur as well.

7.12 Environmental Justice

Description of Affected Environment
In Chambers County for 2019, out of the 43,837-population estimate, approximately 8.6% fell within the poverty line (USCB 2021a). Within Jefferson County for 2019, the 251,565-population estimate had approximately 16.9% falling within the poverty line (USCB 2021b). The actual project locations are approximately 30 miles from the city of Port Arthur, TX and 55 miles from the town of Winnie, TX. The GIWW is a major industrial transport waterway with no homes or schools within or adjacent to the immediate project locations.

Impacts on Affected Resource

Alternative A
Implementation of the proposed projects would benefit the people of Chambers and Jefferson counties by protecting the resources of the refuges in which they recreate, hunt, and fish. No homes or schools are nearby to be affected by temporary impacts from the placement of the breakwaters. There would be no disproportionate or adverse environmental, economic, social, or health impacts to minority or low-income populations.

Alternative B
In the long-term, there may be negative effects of not building the breakwater structures as the refuge shoreline would continue to suffer erosion which could lead to land loss and potential access issues to certain areas of the refuge should erosion become hazardous enough.

8.0 MITIGATION MEASURES AND CONDITIONS

Measures to mitigate and/or minimize adverse effects have been incorporated into the selected action. These measures include:

- Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.
- The permittee will instruct all personnel associated with the project of the potential presence of sea turtles and manatees in the project area.
- The permittee and all personnel associated with the project will be informed that there are civil and criminal penalties for harming, harassing, or killing sea turtles and/or manatees, which are protected under the Endangered Species Act.
- Vessel operators and crews will maintain a vigilant watch for protected species to avoid striking them and project activities would adhere to Vessel Strike Avoidance Measures and Reporting for Mariners (NOAA, 2008) and Sea Turtle and Smalltooth Sawfish Construction Conditions (NOAA, 2006).
- As a general condition of operations, trash would be contained within work vessels and taken out daily to prevent trash from entering waterways and being ingested and/or resulting in entanglement of protected species.
- If dead or injured protected species are observed, either related or unrelated to the project, they will be reported to USFWS, the National Marine Fisheries Service's Protected Resources Division (727-824-5312), and the local authorized sea turtle stranding/rescue organization.

9.0 MONITORING

No long-term monitoring is necessary for this project. As long as the breakwaters are in place, they should function as planned, slowing erosion of the shoreline and offering protection to inland assets/resources that are important to management of the Refuge.

10.0 SUMMARY OF ANALYSIS

The purpose of this EA is to briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

10.1 Alternative A – Proposed Action Alternative

As described above, the proposed action may result in minor, short-term adverse impacts on water quality, wildlife and aquatic species, and visitor use and experience in localized areas during construction. However, construction of the breakwaters will decrease the rate of erosion along the ANWR and MNWR shorelines, resulting in long-term beneficial indirect and cumulative impacts to vegetation, soils, wildlife and aquatic species, threatened and endangered species, wetlands and water resources. The beneficial impacts of the proposed action far outweigh the adverse impacts.

10.2 Alternative B – No Action Alternative

As described above, the no action alternative would have no direct impacts on any resources of concern. However, the no action alternative would result in long-term, adverse indirect impacts to vegetation, soils, wildlife, and aquatic species, threatened and endangered species, wetlands, water resources, and visitor use and experience due to continued loss of wetland habitat.

11.0 LIST OF SOURCES, AGENCES, AND PERSONS CONSULTED

Tim Cooper, Refuge Complex Manager, Texas Chenier Plain NWR Complex
Kristin Fritz, ANWR Manager
Doug Head, MNWR Manager
Monica Kimbrough, Chief, Branch of Planning/Deputy Refuge Supervisor, Regions 6, 7, 8
Steve Baker - ANWR Facilities Manager
Kevin Hartke - Regional Biologist, Ducks Unlimited
Carter Coleman - Regional Engineer, Ducks Unlimited
Jan Culbertson, Texas Parks and Wildlife Department
Jeff Durst, Texas Historical Commission
Amy Boergens, Texas Historical Commission
Jerry Androy, US Army Corps of Engineers
Andria Davis, US Army Corps of Engineers
Kristi McMillan, US Army Corps of Engineers

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13.0 LIST OF PREPARERS

Tanya Matcek, President, DESCO Environmental Consultants
Misti Little, Biologist and GIS Specialist, DESCO Environmental Consultants
Thomas Wilder, Biologist, DESCO Environmental Consultants
Tim Cooper, Refuge Complex Manager, Texas Chenier Plain NWR Complex
Kristin Fritz-Grammond, Refuge Manager, Anahuac National Wildlife Refuge
Douglas Head, Refuge Manager, McFaddin National Wildlife Refuge

14.0 STATE COORDINATION

November 6 and 7, 2019 – Verbal communication between Jeff Durst of the THC and Ashley Chapman of DESCO regarding shell middens documented in the project footprint. Jeff indicated that we should submit the project for review for the THC to make recommendations and/or a determination of project effect.

May 22, 2020 - USFWS submitted a project description and information on cultural resources for the ANWR breakwaters to the THC to initiate Section 106 consultation.

June 18, 2020 – THC concurred that the ANWR breakwaters project would have no adverse effects on terrestrial archeological sites and above-ground resources. Due to reported historic shipwrecks within the project area, THC requested an underwater archeological survey, per agency policy.

July 21, 2020 – USFWS submitted a project description and information on cultural resources for the MNWR breakwaters to the THC to initiate Section 106 consultation.

August 19, 2020 – THC concurred that the MNWR breakwaters project would have no adverse effects to historic properties.

January 7, 2021 - BOB Hydrographics submitted his report summarizing findings of the marine archaeological survey of the ANWR breakwaters project to the THC for review and concurrence.

February 1, 2021 – THC concurred that no identified underwater archeological sites, historic shipwrecks, and/or significant remote-sensing targets are present or affected by the project as proposed and the project was cleared to proceed.

15.0 TRIBAL CONSULTATION

USFWS contacted/consulted with the appropriate tribal representations and provided them with an opportunity to comment on the project. No response was received from any of the tribes.

16.0 PUBLIC OUTREACH

Hard copies of the Draft ANWR and MNWR GIWW BWs EA were mailed out to 59 interested parties on May 31, 2022, and the Draft EA was emailed to an additional 13 recipients on April 4, 2022, marking the beginning of the 30-day comment period, which ended on May 4, 2022. USFWS extended the comment period by one week beyond the 30 days to account for any potential delays due to mail delivery of the hard copies. Recipients of the Draft EA included but were not limited to federal, state, and local government representatives/officials, libraries, and public interest groups.

Two comments were received during the comment period:

1. The THC commented that the discussion of Alternative A on page 22 needed to be revised as it implied that the THC made a recommendation of no adverse effects but alternately then asked for an underwater survey. This comment was addressed by revising the discussion to describe the THC consultation process more accurately as outlined in the comments submitted by the agency.
2. Michelle Falgout, County Engineer for Jefferson County, Texas, commented that the discussion of Alternative A on Page 24 related to socio-economic impacts seemed to be contradictory. This section states: “The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project, since labor and materials would

be utilized locally, as much as possible. The construction labor force would need temporary housing and meals in the nearby towns of Port Arthur and Winnie." Ms. Falgout said that if labor and materials were utilized locally, there would be no need for temporary housing. To address this comment, the paragraph was revised as follows: "The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project due to crew expenditures (lodging, supplies, meals, etc.) in the nearby towns of Port Arthur and Winnie during project construction."

17.0 OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS & REGULATIONS

Other statutes, executive orders, and/or regulations that are applicable to the proposed action and were considered during its development are included in **Appendix D**.

18.0 DETERMINATION

This section will be filled out upon completion of any public comment period and at the time of finalization of the Environmental Assessment.

☒ The Service's action will not result in a significant impact on the quality of the human environment. See the attached "Finding of No Significant Impact".

☐ The Service's action may significantly affect the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: _____ Date: 10/6/23

Name/Title/Organization: Refuge Complex Manager

Texas Chenier Plain National Wildlife Refuge Complex, Refuges, Region 2

Reviewer Signature: _____ Date: _____

Name/Title: _____

APPENDIX A
ANWR Breakwaters
Construction Drawings

APPENDIX B
MNWR Breakwaters
Construction Drawings

APPENDIX C
Land Ownership Maps

APPENDIX D
Other Applicable Statutes, Executive Orders, & Regulations

APPENDIX D
OTHER APPLICABLE STATUES, EXECUTIVE ORDERS & REGULATIONS

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
Cultural Resources American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7 Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3 Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7 National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810 Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11 Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10 Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971) Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	Compliance with the National Historic Preservation Act of 1966, as amended, requires identification of all NRHP-listed or NRHP-eligible properties in the project's Area of Potential Effect (APE) and development of mitigation measures for those resources adversely affected in coordination with the Texas State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. The State Historic Preservation Officer (SHPO) of the Texas Historical Commission is responsible for overseeing Section 106 consistency within the State of Texas. DESCO completed a file search of known archaeological and historic resources within the project area. This assessment was based on a search of the site files at the Texas Archaeology Research Laboratory (TARL). This file search revealed 8 recorded as prehistoric shell middens adjacent to the proposed ANWR breakwaters and 2 sites and one shipwreck in the vicinity of the MNWR breakwaters. BOB Hydrographics performed a marine archaeological survey, as required by THC of the ANWR breakwater footprint plus a 50-meter buffer on October 12-16 and November 9-12, 2020 and did not identify any geophysical targets believed to meet criteria for State Antiquities Landmark or NRHP eligibility. USFWS consulted with the SHPO with regard to potential impacts to cultural resources. The SHPO concurred that the MNWR breakwaters project would have no effect to cultural resources on July 21, 2020 and that the ANWR breakwaters would have no effect to cultural resources on February 1, 2021. USFWS contacted/consulted with the appropriate tribal representations and provided them with an opportunity to comment on the project. No response was received from any of the tribes.
Fish & Wildlife Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450 Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21 Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)	Interagency consultation procedures under Section 7 of the Endangered Species Act were satisfied on March 1, 2021 on listed species under the jurisdiction of the USFWS. Consultations with NOAA Fisheries Southeast Regional Office for Section 7 for sea turtles were submitted on November 13 and November 16, 2020. NMFS concluded that the proposed action is not likely to adversely affect listed species under NMFS's purview on February 18, 2021. The Fish and Wildlife Coordination Act directs Federal agencies to consult with USFWS, NMFS, and State agencies before authorizing alterations to water bodies, for any purpose, including navigation, and by any public or private agency under Federal permit or license. USFWS, NMFS, and TPWD were provided copies of the Draft EA for review and comment. There should be no adverse impacts to migratory birds, as the project would be constructed from and within open water. Should birds be displaced by noise or presence of crews during operations, there is a multitude of adjacent suitable habitat for them to move into.

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
Natural Resources Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23 Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)	The Clean Air Act (CAA) contains provisions under the General Conformity Rule to ensure that actions taken by Federal agencies in air quality nonattainment and maintenance areas do not interfere with a state's plans to meet national standards for air quality. Under the General Conformity Rule (the Rule), Federal agencies must work with State, Tribal and local governments in a nonattainment or maintenance areas to ensure that Federal actions conform to the air quality plans established in the applicable state or tribal implementation plan. The regulations codifying the Rule under 40 CFR Part 93, Subpart B, specify that no Federal agency shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan. Construction emissions would be minimal and would not adversely affect air quality. Construction equipment would be washed prior to entry into the area to prevent the spread of invasive species.
Water Resources Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933 Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328 Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333 Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977) Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	Submerged tracts of land owned by the State of Texas and administered by the Texas General Land Office (GLO) are present within the project area. Texas Coastal Management Program (CMP) Consistency statements were submitted to the USACE as part of permit application. The USFWS will obtain any necessary permissions from the GLO to construct the breakwaters. The proposed action has been analyzed for compliance with Executive Order (EO) 11990, Protection of Wetlands and 11988, Floodplain Management. The project will be constructed from and in open water; therefore, no wetlands would be impacted. The project would help to protect wetlands that offer flood protection to interior areas and, therefore, any impacts to floodplains as a result of the proposed action would be beneficial. State water quality certification through Section 401 of the Clean Water Act was obtained from the Texas Commission on Environmental Quality through the USACE permit process. The Clean Water Act (Section 404) and Rivers and Harbors Act (Section 10) afford protection of non-tidal and tidal waters of the United States. The USFWS applied for and obtained Letters of Permission for construction of the Anahuac GIWW Breakwaters (SWG-2020-00532) and the McFaddin GIWW Breakwaters (SWG-2020-00644) from the USACE Galveston District. The applicant will comply with the terms and conditions of the USACE permits.

UNITED STATES FISH AND WILDLIFE SERVICE
ENVIRONMENTAL ACTION STATEMENT FOR ENVIRONMENTAL ASSESSMENT
ANAHUAC & MCFADDIN NATIONAL WILDIFE REFUGES GIWW BREAKWATERS

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the action of constructing structural protection (rock breakwaters) along shorelines of the Anahuac and McFaddin National Wildlife Refuges (NWRs) within the Gulf Intracoastal Waterway (GIWW):

_____ is a categorical exclusion as provided by 43 CFR §46.210 and/or 516 DM 8.5 and 43 CFR §46.215. No further NEPA documentation will therefore be made. The proposed action falls under categorical exclusion: **516 DM 8.5 (B)(2)** "*The operation, maintenance, and management of existing facilities and routine recurring management activities and improvements, including renovations and replacements which result in no or only minor changes in the use, and have no or negligible environmental effects on-site or in the vicinity of the site.*"

__√__ is found not to have significant environmental effects as determined by the attached environmental assessment and finding of no significant impact.

___ is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an environmental impact statement.

_____ is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.

___ is an emergency action within the context of 40 CFR §1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

OTHER SUPPORTING DOCUMENTS

1. Environmental Assessment
2. FONSI
3. Intra-Service Section 7 Consultation
4. National Marine Fisheries Service Section 7 Consultation/Concurrence
5. Texas Historical Commission Consultation/Concurrence for Section 106 compliance

Approved by:

_____

Amanda G. McAdams
Assistant Regional Director, NWRS, Southwest Region

_____

Jeff Fleming
Acting Regional Director, U.S. Fish and Wildlife Service, Region 2

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Tim Cooper

Anahuac and McFaddin National Wildlife Refuges

Telephone Number: 409-267-3337x125

Date: October 7, 2023

I. Region: Region 2

II. Service activity: Anahuac and McFaddin National Wildlife Refuges (NWRs) – Construction of GIWW Breakwaters

III. Pertinent species and habitat:

A. Listed species and/or their critical habitat within the action area:

McFaddin NWR

DESCO obtained Species Lists for each breakwater segment from the USFWS ECOS-IPaC system on May 28 and 29, 2020 to determine threatened and endangered species with potential for occurrence within the project area (Consultation Code: 02ETTX00-2020-SLI-2234 Event Code: 02ETTX00-2020-E-04647; Consultation Code: 02ETTX00-2020-SLI-2236 Event Code: 02ETTX00-2020-E-04651; Consultation Code: 02ETTX00-2020-SLI-2238 Event Code: 02ETTX00-2020-E-04655; Consultation Code: 02ETTX00-2020-SLI-2239 Event Code: 02ETTX00-2020-E-04657; and Consultation Code: 02ETTX00-2020-SLI-2243 Event Code: 02ETTX00-2020-E-04667; Consultation Code: 02ETTX00-2020-SLI-2254 Event Code: 02ETTX00-2020-E-04687; Consultation Code: 02ETTX00-2020-SLI-2255 Event Code: 02ETTX00-2020-E-04689; Consultation Code: 02ETTX00-2020-SLI-2256 Event Code: 02ETTX00-2020-E-04691; Consultation Code: 02ETTX00-2020-SLI-2258 Event Code: 02ETTX00-2020-E-04695; Consultation Code: 02ETTX00-2020-SLI-2259 Event Code: 02ETTX00-2020-E-04697; Consultation Code: 02ETTX00-2020-SLI-2260 Event Code: 02ETTX00-2020-E-04699; and Consultation Code: 02ETTX00-2020-SLI-2261 Event Code: 02ETTX00-2020-E-04701). In addition, we updated the list for Jefferson County on 8/24/ 23 to include Whooping Cranes that were added to the IPaC list since the initial work was done

Anahuac NWR

DESCO obtained Species Lists for each breakwater segment from the USFWS ECOS-IPaC system on February 20 and 21, 2020 to determine threatened and endangered species with potential for occurrence within the project area (Consultation Code: 02ETTX00-2020-SLI-1170 Event Code: 02ETTX00-2020-E-02421; Consultation Code: 02ETTX00-2020-SLI-1171 Event Code: 02ETTX00-2020-E-02423; Consultation Code: 02ETTX00-2020-SLI-1172 Event Code: 02ETTX00-2020-E-02425; Consultation Code: 02ETTX00-2020-SLI-1176 Event Code: 02ETTX00-2020-E-02433; and Consultation Code: 02ETTX00-2020-SLI-1177 Event Code: 02ETTX00-2020-E-02435).

Based on this information, the following federally listed threatened and endangered species have potential for occurrence:

Piping Plover (*Charadrius melodus*) - T
Red Knot (*Calidris canutus rufa*) - T
Attwater's Greater Prairie-Chicken (*Tympanuchus cupido*) - E
Whooping crane (*Grus americana)* – E
Green sea turtle (*Chelonia mydas)* - T
Hawksbill sea turtle (*Eretmochelys imbricata*) - E
Kemp's Ridley sea turtle (*Lepidochelys kempii*) - E
Leatherback sea turtle (*Dermochelys coriacea*) - E
Loggerhead sea turtle (*Caretta caretta*) - T
West Indian manatee (*Trichechus manatus*) – T
Eastern Black Rail (*Laterallus jamaicencis jamaicensis*) – T

B. Proposed species and/or proposed critical habitat within the action area:

N/A

C. Candidate species within the action area:

N/A

IV. Geographic area or station name and action:

Station: Texas Chenier Plain NWR Complex, Anahuac and McFaddin NWRs, Chambers and Jefferson Counties, Texas.

Action:
McFaddin NWR: Construct approximately 76,151 linear feet (approximately 14.4 linear miles) of rock breakwaters in the Gulf Intracoastal Waterway (GIWW) in 14 separate segments along the McFaddin NWR shoreline to slow erosion due to tidal scour, wave action, and other natural processes.

Anahuac NWR: Construct approximately 4,661 linear feet (0.88 linear miles) of rock breakwaters in seven separate segments in the Gulf Intracoastal Waterway (GIWW) along the Anahuac NWR to slow erosion due to tidal scour, wave action, and other natural processes.

The proposed actions will protect/conserve valuable assets/resources of importance to the management of the Refuge further inland. Left unprotected, the Anahuac and McFaddin NWR shorelines would continue to erode rapidly over time and saltwater will eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area.

V. Location (attach map): See maps in EA

A. Ecoregion Number and Name: Southeastern Mixed Forest Province (231)

B. County and State: Chambers, Galveston, and Jefferson Counties, Texas

C. Section, township, and range (or latitude and longitude):

McFaddin NWR

NAD 1983 UTM Zone 15N		
McFaddin NWR Breakwater Number	**Beginning**	**End**
Breakwater #1	29° 35’ 36” N 94° 23’ 04” W	29° 35’ 43” N 94° 22’ 42” W
Breakwater #2	29° 35’ 44” N 94° 22’ 42” W	29° 36’ 13” N 94° 21’ 56” W
Breakwater #3	29° 36’ 15” N 94° 21’ 55” W	29° 37’ 31” N 94° 19’ 17” W
Breakwater #4	29° 37’ 42” N 94° 18’ 52” W	29° 37’ 55” N 94° 18’ 19” W
Breakwater #5	29° 37’56” N 94° 18’ 16” W	29° 39’ 10” N 94° 15’ 37” W
Breakwater #6	29° 40’ 31” N 94° 12’ 37” W	29° 40’ 37” N 94° 12’ 23” W
Breakwater #7a	29° 40’ 38” N 94° 12’ 19” W	29° 40’ 44” N 94° 12’ 08” W
Breakwater #7b	29° 40’ 45” N 94° 12’ 06” W	29° 40’ 46” N 94° 12’ 01” W
Breakwater #8	29° 40’ 50” N 94° 11’ 57” W	29° 41’ 03” N 94° 11’ 24” W
Breakwater #9	29° 41’ 12” N 94° 10’ 31” W	29° 41’ 14” N 94° 10’ 20” W
Breakwater #10	29° 41’ 22” N 94° 10’ 03” W	29° 43’ 04” N 94° 04’ 13” W
Breakwater #10a	29° 42’ 47” N 94° 07’ 25” W	29° 42’ 58” N 94° 07’ 09” W
Breakwater #11	29° 45’ 59” N 94° 02’ 59” W	29° 46’ 13” N 94° 02’ 39” W
Breakwater #12	29° 46’ 17” N 94° 02’ 25” W	29° 46’ 35” N 94° 01’ 57” W

Anahuac NWR

NAD 1983 UTM Zone 15N		
Anahuac NWR Breakwater Number	**Beginning**	**End**
Breakwater #1	N 29° 33’ 42” W 94° 27’ 37”	N 29° 33’ 44” W 94° 27’ 31”
Breakwater #2	N 29° 33’ 54” W 94° 26’ 28”	N 29° 33’ 55” W 94° 26’ 10”
Breakwater #3	N 29° 33’ 58” W 94° 25’ 40”	N 29° 34’ 03” W 94° 25’ 31”

NAD 1983 UTM Zone 15N		
Anahuac NWR Breakwater Number	**Beginning**	**End**
Breakwater #4a	N 29° 34’ 04” W 94° 25’ 21”	N 29° 34’ 07” W 94° 25’ 21”
Breakwater #4b	N 29° 34’ 09” W 94° 24’ 11”	N 29° 34’ 11” W 94° 25’ 08”
Breakwater #5a	N 29° 35’ 00” W 94° 24’ 56”	N 29° 35’ 03” W 94° 25’ 01”
Breakwater #5b	N 29° 35’ 07” W 94° 24’ 59”	N 29° 35’ 09” W 94° 24’ 59”

D. Species/habitat occurrence:

Piping Plovers and Red Knots have been seen using the beach areas on the Texas Chenier Plain NWR Complex. Piping Plovers have also been observed utilizing mud flat areas along the GIWW. These species would not utilize the open water habitat within the project’s Area of Potential Effect (APE) but could be present on mudflats behind the breakwaters. The project area is outside of the known range of Attwater’s Greater Prairie Chicken. There is no suitable sea turtle nesting habitat within the project area; however, juvenile Green and Kemp’s ridley sea turtles have the potential for occurrence in the project area during operations. The likelihood of presence is low and is greater in the summer months than in the winter months. Similarly, West Indian manatees also have the potential for occurrence in the project area; however, the likelihood is extremely low.

The Eastern Black Rail is known to occur within the Texas Chenier Plain NWR Complex, potentially year-round, and could be present in persistent emergent wetland areas adjacent to the project area during project construction. However, there is no suitable habitat within the APE.

Whooping cranes have been seen and documented within the upper Texas coast region in recent years. Whooping cranes would not utilize the open water habitat within the project’s APE but could occur as a transient species in marshes inland of the project area if they were to make a flight into this area from Louisiana.

There is no designated critical habitat or proposed critical habitat for any protected species located within the Anahuac or McFaddin NWR boundaries nor within the APE considered herein.

VI. Description of proposed action:

The proposed rock breakwaters would be constructed within the GIWW in 21 separate segments at varying distances (0-150 feet) from the shoreline. Water depths would vary at the breakwater locations but would not exceed 1.5 feet. The waterward toe of the breakwaters would be located a minimum of 10 feet from the construction setback for the GIWW and would not interfere with navigation. The breakwaters would be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.0 feet, which is an average of 4.5 feet above existing grade at the centerline,

with a 3-foot top width and 2:1 side- slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. The breakwater will transition back to natural ground at the termination point on a 45-degree angle.

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting, middle, and ending points of the rock breakwaters. Beacon design is indicated on Sheet 96 of 96 of the attached drawings. Upon receipt of a USACE permit, DU will submit a Private Aids to Navigation marking determination request to the USCG in accordance with 33 CFR Part 66 Subpart 66.01. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored in a long line just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Up to two shallow water spud barges will be utilized for construction, one spud barge containing a long-reach excavator and potentially another loaded with riprap if it is not feasible to work directly from the deck barge on which the rock is delivered. The shallow water barge(s) will be transported to the breakwater locations using a tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge. No dredging would be necessary for barge access to the breakwater locations.

Geotextile fabric will be placed in the footprint of the breakwaters prior to placement of riprap using either the long-reach excavator or small John boats. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to wetland areas.

Project construction is expected to take approximately 3 months for Anahuac NWR and 6 months for McFaddin NWR.

I. Determination of effects:

Explanation of effects of the action on species and critical habitats

A. Piping Plover

The Piping Plover, a federally listed threatened species, occurs along the Texas Gulf Coast in large wintering populations. Piping Plovers are normally only observed in small numbers wintering on the beaches and mudflats of the Texas Chenier Plain NWR Complex between October and March.

The breakwaters will be constructed completely within and from open water habitat approximately 1.5 feet deep; therefore, there is no suitable habitat or designated critical habitat for this species within the APE. Piping Plovers could potentially be present on mud flats behind the breakwaters during construction and subject to temporary disturbance/displacement due to crew presence and noise. Disturbance/displacement would be short-term and localized to the construction area and there is a multitude of suitable foraging habitat in the vicinity of the project area.

Historically, McFaddin NWR conducted some short duration population surveys consisting of two survey types, an annual full beach survey and a monthly survey that

was done on select preferred habitat areas. The annual survey route was conducted during the middle of the Piping Plover wintering season on the Texas Gulf Coast (November), at low tide, and ran the entire length of the beach in the proposed area. For a project need on the beach bordering 3 miles of McFaddin NWR, surveys were conducted on two main areas, one on the east end of the route and one on the west end of the route. These surveys were conducted from July-April from 2014 to 2016. Results from Dec 2014-April 2016 show an average of nine Piping Plovers on the McFaddin beach per survey. The McFaddin beach birds are approximately 2.9 miles from this project area. No survey work has been conducted on McFaddin since 2016.

The McFaddin NWR project area is located approximately 3 miles from the Gulf beaches at its closest point and is within the GIWW. The nearest designated Critical Habitat is approximately 9.5 miles to the southwest in the vicinity of Rollover Bay.

Breakwaters placed along the McFaddin NWR shoreline in the GIWW in the past have shown adequate sediment deposition behind the breakwaters for creation of new foraging areas for piping plovers. Refuge surveys have documented bird use in these areas. Construction of the proposed breakwaters in the GIWW could potentially result in the benefit of creation of similar foraging habitat for piping plovers. The location of the structures and sediment loading in the water column will be the greatest factors affecting the potential for sedimentation to create foraging habitat. If sedimentation does occur and habitat is created behind the breakwaters, it would likely require more than a decade for the habitat to develop suitable characteristics for use by plovers.

We have analyzed the effects of the proposed action on the threatened Piping Plover and believe the project **may affect, but is not likely to adversely affect** the species due to the minor, short-term, and localized nature of potential disturbance impacts.

B. Red Knot

The Red Knot, listed as threatened under the Endangered Species Act, has the potential to occur within the project area during the migration and winter months. While sightings have been recorded within the Texas Chenier Plain NWR Complex, information on these sightings is limited entirely to coastal beach areas. There are records of Red Knot usage elsewhere in fresher water systems, so an occurrence, although highly unlikely, is possible in areas containing mud flats.

The McFaddin NWR GIWW Breakwaters project area is located approximately 1.9 miles from the Gulf beaches at its closest point and there is no suitable habitat within the project area. The placement of these structures is in non-tidal areas with water depths that exceed foraging depths for red knots.

We have analyzed the effects of the proposed action on the threatened Red Knot and believe the project **may affect, but is not likely to adversely affect** the species due to the lack of suitable habitat in the project area.

C. Attwater's Greater Prairie-Chicken

Attwater's Greater Prairie-Chicken, listed as Endangered under the Endangered Species Act, is found in coastal prairie habitat that includes grasses such as little bluestem, big bluestem, Indiangrass, and switchgrass. This species is known to occur in only two small pockets of habitat in Galveston and Colorado counties. These two refuges combine for about 12,000 acres - 0.2% of the historic 6 million acres of prairie. No birds are known to be surviving off the refuges despite repeated censuses.

The McFaddin NWR GIWW Breakwaters project is outside of the known range of this species and the species is not expected to be present in or around the project area.

We have analyzed the effects of the proposed action on the endangered Attwater's Greater Prairie Chicken and believe the project would have **no effect** due to the lack of presence wit the project area.

D. Whooping Crane

Whooping Cranes were living on this coastal marshlands for years but like all other historic range areas lost there wild populations generations ago. Only the flock at Aransas/Wood Buffalo survives in the wild. An experimental population in Louisiana has documented several cranes from that area using rice fields near Winnie. Although one short flight of these birds was recorded near Willow Slough that represents the closest area birds have used from the project site. . Our data indicates that all Whooping Cranes have been from the experimental population in these counties and were monitored with telemetry. As of 2023 all Whooping Cranes were retrieved and returned to Louisiana. We believe the project would have **no effect** due to the lack of presence within the project area at this time and the lack of use of marsh habitat when they were here.

E. Sea Turtles

Three species of sea turtles, the Kemp's Ridley, leatherback, and hawksbill are federally listed as endangered, and two species, the loggerhead and green sea turtles, are federally listed as threatened. All five species occur in the nearshore Gulf of Mexico waters and the Kemp's Ridley and green sea turtles can be found in East Bay adjacent to Anahuac NWR. The likelihood of presence in the GIWW is low and is greater in the summer months than in the winter months. There is no suitable sea turtle nesting habitat within the project area, so there is **no effect** under the consolation role of UFSWS consultation.

Potential effects from project construction include death or injury due to vessel strikes and/or placement of riprap; however, with implementation of the following conservation measures for the protection of threatened and endangered sea turtles and manatees, the likelihood of impacts is low:

- As a general condition of operations, trash would be contained within work vessels and taken out daily to prevent trash from entering waterways and being ingested and/or resulting in entanglement of protected species.
- The permittee will instruct all personnel associated with the project of the potential presence of sea turtles and manatees in the project area.
- The permittee and all personnel associated with the project will be informed that there are civil and criminal penalties for harming, harassing, or killing sea turtles and/or manatees, which are protected under the Endangered Species Act.
- If dead or injured protected species are observed, either related or unrelated to the project, they will be reported to FWS, NMFS, and/or local stranding network contacts.
- Vessel operators and crews will maintain a vigilant watch for protected species to avoid striking them.
- Protected species may surface in unpredictable locations or approach slowly

moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, operators will reduce speed and shift the engine to neutral. Engines would not be engaged until the animals are clear of the area.

We have analyzed the effects of the proposed action on all five species of sea turtles and believe that, with implementation of the above conservation measures, the project **may affect, but is not likely to adversely affect** any listed sea turtles in the water.

F. West Indian Manatee

The threatened West Indian manatee is most commonly found in shallow, slow-moving waters of rivers, estuaries, saltwater bays, canals and coastal areas where it prefers freshwater and brackish habitats. West Indian manatees also have the potential for occurrence in the project area; however, the likelihood is extremely low. Potential affects from project construction include death or injury due to vessel strikes and/or placement of riprap.

There seem to be a few rare, documented occurrences or reports of manatees on the Upper Texas Coast. We reviewed a comprehensive work on distribution of manatees, namely *Manatee Occurrence in Northern Gulf of Mexico, West of Florida* (D. Fertl et al, 2005), which found 53 sightings, 8 carcasses, and documented 5 captures in Texas over a 151-year period (1853-2005). Most occurrences in Texas were south of the Matagorda Bay area. We also consulted Schmidly and Bradley (2016), which reported a manatee carcass found off of Bolivar with no specific location. It is possible this is the same badly decomposed manatee carcass that was found in 2016 on McFaddin Beach near Perkins Levee. This is an area that has offshore currents coming in directly from the Gulf, and it is likely that this manatee died elsewhere in the Gulf and was washed ashore at this location. One additional manatee carcass was documented in Cow Bayou just north of Sabine Lake, but no date was provided.

The Galveston Bay system has certainly had a few more manatee sightings and relocations since Fertl et. al.'s comprehensive work was published in 2005. Other manatees of noteworthy acclaim occurred in the area. A manatee was captured and referred to as Sweet Pea or Selina. It was found in Buffalo Bayou during December 1995. She was in a sewer plant outfall surrounded in photos by water hyacinth. She needed to be rescued as water temperatures would not have supported her. In 2012, there were manatee sightings from South Padre Island to Galveston Bay, which were thought to be a single manatee given the name Molly. Molly likely found that conditions on the upper coast were not supportive enough for survival and kept moving. She was a short-term visitor and disappeared without need for a rescue. In 2014, a manatee was seen near Corpus Christi, and more sightings came from Corpus Christi on July 11th and 17th of 2019. Both the 2014 and 2019 sightings in Corpus Christi could have been Molly moving north again or possibly another manatee. In late November of 2014, an animal was reported in need of rescue at the Baytown CPL power outlet on Trinity Bay (possibly the same as a manatee documented in

Westlake, LA). The warm water discharge was attracting the animal who appeared reluctant to leave this artificial hot water discharge outflow. This animal was emaciated and captured by SeaWorld staff. It was identified as a known manatee from the Tampa Bay area of Florida and was returned to that area as soon as adequate fat reserves could be restored to allow for its release. For the Galveston Bay area, we have only two additions to the list, both rescues from the relatively sea grass rich portions of this bay system.

Rare reports exist for manatees in Louisiana (LA), as well. In 1929, a skull was added to the National Museum collection (#257406) from Calcasieu Lake and was reported, up to 1941, as the only record of this animal in this state at that time. There were other records in the state in 1976 and 1979 (Powell and Rathburn, 1984), but they were mostly confined to the eastern portion of LA. However, a manatee was videoed in November of 2014 near Westlake, LA on the Calcasieu River. Scarring on that animal's back was not consistent with the animal recovered from Trinity Bay in November of 2014 (T. Cooper, pers. comm.); therefore, we think this was a different animal.

Florida manatees (*Trichechus manatus latirostris*) have been documented exploring other areas all the way to Massachusetts, and it is likely that the Antillean manatee (*Trichechus manatus manatus*) may move up the coast in exploratory trips. These wandering trips are referenced in numerous places in literature reviewed, but exploration comes at considerable risk to the individuals. They run a risk of being killed by cold water exposure, or they may simply find inadequate food resources and return to suitable year-round habitats.

Manatees feed on aquatic vegetation and need to consume between 5% and 10% of their body weight to maintain condition. That equates to 100 to 200 pounds of sea grasses or other vegetation daily. Seas grasses do not occur in the GIWW, but may occur in nearby bays, although not in abundance since the mid-1950s. The TPWD Seagrass Conservation Plan states, "Although 1956 is our earliest reference point, it is interesting to note that seagrasses were generally more abundant in the Galveston Bay system (even East Bay and upper Galveston Bay) during the early part of the century based on anecdotal information." The report also states that East Bay no longer supports much in the way of seagrass. The proposed project will not directly impact any sea grass beds. Seagrasses may still be found in other areas of the Galveston Bay System, including places like Christmas Bay and the Trinity River delta. Manatees moving through the upper Texas Coast will not find adequate food resources from sea grasses to remain in the GIWW at this time.

Water hyacinth is also eaten by manatees, but this floating plant is only found in quantity in the GIWW after large and prolonged rain events, which can flush some excess hyacinth from inland bayous. Even after these events, hyacinth is only present for a few weeks. Saltwater kills water hyacinth as soon as salinities return in zones below the saltwater barriers, removing the palatability of these plants. Therefore, any manatee in the project area should be considered transient and likely continuing its

search for more favorable areas than the GIWW, even during warm summer exploratory trips.

In conclusion, in 166 years of record keeping between these various references, there has been no reported sighting of a manatee in the GIWW within the vicinity of the Refuges. The Refuges have no sightings or reports since their establishment in this area, with the exception of the 2016 carcass that likely floated in from some other location. The animal was found in an advanced state of decomposition with >95% of its epidermis sloughed off. Manatee food resources are not present in the action area except in trace amounts, and any vagrant manatee that passes through this area would continue moving to find required sea grasses or aquatic vegetation. Water hyacinth may be present in the project area at times, but is also limited and would not provide adequate material to support a manatee for any length of time. The odds that we will encounter a manatee passing through the area during construction of this project are so remote as to be discountable. However, the measures implemented for protection of sea turtles will also offer protection to a manatee(s) in the off-chance that one is present during project construction.

The breakwater structures are expected to be in place over many decades, and, although unlikely, a transient manatee(s) may encounter the structures during their projected lifespan. The structures will have openings that would allow any manatee that enters to exit the breakwater area with minimal difficulty, even in hurricane flooding events; therefore, there is no stranding risk for a transient manatee, in the very unlikely event that one encounters the breakwaters.

We have analyzed the effects of the proposed action on the threatened West Indian manatee and believe that the project **may affect, but is not likely to adversely affect** the species.

G. Eastern Black Rail

The Eastern Black Rail has been listed as threatened under the Endangered Species Act and is known to occur within the Texas Chenier Plain NWR Complex year-round. Eastern Black Rails along the Gulf Coast are known to inhabit freshwater and brackish/saltwater persistent emergent marsh habitats. There is no suitable black rail habitat within the project area. All work will be conducted from and within open water habitat. Currently, there are no official records of Eastern Black Rails being documented within or near the project area. There is some potential for equipment noise issues creating secondary effects, but the effects of noise are all speculative and not supported in publications for this species or similar cryptic marsh birds. Black rails have been found near roadways, pumping stations, and other noisy equipment, indicating that they do not abandon areas subjected to industrial noise.

We have analyzed the effects of the proposed action on the Eastern Black Rail and believe the project **may affect, but is not likely to adversely affect** this species**.** This determination is due to the fact that the entire project is being conducted from the

water and barges. Barge loading and unloading will be at well-established ramps with no potential to impact any areas containing suitable habitat for the species. Any possible noise effects from project construction will be reduced by the distance between the breakwaters and the shoreline. Loading of barges will be accomplished from commercial ramps where industrial materials are already loaded and shipped as part of normal operations.

Explanation of actions to be implemented to reduce adverse effects:

Construction crews will be working from barges and not from shore. Work will be conducted during daylight hours.

Conservation Measures:

To reduce short term impacts, conservation measures have been identified and will be employed by all involved in the project. Both general and specific measures are listed below for the protection of listed T&E species.

Conservation Measures – General – All Species

The following conservation measures will be incorporated into operations for protection of all listed species:

1. Training: All crew members (contractors, workers, etc.) will attend training sessions prior to the initiation of, or their participation in, project work activities. Training will be conducted by qualified personnel and the scope of training will include: 1) recognition of sea turtles, manatees, Piping Plovers, Red Knots, and Eastern Black Rails and their habitats; 2) recognition of other listed species; 3) impact avoidance measures; 4) reporting criteria; 5) contact information for different rescue agencies in the area. Documentation of this training, including a list of attendees, will be submitted to the Refuge Manager prior to project construction and as new members are trained.

2. Contingency: If any federally listed species is observed in or within 100 meters of the construction area, work will be stopped within that area, until the animal leaves the construction site. If the protected animal does not relocate (e.g. injured bird), Refuge staff will be contacted to solicit additional guidance.

II. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination		**Response Requested**
No effect/no adverse modification		
species:	Green sea turtle	**___ Concurrence**
	Hawksbill sea turtle	
	Kemp's Ridley sea turtle	
	Leatherback sea turtle	
	Loggerhead sea turtle	
	Attwater's Greater Prairie Chicken	
May affect, but is not likely to adversely affect species/adversely modify critical habitat		
species:	Piping Plover	**___ Concurrence**
	Red Knot	
	Eastern Black Rail	
	West Indian manatee	
May affect, and is likely to adversely affect species/adversely modify critical habitat (species:_____)		**_____Concurrence**

B. Proposed species/proposed critical habitat:

Determination	**Response Requested**
No effect on proposed species/no adverse modification of proposed critical habitat (species:_____)	**_____Concurrence**
Is likely to jeopardize proposed species/ Adversely modify proposed critical habitat (species:_____)	**_____Concurrence**

_____ _____

Signature Date

(Tim Cooper, Texas Chenier Plain NWR Complex)

III. Reviewing ESO Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required_____

E. Remarks (attach additional pages as needed): Per Regional consultation guidance, this consultation is not requesting concurrence. The determinations of these findings are reviewed by Clearlake E.S. per regional consultation guidance. A separate consultation with NMFS was completed to address any potential project concerns with these sea turtles in marine environments.

_____ _____

Signature Date

IV. Literature Cited

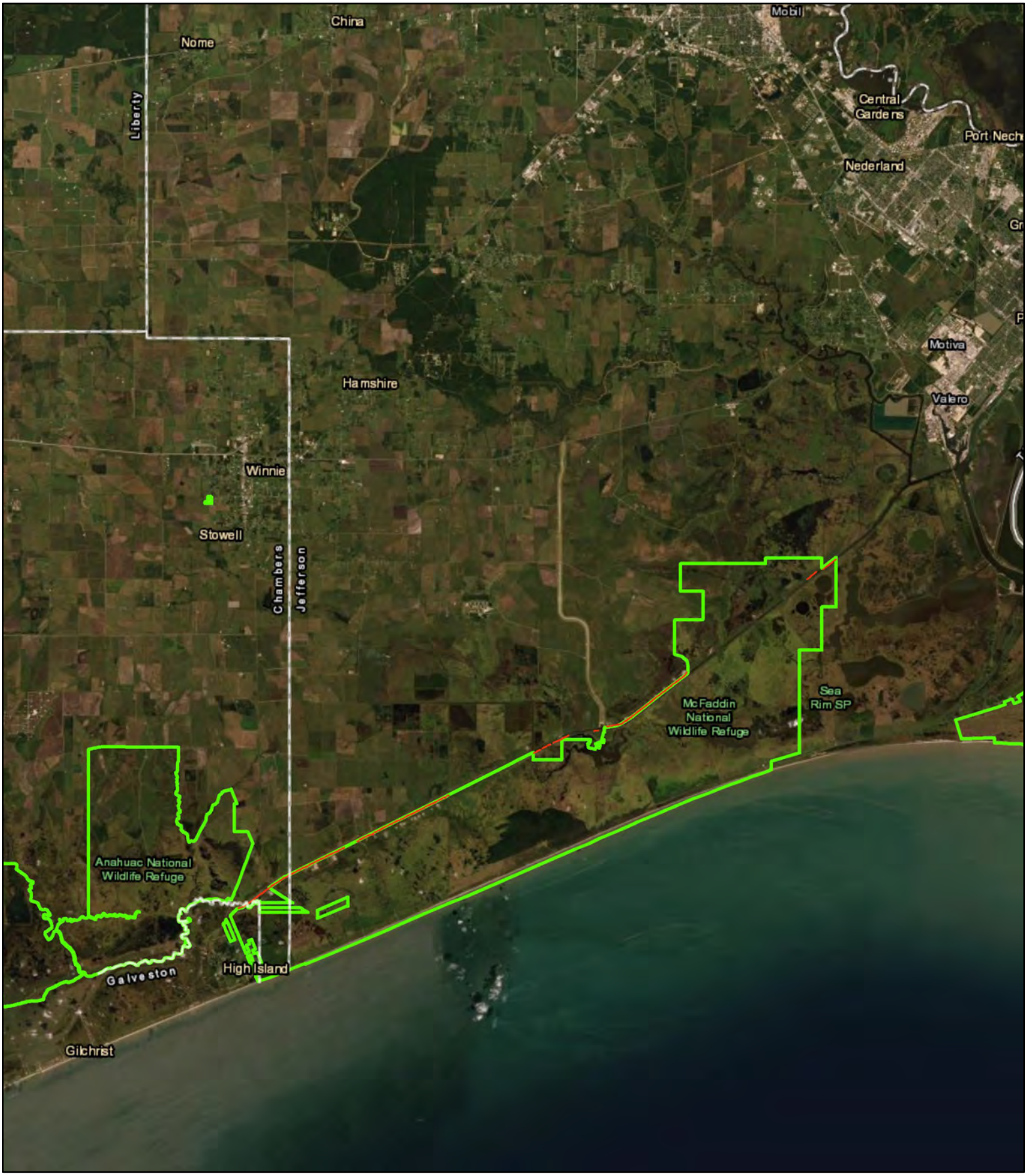
Fertl, D., A. Schiro, G. Regan, C. Beck, N. Adimey, L. Price-May, A. Amos, G. Worthy and R. Crossland. 2005. Manatee Occurrence in the Northern Gulf of Mexico, West of Florida:Gulf and Caribbean Research 17 (1): 69-94.

Powell, J.A. and Rathburn, G.B. 1984. Distribution and Abundance of Manatees Along the Northern Coast of the Gulf of Mexico. Northeast Gulf Science, 7, (1).

Pulich, W.M., Jr., K. Dunton, T. Calnan, and J. Lester. 1999. Seagrass Conservation Plan for Texas. Texas Parks and Wildlife. Resource Protection Division Publication. 1-84.

Schmidly, D.J. and Bradley, R.D. 2016. The Mammals of Texas, Seventh Edition. University of Texas Press.

ATTACHMENT A
Locational Maps



McFaddin NWR GIWW Breakwaters Project Area - Vicinity Map

Ducks Unlimited Texas Chenier Plain NWR Complex

Hurricane Harvey Remediation

Chambers and Jefferson Counties, Texas

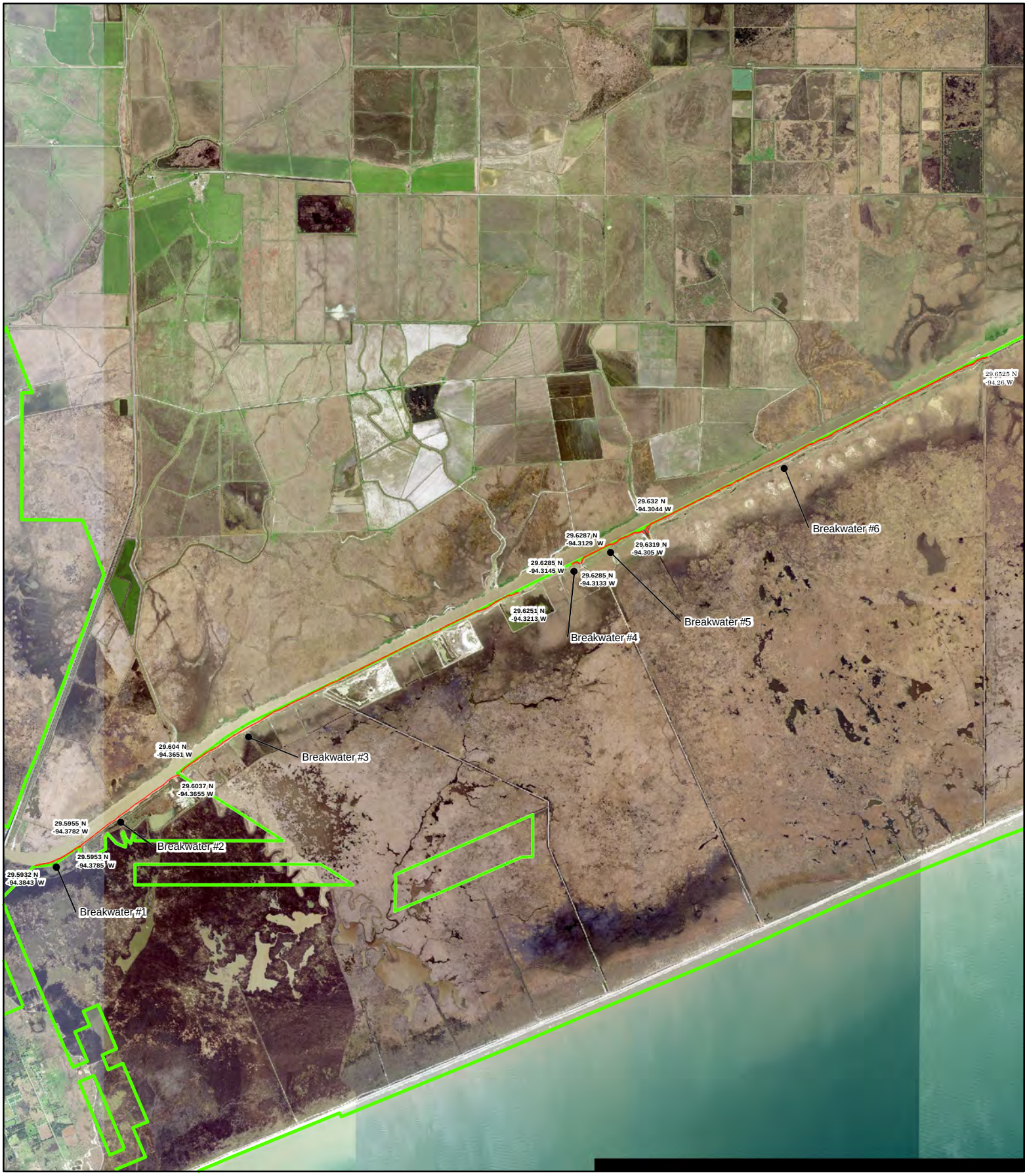
Legend

- McFaddin GIWW Breakwaters
- USFWS Boundaries

Map Base: ESRI World Map
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: July 20, 2020

DESCO

0 1.5 3 6 Miles



<u>McFaddin NWR GIWW Breakwaters Project Area - Map 1</u>
Ducks Unlimited Texas Chenier Plain NWR Complex
Hurricane Harvey Remediation

Chambers and Jefferson Counties, Texas

Legend

McFaddin GIWW Breakwaters

USFWS Boundaries

Map Base: 2018 NAIP Imagery from TNRIS
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: July 20, 2020

1:63,000

DESCO

0 0.25 0.5 1 Miles

McFaddin NWR GIWW Breakwaters Project Area - Map 2

Ducks Unlimited Texas Chenier Plain NWR Complex

Hurricane Harvey Remediation

Chambers and Jefferson Counties, Texas

Legend

- McFaddin GIWW Breakwaters
- USFWS Boundaries

1:49,819

DESCO

0 0.2 Miles

Map Base: 2018 NAIP Imagery from TNRIS
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: July 20 2020


0.4
0.8
DESCO
Map Date: July 20 2020
Miles

McFaddin NWR GIWW Breakwaters Project Area - Map 3

Ducks Unlimited Texas Chenier Plain NWR Complex

Hurricane Harvey Remediation

Chambers and Jefferson Counties, Texas

Legend

- McFaddin GIWW Breakwaters
- USFWS Boundaries

Map Base: 2018 NAIP Imagery from TNRIS
Map Datum: NAD 1983 UTM Zone 15N, meters
Map Date: July 20, 2020

DESCO

0 0.125 0.25 0.5 Miles

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Ave S
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

02/18/2021

F/SER31:KR/LR
SERO-2020-03263

Douglas Head, Refuge Manager
McFaddin National Wildlife Refuge
U.S. Fish and Wildlife Service
7950 South Gulfway Drive
Sabine Pass, Texas 77655

Dear Mr. Head:

This letter responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) for the following action.

Applicant	SERO Number	Project Type
United States Fish and Wildlife Service (USFWS) McFaddin National Wildlife Refuge	SERO-2020-03263	Breakwater construction (12 locations)

Consultation History
We received your letter requesting consultation on November 17, 2020. We requested additional information on January 14, 2021. We received a final response on January 25, 2021, and initiated consultation on that date. The project has been assigned a tracking number in our NMFS Environmental Consultation Organizer (ECO), SERO-2020-03263. Please refer to this number in any future inquiries regarding this project.

Project Location

Address	Latitude/Longitude	Water Body
7950 South Gulfway Drive Sabine Pass, Texas	29.593386°N, 94.3844512°W to 29.7763924°N, 94.0325066°W (World Geodetic System 1984)	Gulf Intracoastal Waterway, between mile markers 294 and 319

Breakwater Locations

Breakwater Number	Start (Latitude/Longitude)	End (Latitude/Longitude)
#1	29.5933386ºN, 94.3844512ºW	29.5952830ºN, 94.3783401ºW
#2	29.5955608ºN, 94.3783401ºW	29.6036164ºN, 94.3655623ºW
#3	29.6041719ºN, 94.3652845ºW	29.6252830ºN, 94.3213956ºW
#4	29.6283386ºN, 94.3144511ºW	29.6319497ºN, 94.3052845ºW
#5	29.6322275ºN, 94.3044511ºW	29.6527830ºN, 94.2602845ºW
#6	29.6752830ºN, 94.2102845ºW	29.6769497ºN, 94.2063956ºW
#7	29.6775053ºN, 94.2052845ºW	29.6794497ºN, 94.2005622ºW
#8	29.6805608ºN, 94.1991733ºW	29.6844497ºN, 94.1897289ºW
#9	29.6866719ºN, 94.1752844ºW	29.6872275ºN, 94.1722289ºW
#10	29.6894497ºN, 94.1675067ºW	29.7177610ºN, 94.1203370ºW
#11	29.7663942ºN, 94.0497289ºW	29.7702831ºN, 94.0441733ºW
#12	29.7713942ºN, 94.0402844ºW	29.7763942ºN, 94.0325066ºW

Image of the project area and surrounding location showing the proposed breakwater (BW) locations in blue (©Google Earth 2021)

Existing Site Conditions

The project is located in Chambers and Jefferson Counties near Port Arthur, Texas. Breakwater 12, at the northeastern end of the project, is approximately 5.4 miles from the intersection of the Gulf Intracoastal Waterway (GIWW) with the Port Arthur Canal. This intersection is approximately 13.3 miles from the where the canal enters the Gulf of Mexico. Breakwater 1, at the western end of the project, is approximately 10.7 miles from the nearest outlet to the Gulf of Mexico near Gilchrist, Texas. The project area consists of 12 sections of shoreline of the McFaddin National Wildlife Refuge (NWR) to the west of Port Arthur. There are no existing structures within the immediate proposed breakwater locations. Areas adjacent to the 12 proposed breakwater locations consist of unprotected shoreline and remnant or intact existing rock breakwaters. The GIWW carries a significant amount of vessel traffic and passes through the refuge for several miles, forming the northern shoreline

boundary of the refuge farther to the west. Water depths in the project area are -1.5 feet (ft) National American Vertical Datum 1988 (NAVD88), and the substrates in the project area consist of clays and silt. There are no submerged aquatic vegetation, mangroves, or corals in the project area.

Project Description

With USFWS funding appropriated for Hurricane Harvey Recovery under the Bipartisan Budget Act of 2018 (Public Law 115-123), USFWS proposes to construct approximately 14.15 linear miles of rock breakwater within the GIWW along the McFaddin NWR shoreline using approximately 107,628 cubic yards (yd^3) of riprap. The proposed rock breakwaters will be constructed within the GIWW in 12 separate locations at varying distances (0 to 150 ft) from the shoreline of the McFaddin NWR. Once completed, this project will combine with existing structures to create an almost continuous breakwater for the full length of the project area which covers approximately 25 miles between river mile markers 294 and 319 on the GIWW.

The breakwaters will be constructed of graded riprap (COE 65# gradation) to a crest elevation of +3.0 ft NAVD88, which is an average 4.5 ft above the existing grade at the centerline. Each breakwater will have a 3-ft top width and a 2:1 side slope. This will equate to a base of approximately 21 ft; however, the actual width of the base will be 20 ft on average because of the shoreward slope of the substrate under the breakwater. The breakwaters will transition back to natural ground at the termination point on a 45-degree angle. Geotextile material will be placed prior to the placement of riprap by crews using small jon boats. The total length, area, and fill volumes for the breakwaters are shown in the table below.

Breakwater Area, Length, and Riprap Volumes

Breakwater Number	Area of Fill (acres[ac])	Length of Breakwater (linear feet)	Volume of Riprap (yd^3)
#1	1.055	2,138.68	3,902.35
#2	2.441	5,135.58	9,345.29
#3	8.261	16,120.76	32,620.00
#4	1.649	3,427.05	6,285.29
#5	8.205	16,279.04	32,045.29
#6	0.660	1,39 4.85	2,414.71
#7	0.949	1,809.06	3,728.24
#8	1.620	3,283.54	6,255.29
#9	0.520	1,004.04	2,074.71
#10	9.327	18,702.81	35,725.88
#11	1.104	2,233.03	4,146.47
#12	1.538	3,179.00	6,885.29
Total	**37.329**	**74,707.44**	**107,628.24**

Each breakwater will incorporate 30-ft-wide fish passage channels at 500-ft intervals to facilitate movement of water, sediment, and aquatic species. Fish passage slots will be lined with rock (approximately 18-inch [in] diameter) to a 0.0 elevation relative to NAVD88 to prevent excess scour at these locations. The sides of the fish passage channels will have a 3:1 slope and will retain the crest of approximately 3 ft.

All work will be conducted via barges. Barges will be anchored just outside of the navigational channel. Riprap will be transported to the site from the Mississippi River to the

work area via the GIWW on 6 barges at a time. The barges are capable of transporting approximately 10,000 tons (approximately 5,000 yd^3) of riprap per trip. Two shallow-water barges will be used for construction: 1 containing a long-reach excavator for the placement of riprap and 1 light-loaded barge for riprap transport to the work area. Shallow-water barges will be moved using a shallow-water tugboat. No dredging is anticipated for barge access.

The applicant may also install up to thirty-seven 10-in wood piles for the placement of day markers. If required by the United States Coast Guard, markers will be placed at each end and in the middle of each breakwater segment at a minimum. Piles will be installed using an impact hammer or driven with an excavator attachment, and up to 1 pile may be installed per day at any given location.

Total construction time for the project is anticipated to be 6 months of in-water work. Construction activities will be conducted during daylight hours only.

Construction Conditions

All construction vessels will be required to adhere to the *Vessel Strike Avoidance Measures and Reporting for Mariners*[1]. The applicant has also agreed to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*[2].

Effects Determinations for Species the Action Agency or NMFS Believes May Be Affected by the Proposed Action

Species	ESA Listing Status[3]	Action Agency Effect Determination[4]	NMFS Effect Determination[4]
Sea Turtles			
Green (North and South Atlantic distinct population segments [DPSs])	T	NLAA	NLAA
Hawksbill	E	NLAA	NE
Kemp's ridley	E	NLAA	NLAA
Loggerhead (Northwest Atlantic DPS)	T	NLAA	NLAA

We believe the project will have no effect on hawksbill sea turtles due to the species' very specific life history strategies, which are not supported at the project site. Hawksbill sea turtles typically inhabit inshore reef and hard bottom areas where they forage primarily on encrusting sponges.

[1] NMFS. 2008. Vessel Strike Avoidance Measures and Reporting for Mariners; revised February 2008. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division. Saint Petersburg, Florida. https://media.fisheries.noaa.gov/dam-migration/vessel_strike_avoidance_february_2008.pdf

[2] NMFS. 2006. Sea Turtle and Smalltooth Sawfish Construction Conditions revised March 23, 2006. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, Saint Petersburg, Florida. https://www.fisheries.noaa.gov/webdam/download/92937961

[3] E = endangered; T = threatened

[4] NLAA = not likely to adversely affect, NE = no effect

Critical Habitat

The project is not located in designated critical habitat, and there are no potential routes of effect to any designated critical habitat.

Analysis of Potential Routes of Effects to Species

Listed species may be physically injured if struck by construction equipment, vessels, or materials. This effect is extremely unlikely to occur due to the ability of the species to move away from the project site when disturbed and the applicant's implementation of NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* which require the contractor to cease operations when ESA-listed species are sighted within 50 ft of project activities. Turtle species are highly mobile and able to avoid construction noise, moving equipment, and placement or removal of materials during construction.

Construction activity may prevent or deter listed species from entering the project area. We believe the effects to listed species from exclusions to the project area will be insignificant. Any exclusionary effects will be temporary, and only relatively small areas of the project area will be excluded at any point in time.

The project will fill approximately 37.33 ac of shallow intertidal habitat. We believe that this effect will be insignificant for sea turtles. All of the filled habitat will consist of shallow waters where sea turtles are less likely to occur. Additionally, there is no submerged aquatic vegetation or other habitat features that support nesting, feeding, sheltering, or foraging or support any life history stage for ESA-listed turtles.

Noise created by pile-driving activities can physically injure animals or change animal behavior in the affected areas. Injurious effects can occur in 2 ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects interfere with animals migrating, feeding, resting, or reproducing, for example. Our evaluation of effects to listed species as a result of noise created by construction activities is based on the analysis prepared in support of the Opinion for SAJ-82[5]. The noise analysis in this consultation evaluates effects to ESA-listed sea turtles identified by NMFS as potentially affected in the table above.

Based on our noise calculations, the installation of 10-inch wood piles by impact hammer will not cause single-strike or peak-pressure injury to sea turtles. The cumulative sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to sea turtles at a radius of up to 30 ft (9 meters [m]). Due to the mobility of sea turtle species, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. Even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the radius of that area is smaller than the 50-ft radius that will be visually monitored for listed species. Construction personnel will cease construction activities if an animal is sighted within 50 ft per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Thus, we believe that any injurious cSEL effects are extremely unlikely to occur. An animal's movement away from the injurious impact zone is a behavioral response with the same effects discussed below.

[5] NMFS. Biological Opinion on Regional General Permit SAJ-82 (SAJ-2007-01590), Florida Keys, Monroe County, Florida. June 10, 2014.

Based on our noise calculations, impact hammer pile installation could also cause behavioral effects at a radius of 151 ft (46 m) for sea turtles. Due to the mobility of sea turtles, we expect them to move away from noise disturbances. Because there is similar habitat nearby, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

Conclusion

Because all potential project effects to listed species were found to be extremely unlikely to occur, insignificant, or beneficial, we conclude that the proposed action is not likely to adversely affect listed species under NMFS's purview. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Karla Reece, Section 7 Team Lead, at karla.reece@noaa.gov.

Sincerely,

REECE.KARLA.M.1365885962 Digitally signed by REECE.KARLA.M.1365885962 Date: 2021.02.18 16:30:35 -05'00'

for David Bernhart
Assistant Regional Administrator
for Protected Resources

File: 1514-22.i

Heather Young <heather.young@restorethegulf.gov>

Re: EFH review of McFaddin Breakwater project

1 message

charrish stevens - NOAA Federal <charrish.stevens@noaa.gov> Wed, May 14, 2025 at 9:53 AM
To: Heather Young <heather.young@restorethegulf.gov>

Good morning Heather,
This project I did review back in January of 2021. I provided a No Objection response to this proposed project via email on January 11, 2021.
Thanks,

Charrish Stevens
Fishery Biologist
Habitat Conservation Division
NOAA National Marine Fisheries Service
4700 Ave U, Galveston, TX 77551

Office Ph: (409) 766-3697
Fax: (409) 766-3575
Email: charrish.stevens@noaa.gov

On Tue, May 13, 2025 at 5:32 PM Heather Young <heather.young@restorethegulf.gov> wrote:

> Hi Charrish,
> TCEQ is requesting RESTORE funding for construction of breakwaters along the GIWW to reduce erosion, allow for marsh to re-establish behind the breakwaters, and to protect existing wetlands and coastal prairie on the McFaddin NWR. Please see attached USACE permit SWG-2020-00644. Did you review this one for EFH impacts?
>
> Thanks in advance!
> Heather
>
> --
> Heather D. Young
>
> Senior Advisor for Ecosystem Restoration and Environmental Compliance
> Gulf Coast Ecosystem Restoration Council
> tel. 504-252-7716
> www.restorethegulf.gov

From: Head, Douglas
To: Tanya Matcek
Subject: Fw: [EXTERNAL] Project Review: 202015892
Date: Wednesday, August 19, 2020 5:32:58 PM

FYI

Douglas Head

Refuge Manager
U.S. Fish and Wildlife Service
McFaddin National Wildlife Refuge
(409) 971-2909

From: noreply@thc.state.tx.us <noreply@thc.state.tx.us>
Sent: Wednesday, August 19, 2020 3:39 PM
To: Head, Douglas <douglas_head@fws.gov>; reviews@thc.state.tx.us <reviews@thc.state.tx.us>
Subject: [EXTERNAL] Project Review: 202015892

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
THC Tracking #202015892
McFaddin NWR GIWW Breakwaters
7950 S. Gulfway Dr.
Sabine Pass,TX 77655

Dear Douglas Head:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff led by Maggie Moore, Caitlin Brashear and Amy Borgens has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No identified underwater archeological sites, historic shipwrecks, and/or significant remote-sensing targets present or affected. However, if buried cultural materials are encountered during project activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.
- No identified historic properties, archeological sites, or other cultural resources are present or affected. However, if cultural materials are encountered during project activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: Maggie.Moore@thc.texas.gov, caitlin.brashear@thc.texas.gov, amy.borgens@thc.texas.gov

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

For Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
2000 FORT POINT ROAD
GALVESTON, TEXAS 77553

May 5, 2022

Evaluation Branch

SUBJECT: Permit No. SWG-2020-00644; Letter of Permission

Mr. Douglas Head
USFWS - Mcfaddin National Wildlife Refuge
P.O. Box 358
Sabine Pass, Texas 77655

Dear Mr. Head:

This is in reference to your request on April 11, 2022, to administratively modify the April 6, 2022, authorization to correct the discharge amounts to more accurately reflect the reduced footprint of the proposed project as shown in the revised plans. The corrected discharge amounts include the discharge 145,887 cubic yards of fill material into 35.84 acres of shallow water habitat in the GIWW to facilitate the construction of thirteen separate segments of rock break water at varying distances (0-150 feet) from the shoreline. The project site is located in the Gulf Intracoastal Waterway (GIWW) along the McFaddin National Wildlife Refuge (MNWR) shoreline in Chambers and Jefferson Counties, Texas.

Your request has been authorized by this Letter of Permission (LOP) for Activities at Certain Reservoirs and Federal State Sponsored Project and is pursuant to Section 404 of the Clean Water Act and 10 of the Rivers and Harbors Act of 1899. All work is to be performed in accordance with the enclosed plans, in 100 sheets dated August 9,2021, and the permit conditions. If the authorized work is not completed by December 31, 2026, this authorization expires. The following special conditions have been added to your authorization:

1. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. When structures or work authorized by this permit are determined by the District Engineer to have become abandoned, obstructive to navigation or cease to be used for the purpose for which they were permitted, such structures or other work must be removed, the area cleared of all obstructions, and written notice given to the Corps of Engineers, Galveston District, Regulatory Division, Chief of the Compliance Branch within 30 days of completion.

3. The permittee must install and maintain, at the permittee's expense, any safety lights, signs and signals required by U.S. Coast Guard, through regulations or otherwise, on the permittee's fixed structures. To receive a U.S. Coast Guard Private Aids to Navigation marking determination, at no later than 30 days prior to installation of any fixed structures in navigable waters and/or prior to installation of any floating private aids to navigation, you are required to contact the Eighth Coast Guard District (dpw), 500 Poydras St., Suite 1230, New Orleans, LA 70130, (504) 671-2328 or via email to: D8oanPATON@uscg.mil. For general information related to Private Aids to Navigation please visit the Eighth Coast Guard District web site at: http://www.uscg.mil/d8/waterways/PATON.Home.asp

If you object to the work authorized or the terms and conditions of this LOP, you may request that the LOP be modified (in accordance with 33 CFR 331.6). To object, you must submit a copy of the completed RFA to the District Engineer (DE) at the letterhead address. Your objections must be received by the DE within **60 days** of the date of this notice; noting the NAP date is considered day 1, or you will forfeit your right to appeal the LOP in the future. It is not necessary to submit an RFA form to this office if you accept the LOP's terms and conditions.

If, after review by the DE, you are still unsatisfied with the LOP because of certain terms and conditions therein, you may appeal under the Corps of Engineers Administrative Appeal Process by completing Section II of the attached RFA form and sending it to the following address:

Mr. Elliott Carman
Regulatory Appeals Officer
Southwest Division USACE (CESWD-PD-O)
1100 Commerce Street, Suite 831
Dallas, Texas 75242-1317
Telephone: 469-487-7061; FAX: 469-487-7199

This letter does not address nor include any consideration for geographic jurisdiction on aquatic resources and shall not be interpreted as such. If you have any questions please contact Andria Davis at the letterhead address or by telephone at 409-766-6389. Please notify the Chief of the Compliance Branch in the Galveston District Regulatory Division in writing at the letterhead address, upon completion of the authorized project.

FOR THE DISTRICT COMMANDER:

Acting For:
Kristi N. McMillan
Chief, Evaluation Chief

cc w/Encl.
Douglas Head, USFWS - Mcfaddin National Wildlife Refuge, by email: douglas _ head@fws.gov

Tanya Matcek, DESCO Environmental Consultants, LP, by email: tmatcek@descoenv.com

Eighth Coast Guard District, New Orleans, LA

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coast & Geodetic Survey, Silver Spring, MD

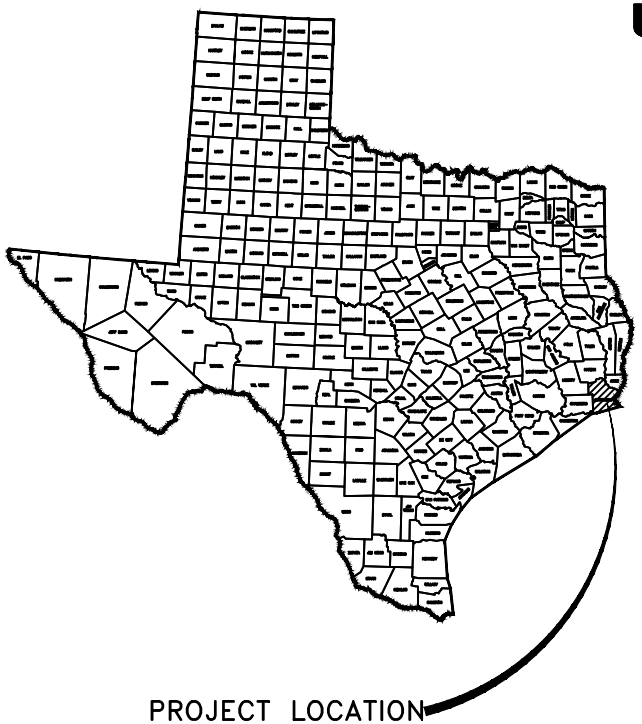
Texas Commission on Environmental Quality

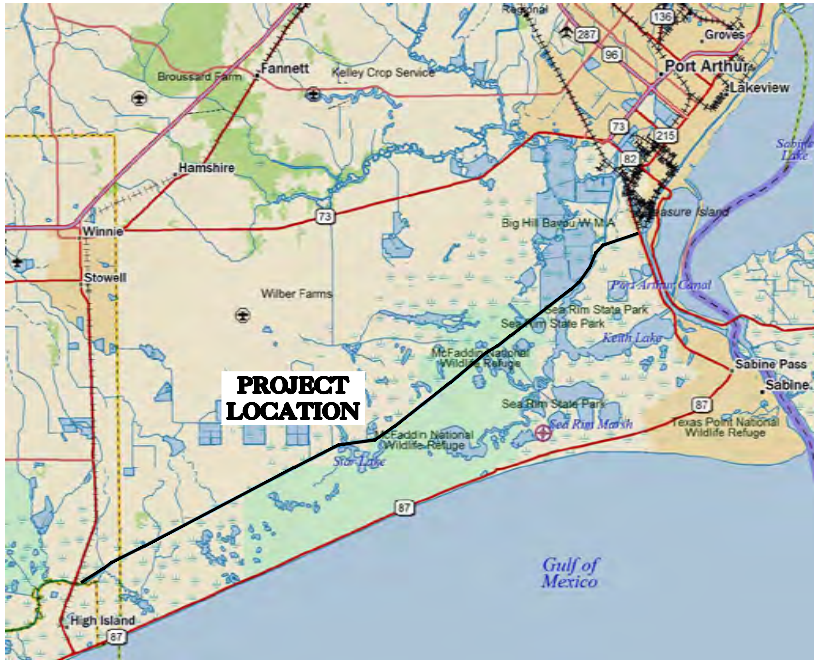
Texas General Land Office

DUCKS UNLIMITED

DUCKS UNLIMITED, INC.
McFADDIN NWR GIWW ROCK BREAKWATER PROJECT

JEFFERSON COUNTY
IN COOPERATION WITH
U.S. FISH AND WILDLIFE SERVICE



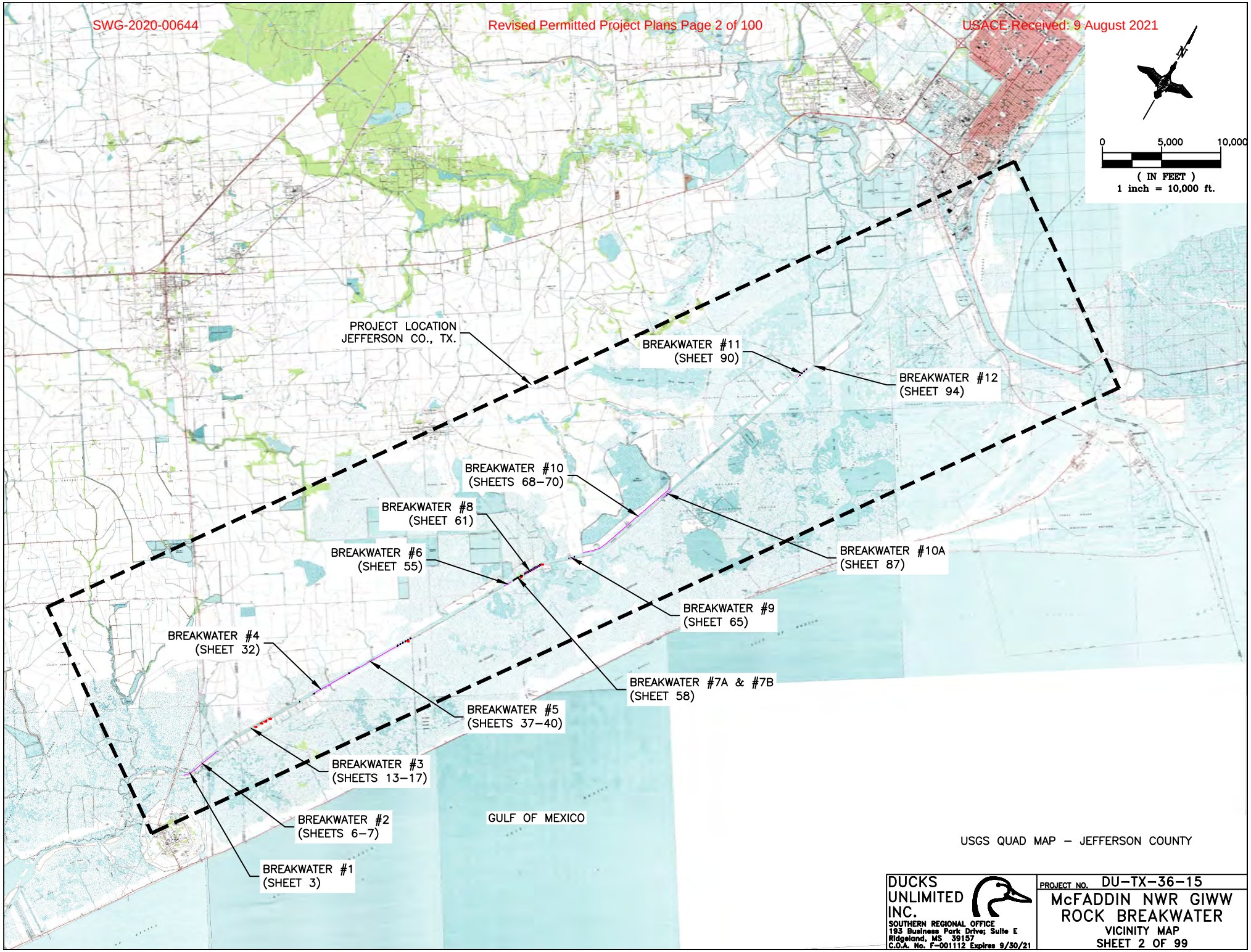


INDEX

CAUTION:
The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
COVER SHEET
SHEET 1 OF 99



USGS QUAD MAP – JEFFERSON COUNTY

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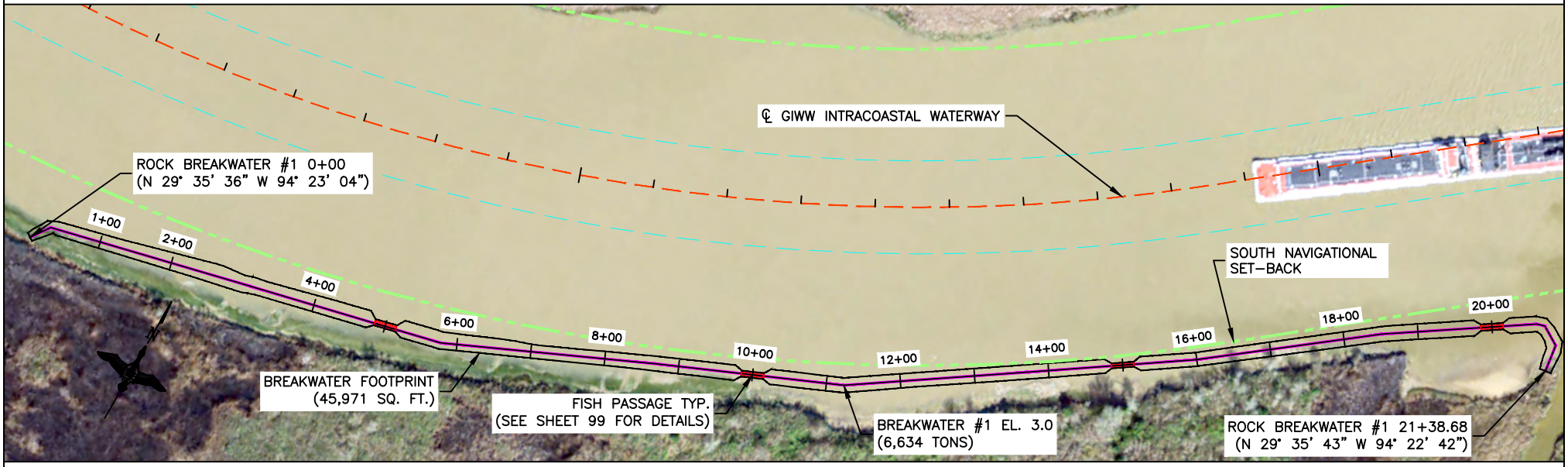
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW ROCK BREAKWATER

VICINITY MAP

SHEET 2 OF 99



ROCK BREAKWATER #1 STA. 0+00 – 21+38.68

"AUTHORIZED UNDER SWG-2020-00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:

℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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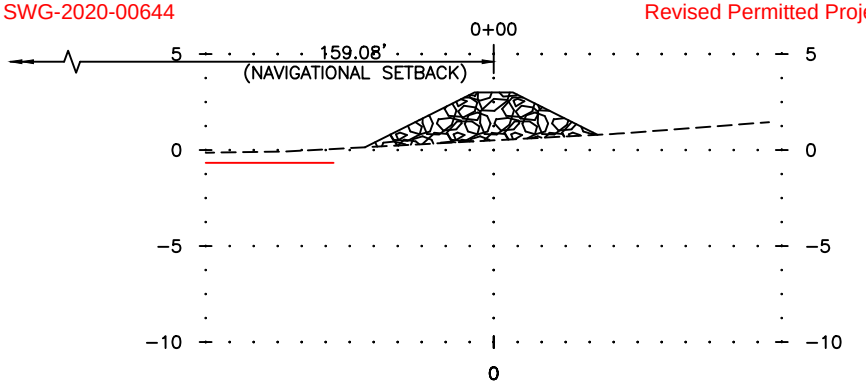
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

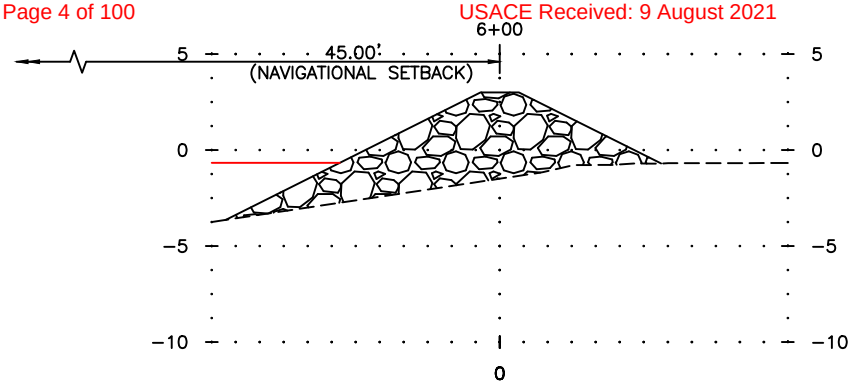
PROJECT NO. DU-TX-36-15

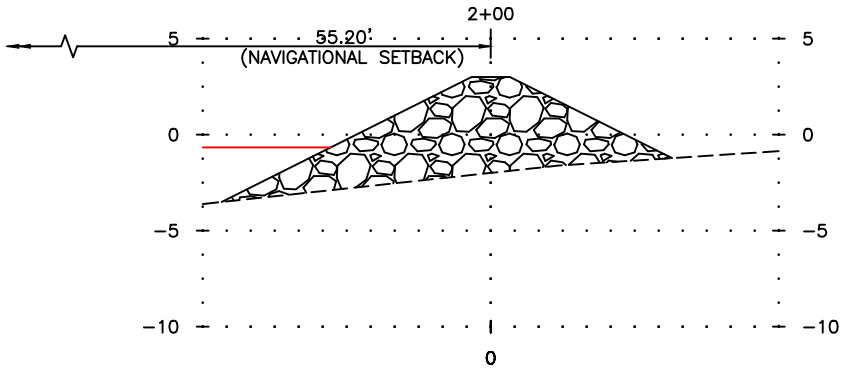
McFADDIN NWR GIWW ROCK BREAKWATER

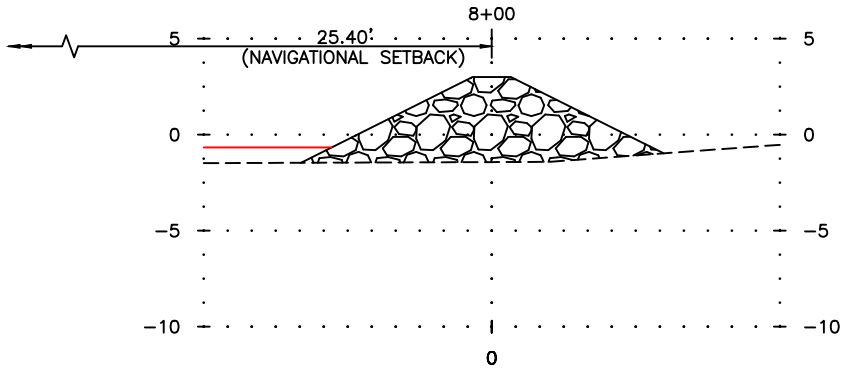
BREAKWATER #1 PLAN

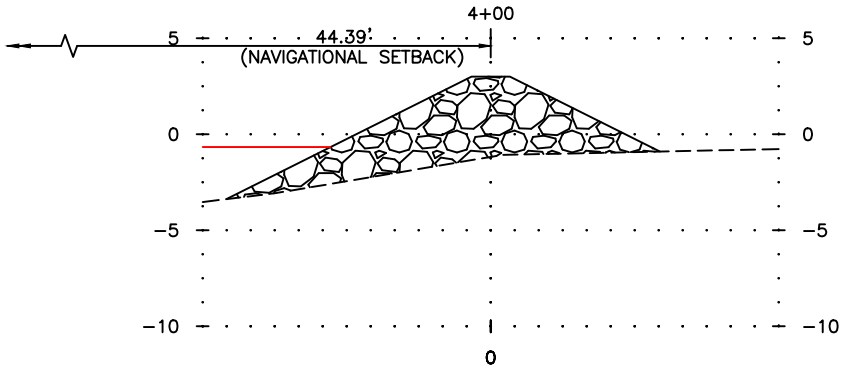
SHEET 3 OF 99

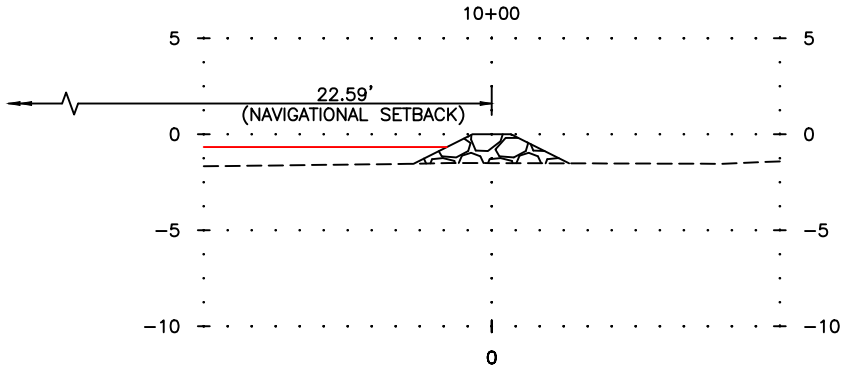












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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SOUTHERN REGIONAL OFFICE
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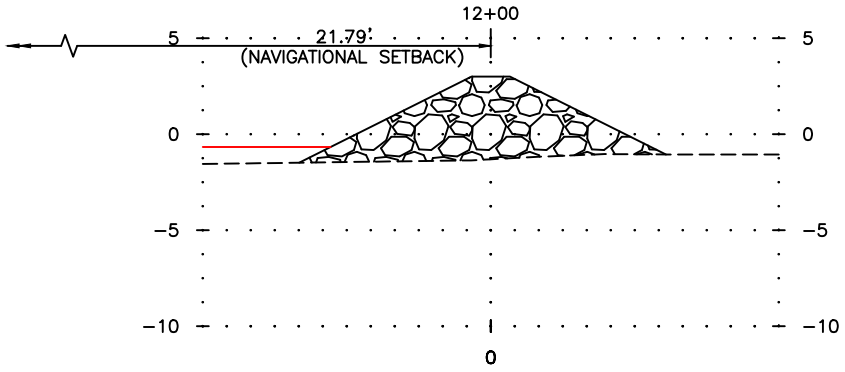
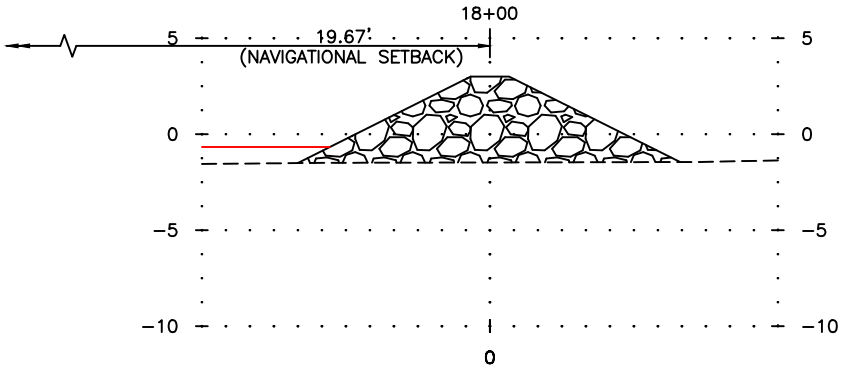
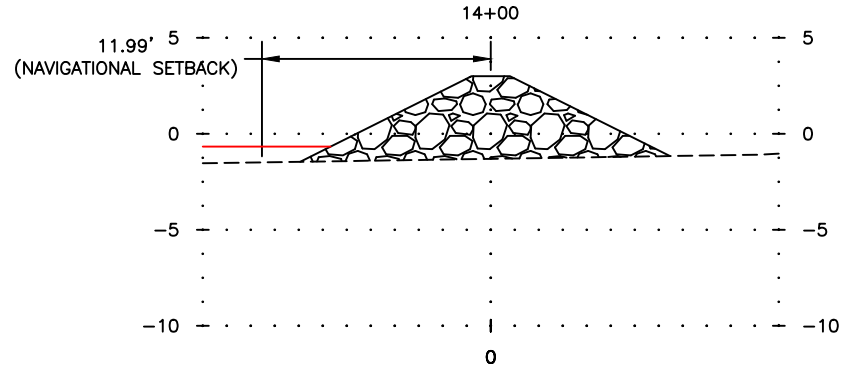
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

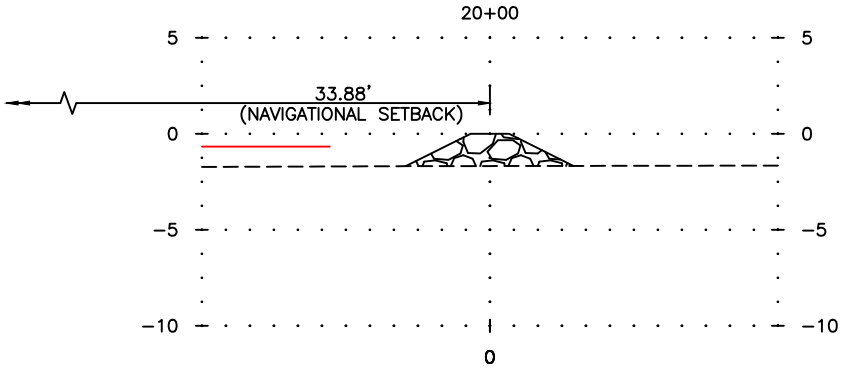
PROJECT NO. DU-TX-36-15

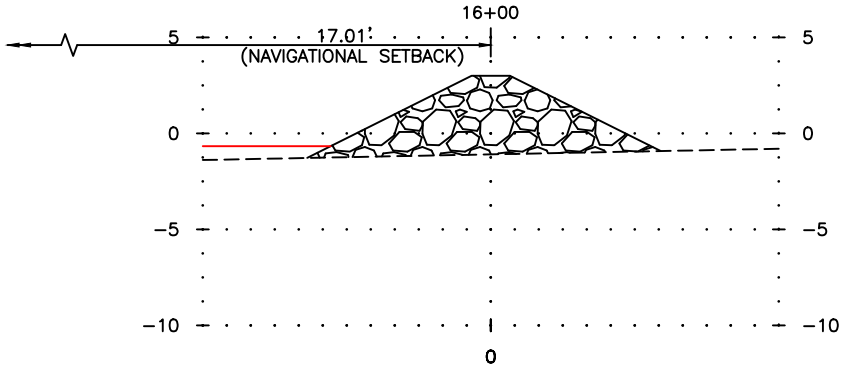
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #1 CROSS SECTIONS
SHEET 4 OF 99

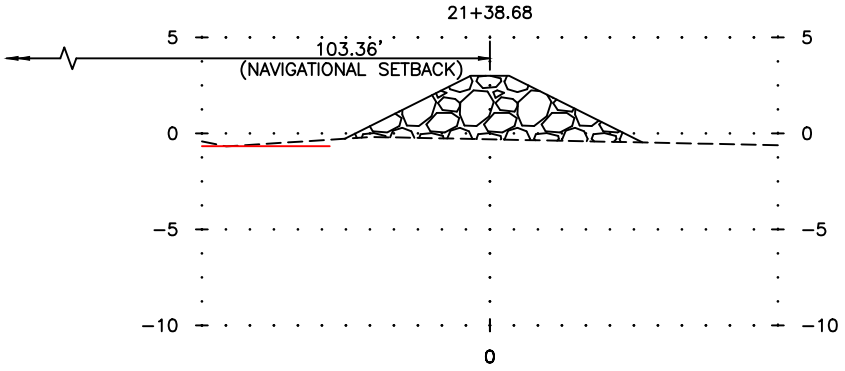












LEGEND

- - - - - - - EXISTING GROUND

——— PROPOSED ROCK RIPRAP

——— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
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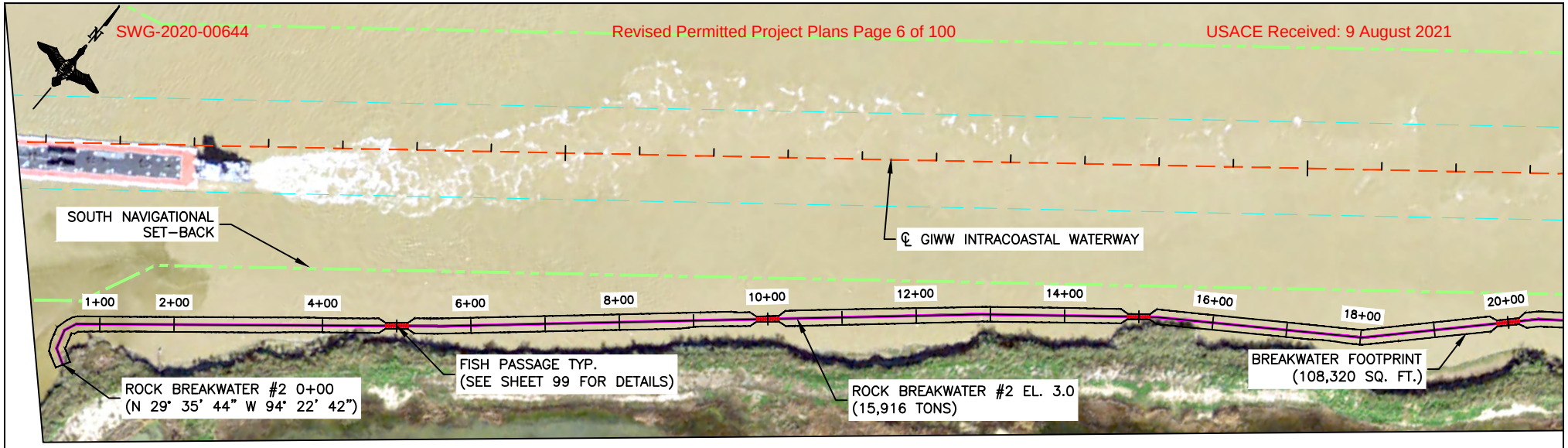
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #1 CROSS SECTIONS
SHEET 5 OF 99



ROCK BREAKWATER #2 STA. 0+00 – 20+50

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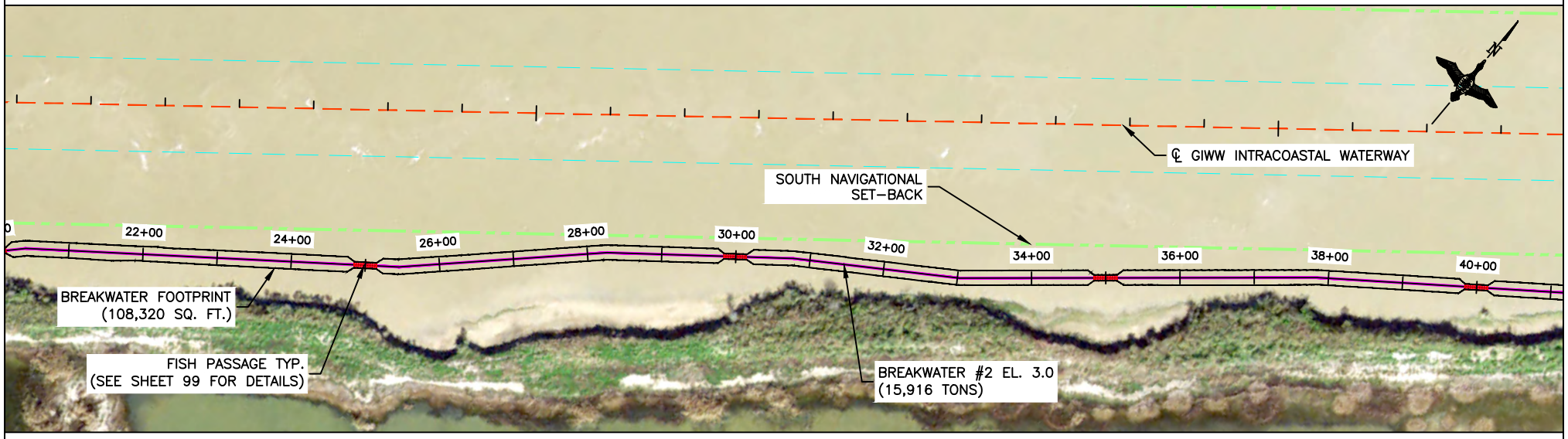

ROCK BREAKWATER #2 STA. 20+50 – 41+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

DUCKS UNLIMITED INC.
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193 Business Park Drive; Suite E
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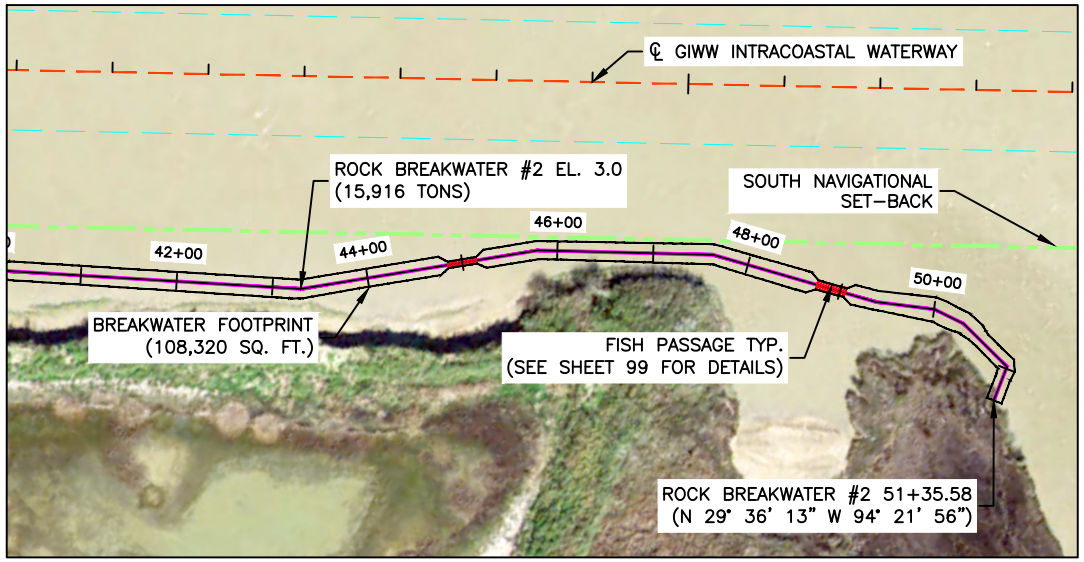
C.O.A. No. F–001112 Expires 9/30/21

PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #2 PLAN

SHEET 6 OF 99



ROCK BREAKWATER #2 STA. 41+00 – 51+35.58

"AUTHORIZED UNDER SWG–2020–00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:

℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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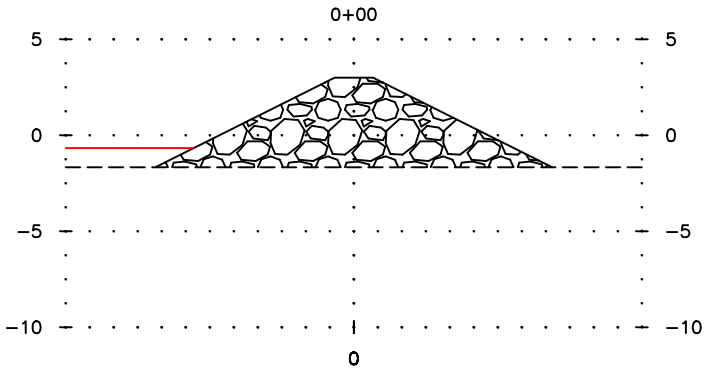
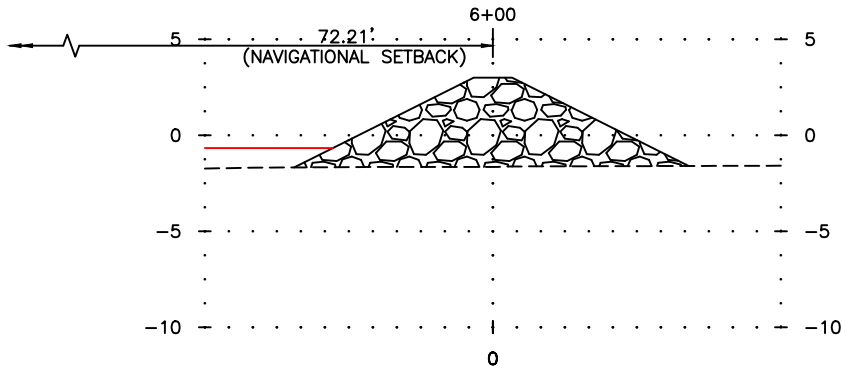
PROJECT NO. DU–TX–36–15

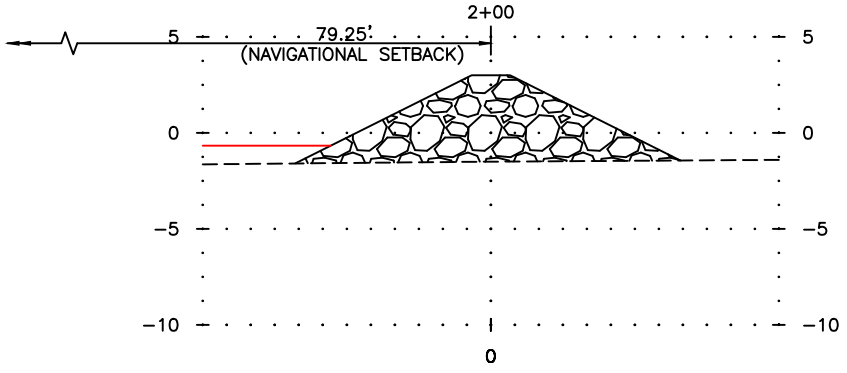
McFADDIN NWR GIWW ROCK BREAKWATER

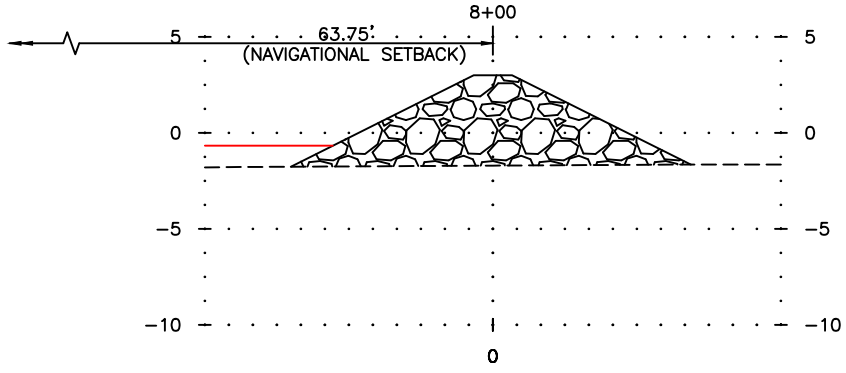
BREAKWATER #2 PLAN

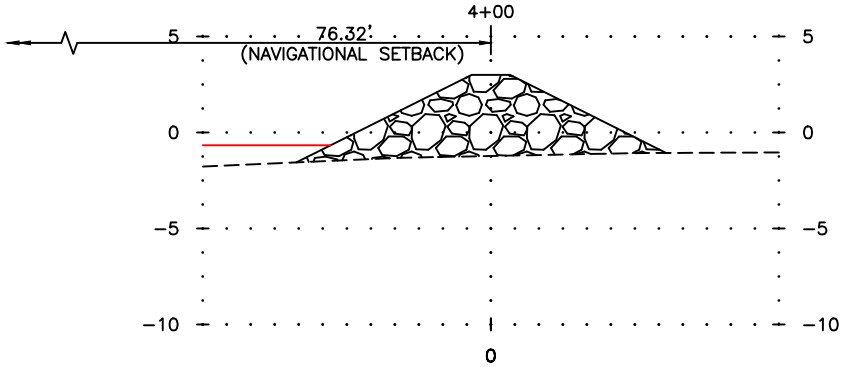
SHEET 7 OF 99

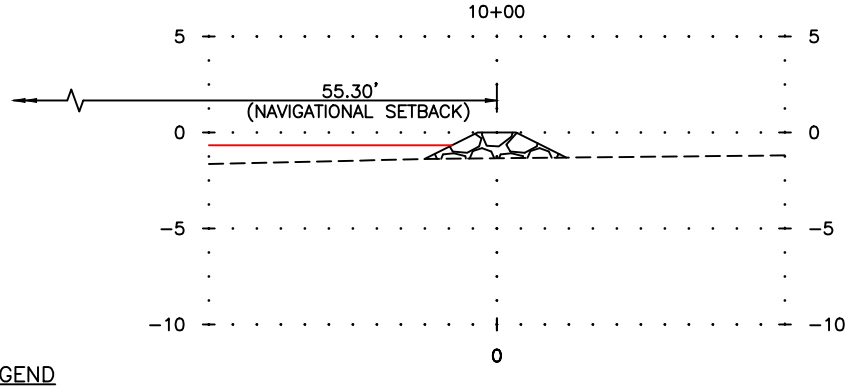












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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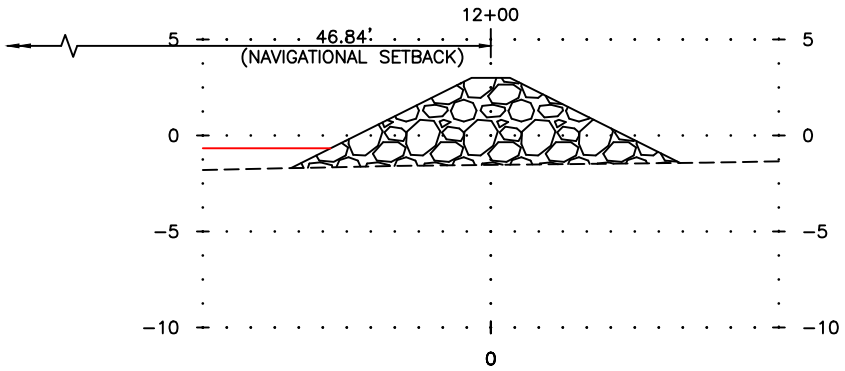
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

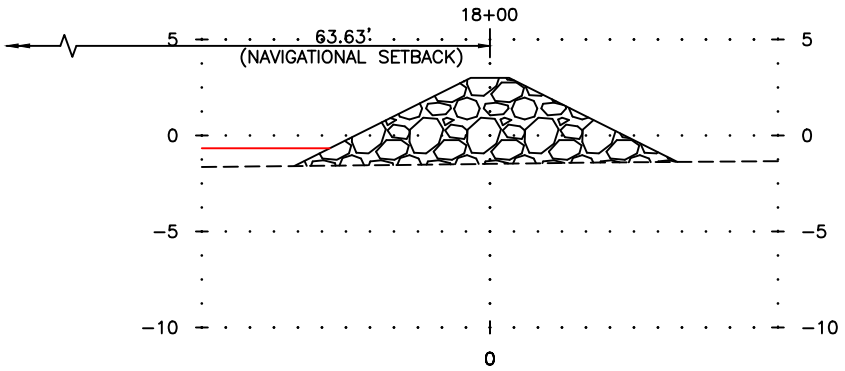
PROJECT NO. DU-TX-36-15

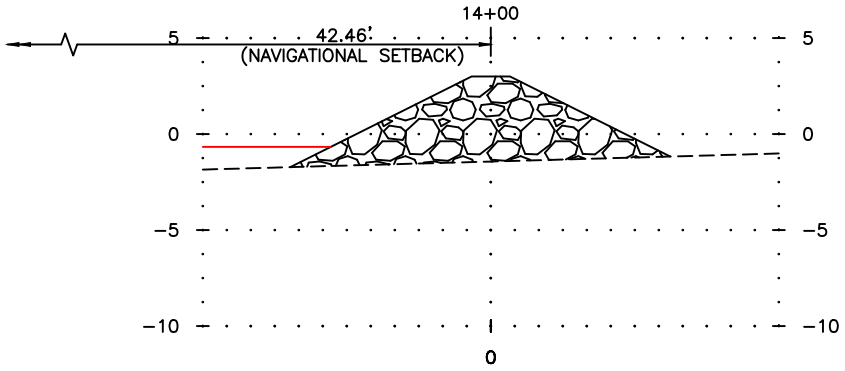
McFADDIN NWR GIWW ROCK BREAKWATER

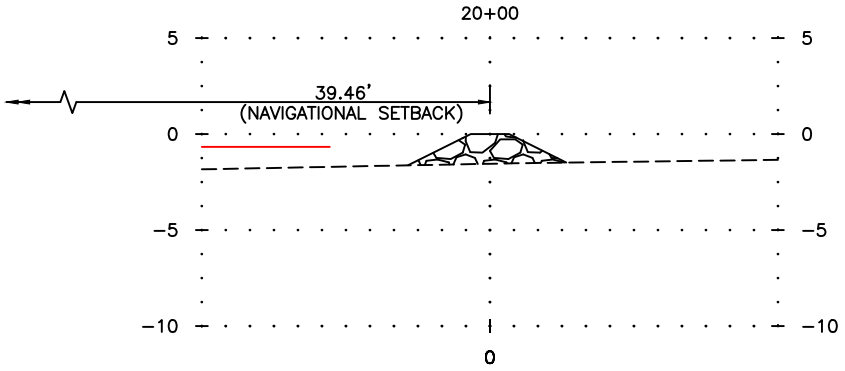
BREAKWATER #2 CROSS SECTIONS

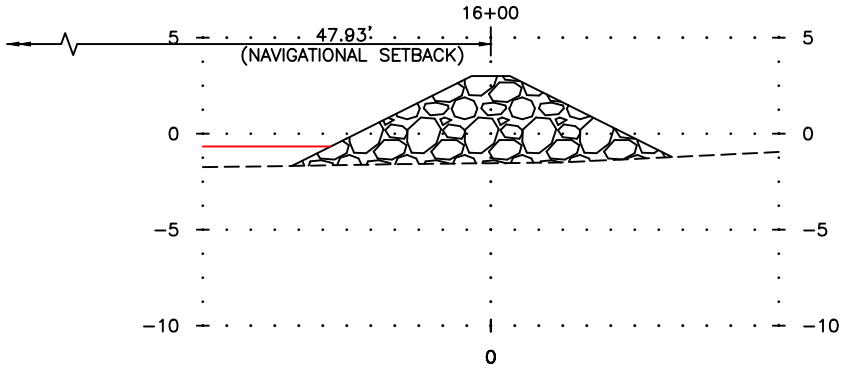
SHEET 8 OF 99

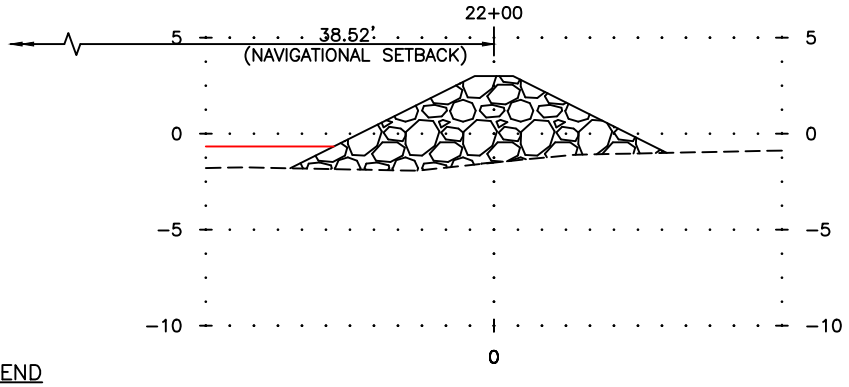












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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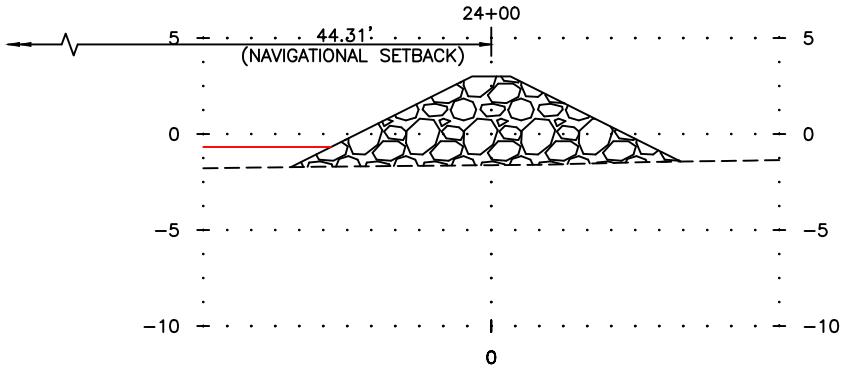
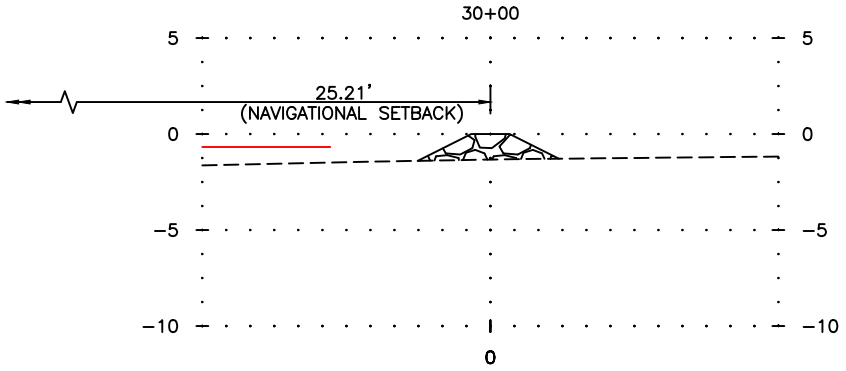
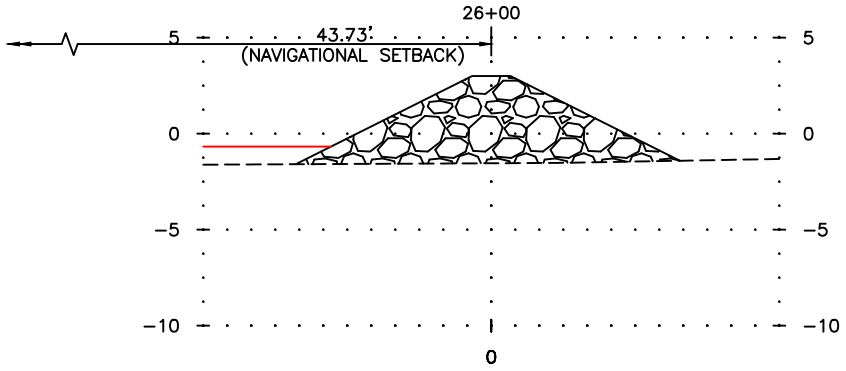
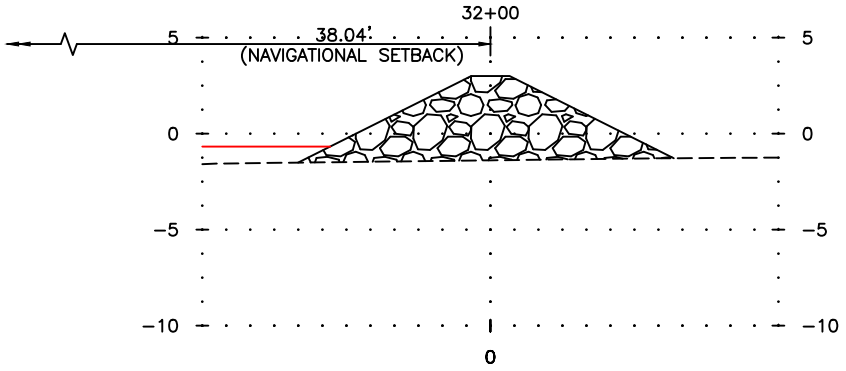
PROJECT NO. DU-TX-36-15

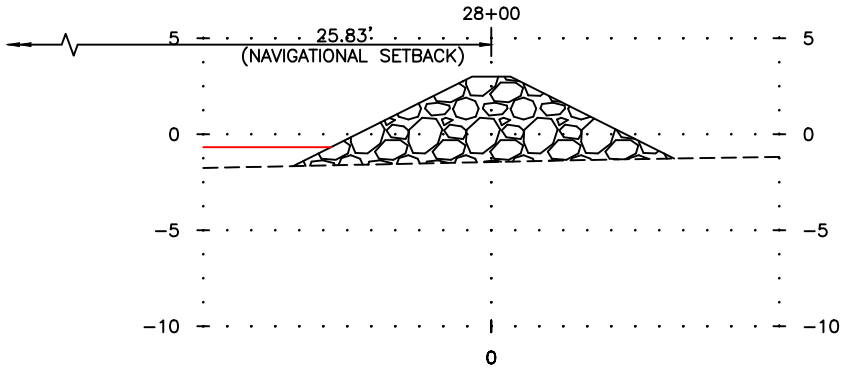
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #2 CROSS SECTIONS
SHEET 9 OF 99

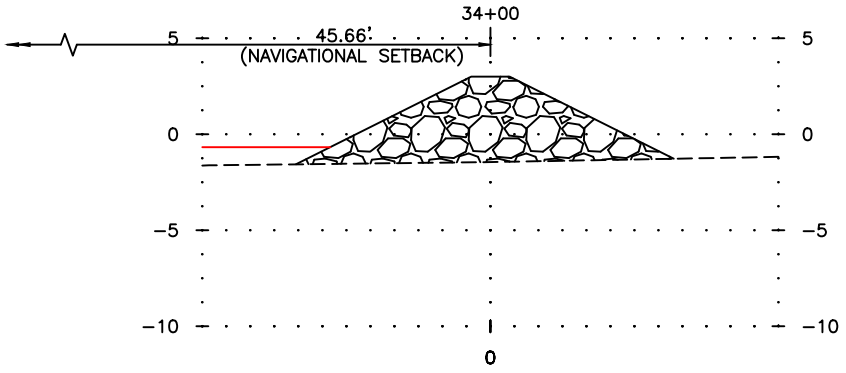












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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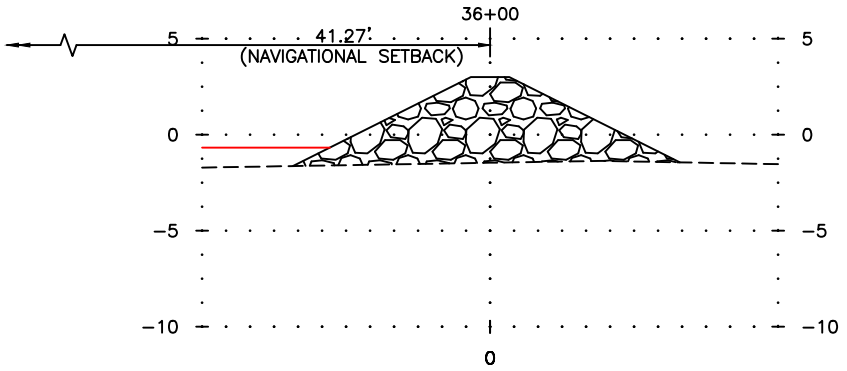
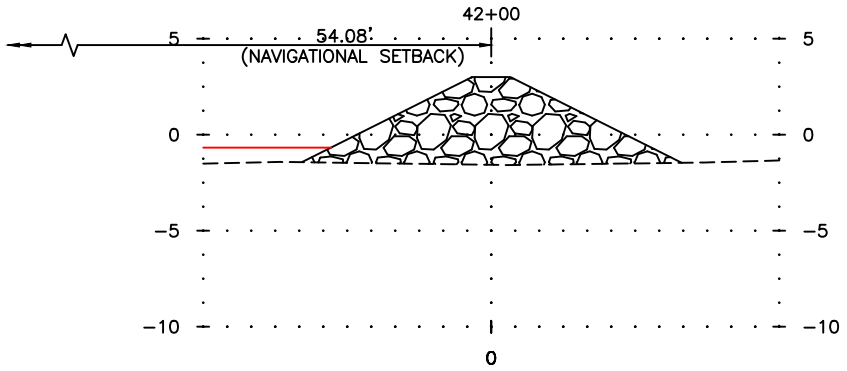
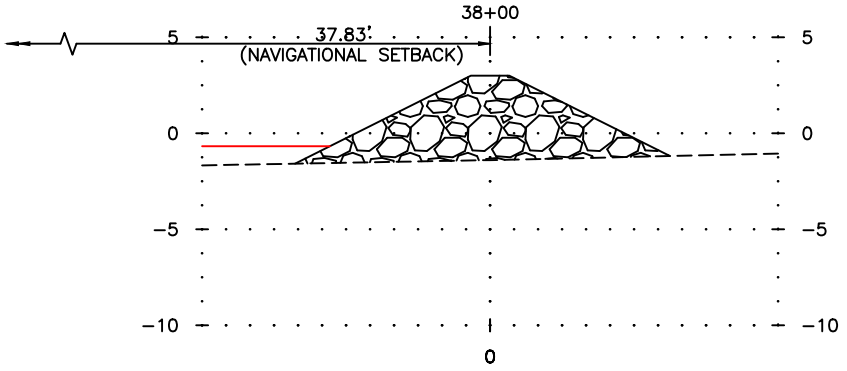
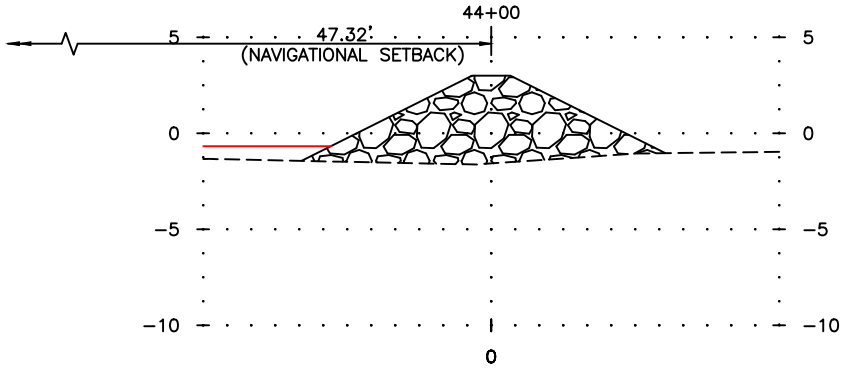
PROJECT NO. DU-TX-36-15

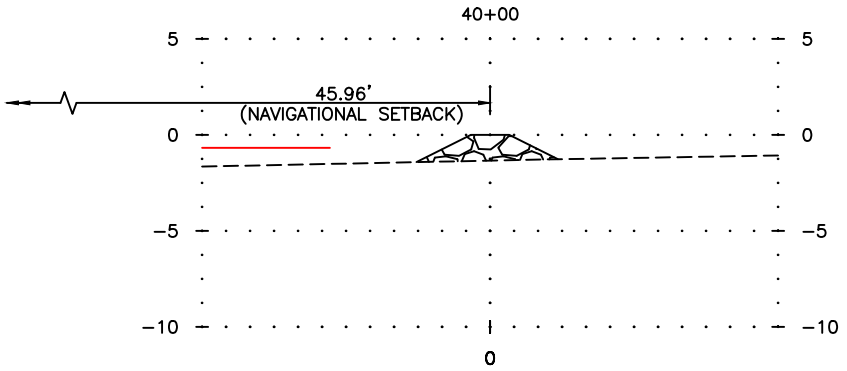
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #2 CROSS SECTIONS
SHEET 10 OF 99

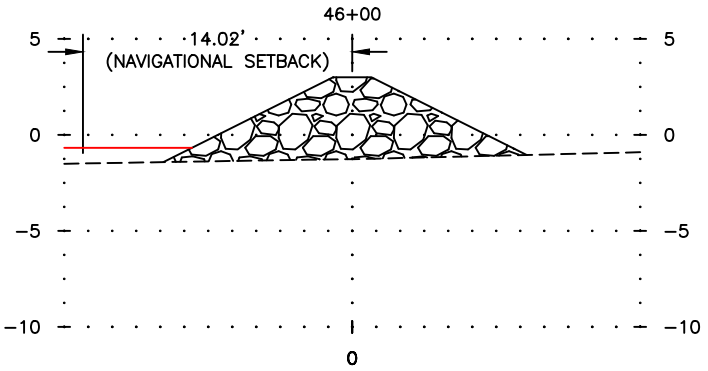












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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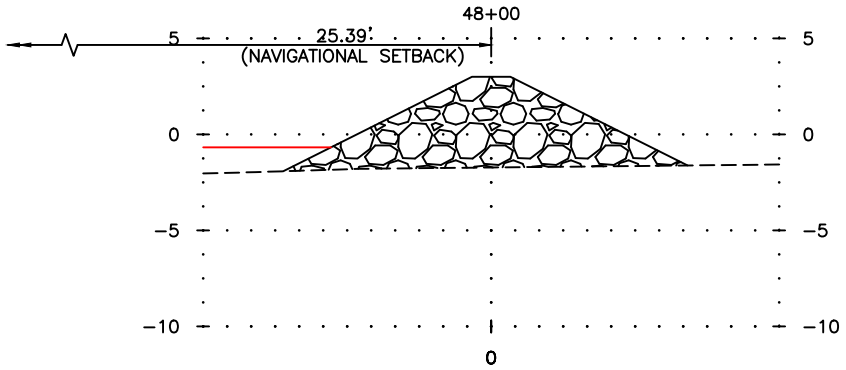
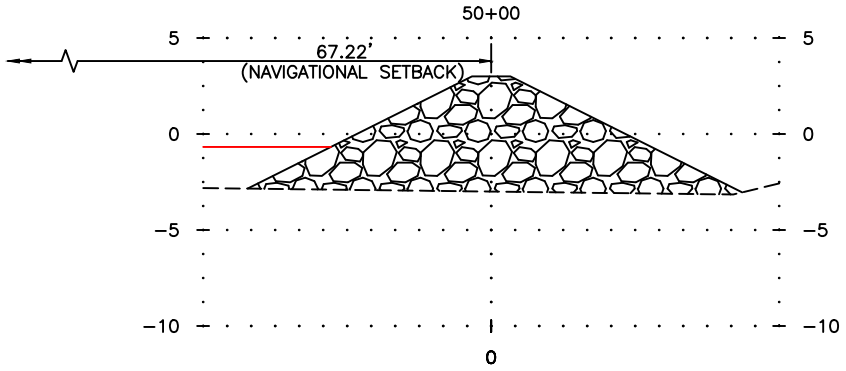
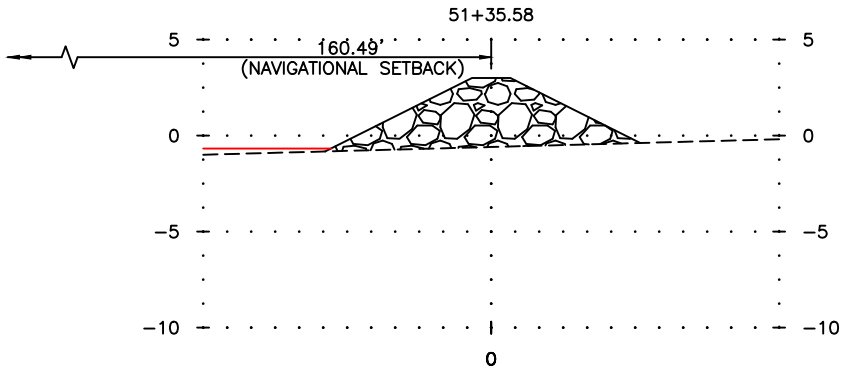
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #2 CROSS SECTIONS
SHEET 11 OF 99







LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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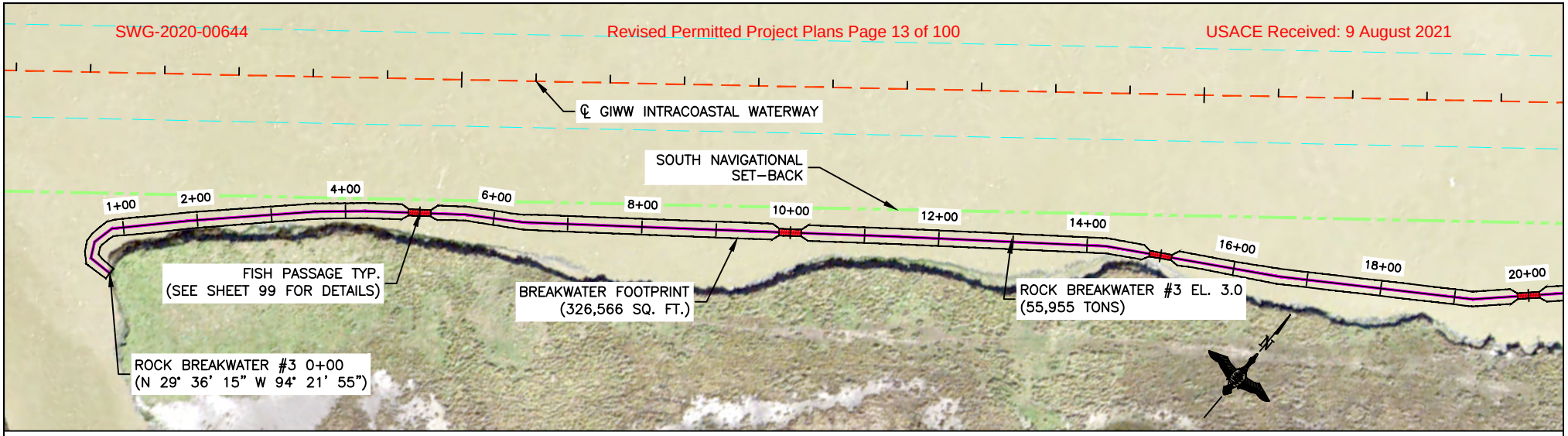
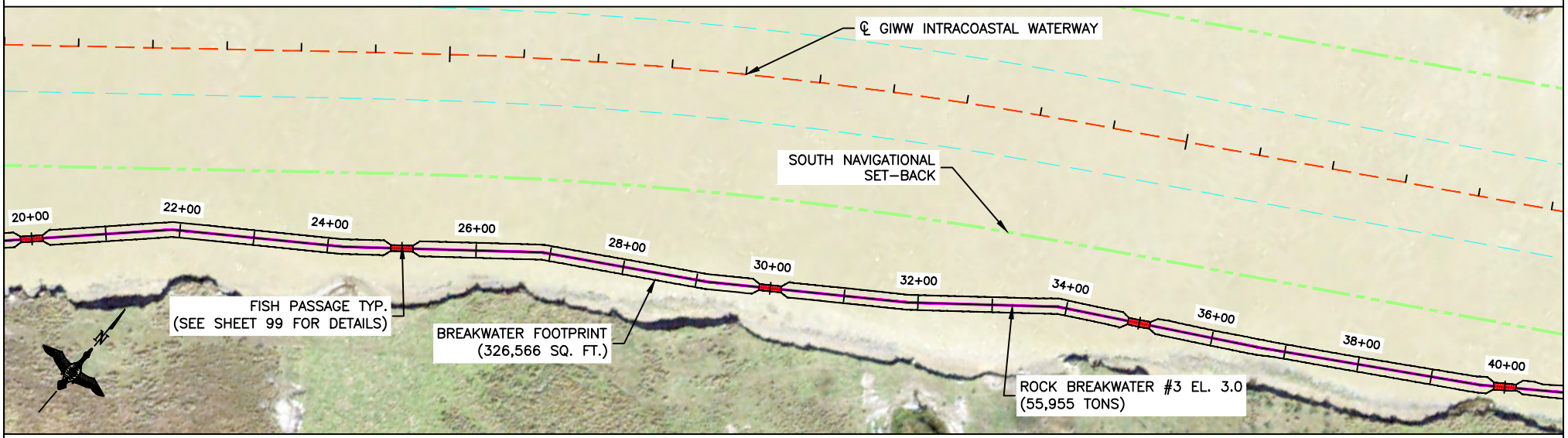
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #2 CROSS SECTIONS
SHEET 12 OF 99



ROCK BREAKWATER #3 STA. 0+00 – 20+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #3 STA. 20+00 – 40+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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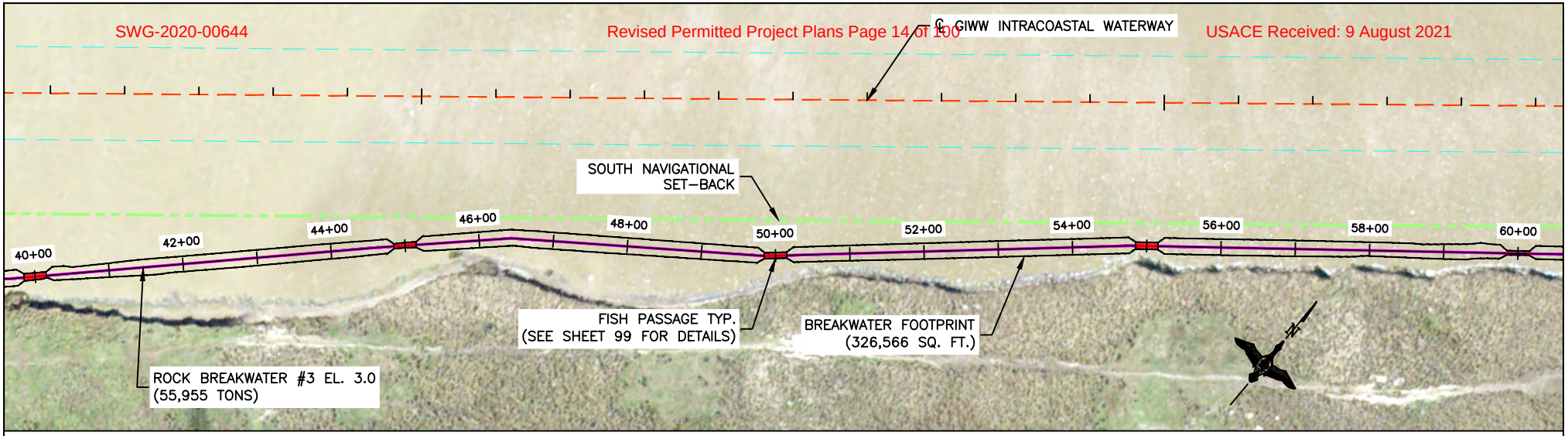
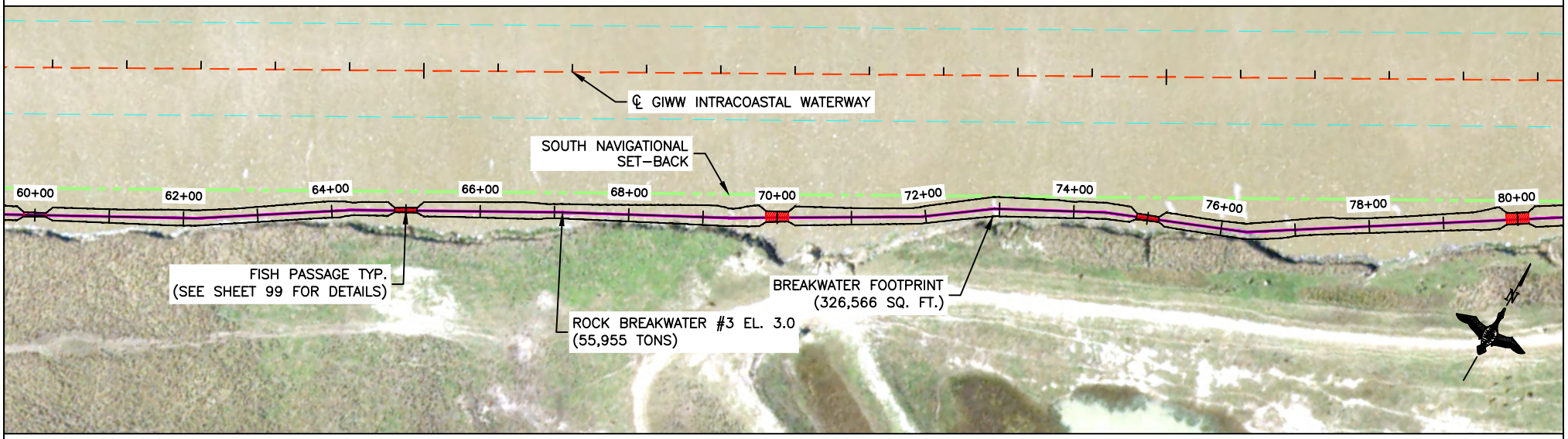
PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #3 PLAN
SHEET 13 OF 99



ROCK BREAKWATER #3 STA. 40+00 – 60+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #3 STA. 60+00 – 80+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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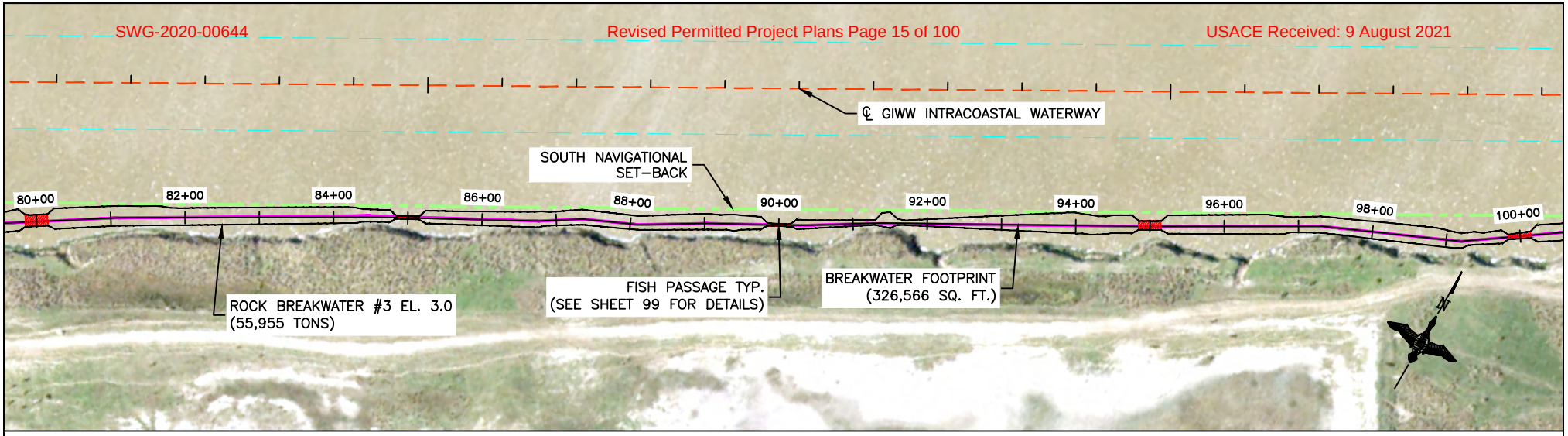
PROJECT NO. DU–TX–36–15

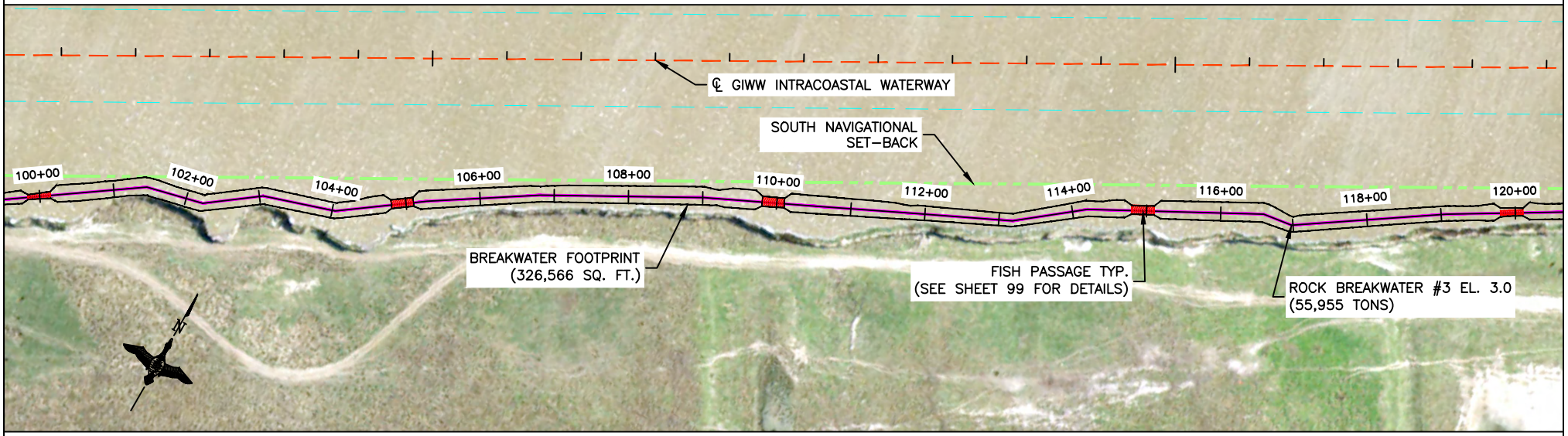
McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #3 PLAN
SHEET 14 OF 99



ROCK BREAKWATER #3 STA. 80+00 – 100+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #3 STA. 100+00 – 120+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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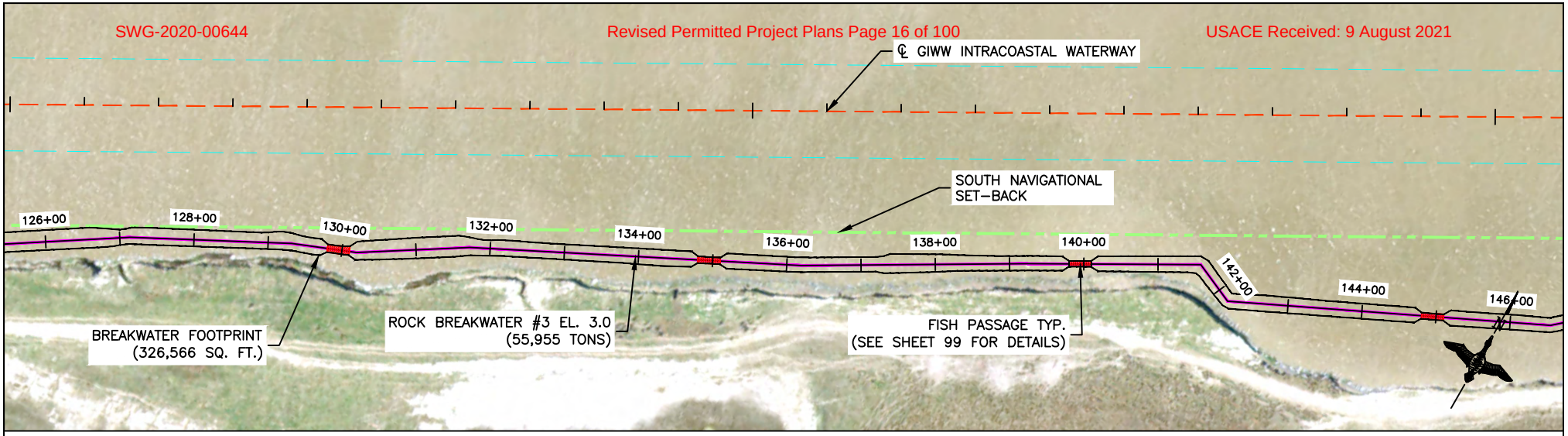
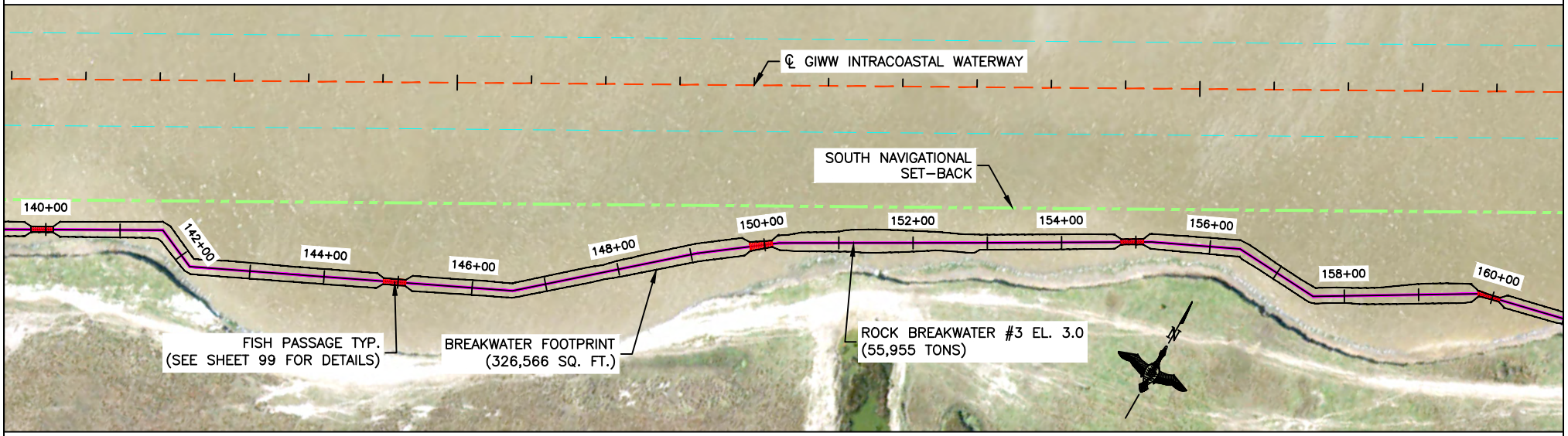
PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #3 PLAN
SHEET 15 OF 99



ROCK BREAKWATER #3 STA. 120+00 – 140+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #3 STA. 140+00 – 160+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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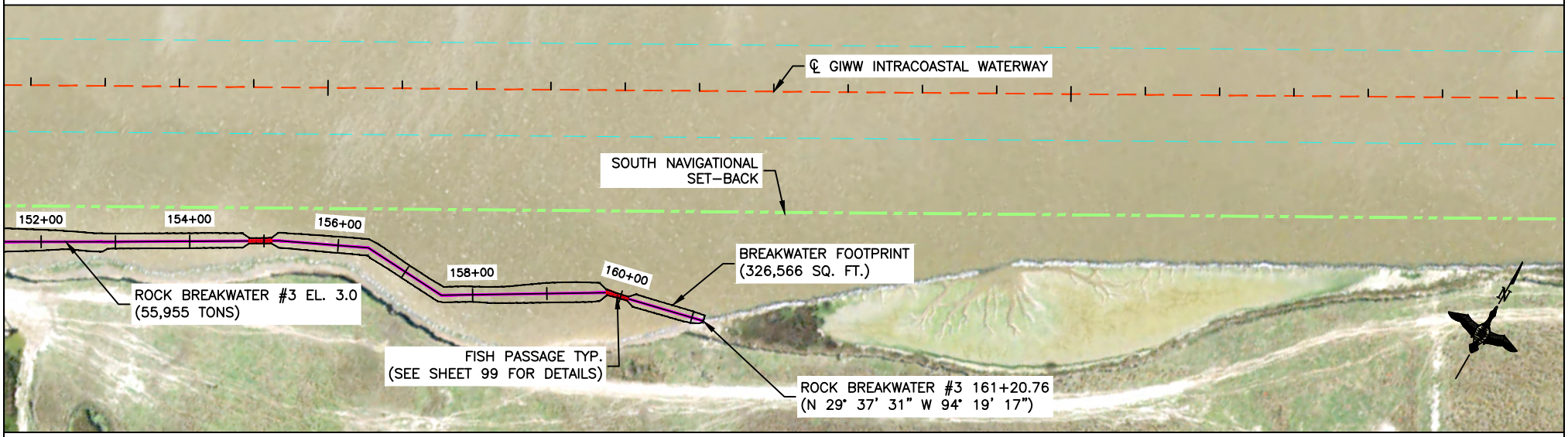
PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #3 PLAN
SHEET 16 OF 99



ROCK BREAKWATER #3 STA. 152+00 – 161+20.76

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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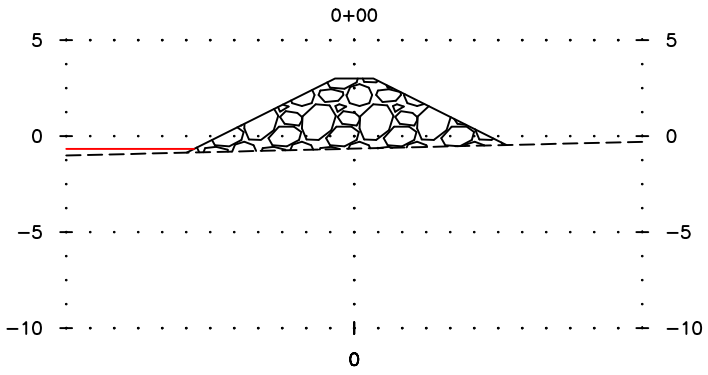
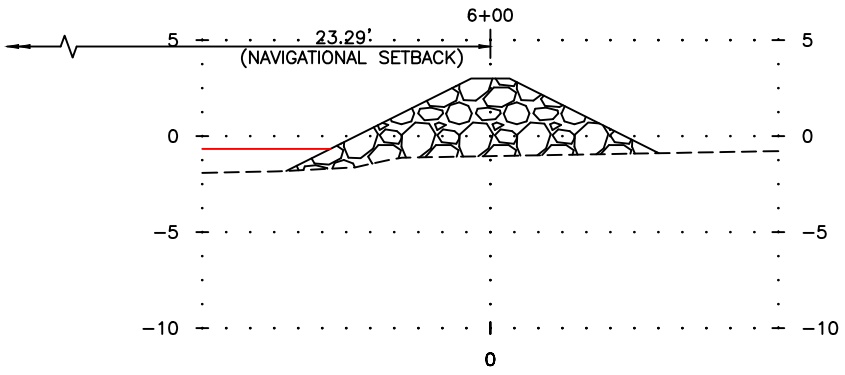
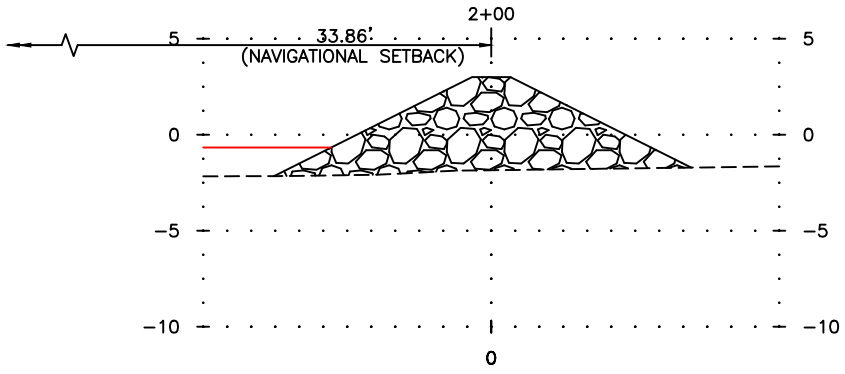
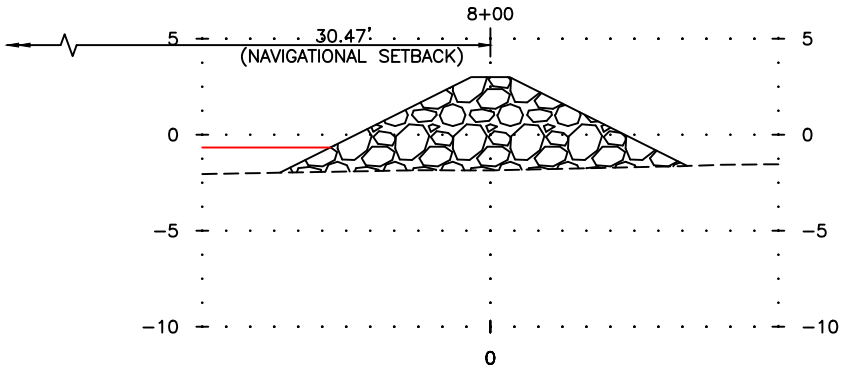
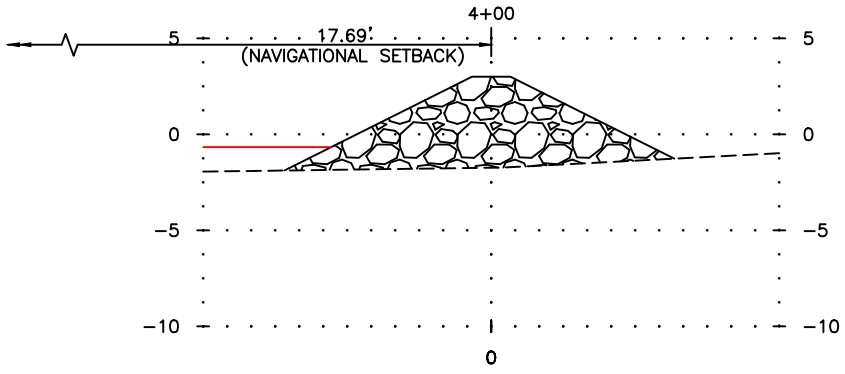
PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER LAYOUT
SHEET 17 OF 99

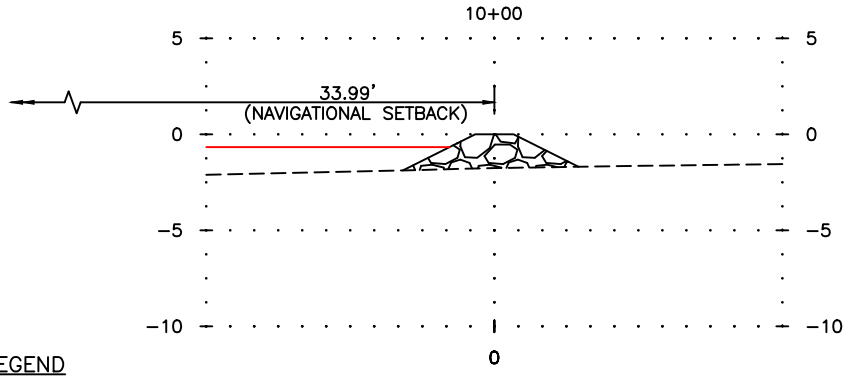












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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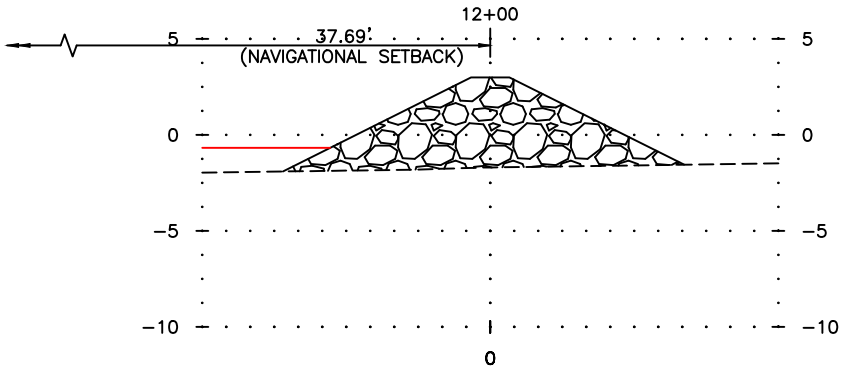
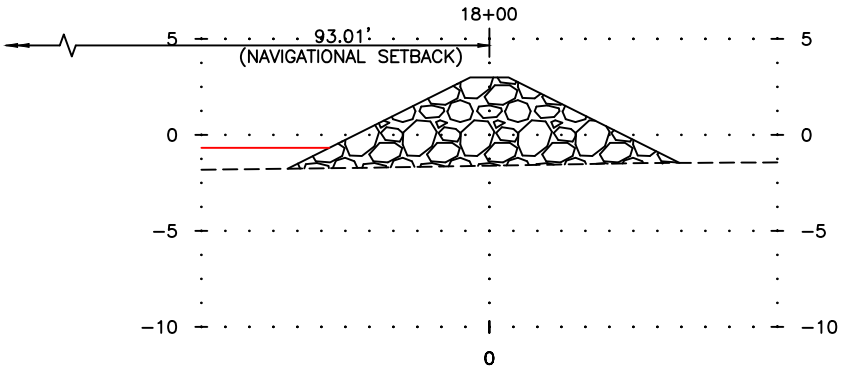
PROJECT NO. DU-TX-36-15

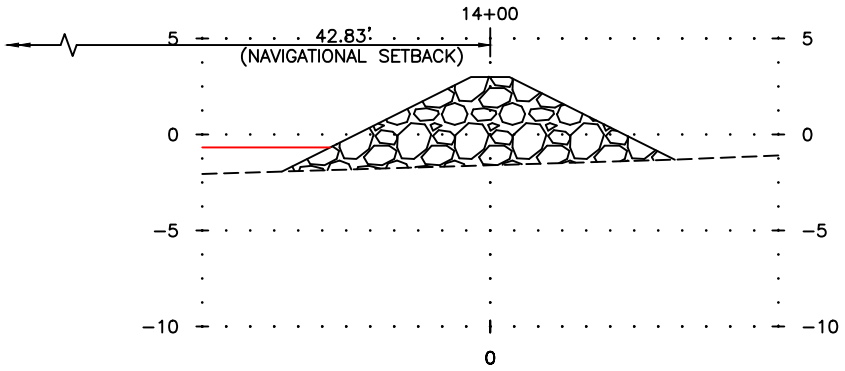
McFADDIN NWR GIWW ROCK BREAKWATER

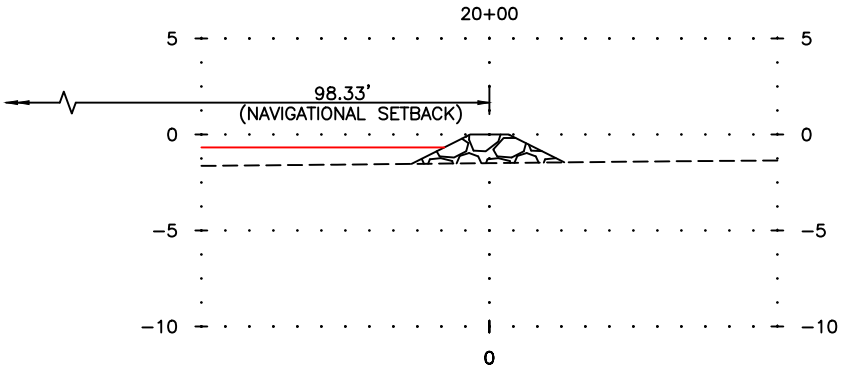
BREAKWATER #3 CROSS SECTIONS

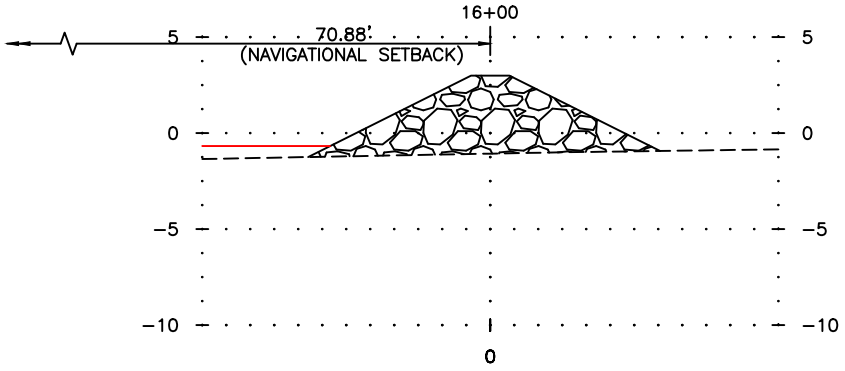
SHEET 18 OF 99

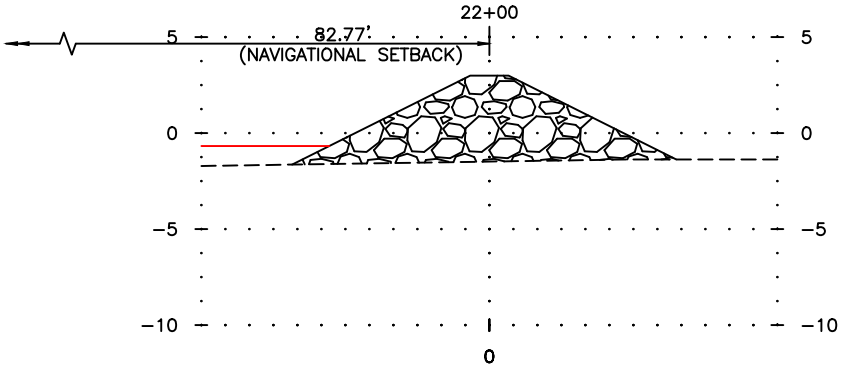












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

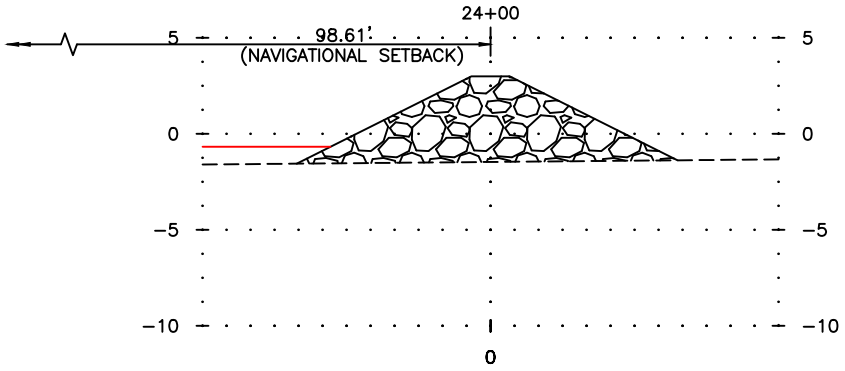
MLLW = −0.67' (NAVD88)

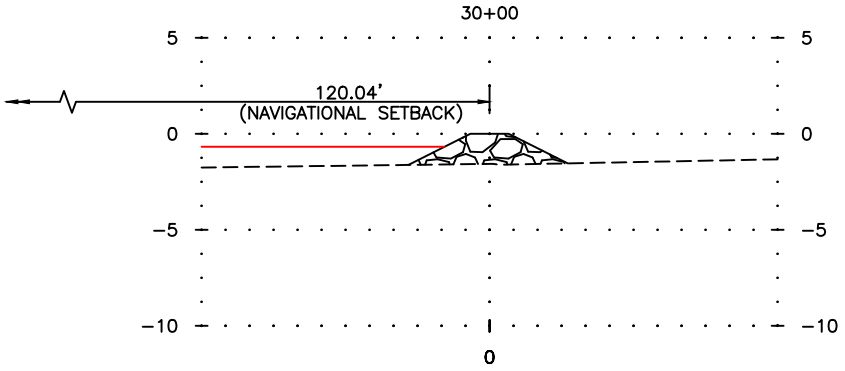
VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

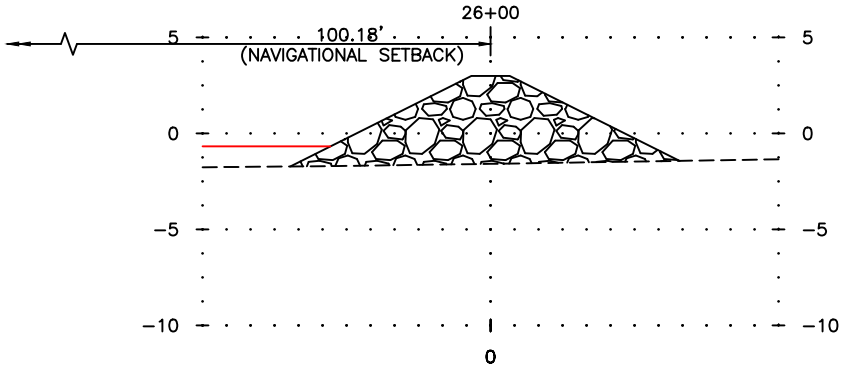
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

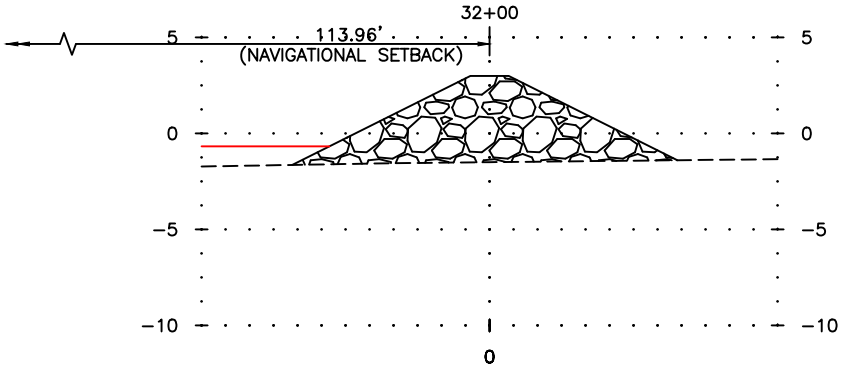
PROJECT NO. DU-TX-36-15

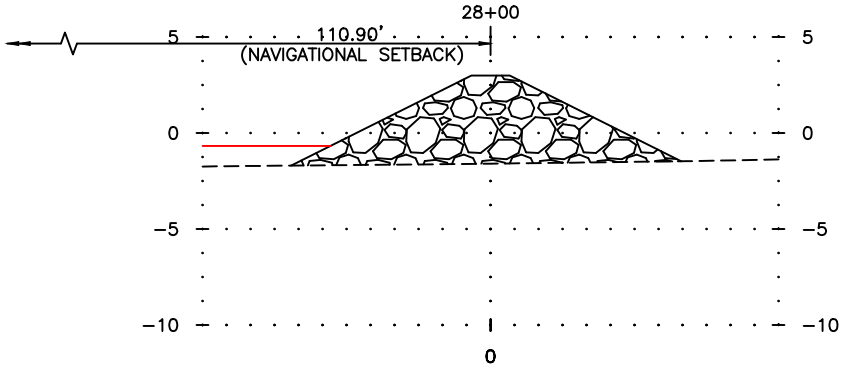
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 19 OF 99

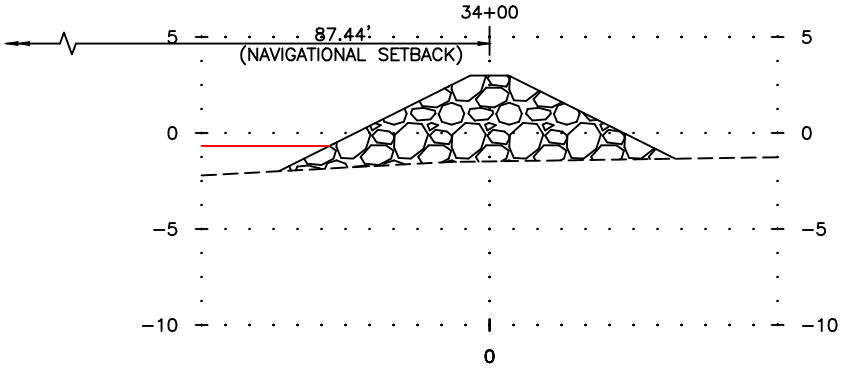












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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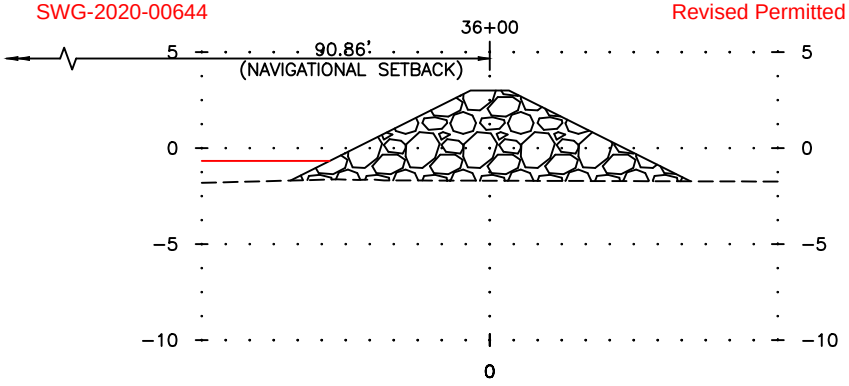
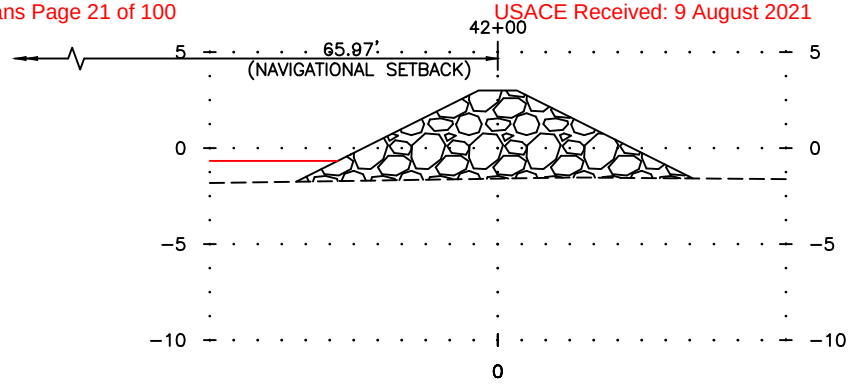
PROJECT NO. DU-TX-36-15

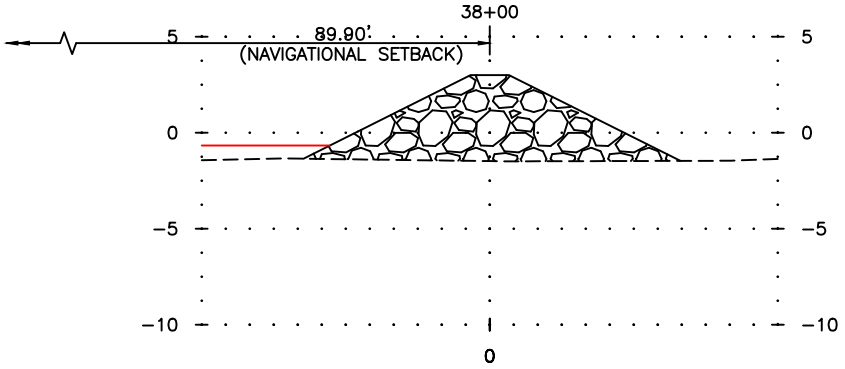
McFADDIN NWR GIWW ROCK BREAKWATER

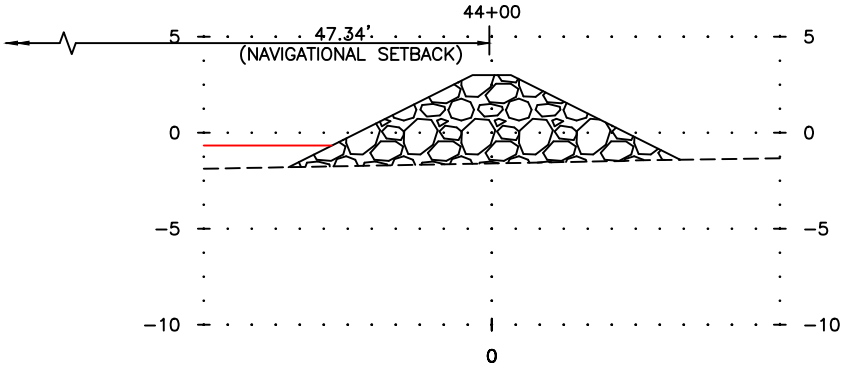
BREAKWATER #3 CROSS SECTIONS

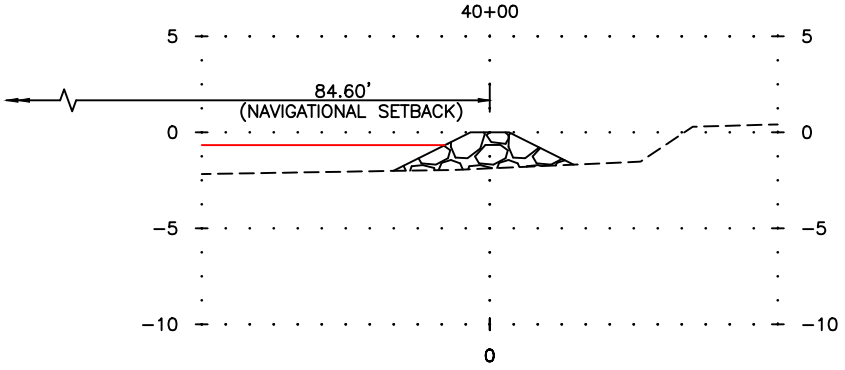
SHEET 20 OF 99

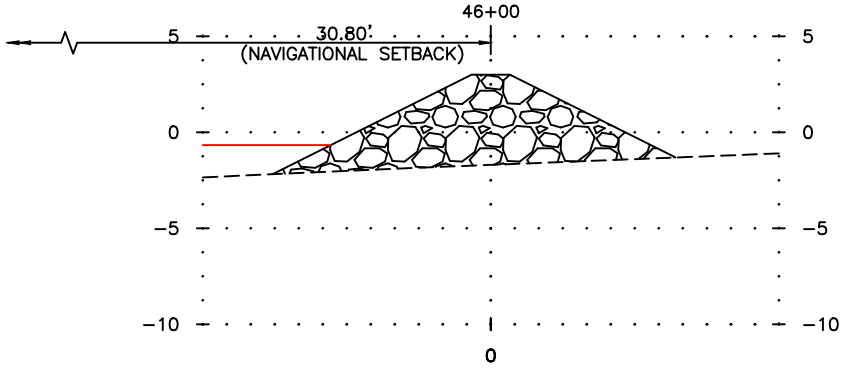












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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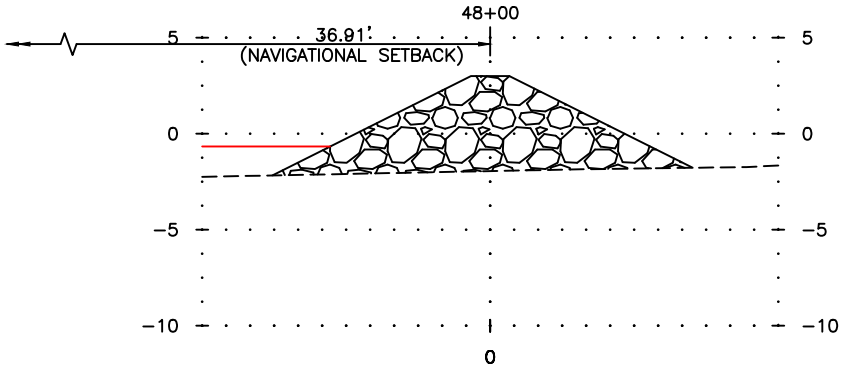
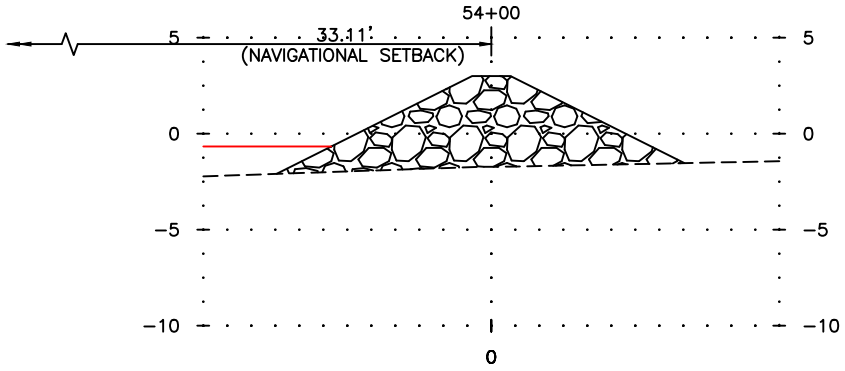
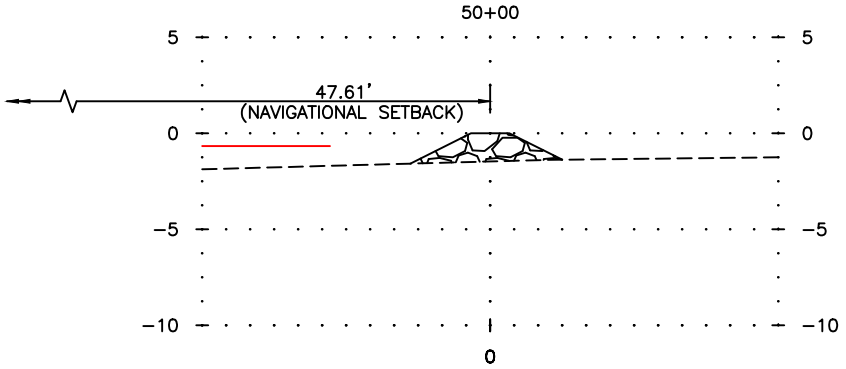
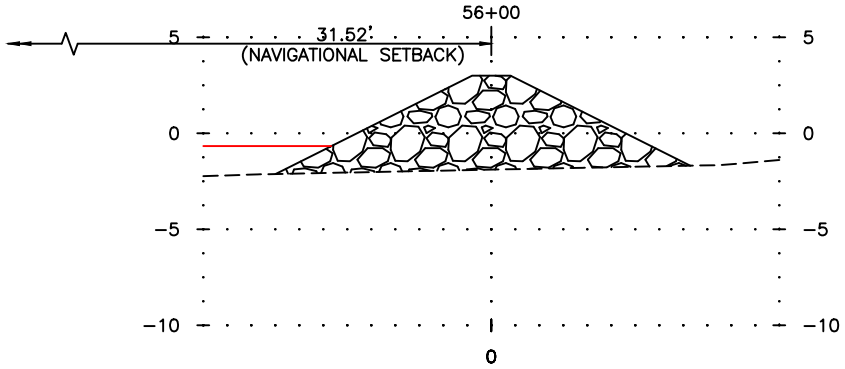
PROJECT NO. DU-TX-36-15

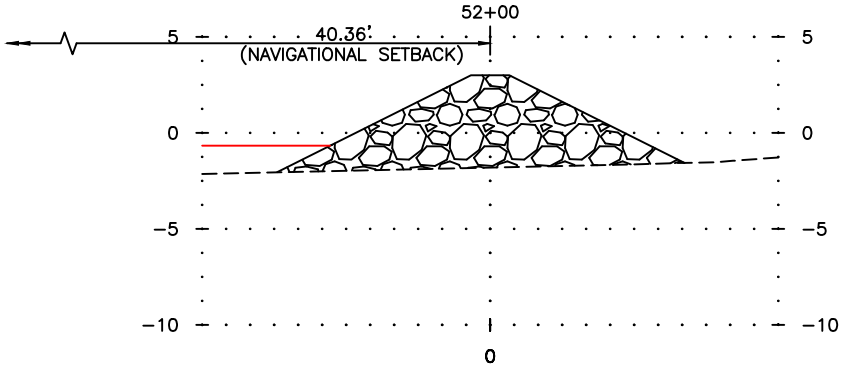
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 21 OF 99

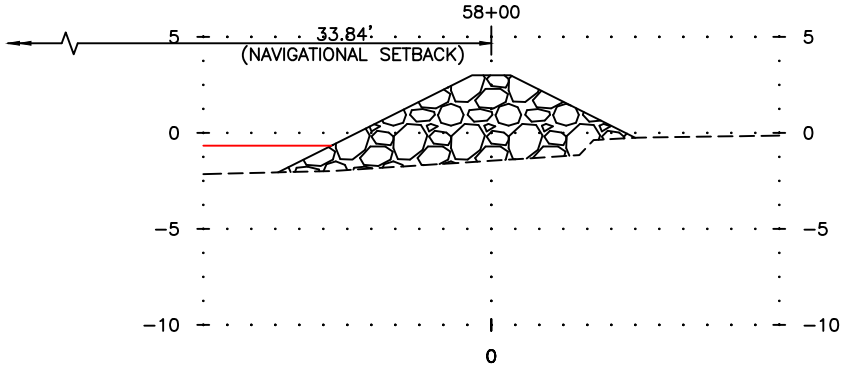












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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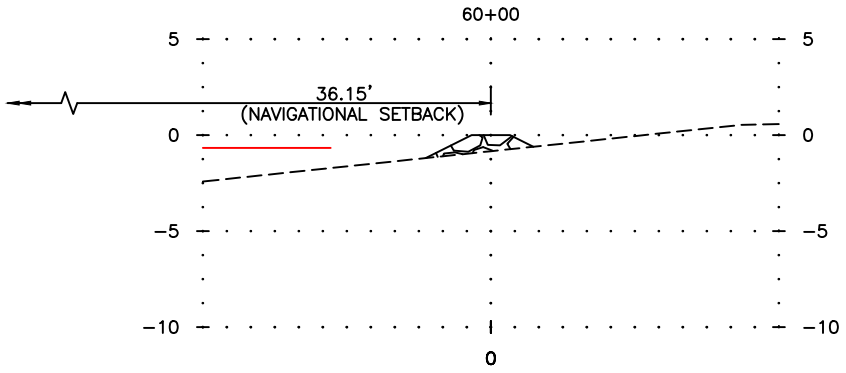
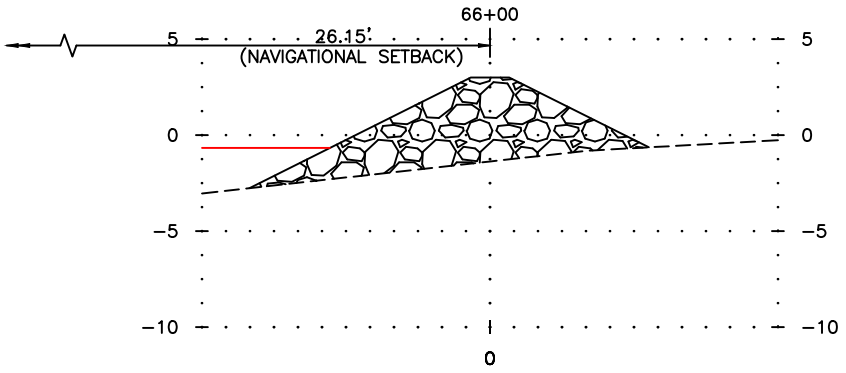
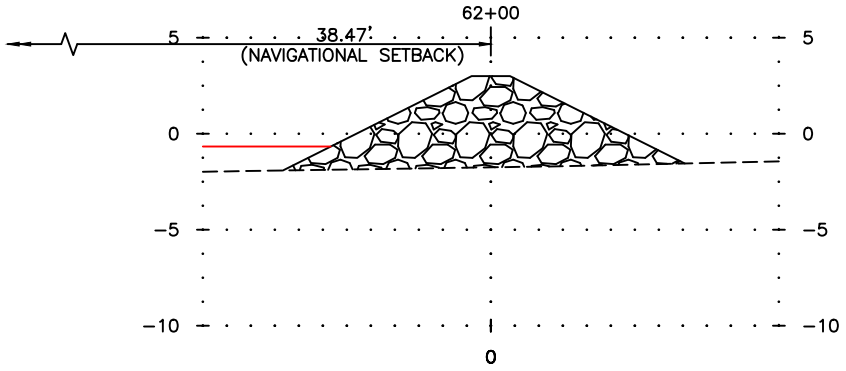
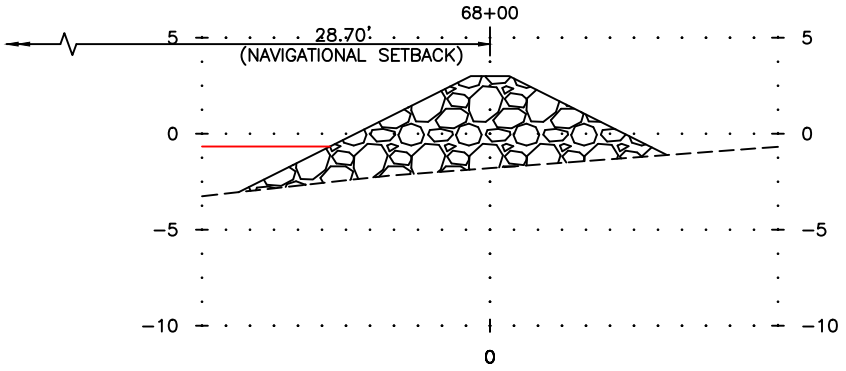
PROJECT NO. DU-TX-36-15

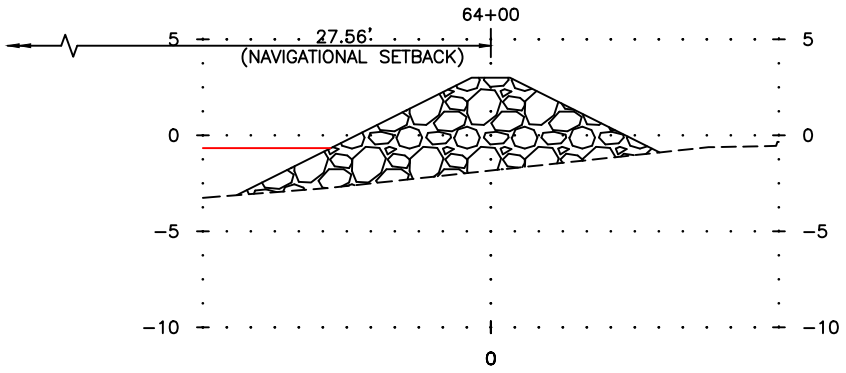
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 22 OF 99

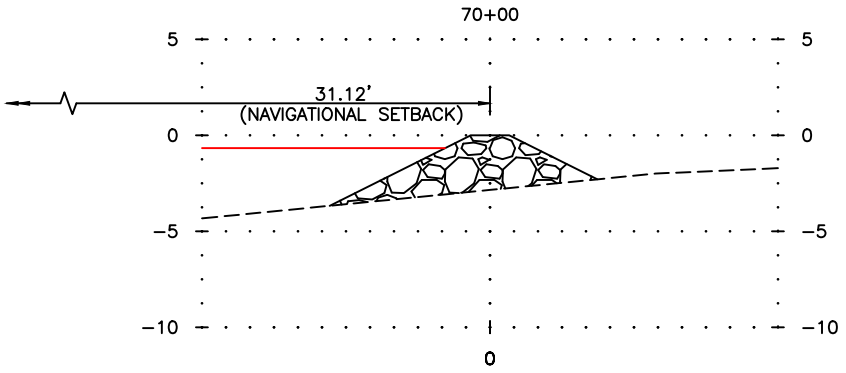












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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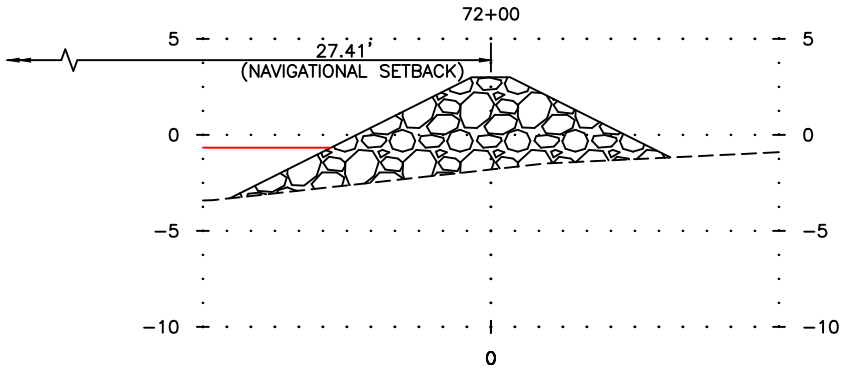
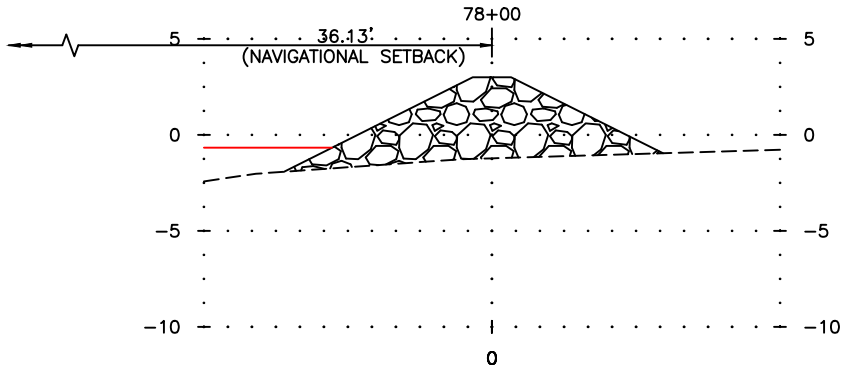
PROJECT NO. DU-TX-36-15

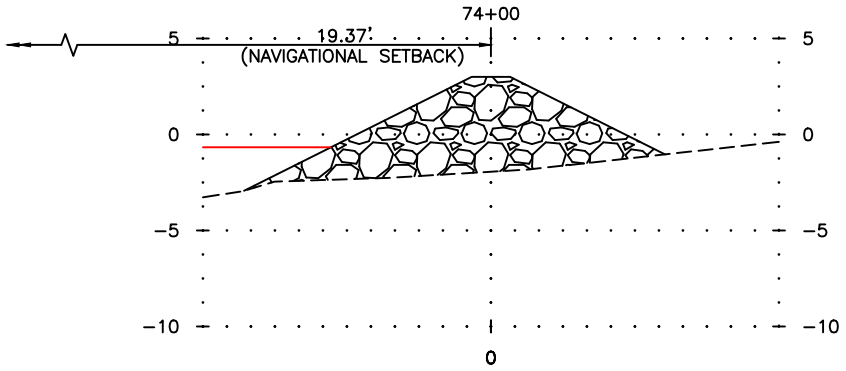
McFADDIN NWR GIWW ROCK BREAKWATER

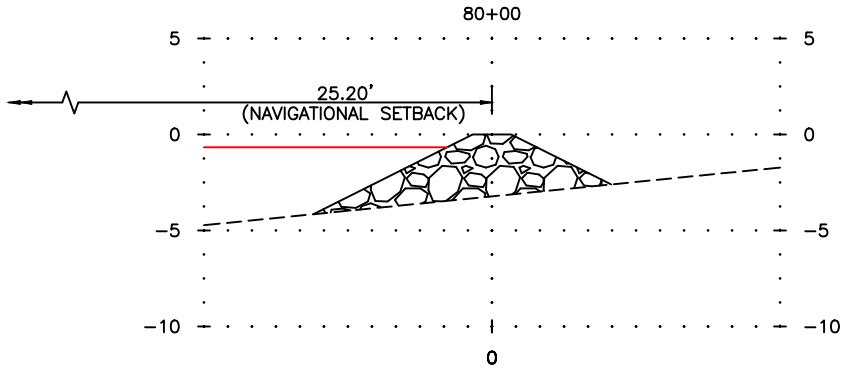
BREAKWATER #3 CROSS SECTIONS

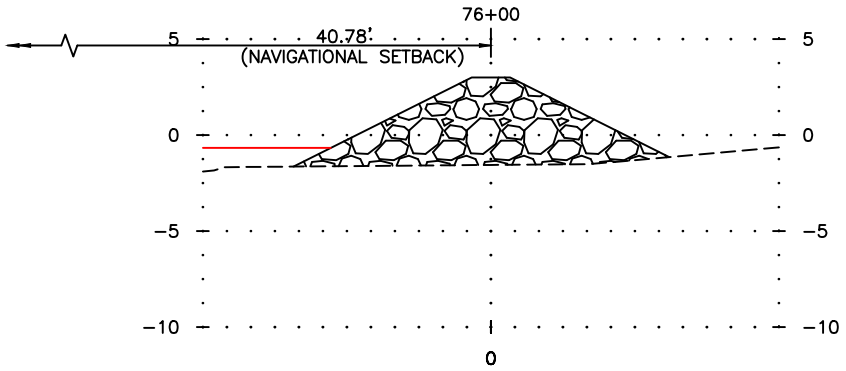
SHEET 23 OF 99

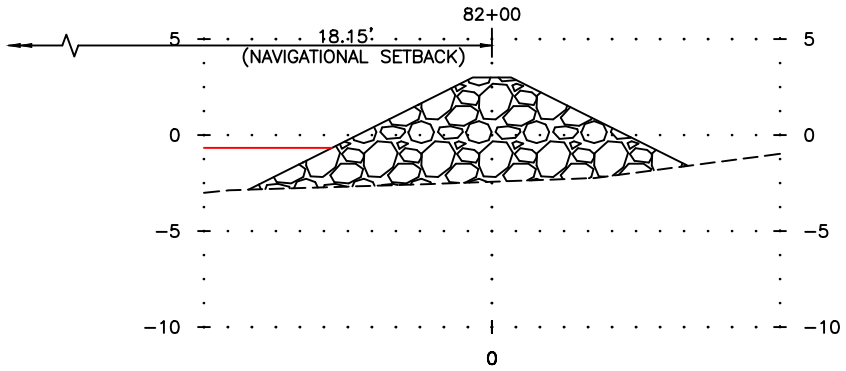












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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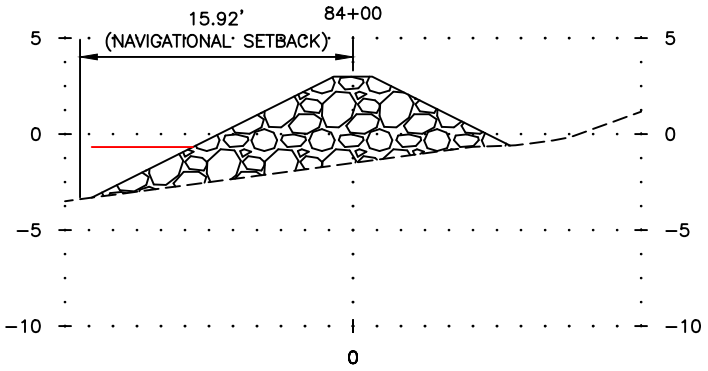
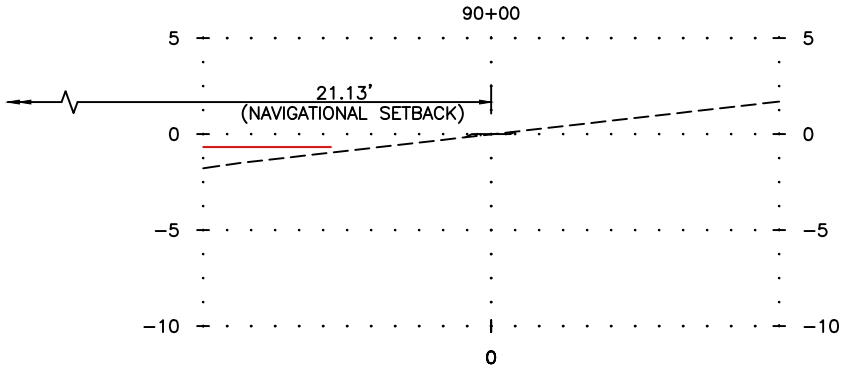
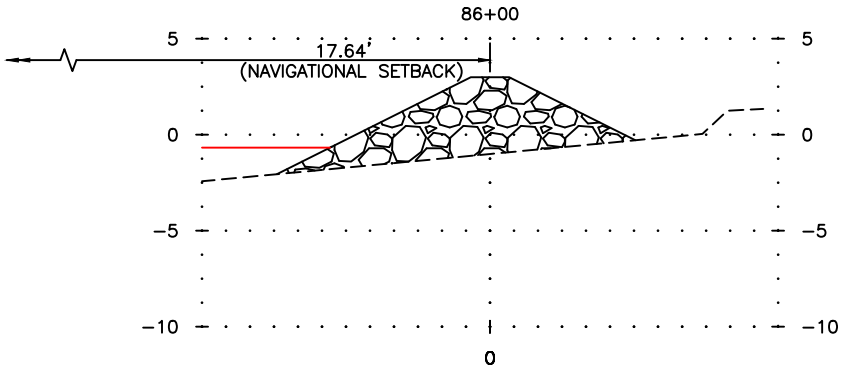
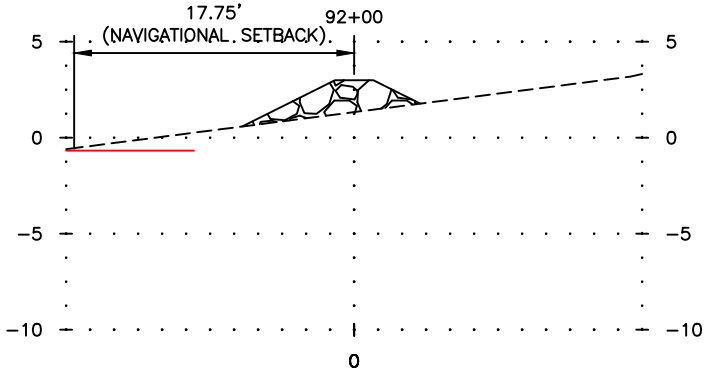
PROJECT NO. DU-TX-36-15

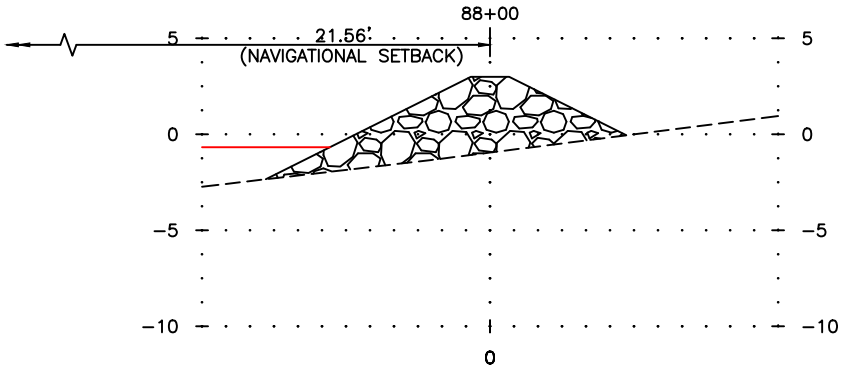
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 24 OF 99

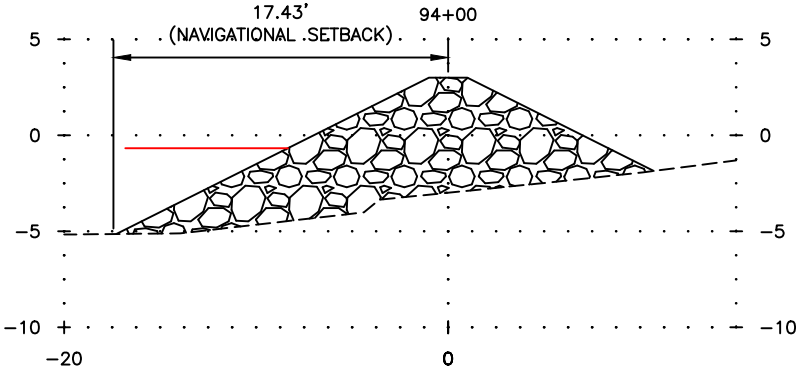












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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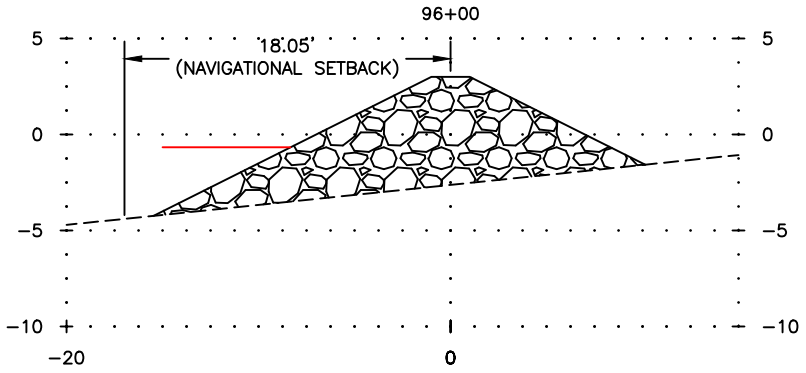
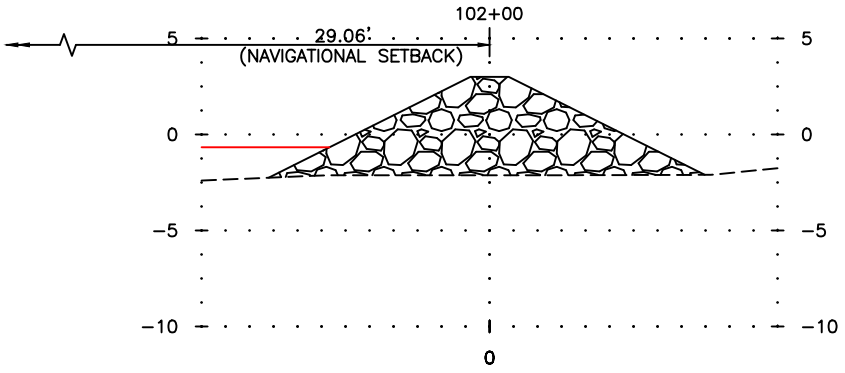
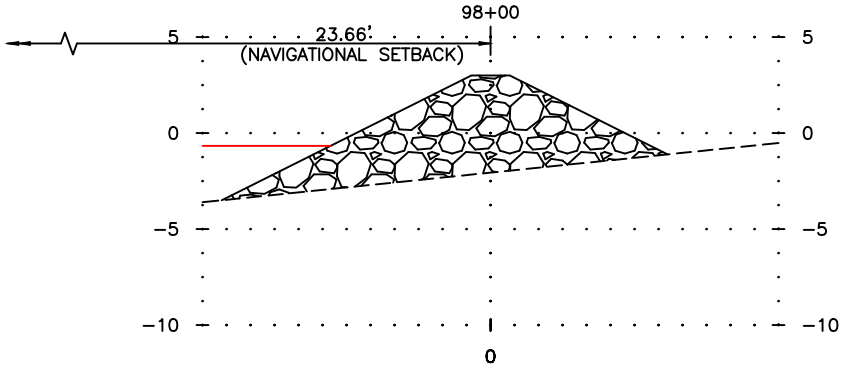
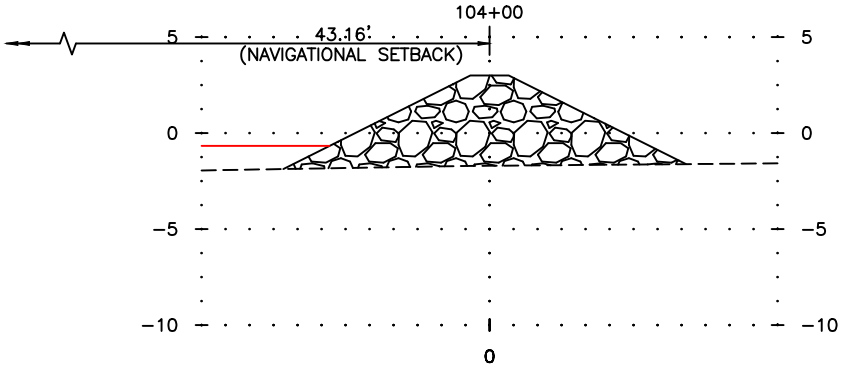
PROJECT NO. DU-TX-36-15

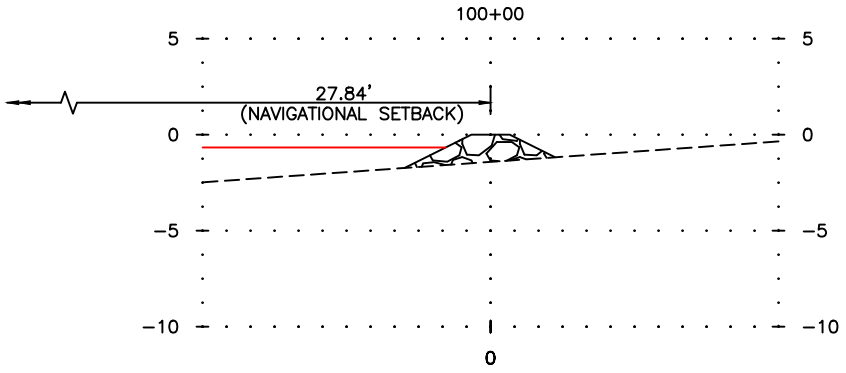
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 25 OF 99

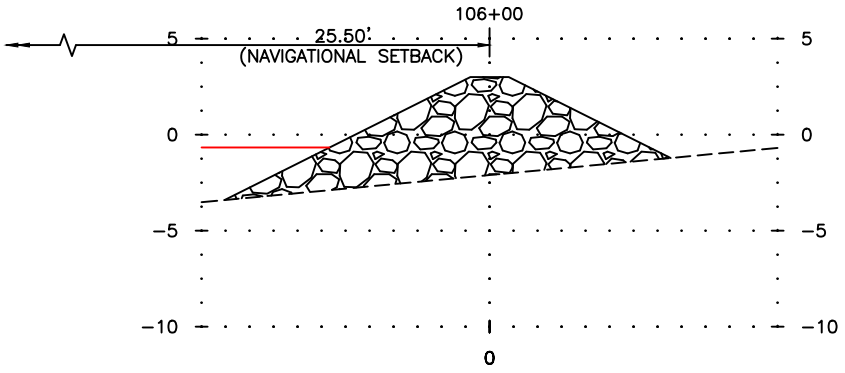












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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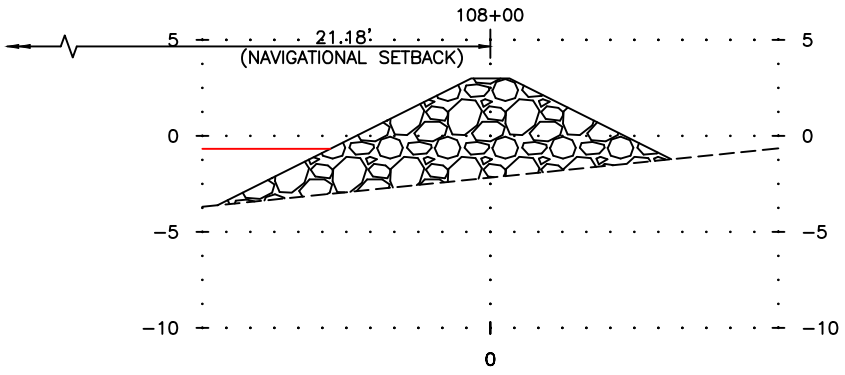
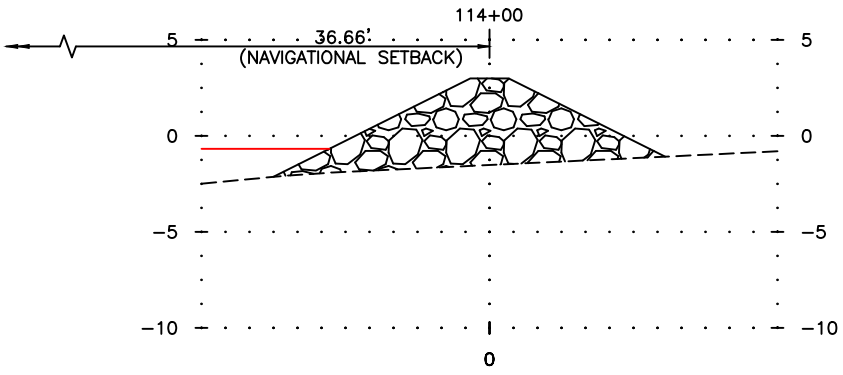
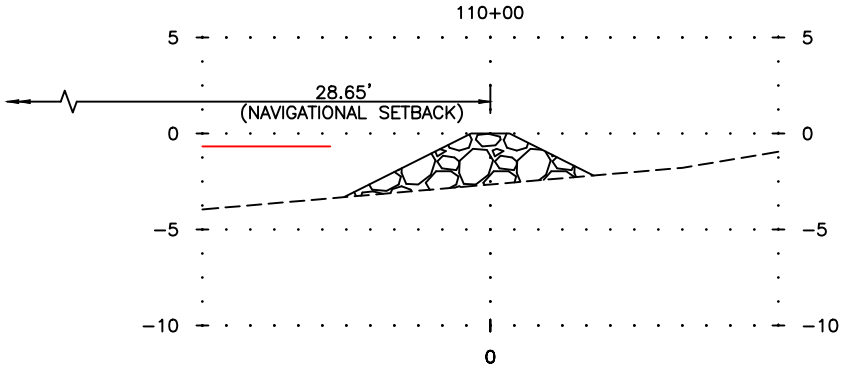
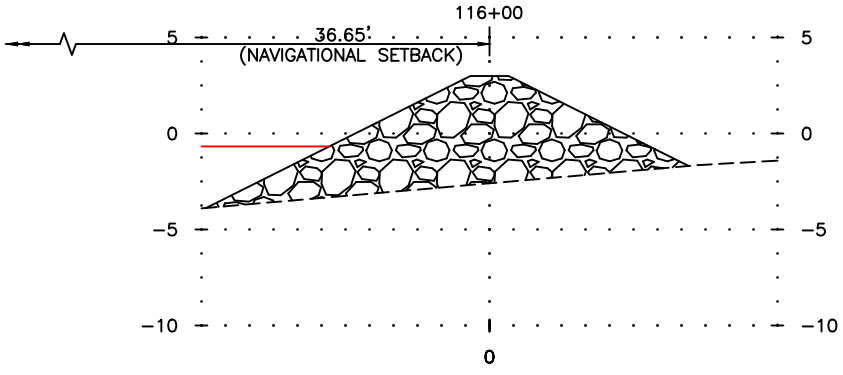
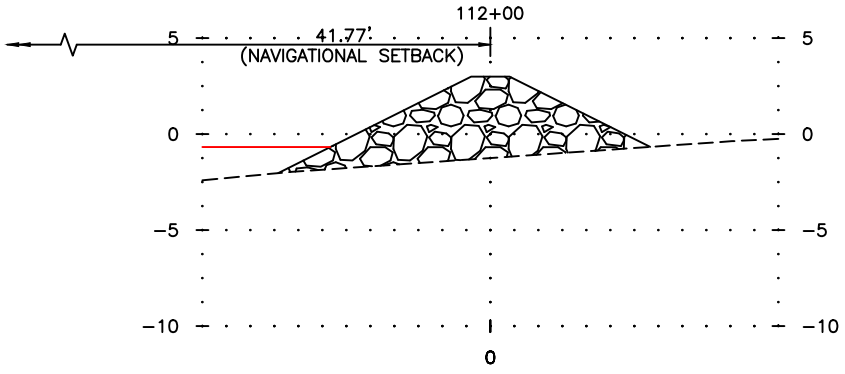
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 26 OF 99

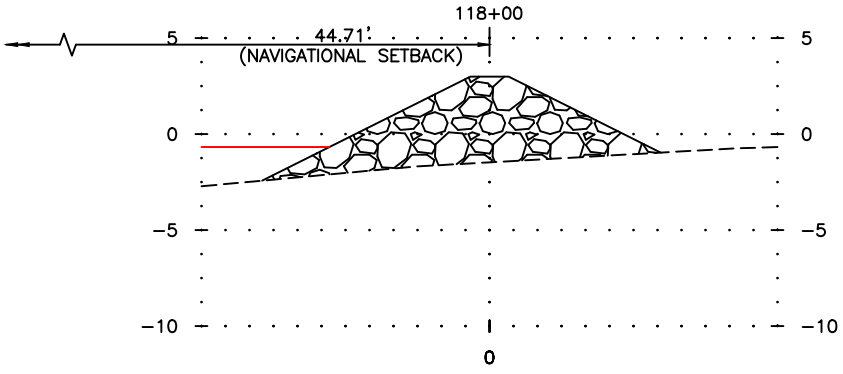












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

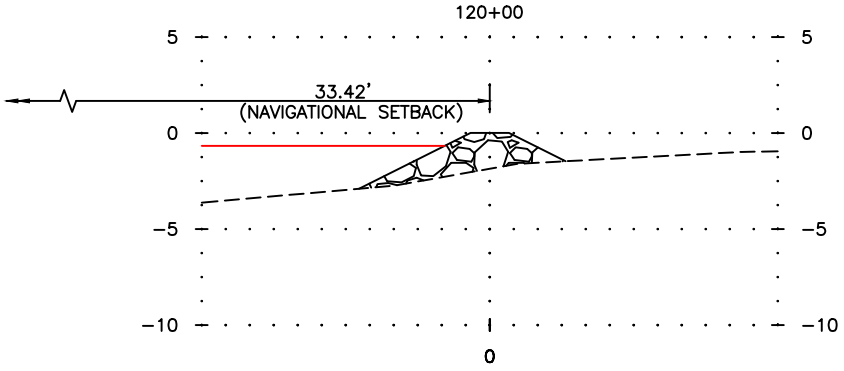
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

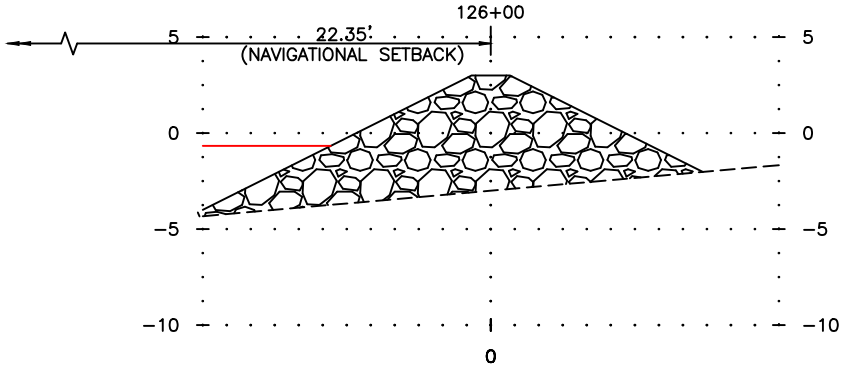
PROJECT NO. DU-TX-36-15

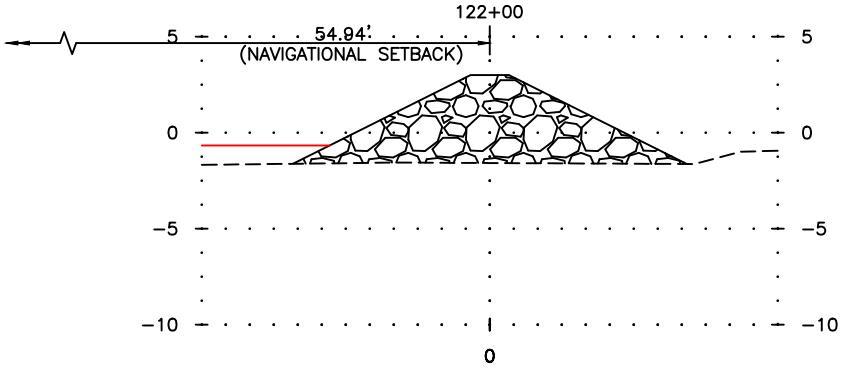
McFADDIN NWR GIWW ROCK BREAKWATER

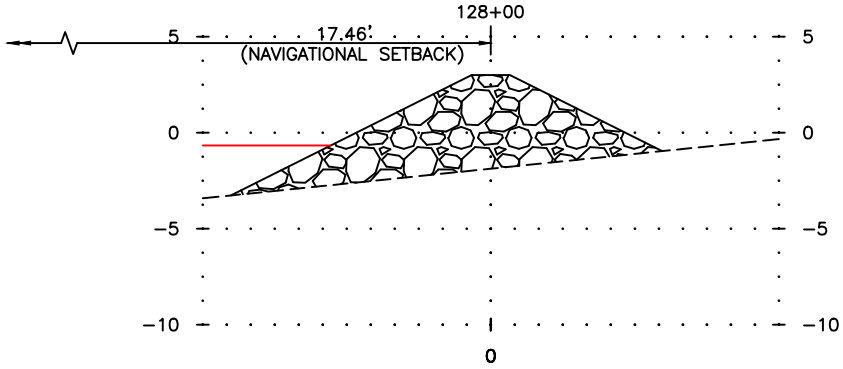
BREAKWATER #3 CROSS SECTIONS

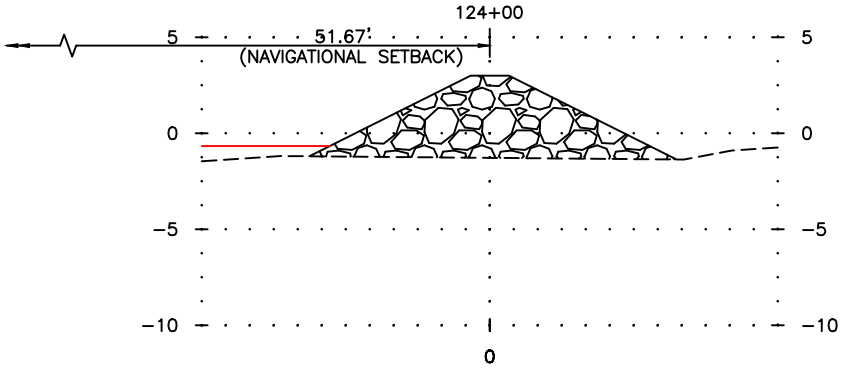
SHEET 27 OF 99

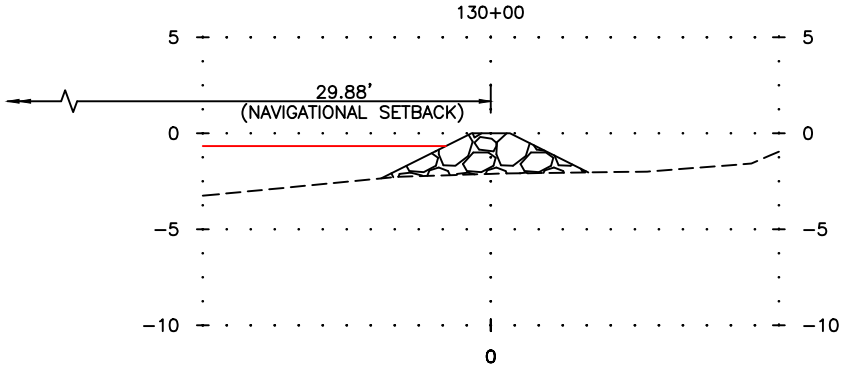












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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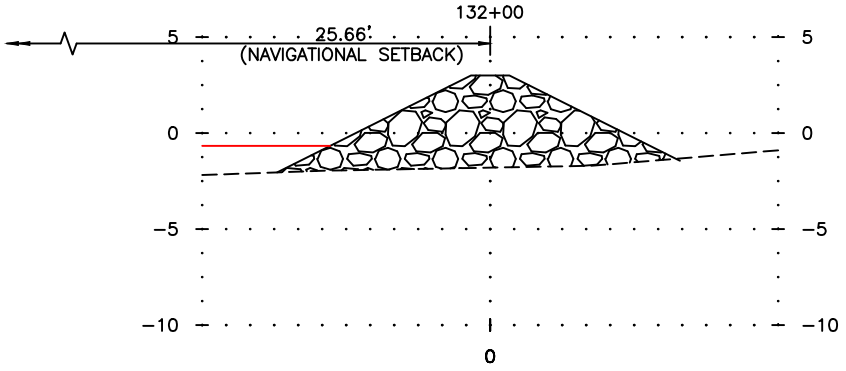
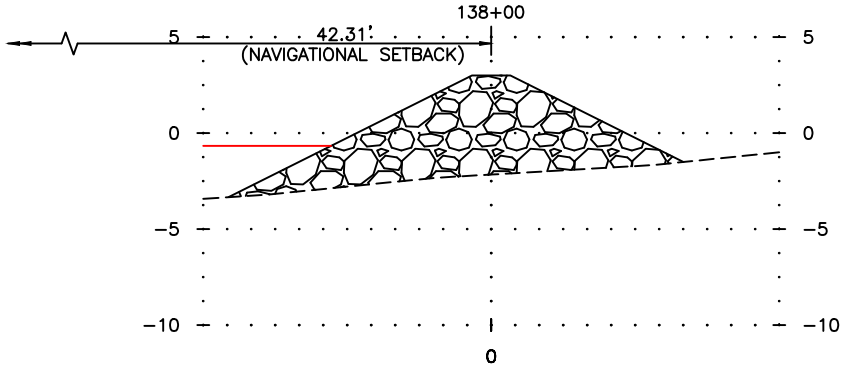
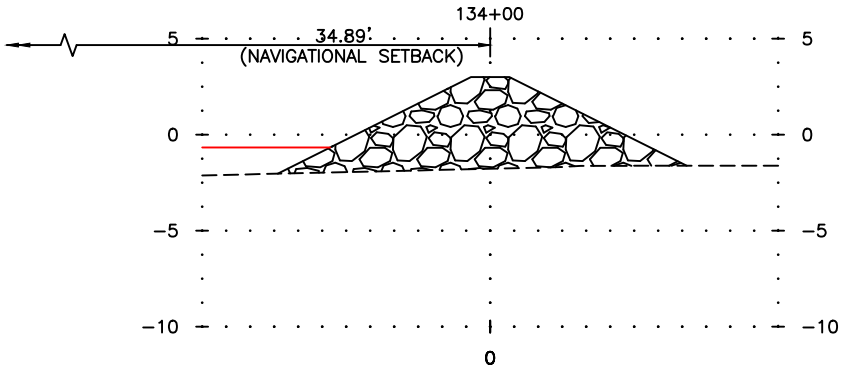
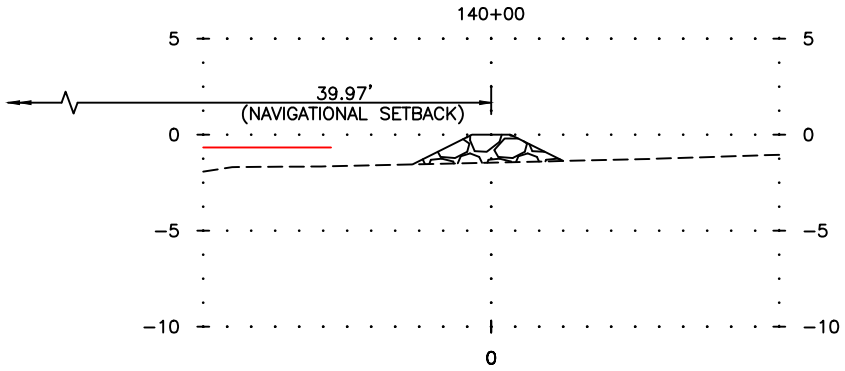
PROJECT NO. DU-TX-36-15

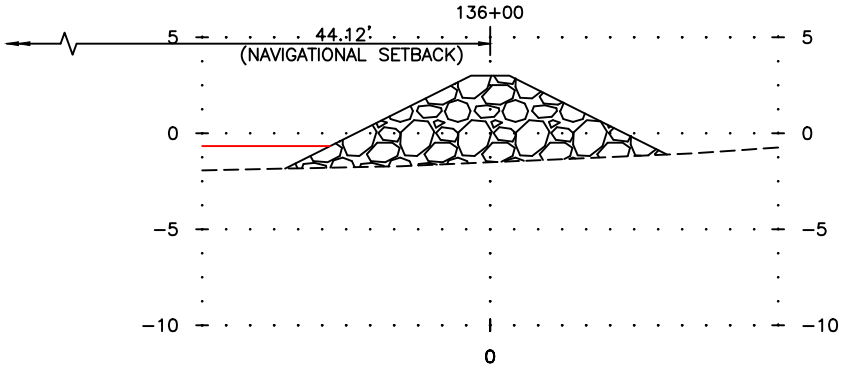
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 28 OF 99

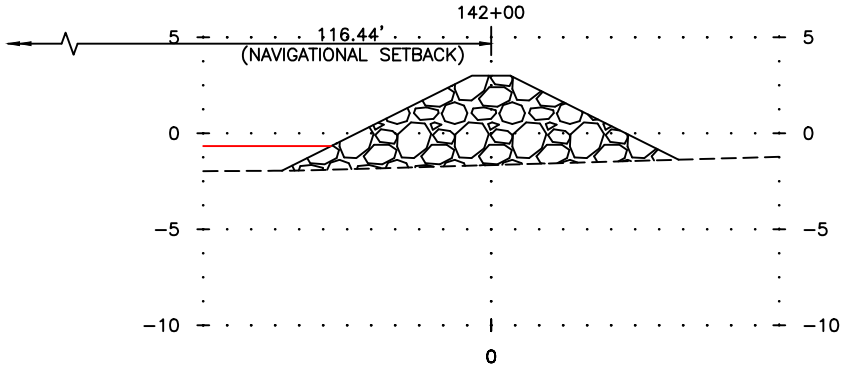












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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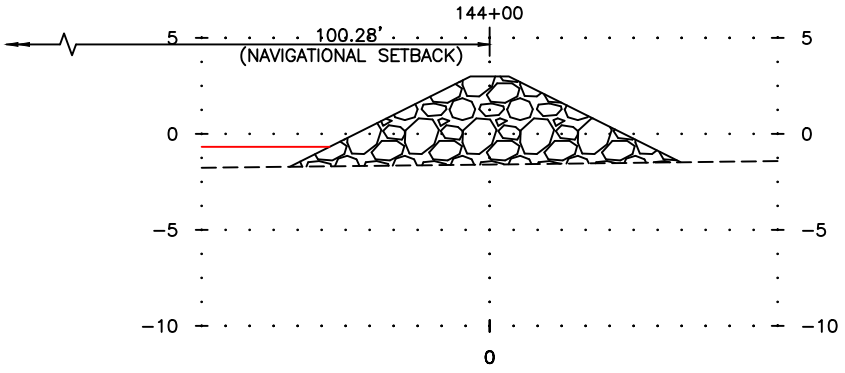
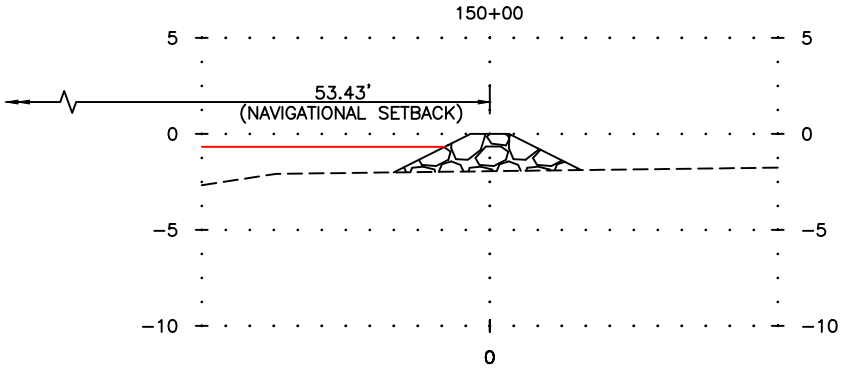
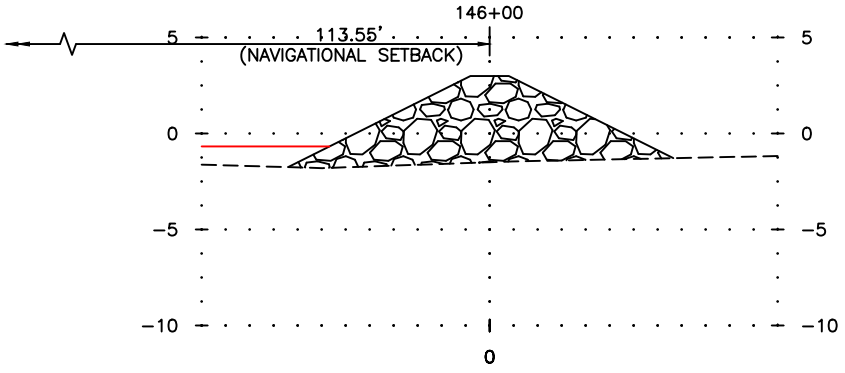
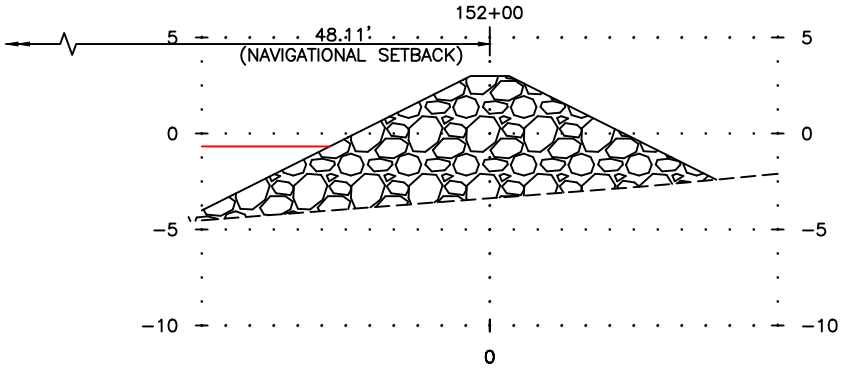
PROJECT NO. DU-TX-36-15

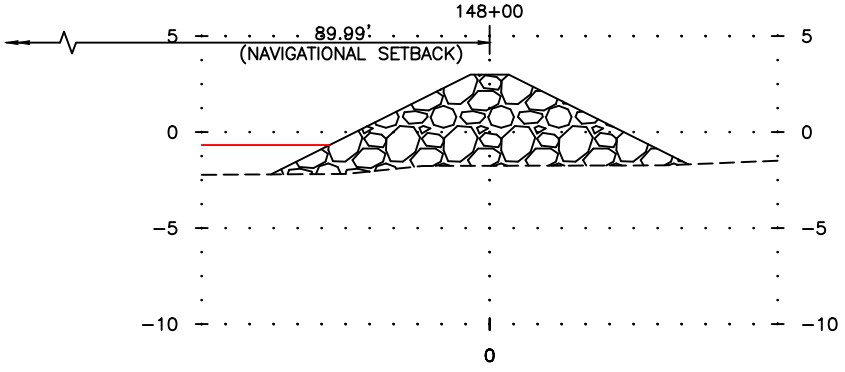
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 29 OF 99

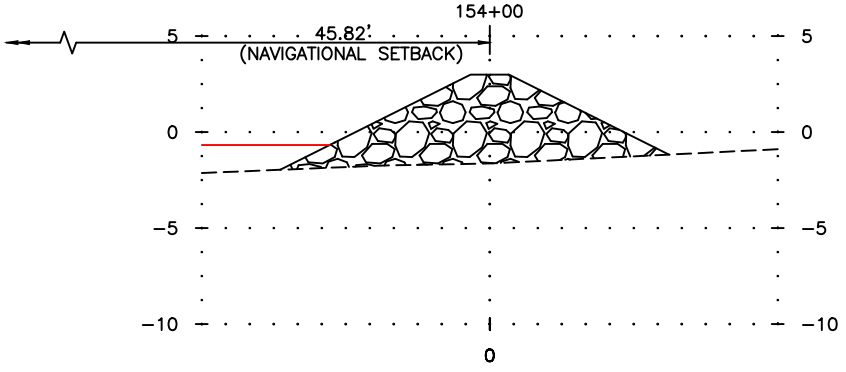












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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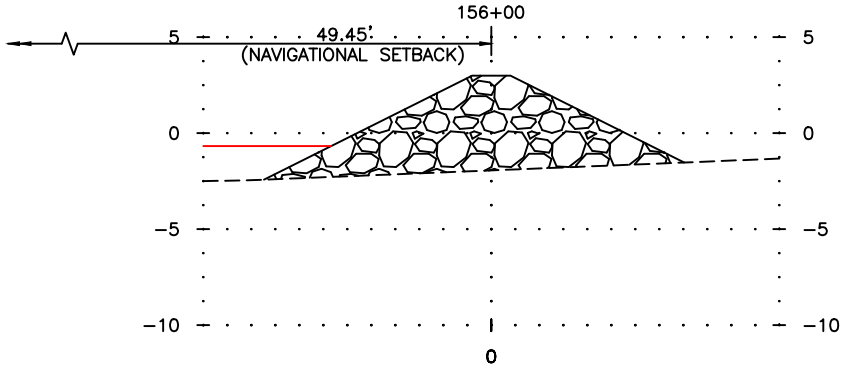
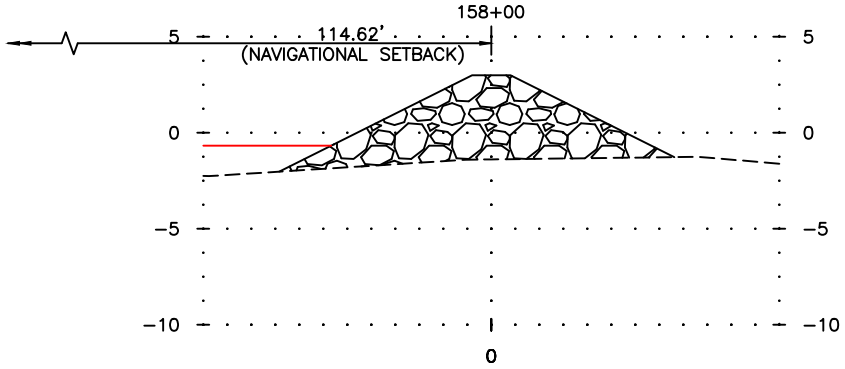
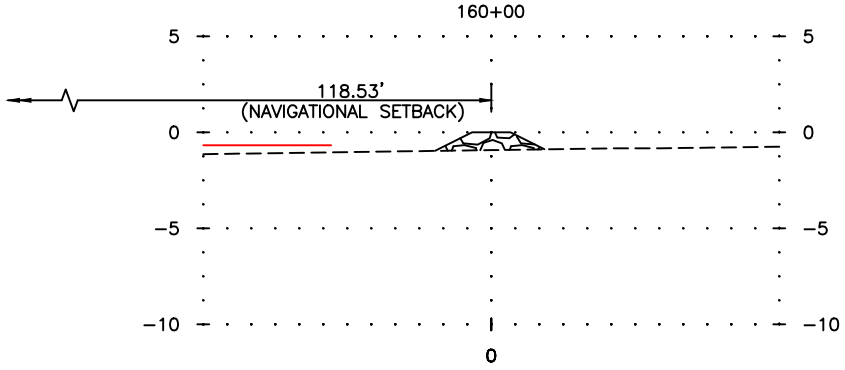
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 30 OF 99







LEGEND

- EXISTING GROUND
- PROPOSED ROCK RIPRAP
- MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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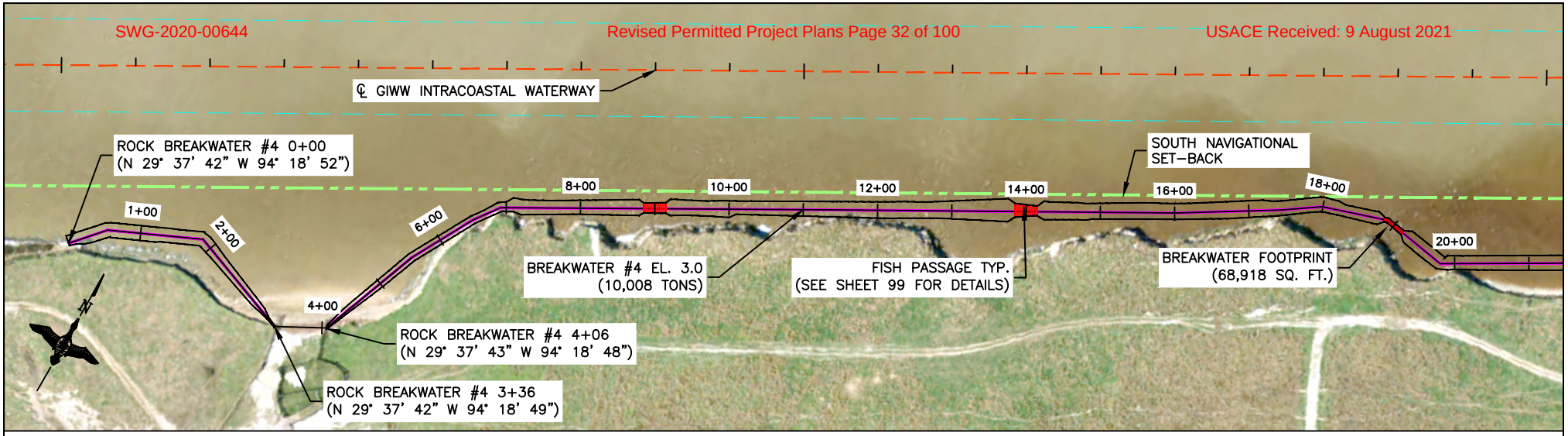
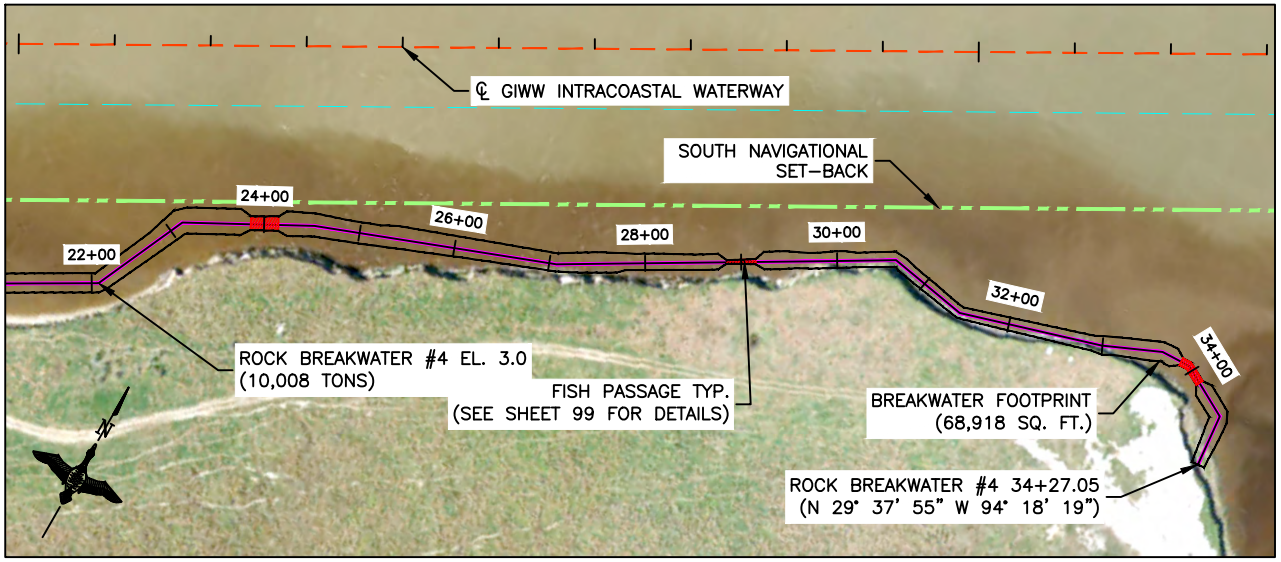
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #3 CROSS SECTIONS
SHEET 31 OF 99



ROCK BREAKWATER #4 STA. 0+00 – 21+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #4 STA. 21+00 – 34+27.05

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

DUCKS UNLIMITED INC.
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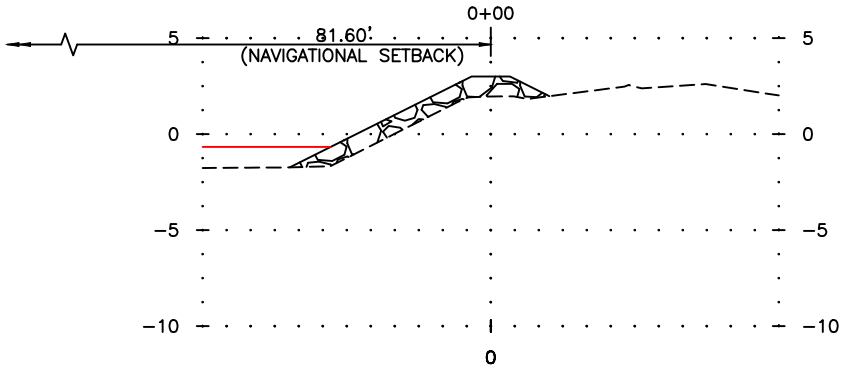
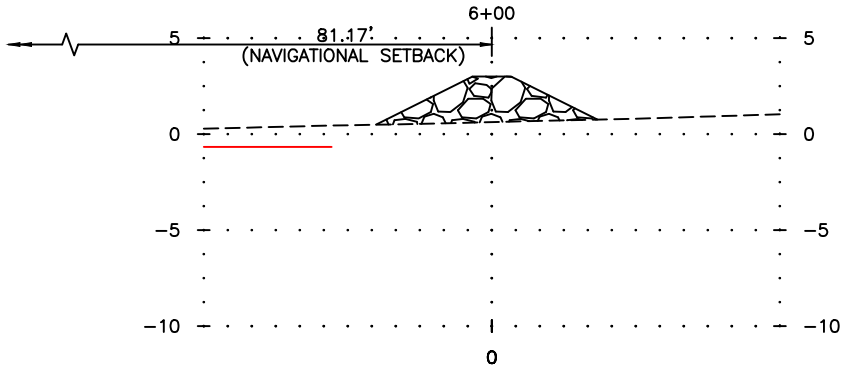
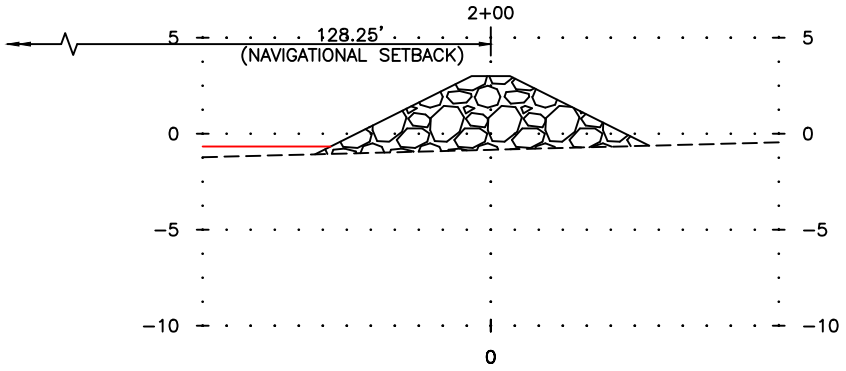
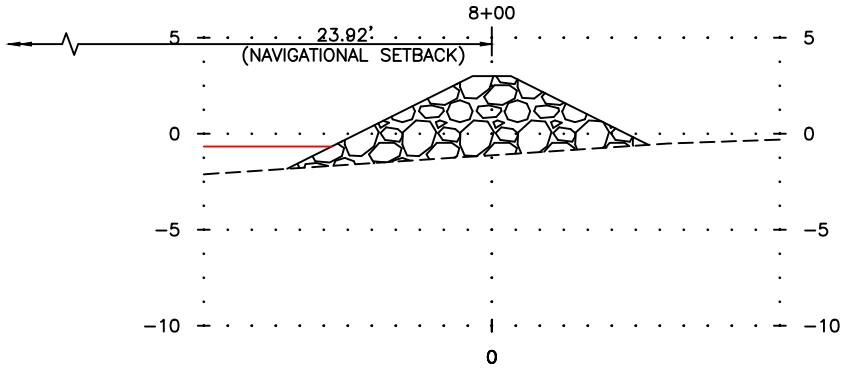
PROJECT NO. DU-TX-36-15

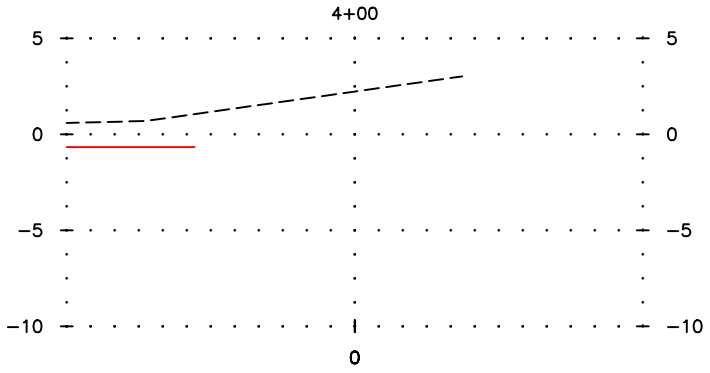
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #4 PLAN
SHEET 32 OF 99

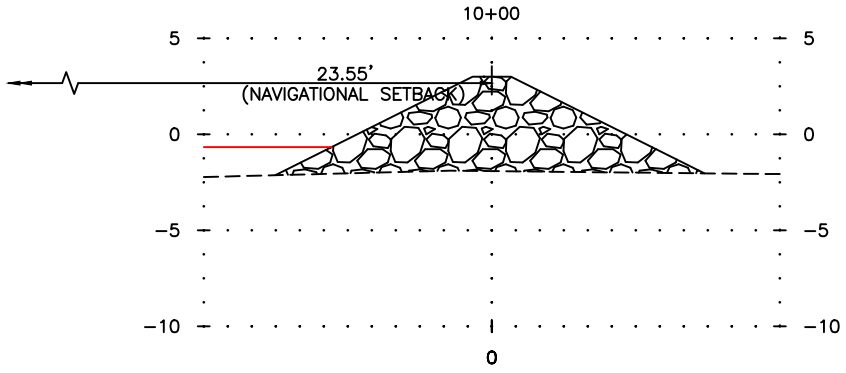












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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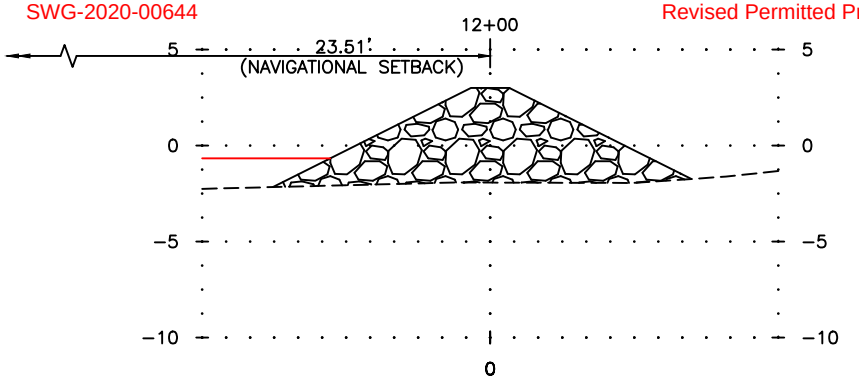
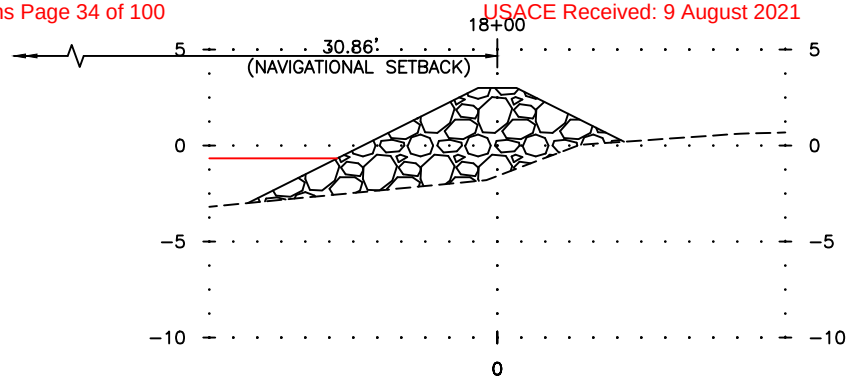
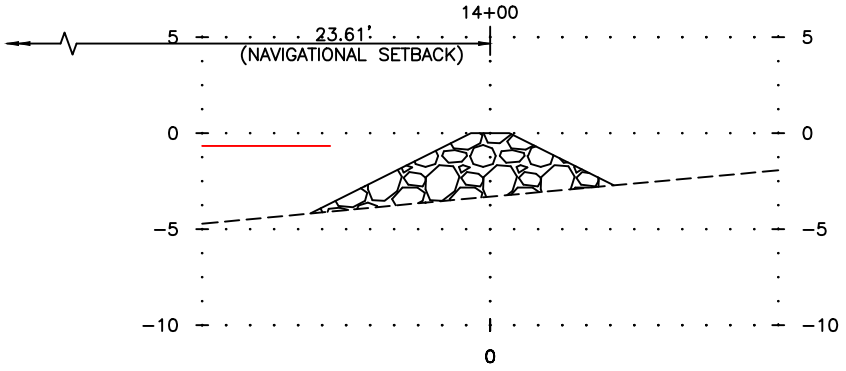
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

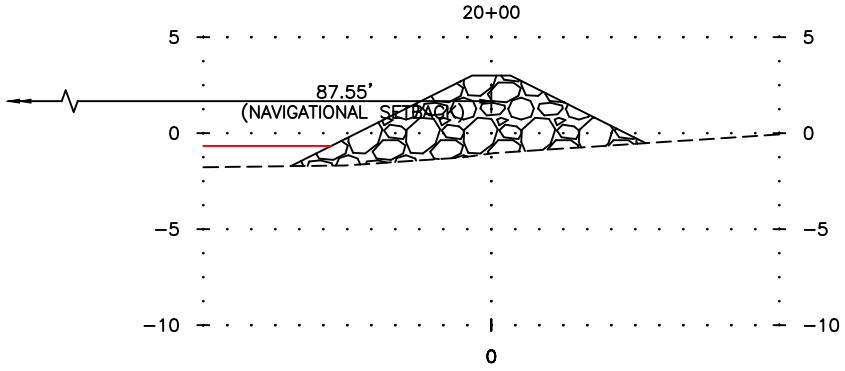
PROJECT NO. DU-TX-36-15

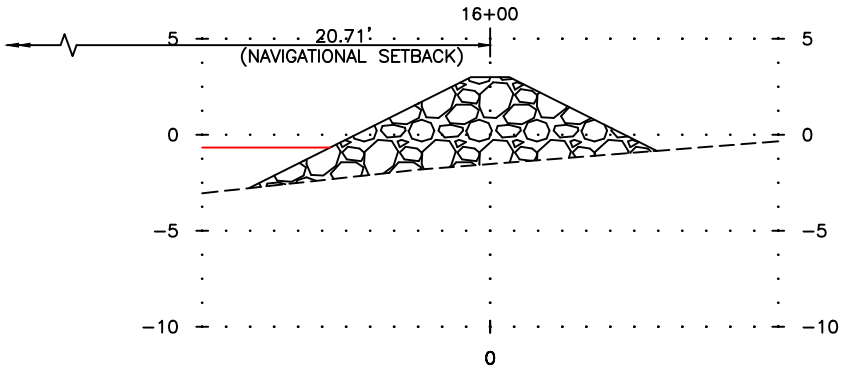
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #4 CROSS SECTIONS
SHEET 33 OF 99

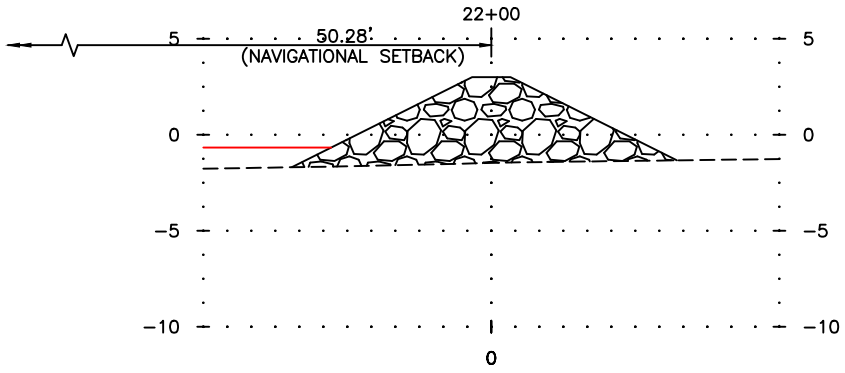












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
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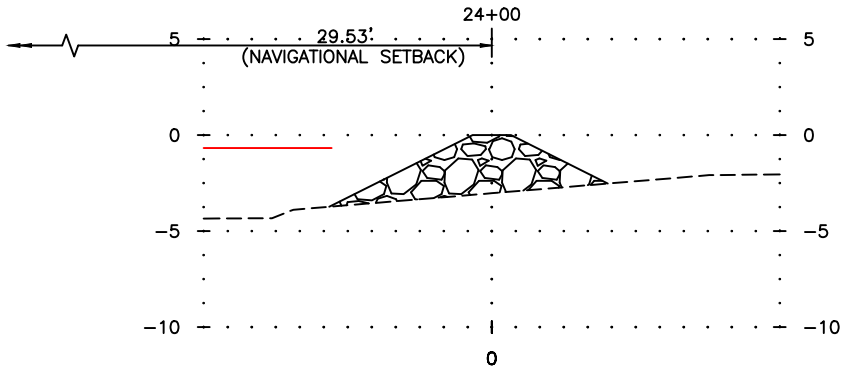
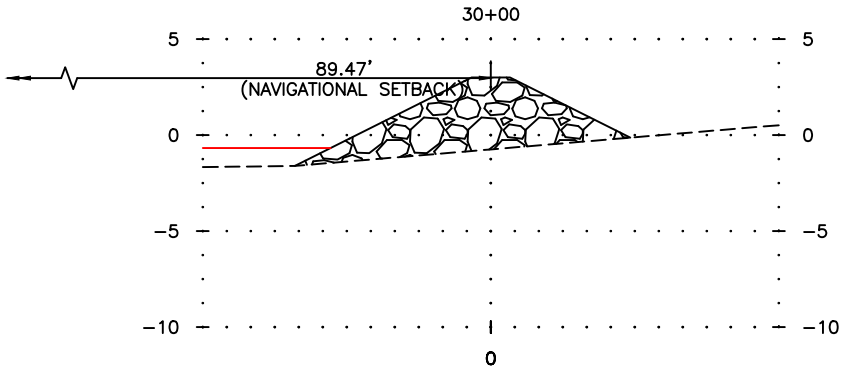
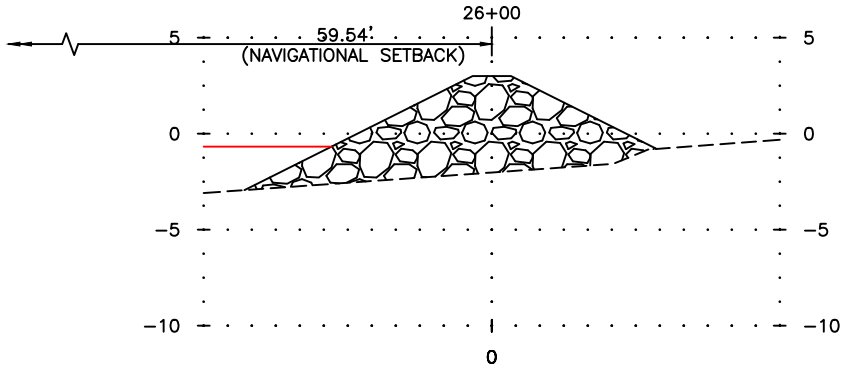
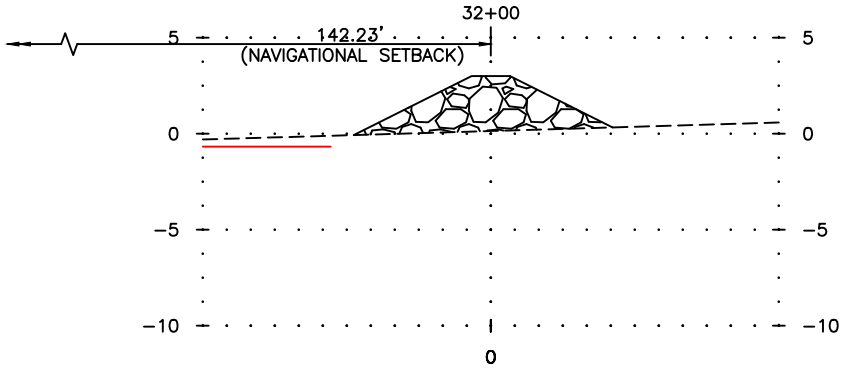
PROJECT NO. DU-TX-36-15

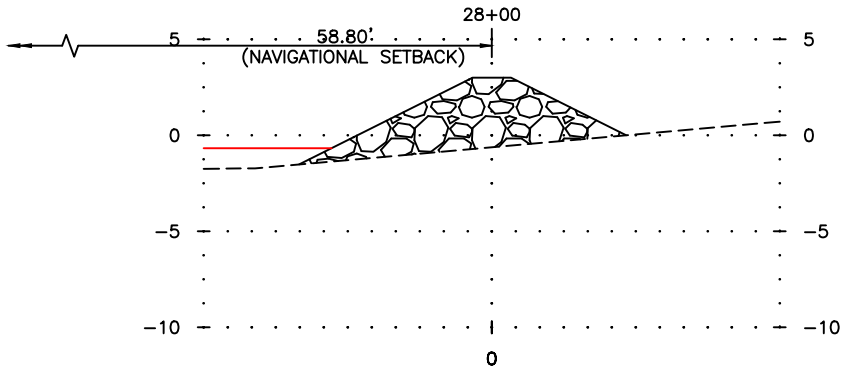
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #4 CROSS SECTIONS
SHEET 34 OF 99

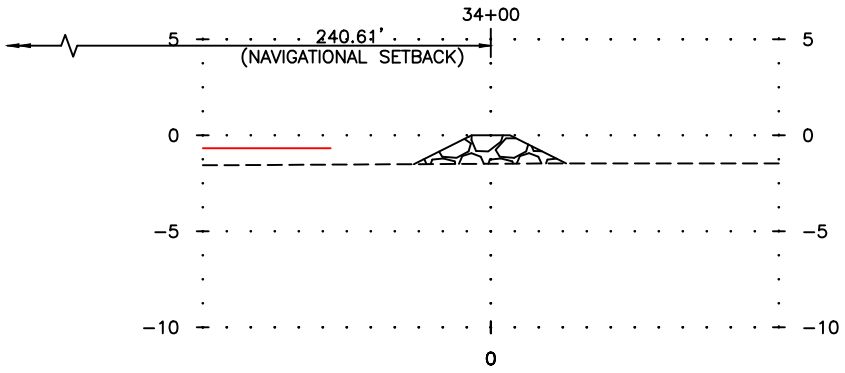












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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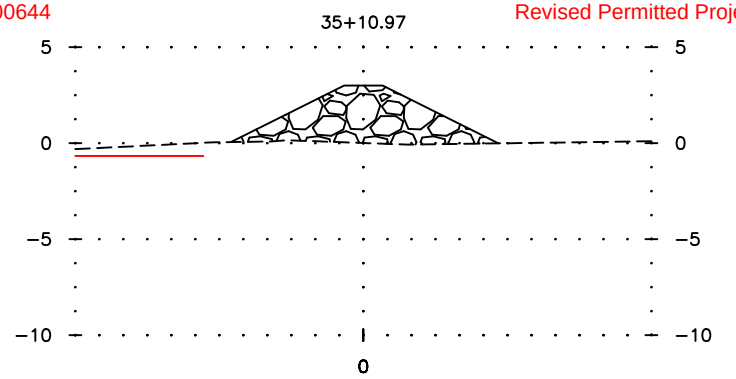
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #4 CROSS SECTIONS

SHEET 35 OF 99



LEGEND

- - - - - - - EXISTING GROUND

——————— PROPOSED ROCK RIPRAP

——————— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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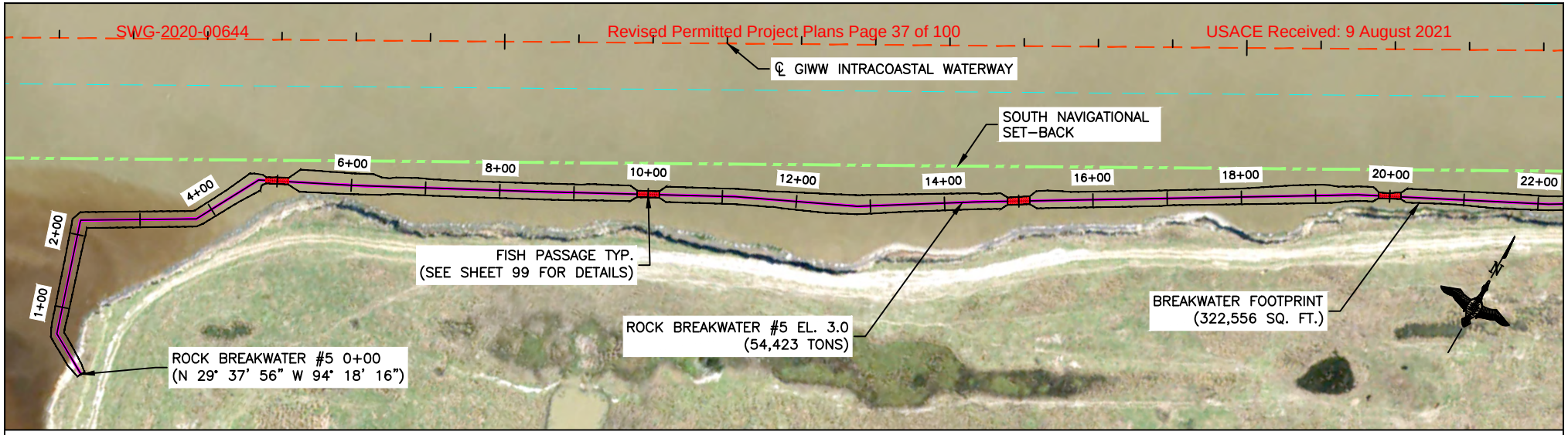
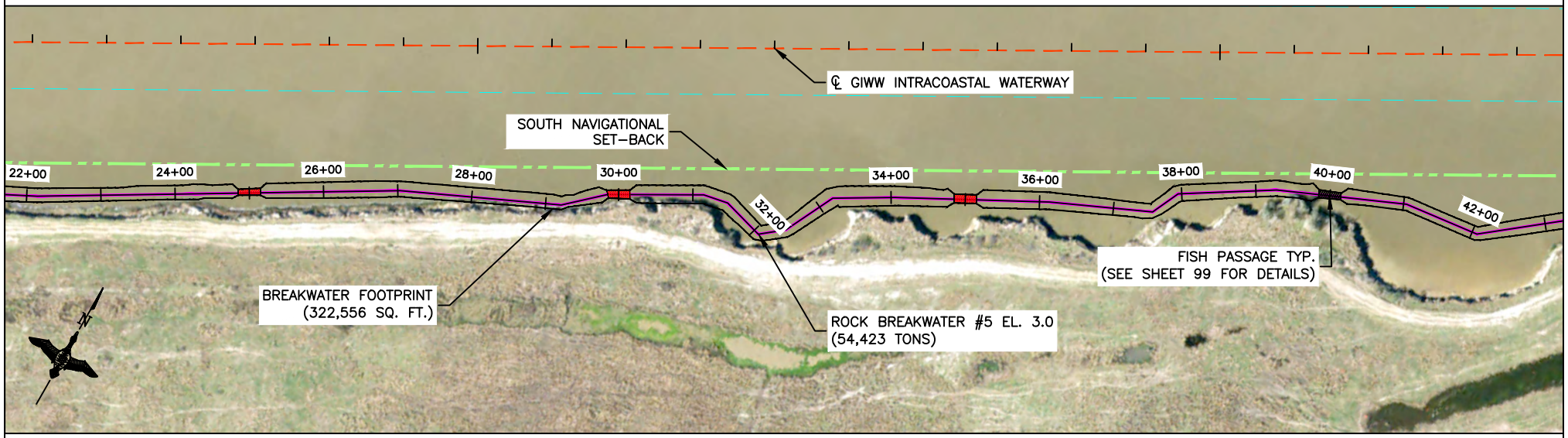
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #4 CROSS SECTIONS
SHEET 36 OF 99



ROCK BREAKWATER #5 STA. 0+00 – 22+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #5 STA. 22+00 – 43+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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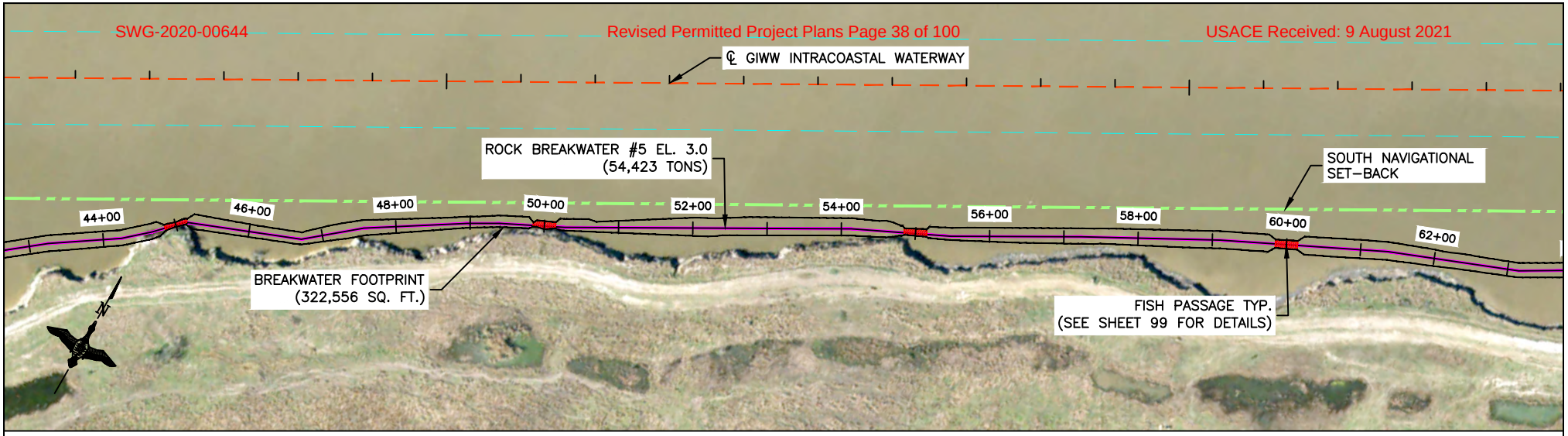
PROJECT NO. DU–TX–36–15

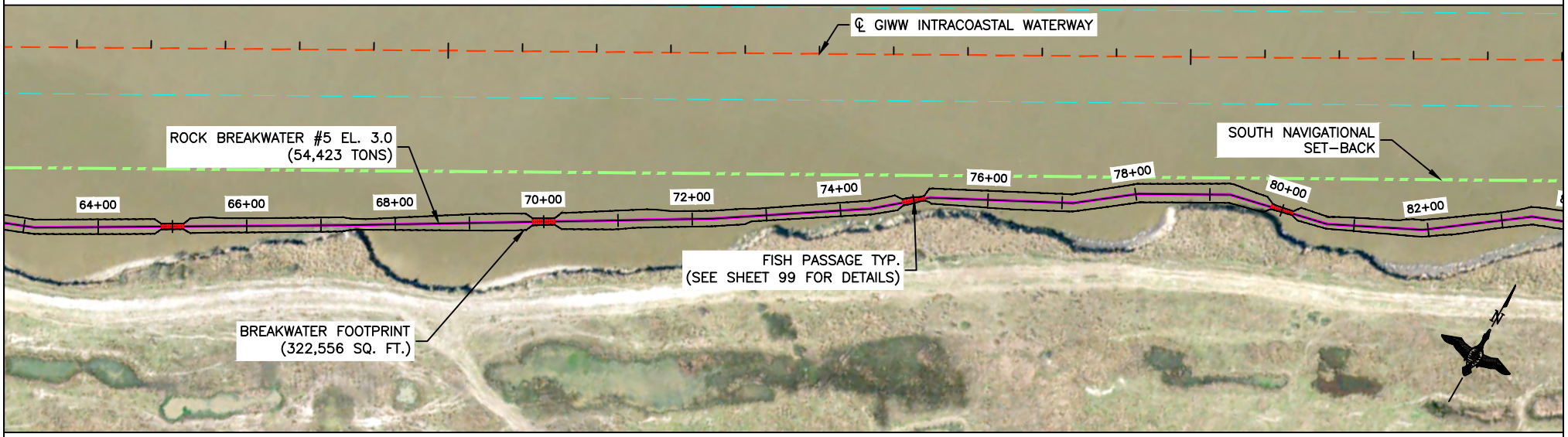
McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #5 PLAN
SHEET 37 OF 99



ROCK BREAKWATER #5 STA. 43+00 – 63+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #5 STA. 63+00 – 83+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'

LEGEND

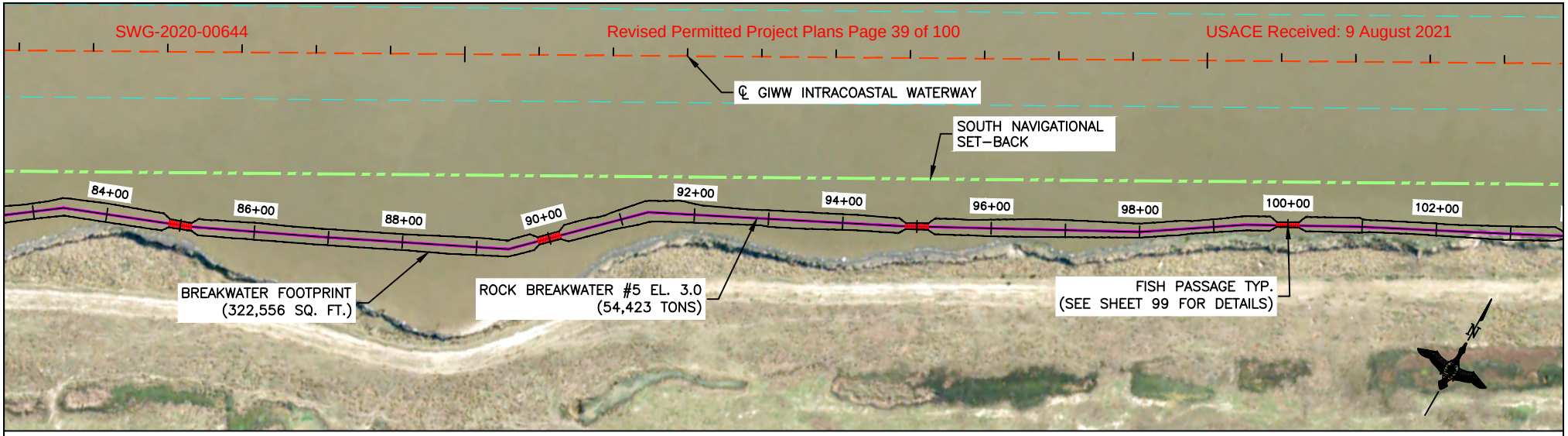
- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION
PROVIDED BY CLIFFORD DOMINEY, USACOE
PROJECT ENGINEER

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

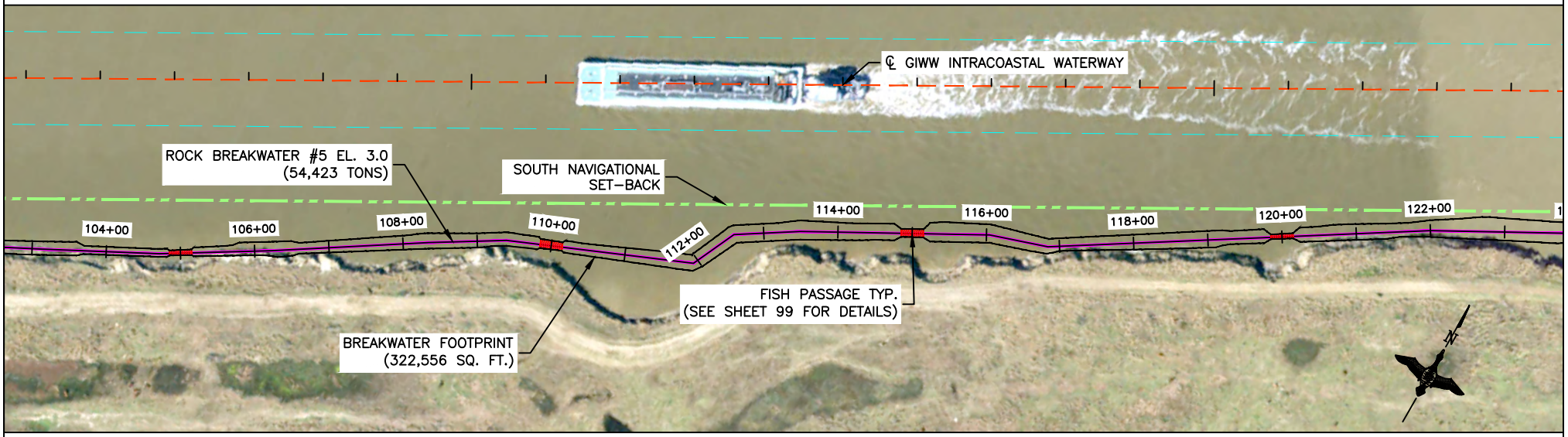
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 PLAN
SHEET 38 OF 99



ROCK BREAKWATER #5 STA. 83+00 – 103+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #5 STA. 103+00 – 123+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

DUCKS UNLIMITED INC.
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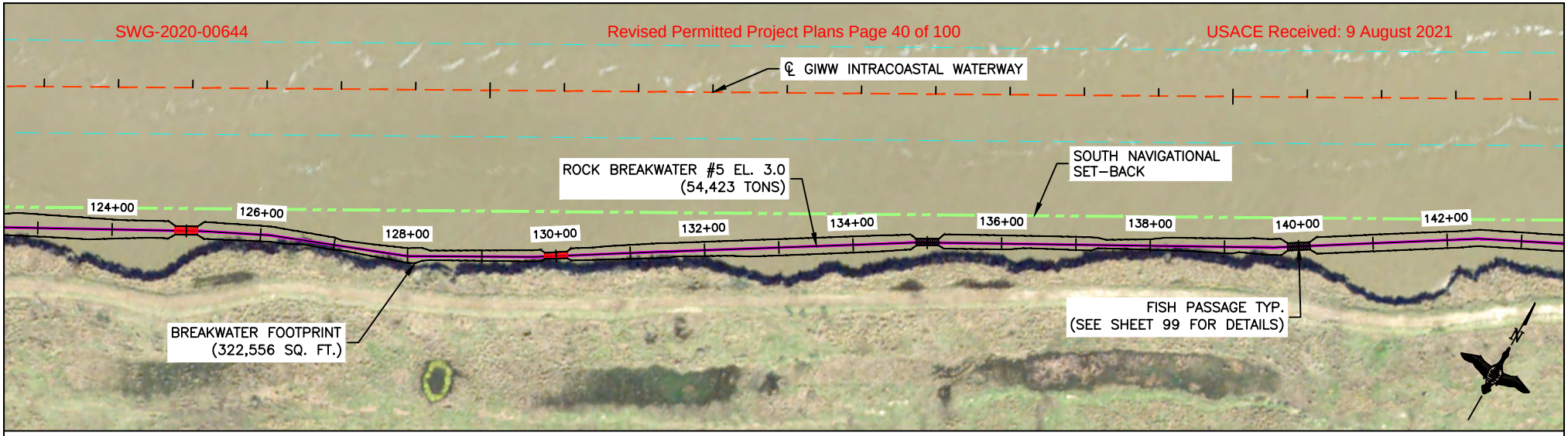
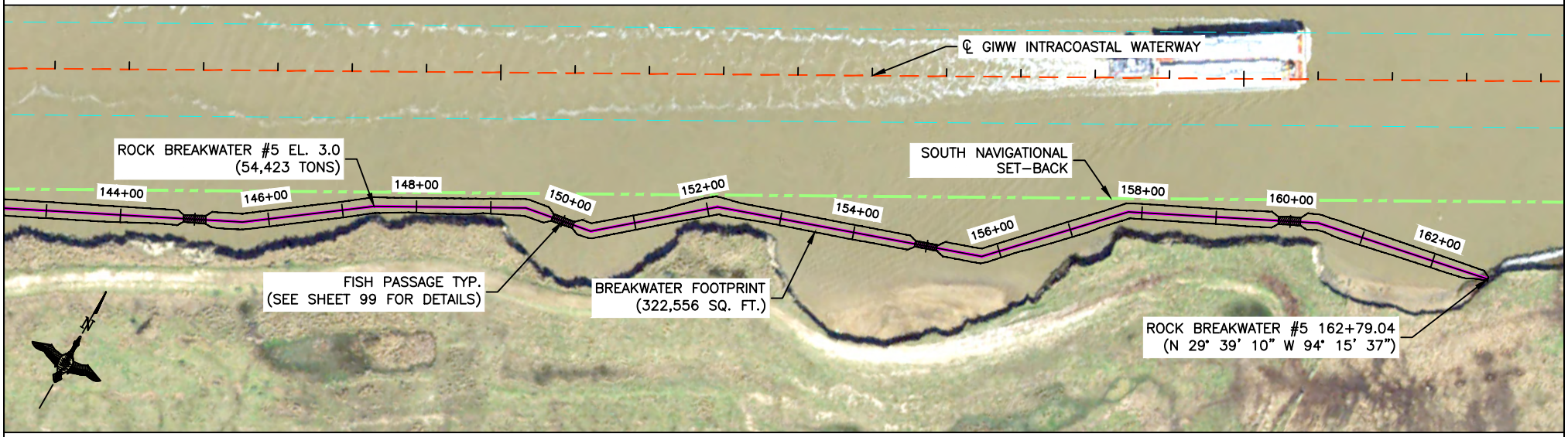
PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #5 PLAN
SHEET 39 OF 99



ROCK BREAKWATER #5 STA. 123+00 – 143+00

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #5 STA. 143+00 – 162+79.04

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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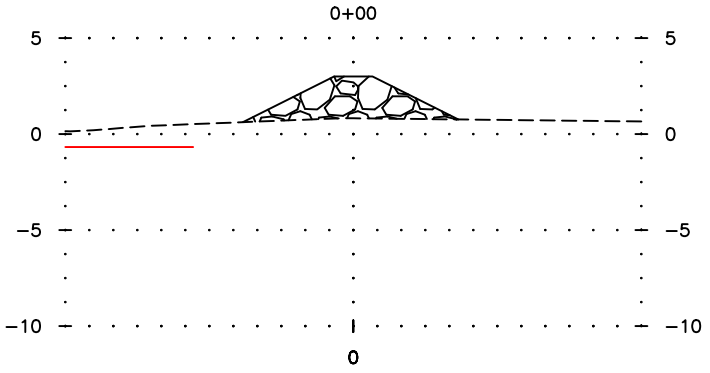
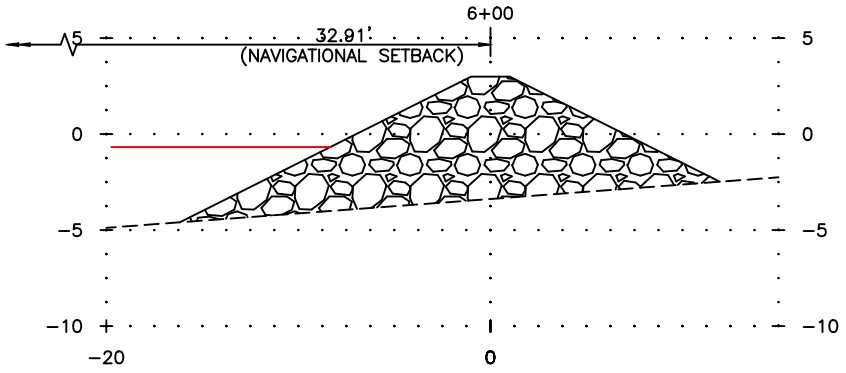
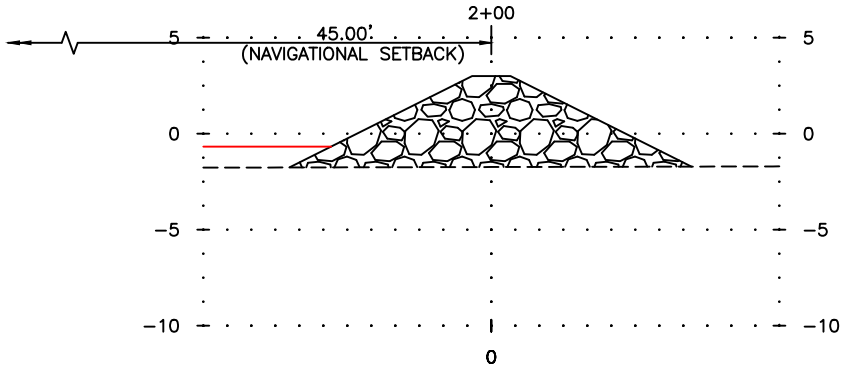
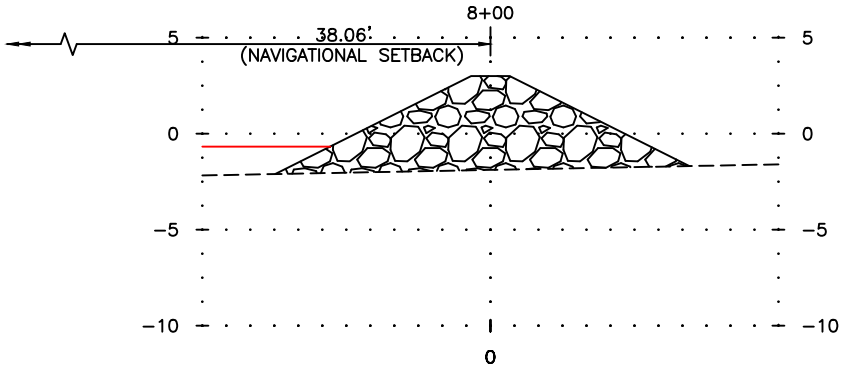
PROJECT NO. DU–TX–36–15

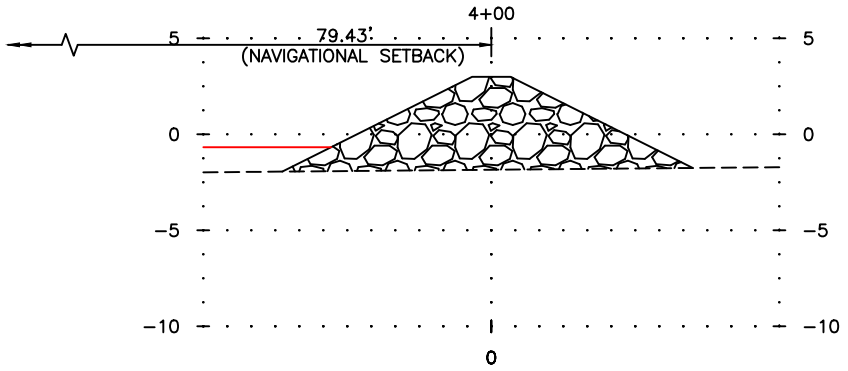
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 PLAN
SHEET 40 OF 99

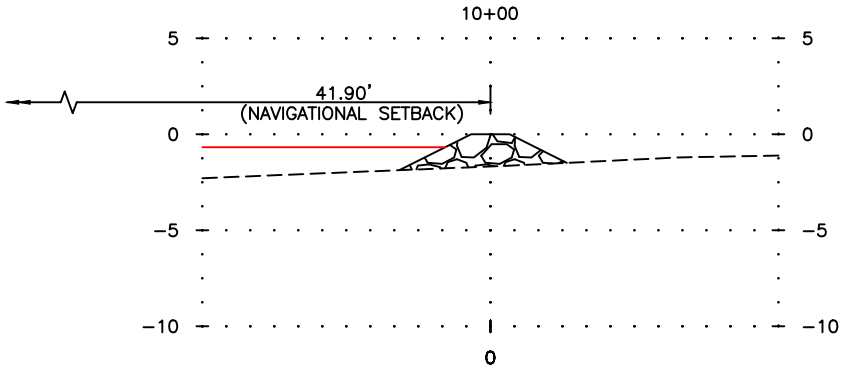












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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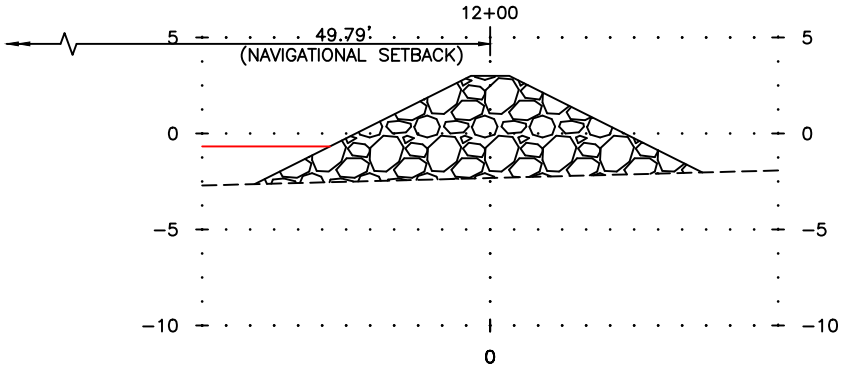
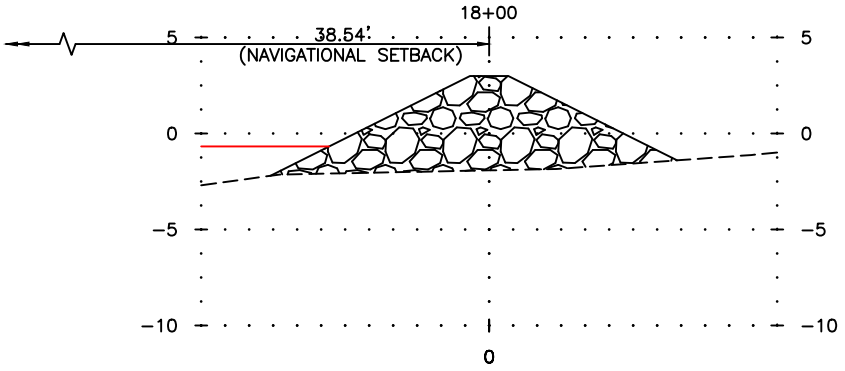
PROJECT NO. DU-TX-36-15

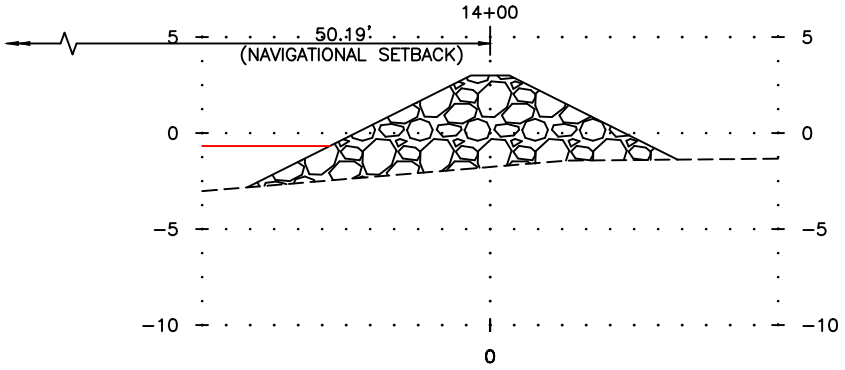
McFADDIN NWR GIWW ROCK BREAKWATER

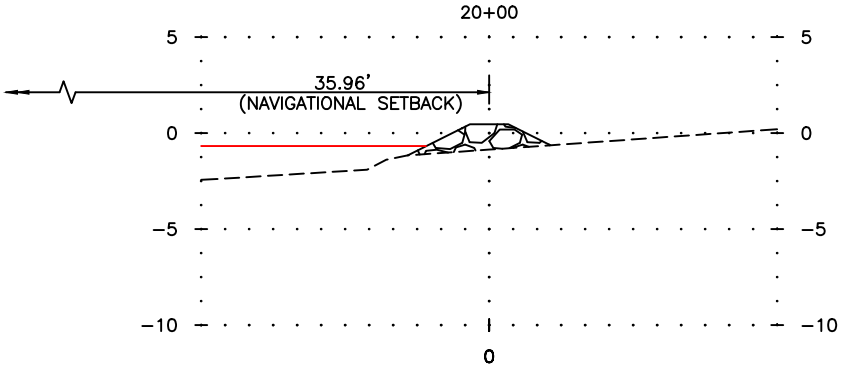
BREAKWATER #5 CROSS SECTIONS

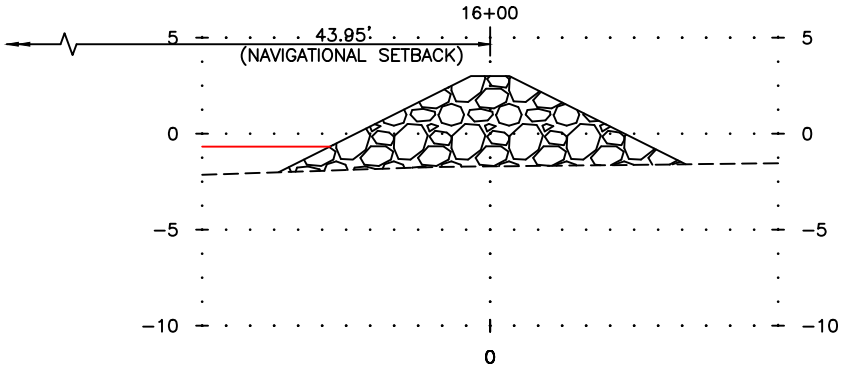
SHEET 41 OF 99

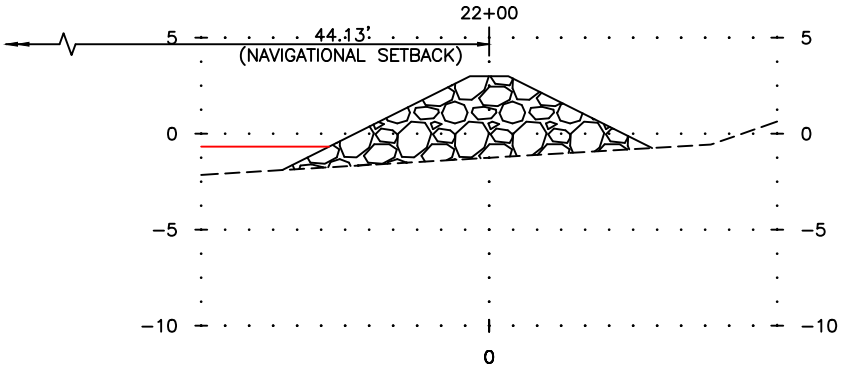












LEGEND

- - - - - - - EXISTING GROUND

——————— PROPOSED ROCK RIPRAP

——————— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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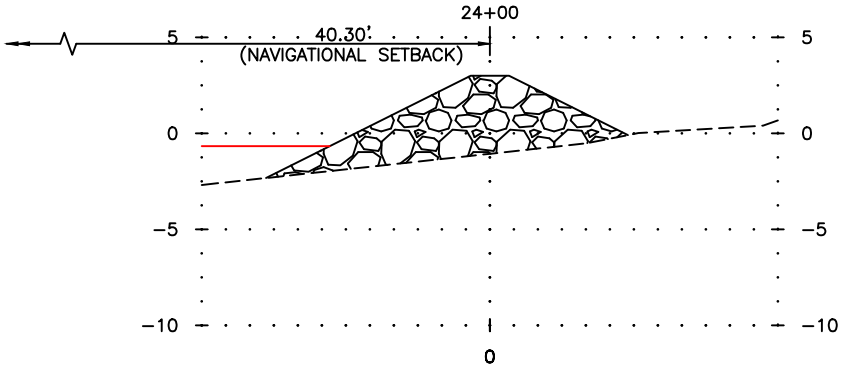
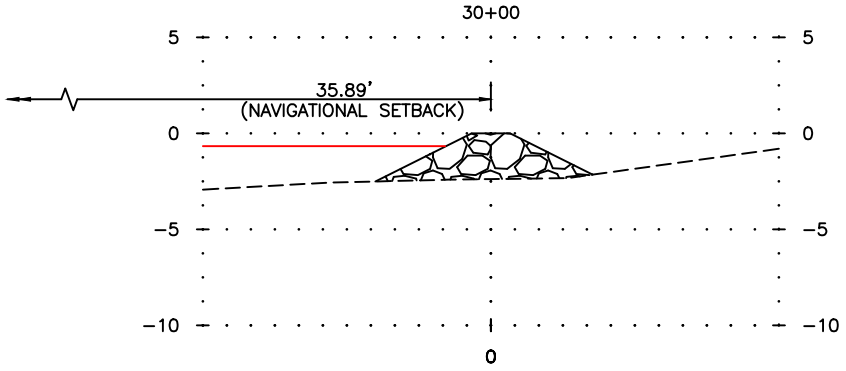
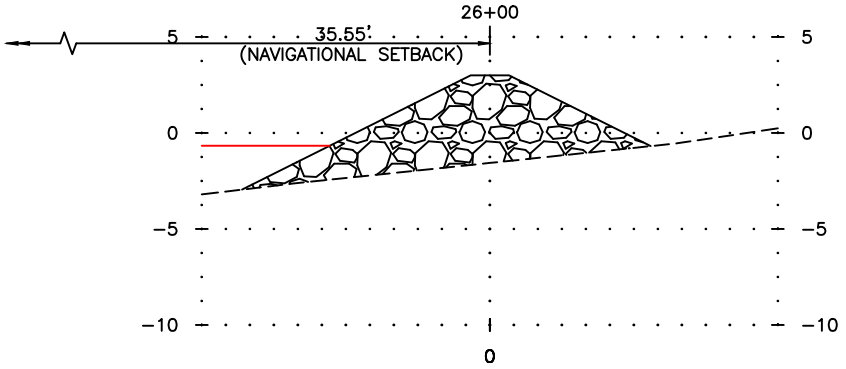
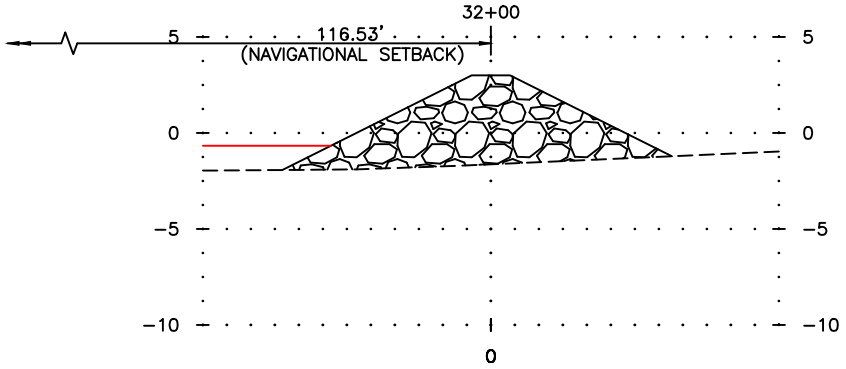
PROJECT NO. DU-TX-36-15

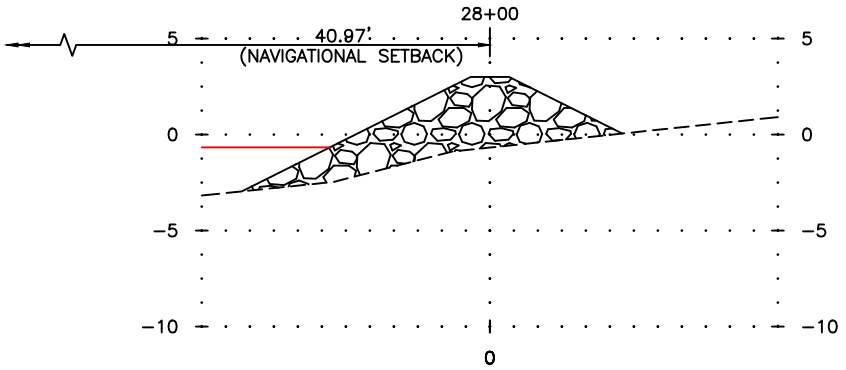
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 42 OF 99

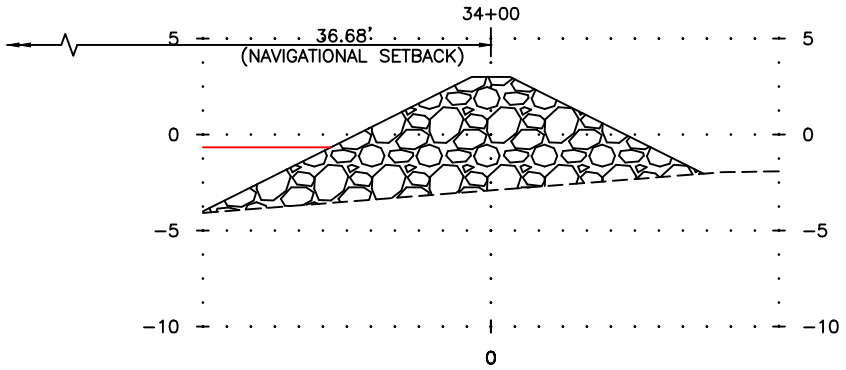












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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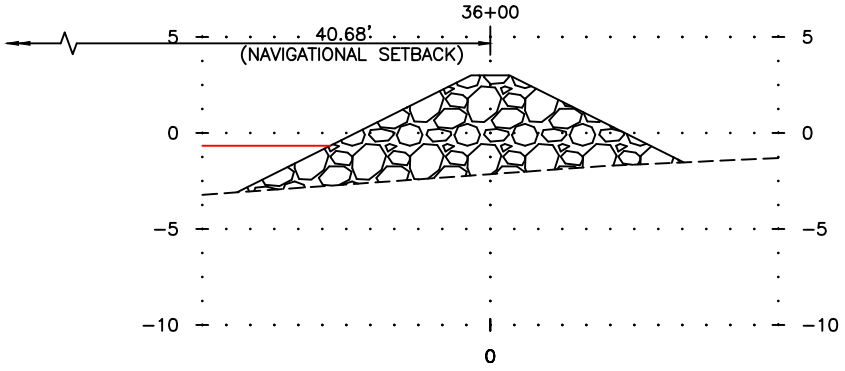
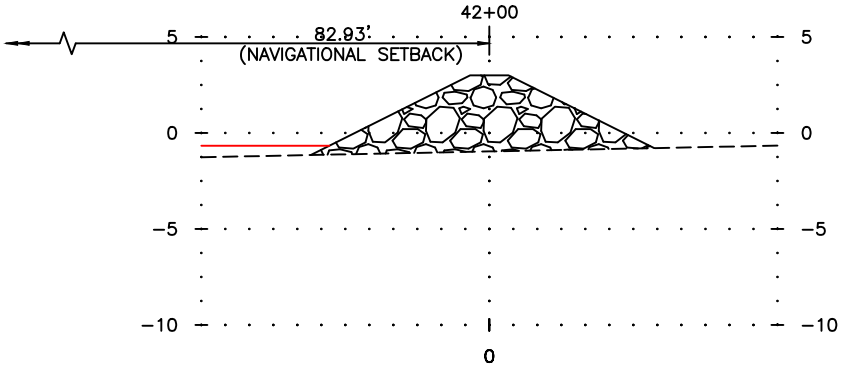
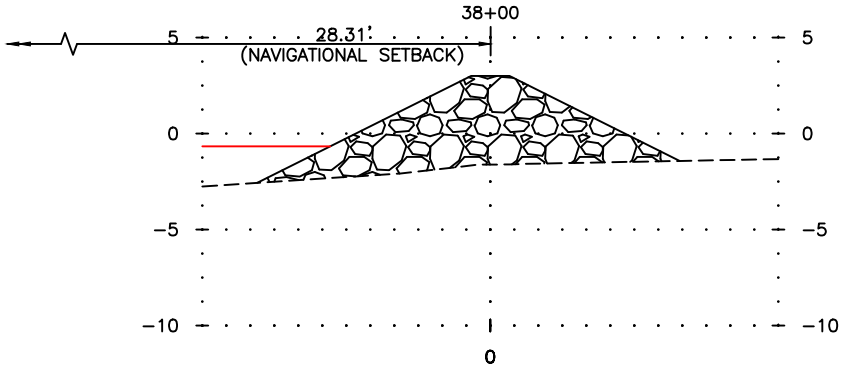
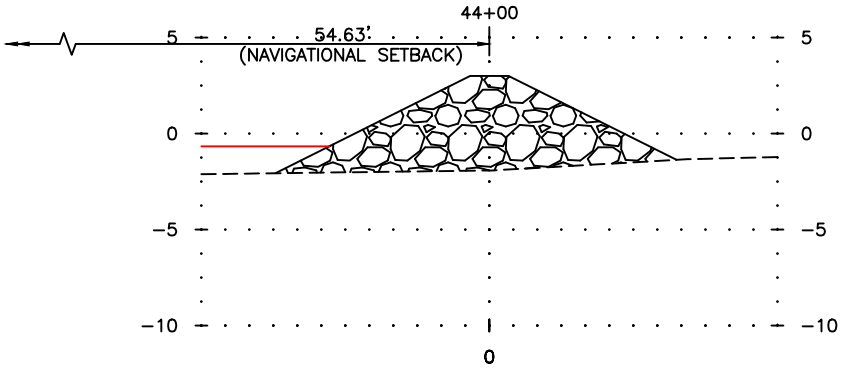
PROJECT NO. DU-TX-36-15

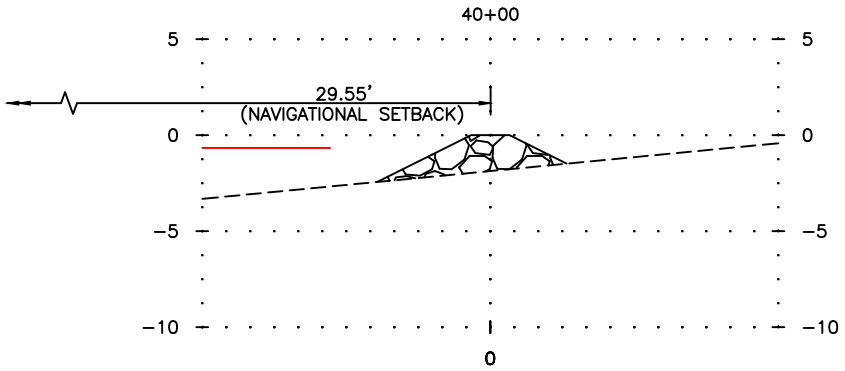
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 43 OF 99

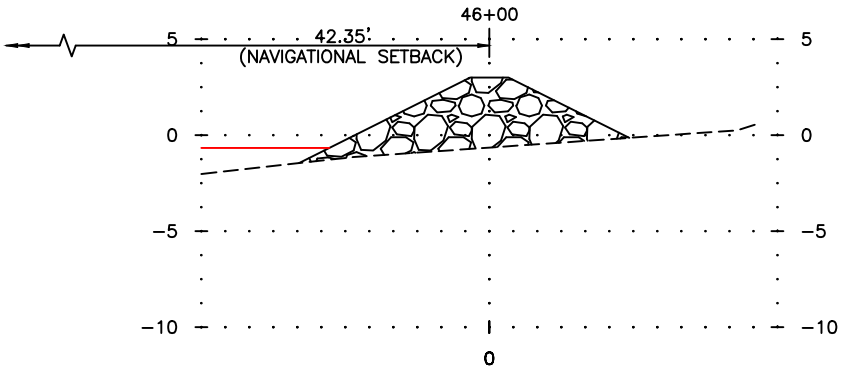












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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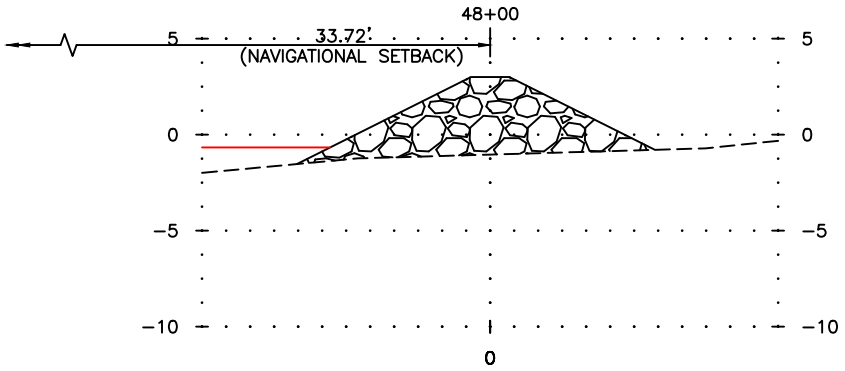
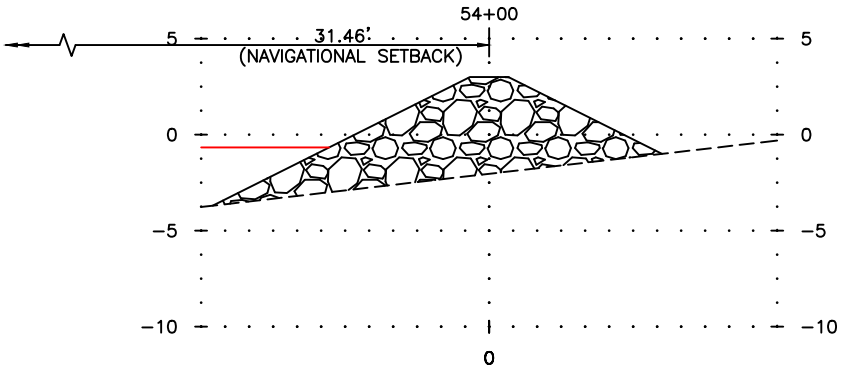
PROJECT NO. DU-TX-36-15

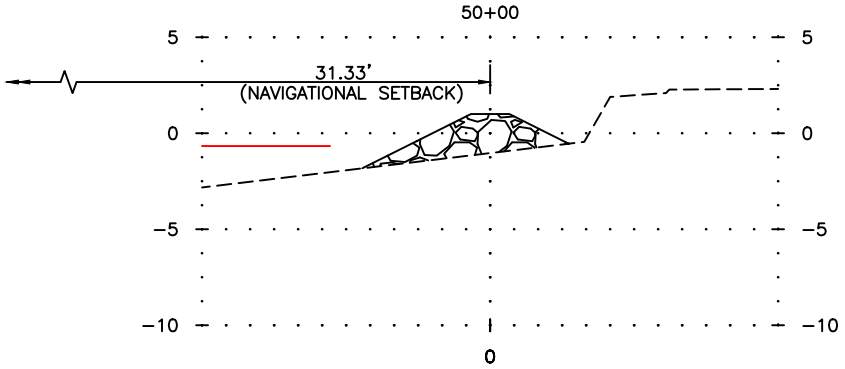
McFADDIN NWR GIWW ROCK BREAKWATER

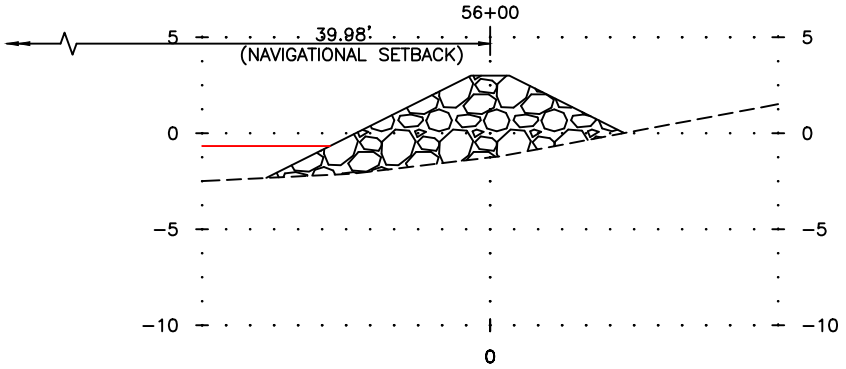
BREAKWATER #5 CROSS SECTIONS

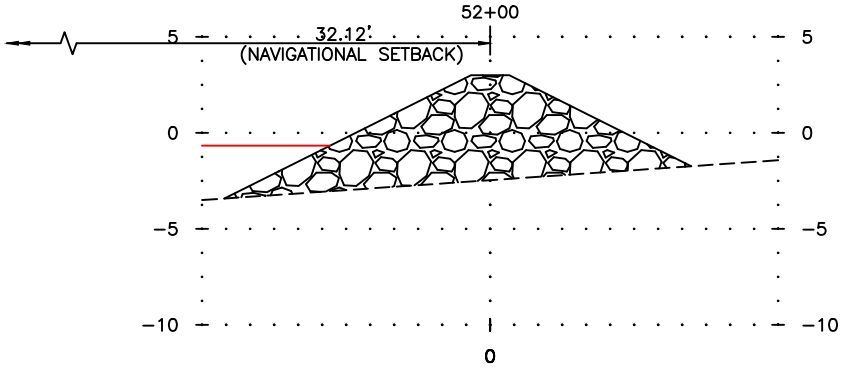
SHEET 44 OF 99

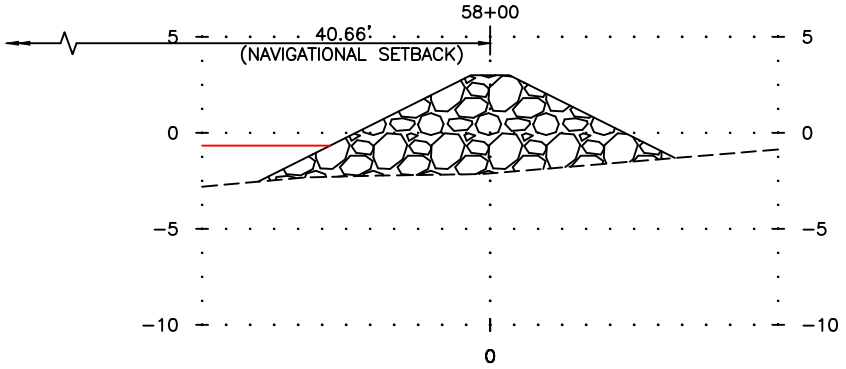












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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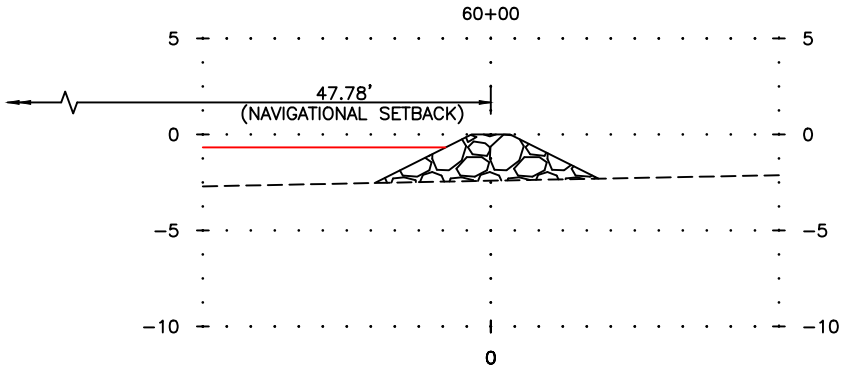
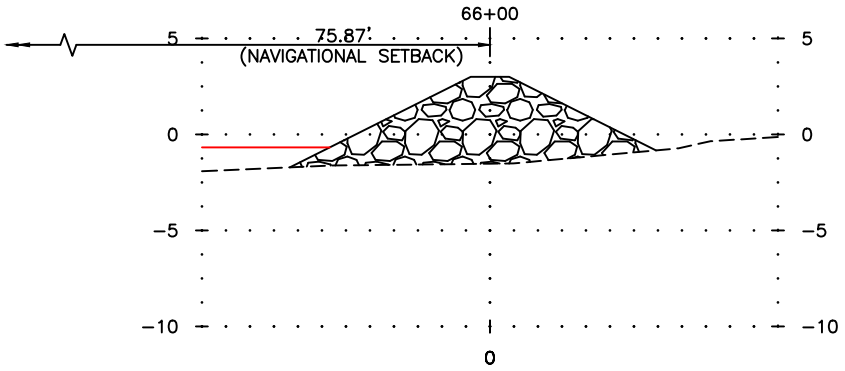
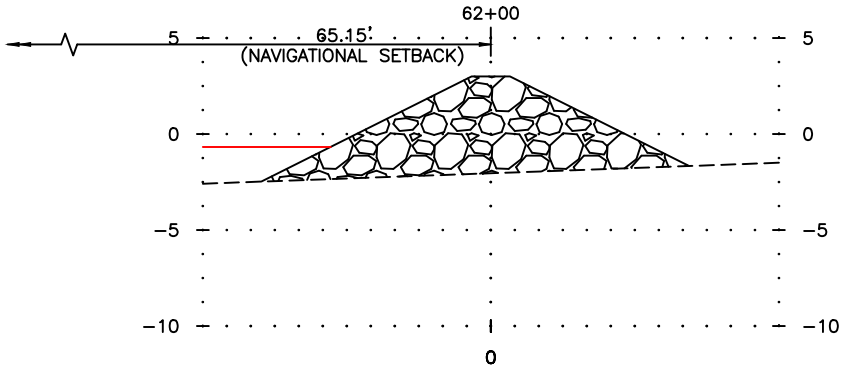
McFADDIN NWR GIWW ROCK BREAKWATER

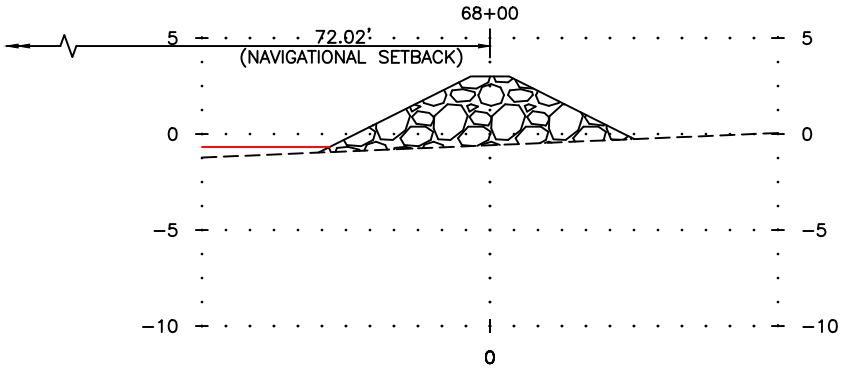
BREAKWATER #5 CROSS SECTIONS

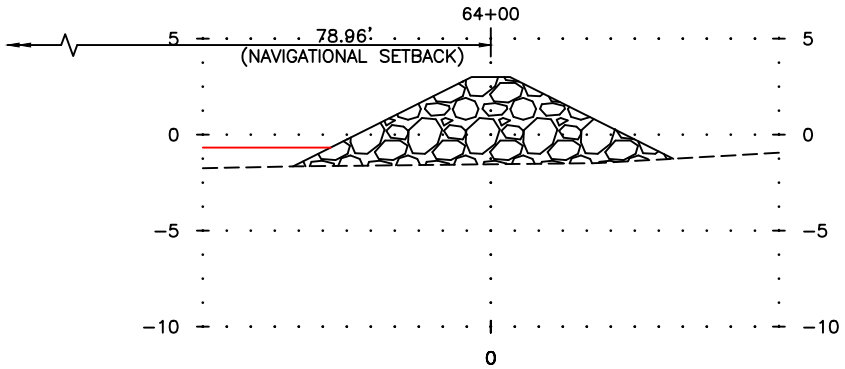
SHEET 45 OF 99

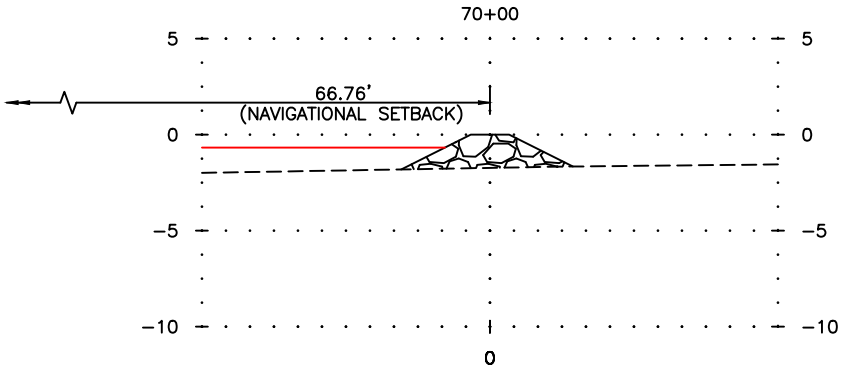












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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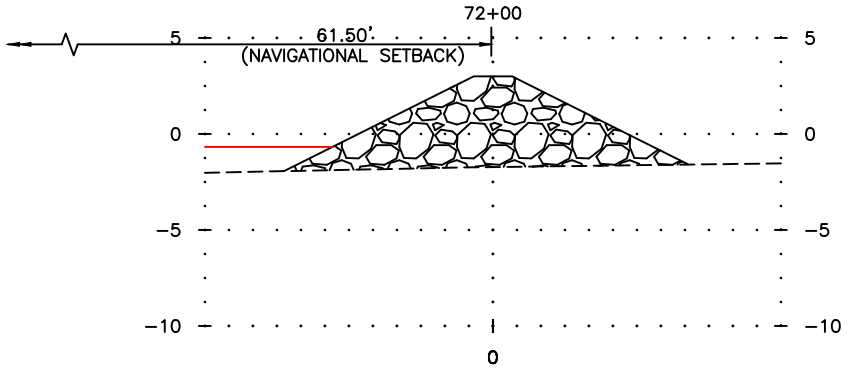
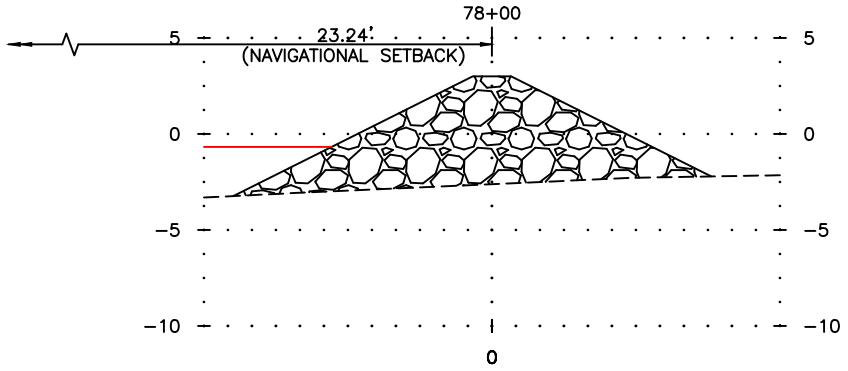
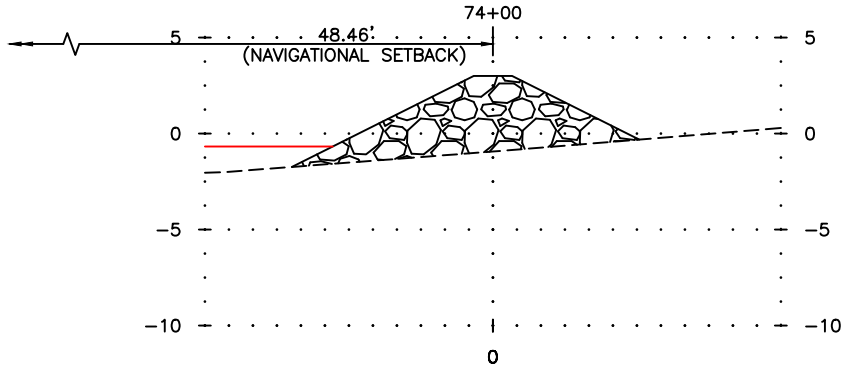
McFADDIN NWR GIWW ROCK BREAKWATER

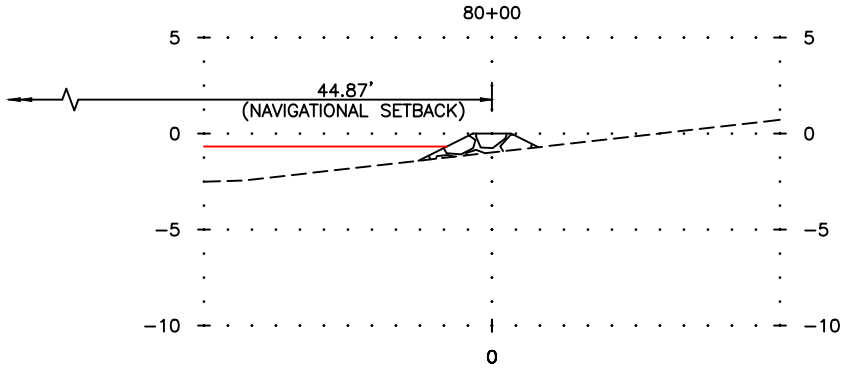
BREAKWATER #5 CROSS SECTIONS

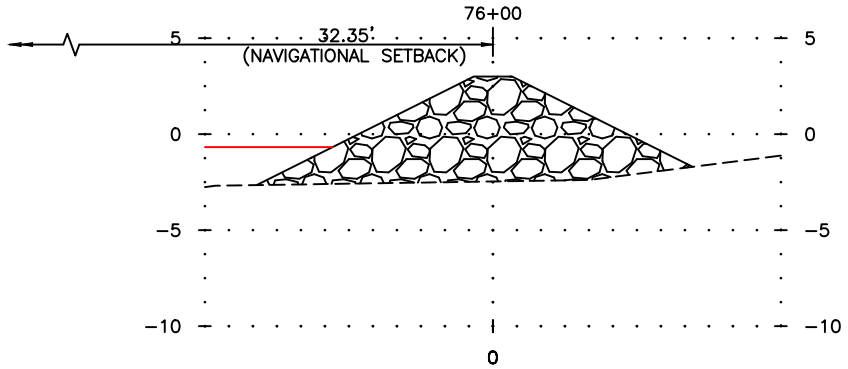
SHEET 46 OF 99

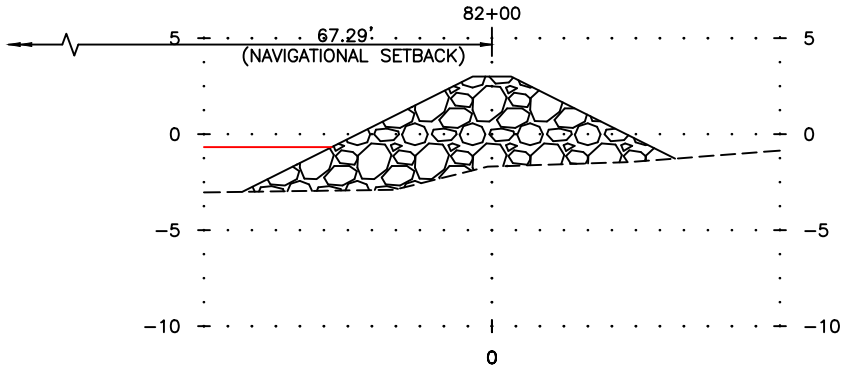












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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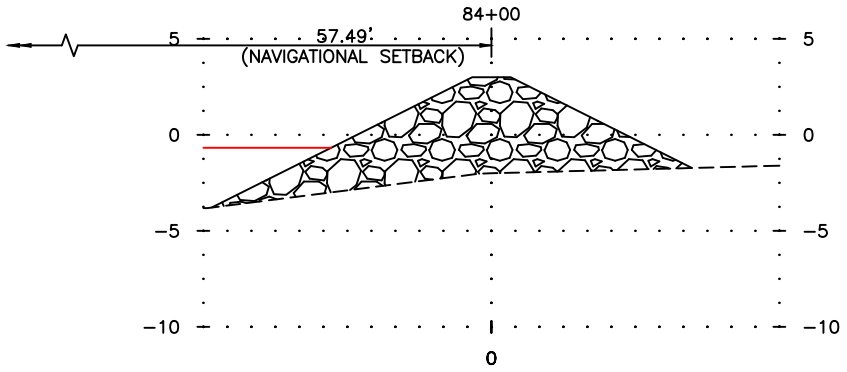
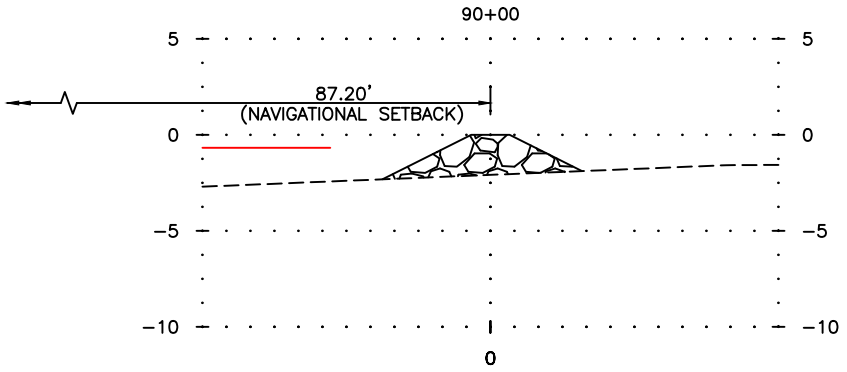
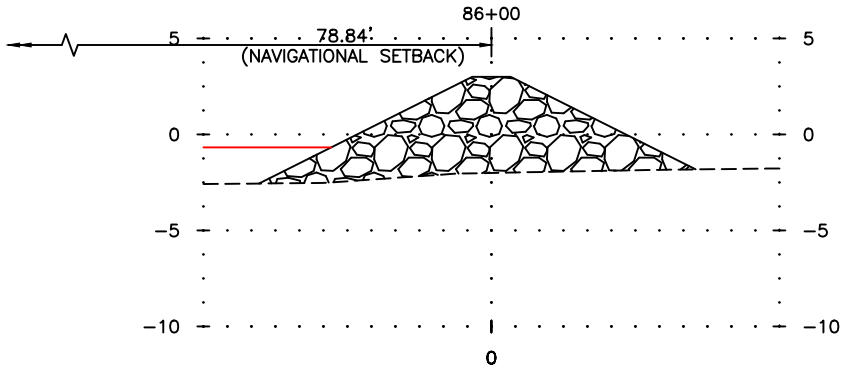
McFADDIN NWR GIWW ROCK BREAKWATER

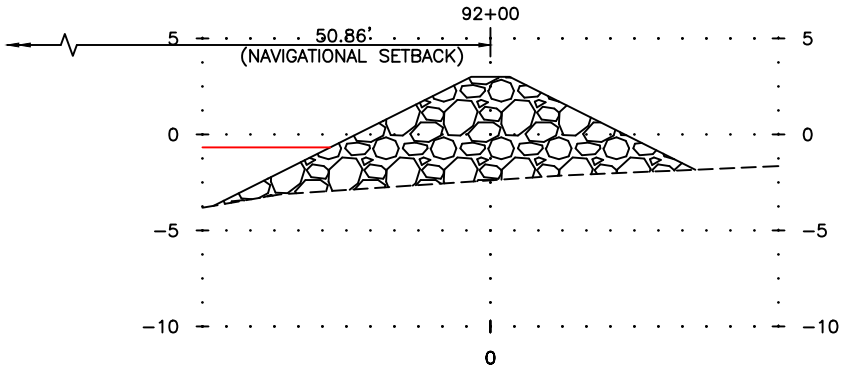
BREAKWATER #5 CROSS SECTIONS

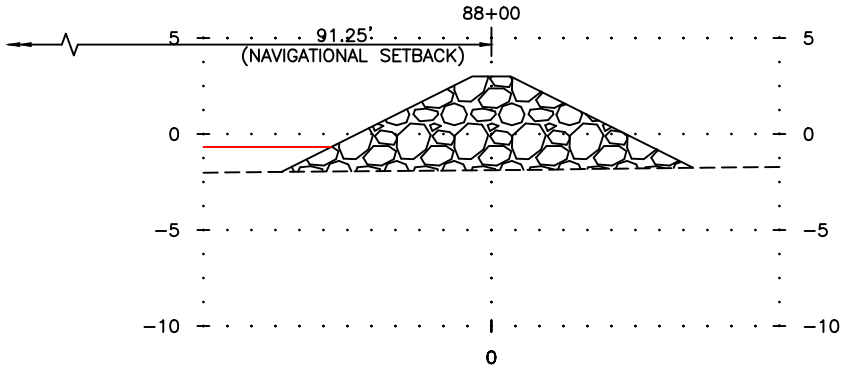
SHEET 47 OF 99

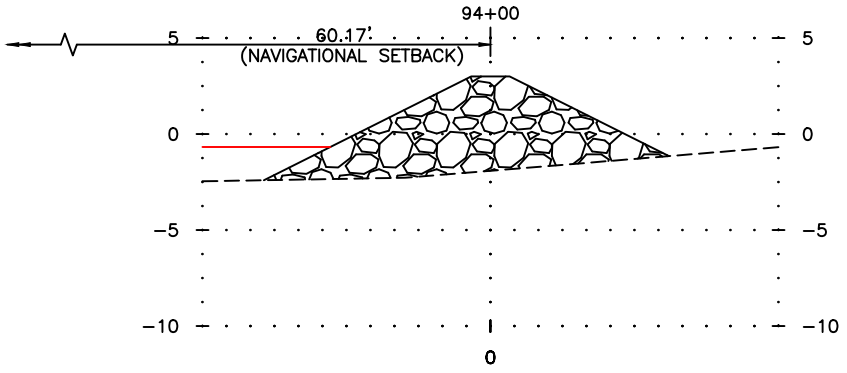












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

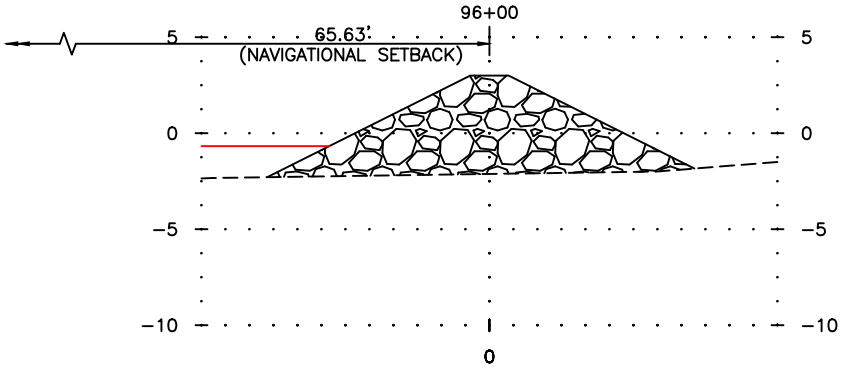
MLLW = −0.67' (NAVD88)

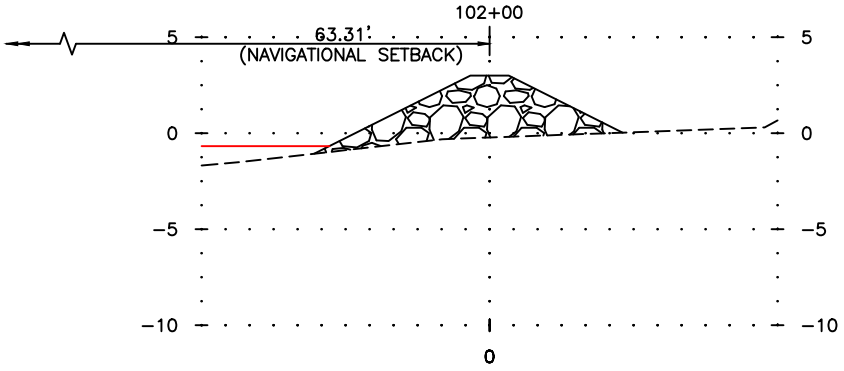
VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

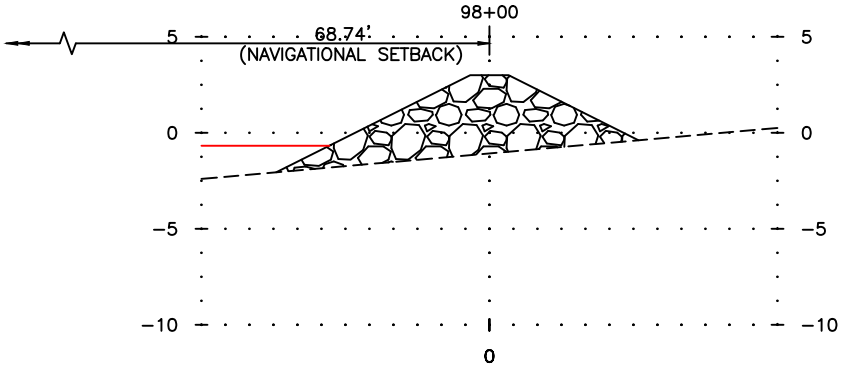
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

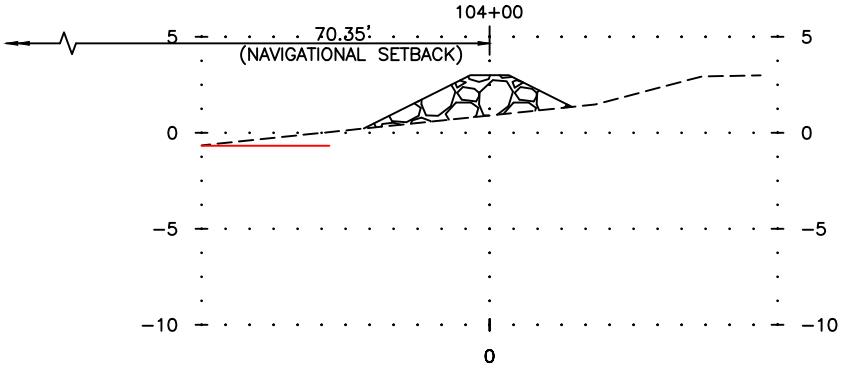
PROJECT NO. DU-TX-36-15

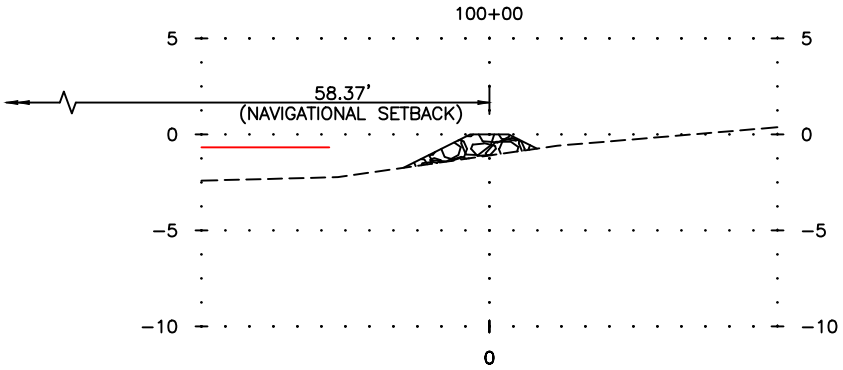
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 48 OF 99

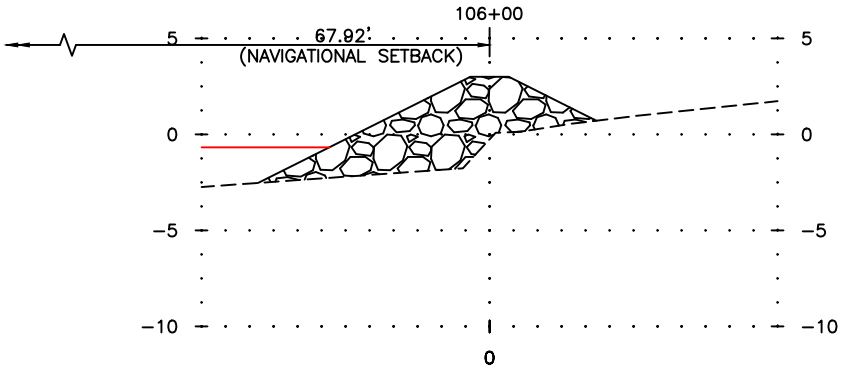












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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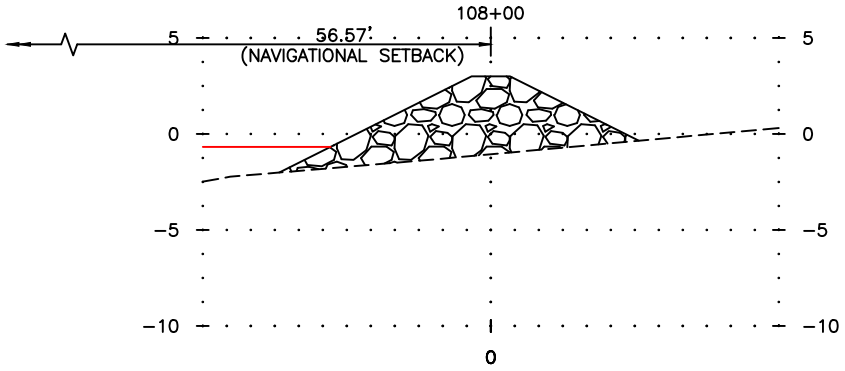
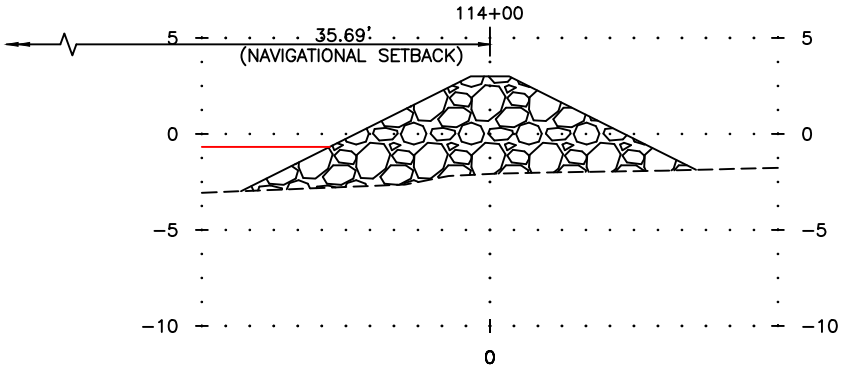
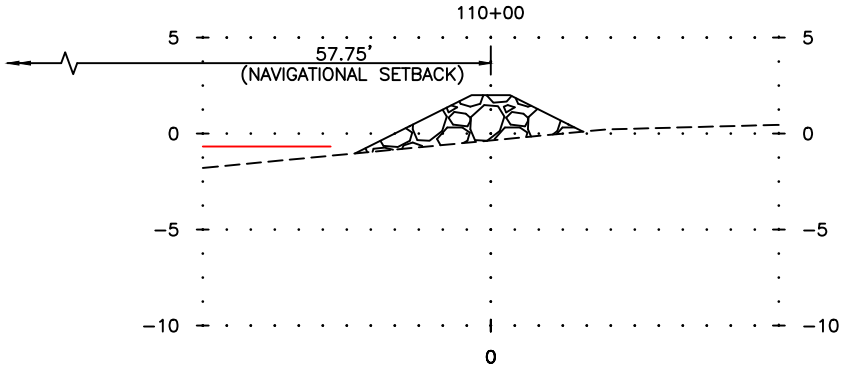
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

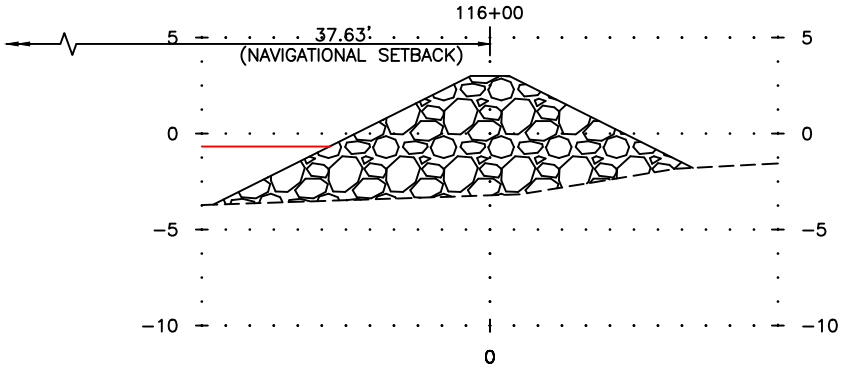
PROJECT NO. DU-TX-36-15

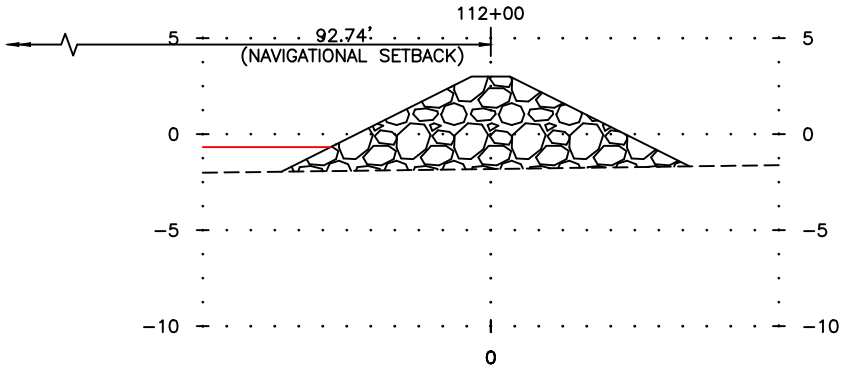
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 49 OF 99

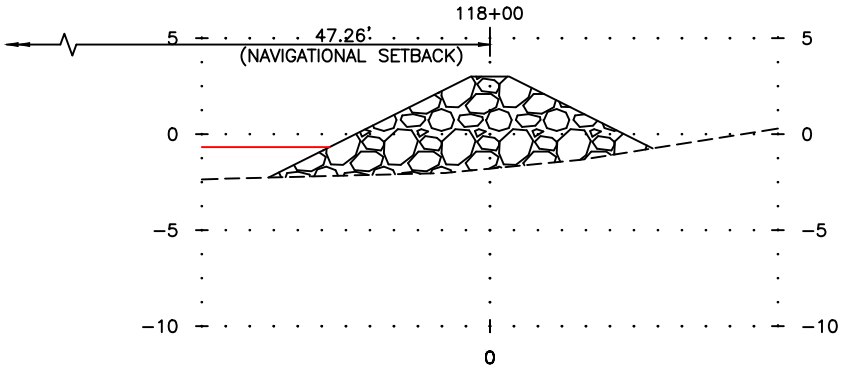












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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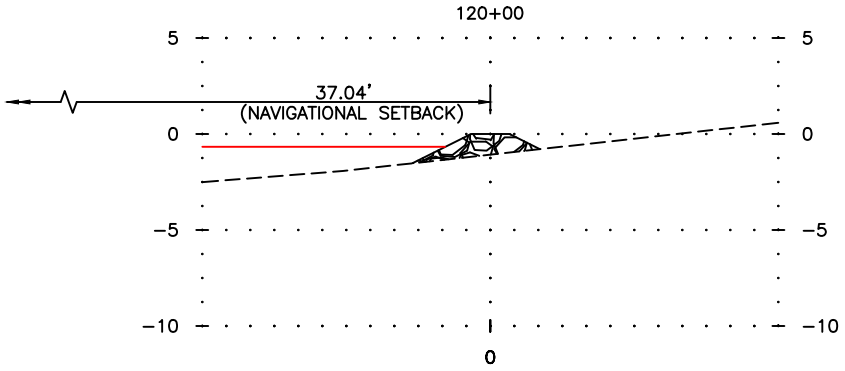
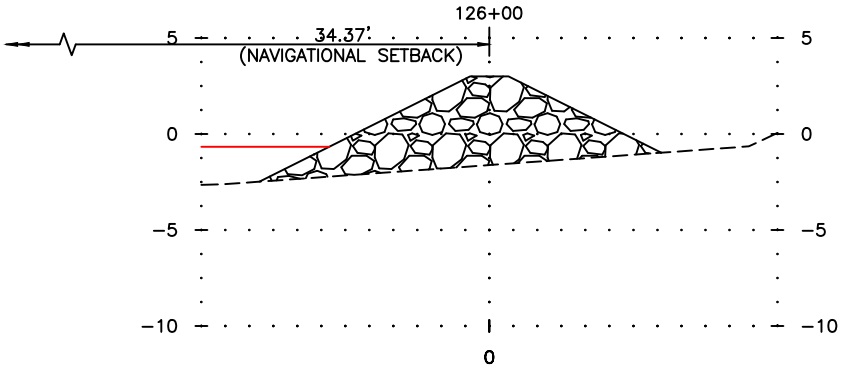
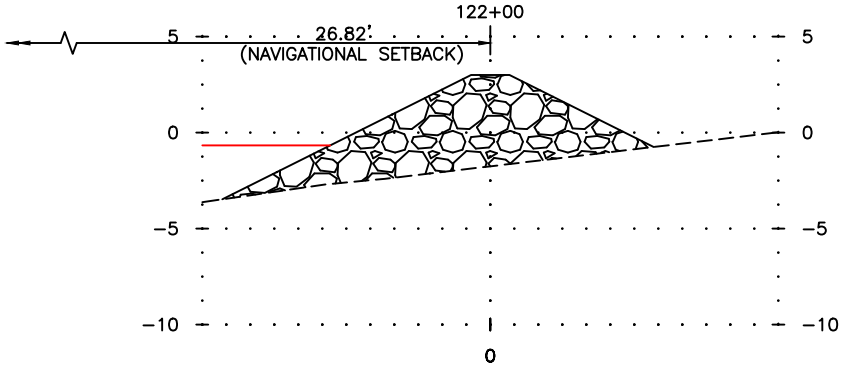
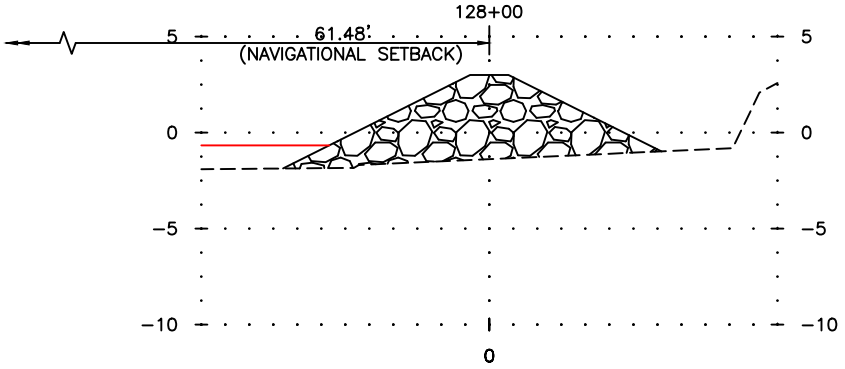
PROJECT NO. DU-TX-36-15

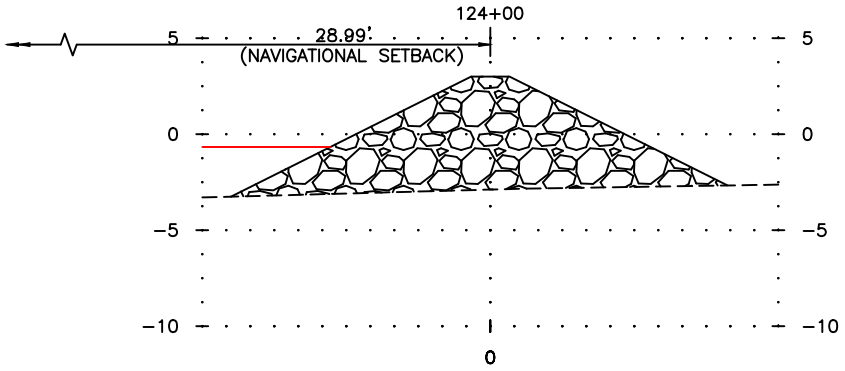
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 50 OF 99

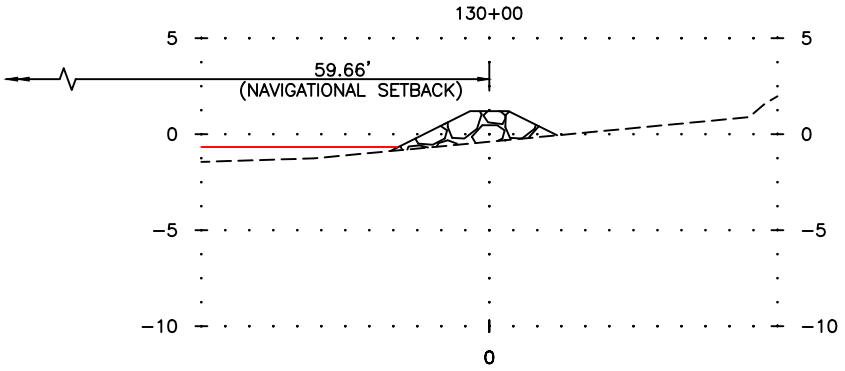












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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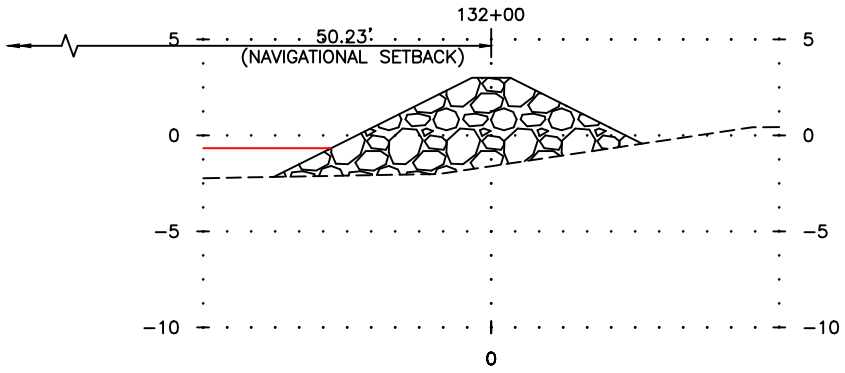
C.O.A. No. F-001112 Expires 9/30/21

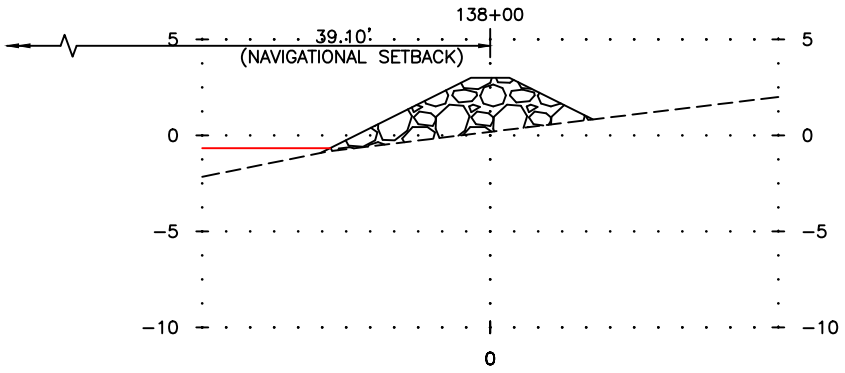
PROJECT NO. DU-TX-36-15

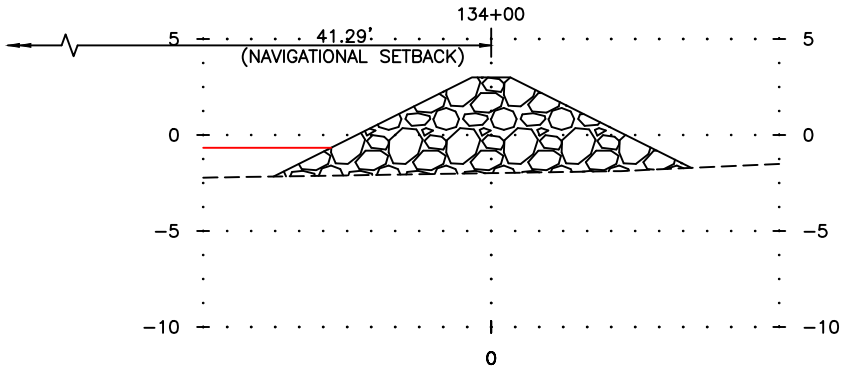
McFADDIN NWR GIWW ROCK BREAKWATER

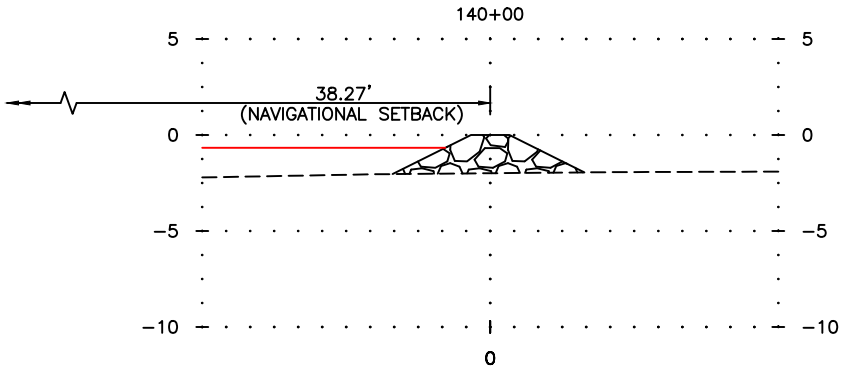
BREAKWATER #5 CROSS SECTIONS

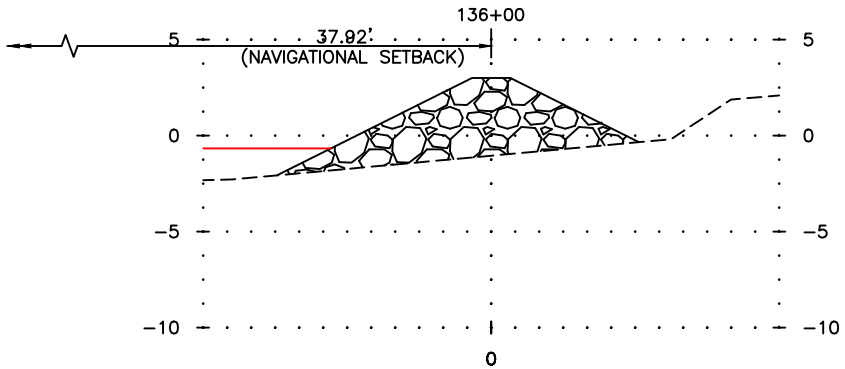
SHEET 51 OF 99

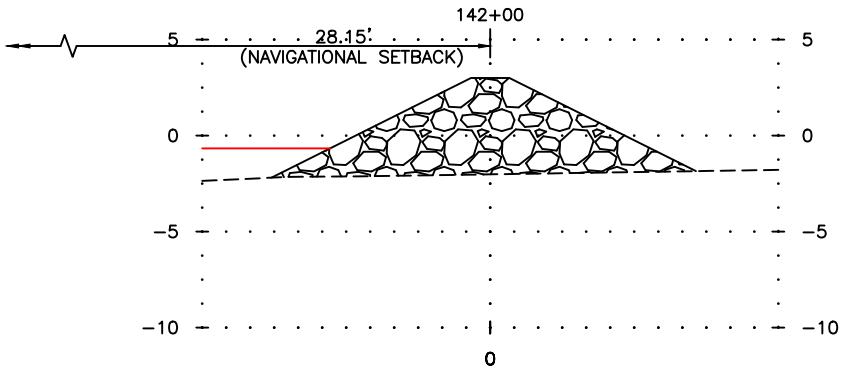












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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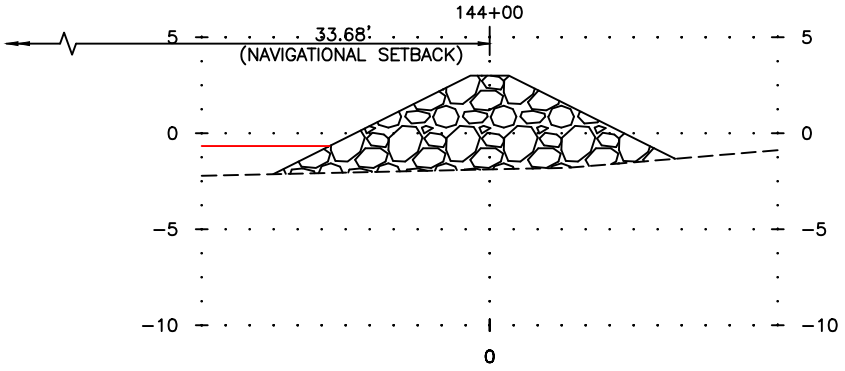
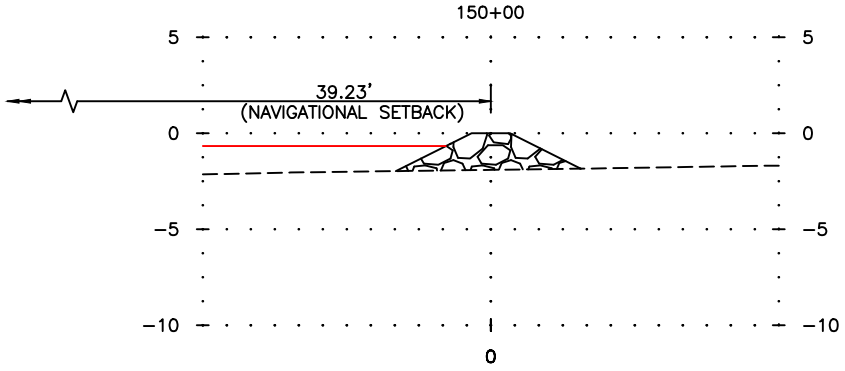
PROJECT NO. DU-TX-36-15

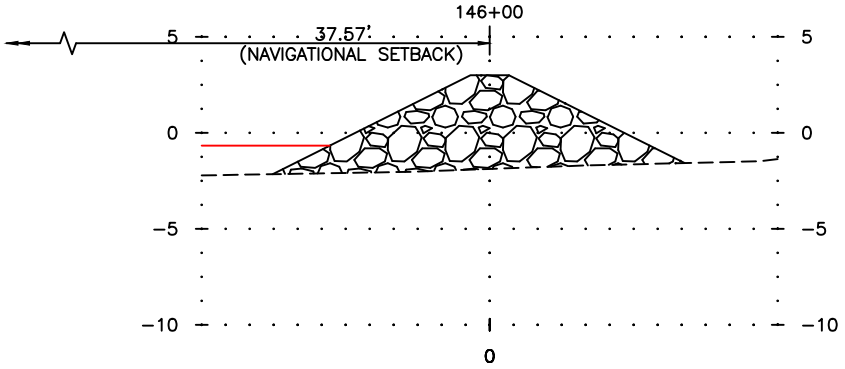
McFADDIN NWR GIWW ROCK BREAKWATER

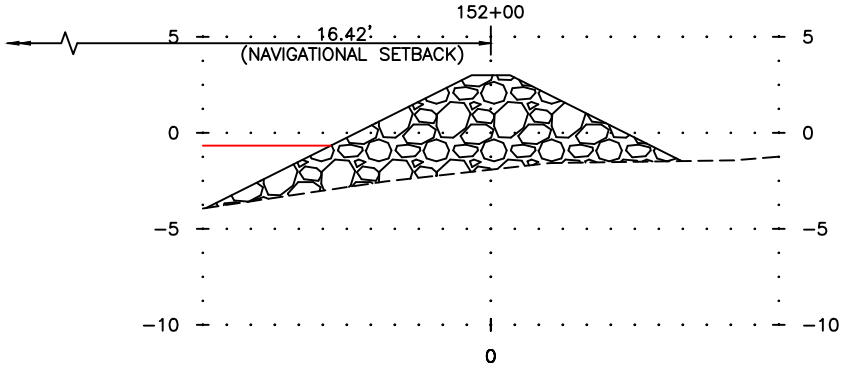
BREAKWATER #5 CROSS SECTIONS

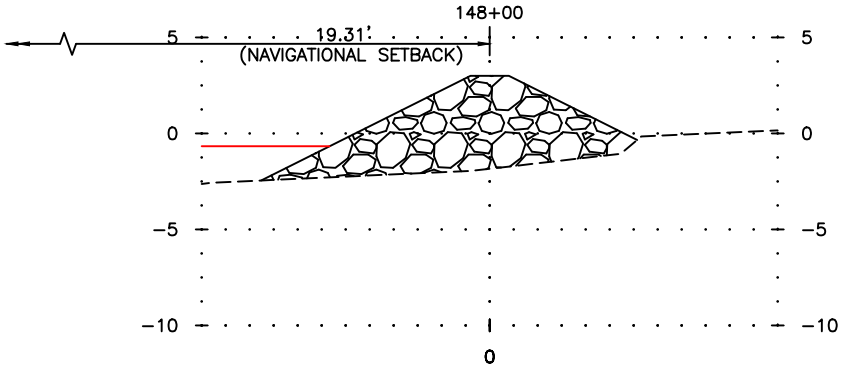
SHEET 52 OF 99

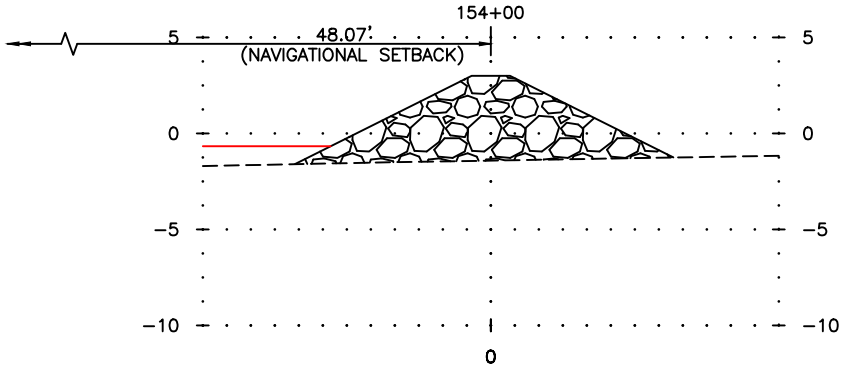












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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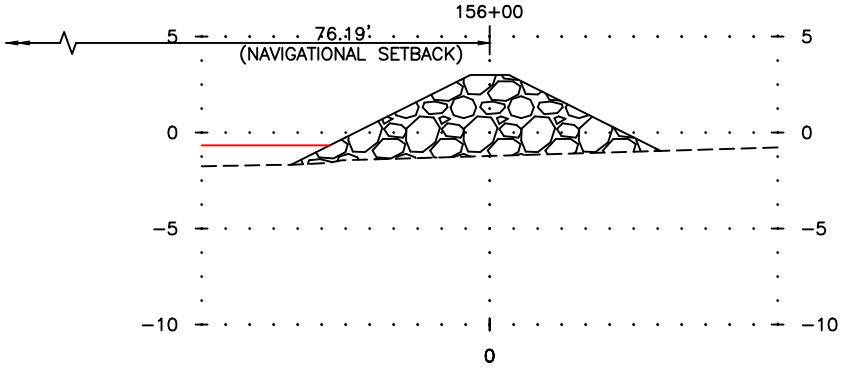
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

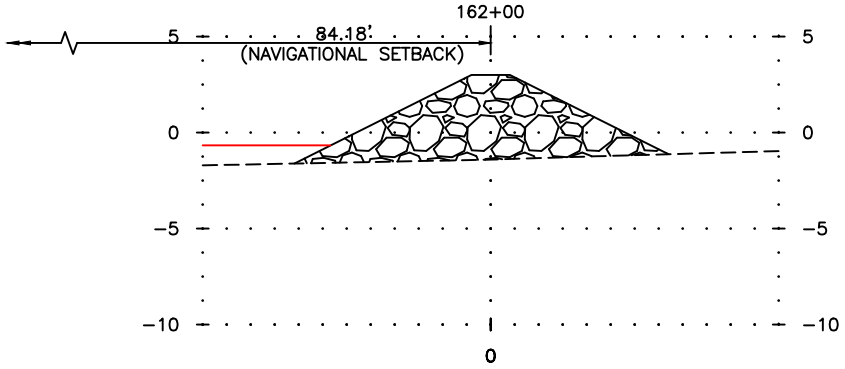
PROJECT NO. DU-TX-36-15

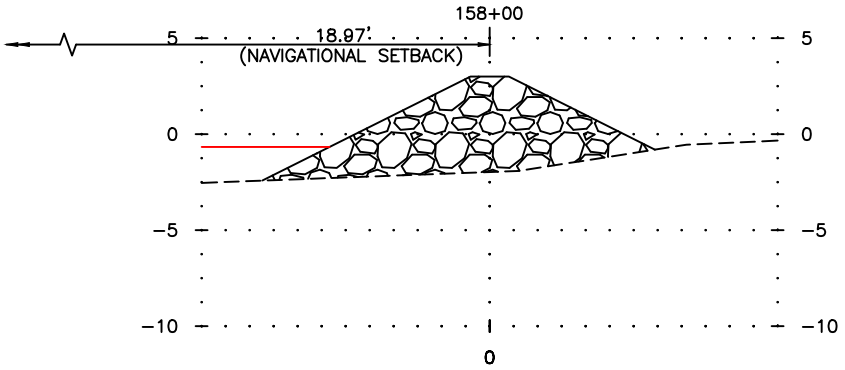
McFADDIN NWR GIWW ROCK BREAKWATER

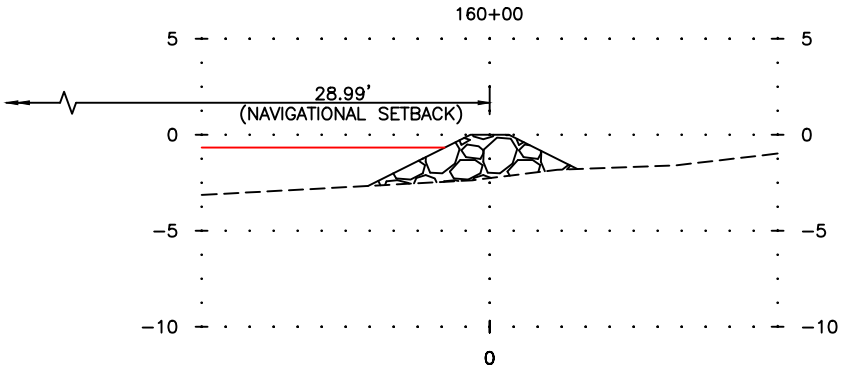
BREAKWATER #5 CROSS SECTIONS

SHEET 53 OF 99









LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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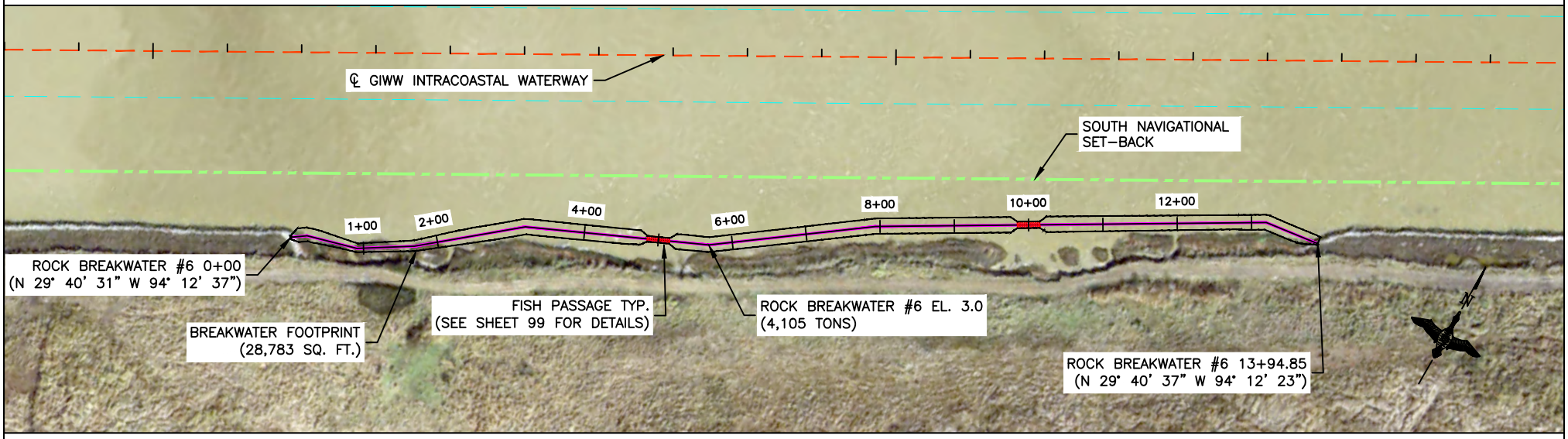
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #5 CROSS SECTIONS
SHEET 54 OF 99



ROCK BREAKWATER #6 STA. 0+00 – 13+94.85

"AUTHORIZED UNDER SWG–2020–00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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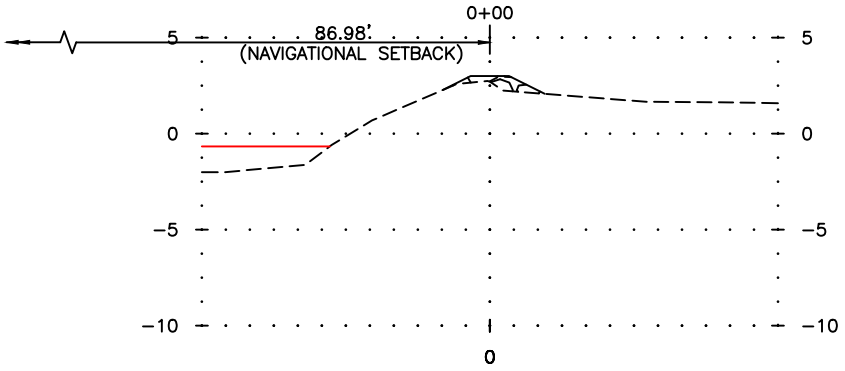
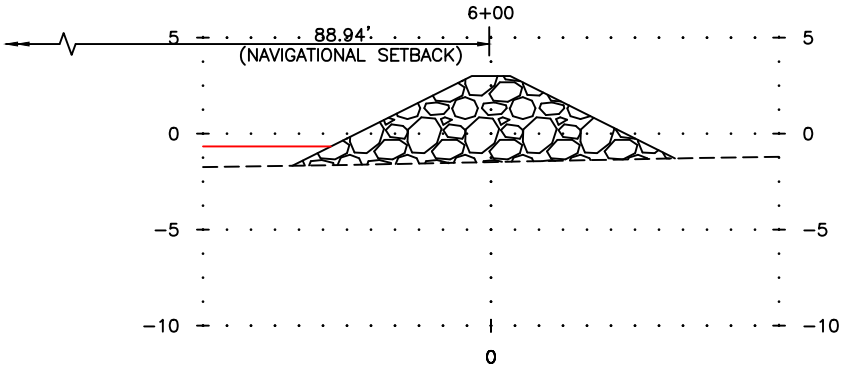
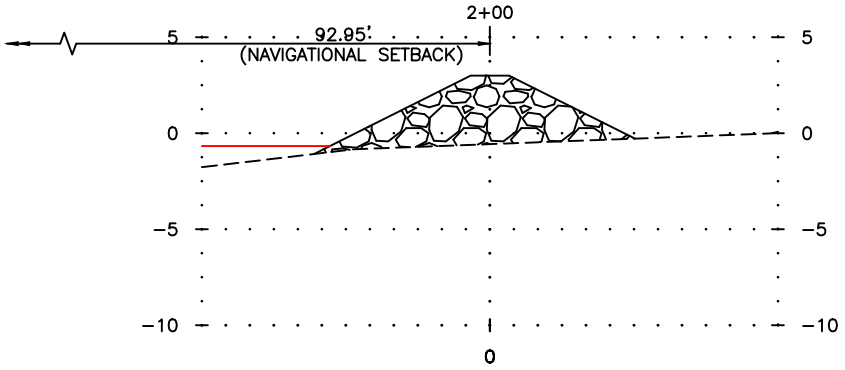
McFADDIN NWR GIWW ROCK BREAKWATER

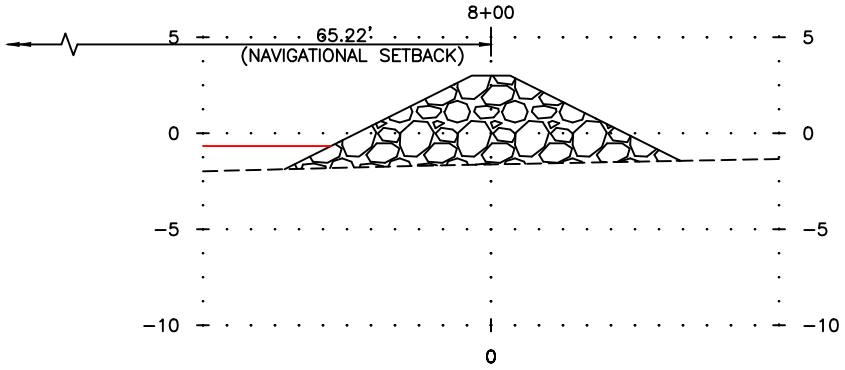
BREAKWATER #6 PLAN

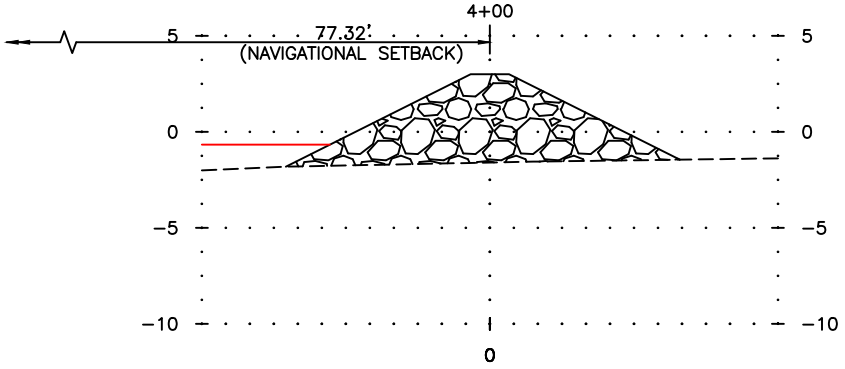
SHEET 55 OF 99

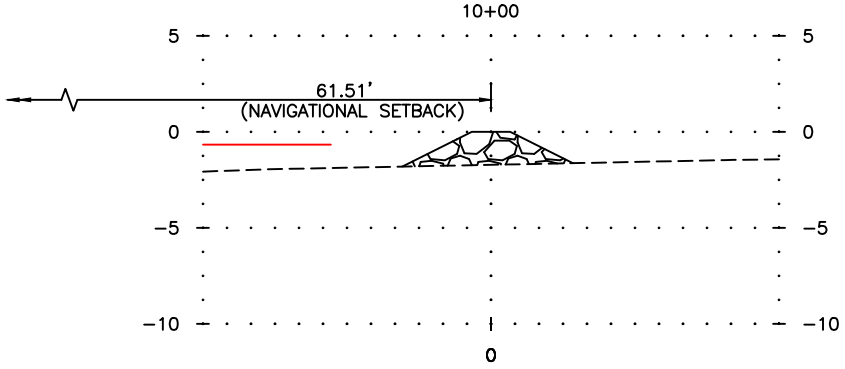












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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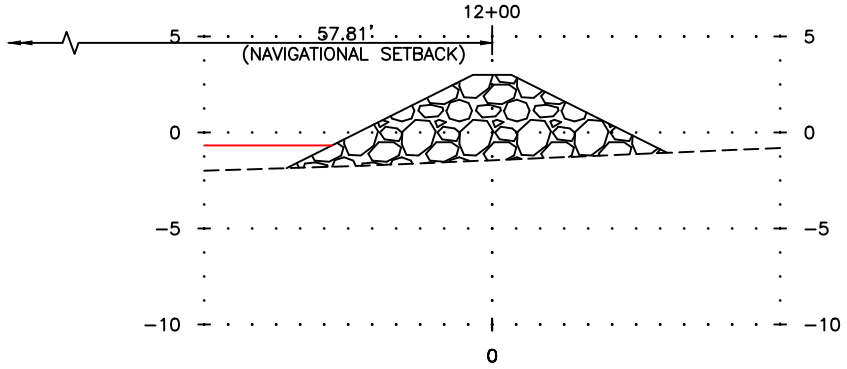
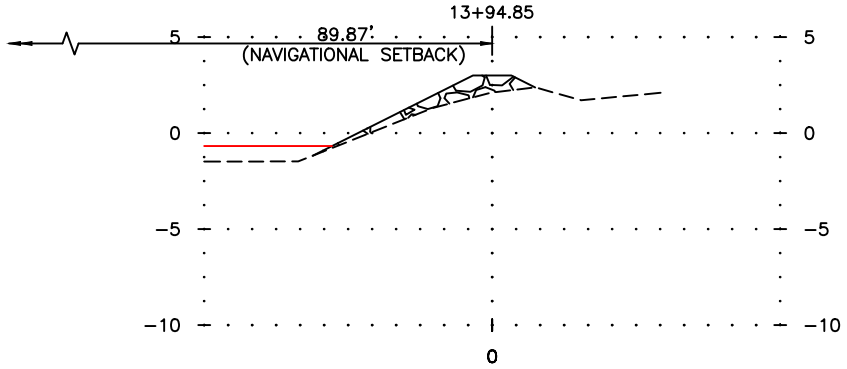
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #6 CROSS SECTIONS
SHEET 56 OF 99





LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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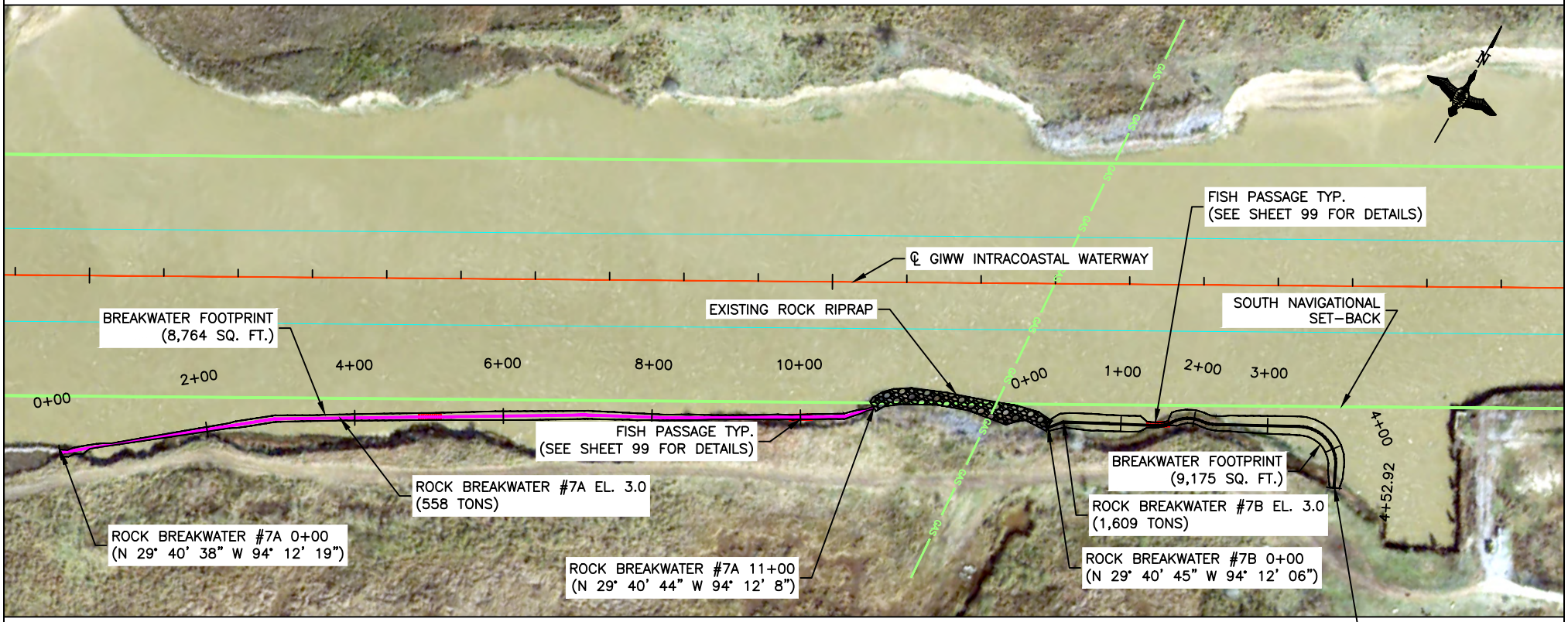
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #6 CROSS SECTIONS
SHEET 57 OF 99



ROCK BREAKWATER #7 STA. 0+00 – 18+09.06

"AUTHORIZED UNDER SWG-2020-00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE
- GAS — EXISTING GAS PIPELINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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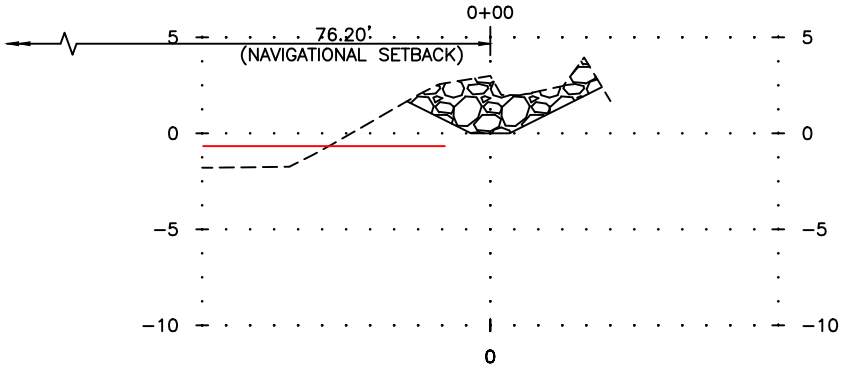
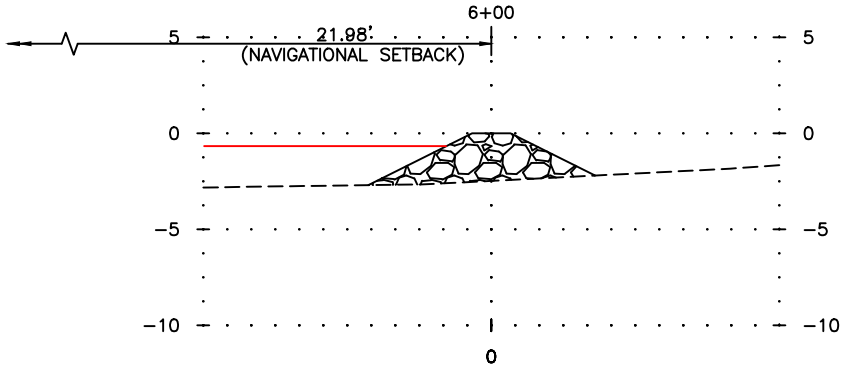
PROJECT NO. DU-TX-36-15

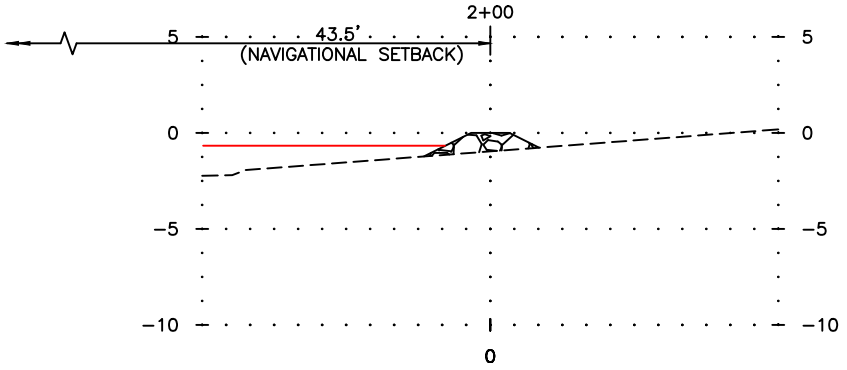
McFADDIN NWR GIWW ROCK BREAKWATER

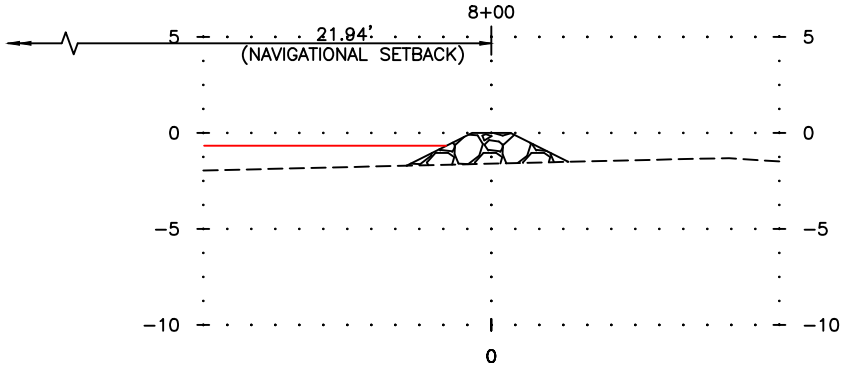
BREAKWATER #7A &#7B PLAN

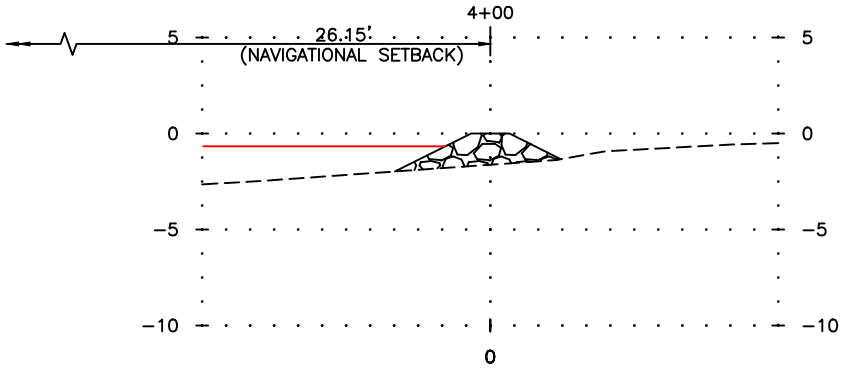
SHEET 58 OF 99

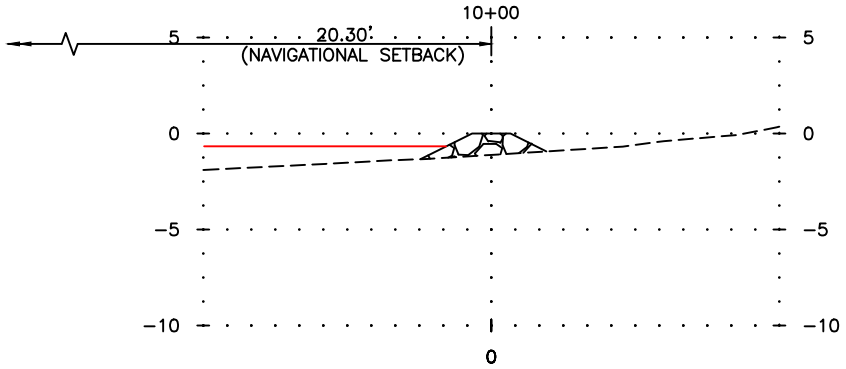












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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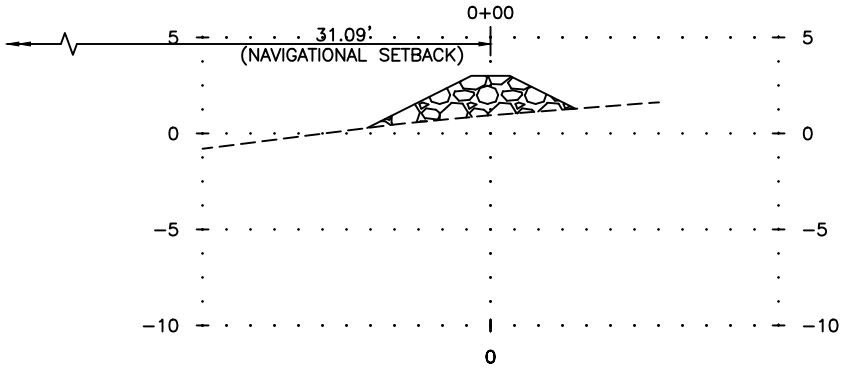
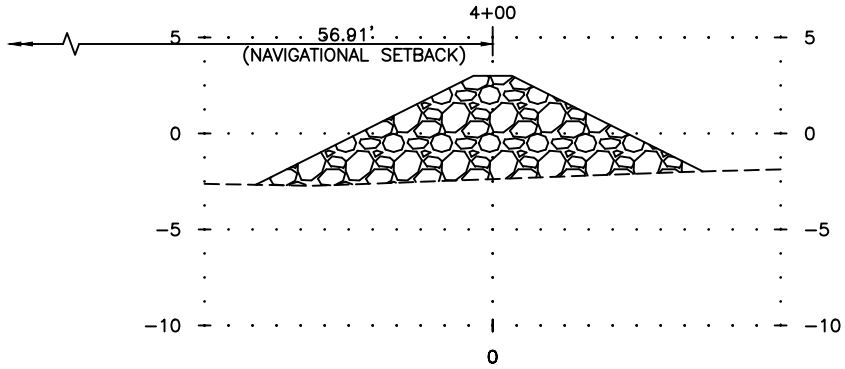
PROJECT NO. DU-TX-36-15

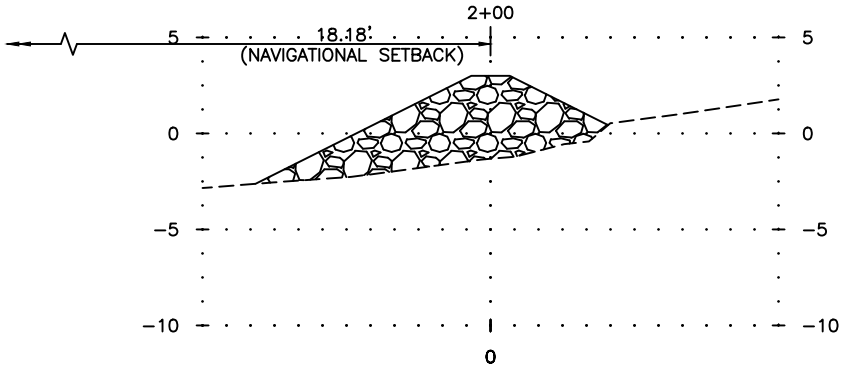
McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #7A CROSS SECTIONS

SHEET 59 OF 99







LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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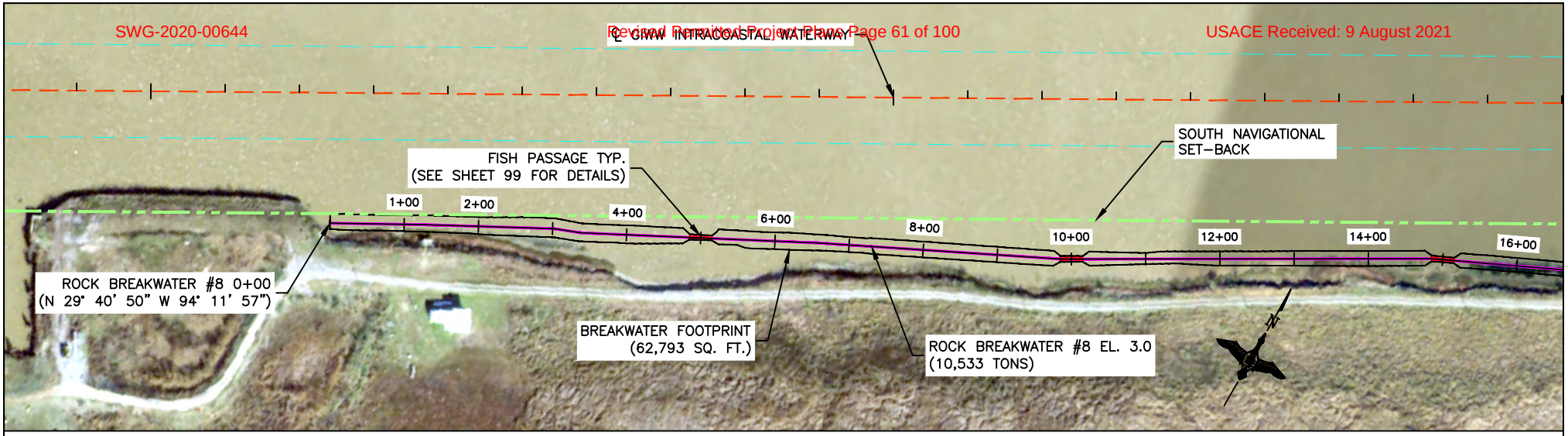
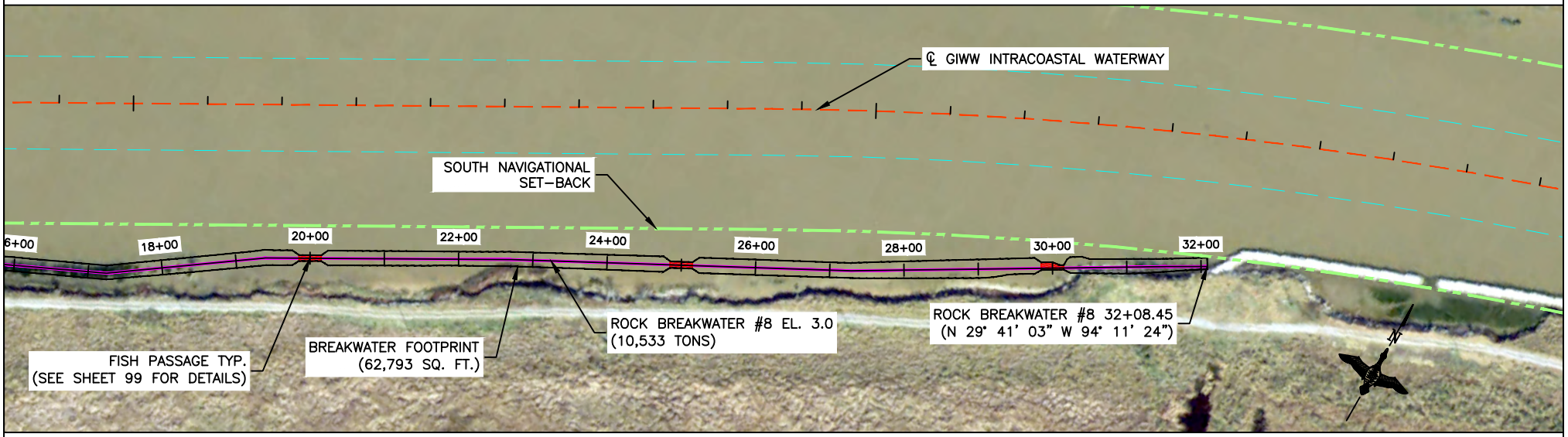
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #7B CROSS SECTIONS
SHEET 60 OF 99



ROCK BREAKWATER #8 STA. 0+00 – 20+50

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #8 STA. 20+50 – 32+08.45

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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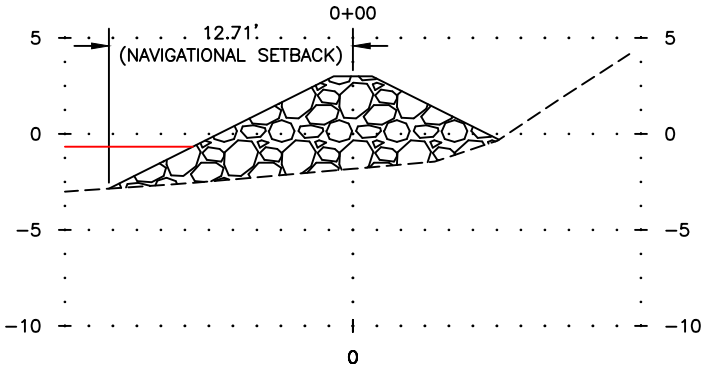
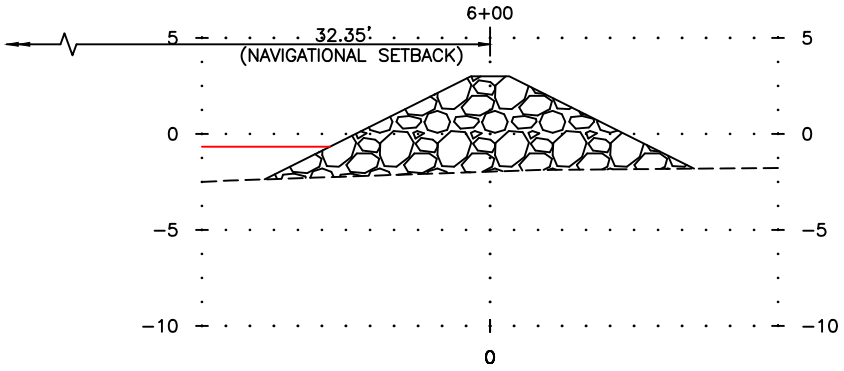
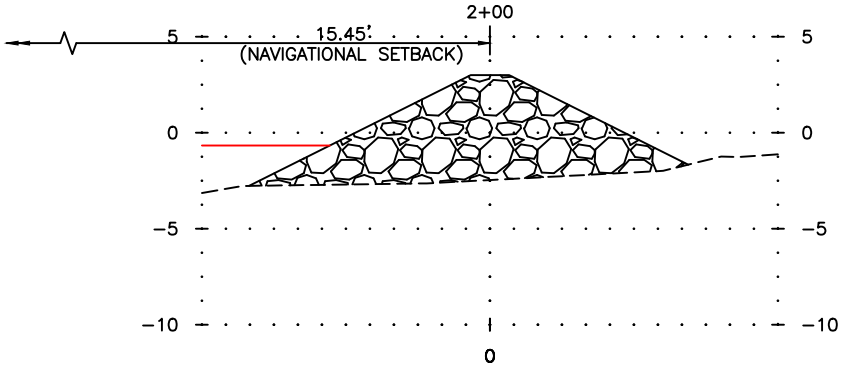
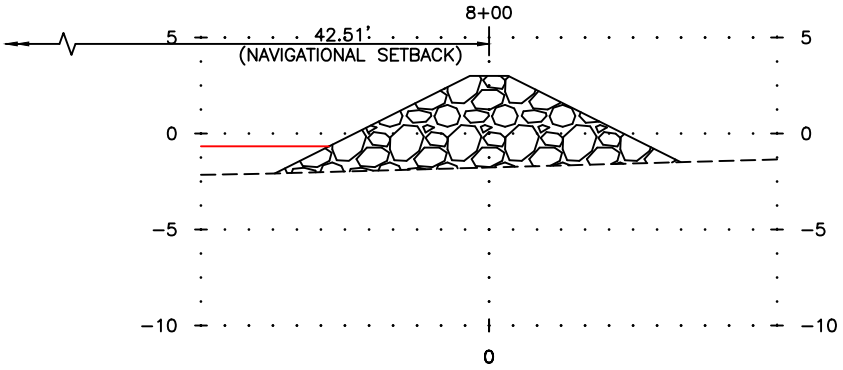
PROJECT NO. DU–TX–36–15

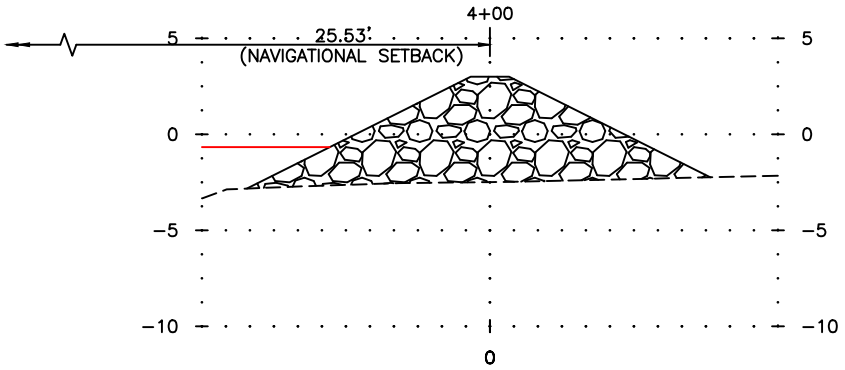
McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #8 PLAN
SHEET 61 OF 99

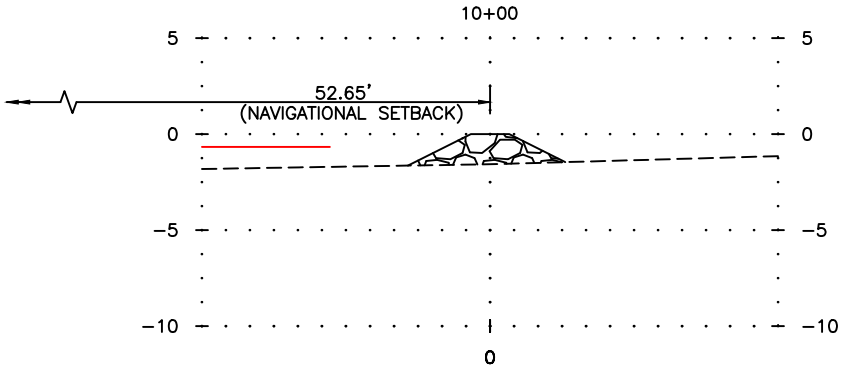












LEGEND

- - - - - - - EXISTING GROUND

——————— PROPOSED ROCK RIPRAP

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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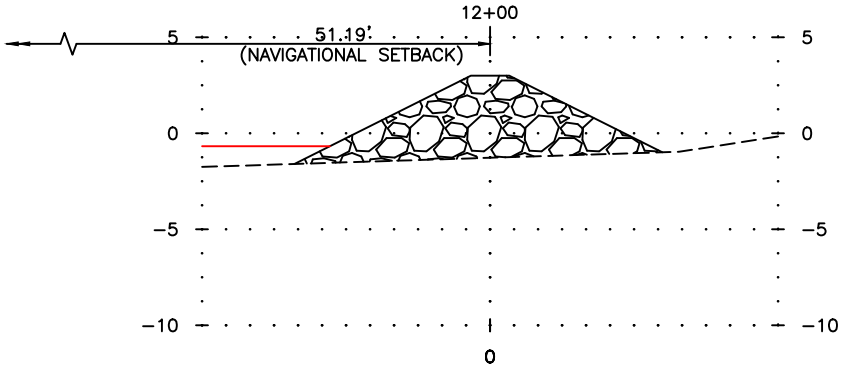
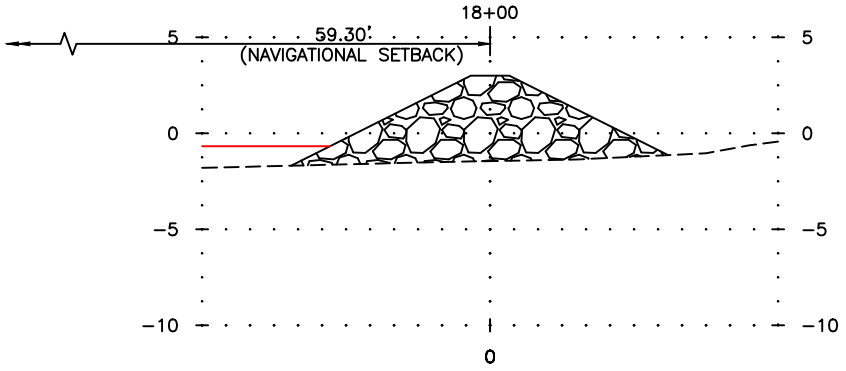
PROJECT NO. DU-TX-36-15

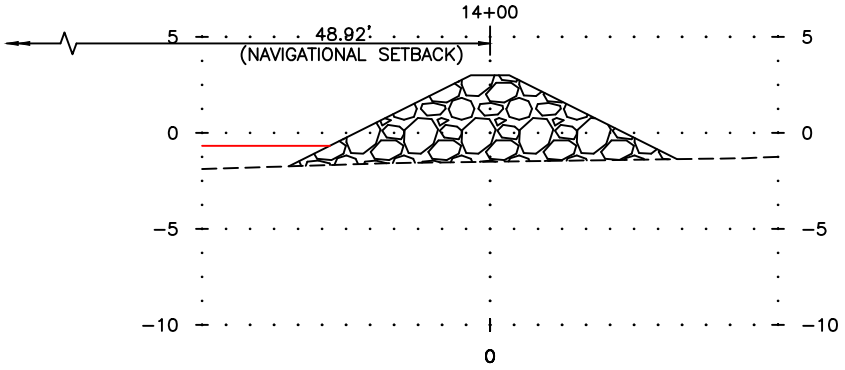
McFADDIN NWR GIWW ROCK BREAKWATER

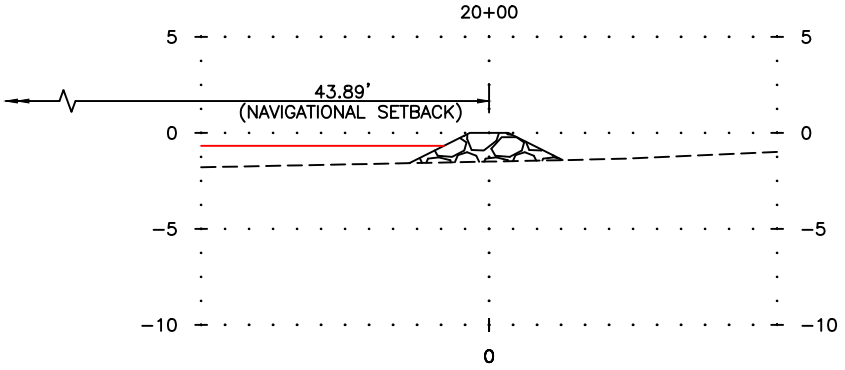
BREAKWATER #8 CROSS SECTIONS

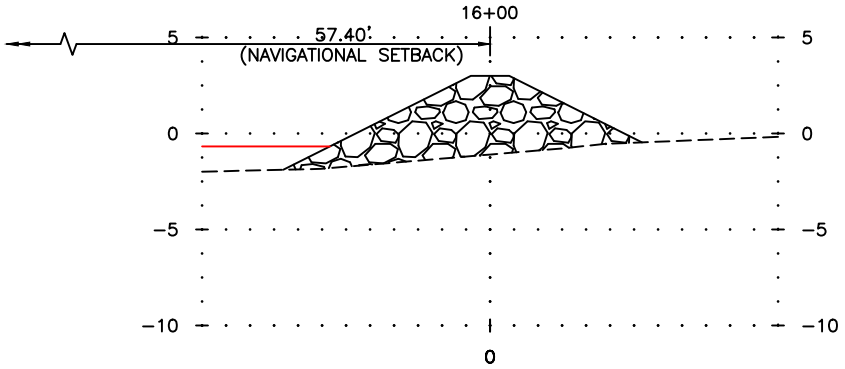
SHEET 62 OF 99

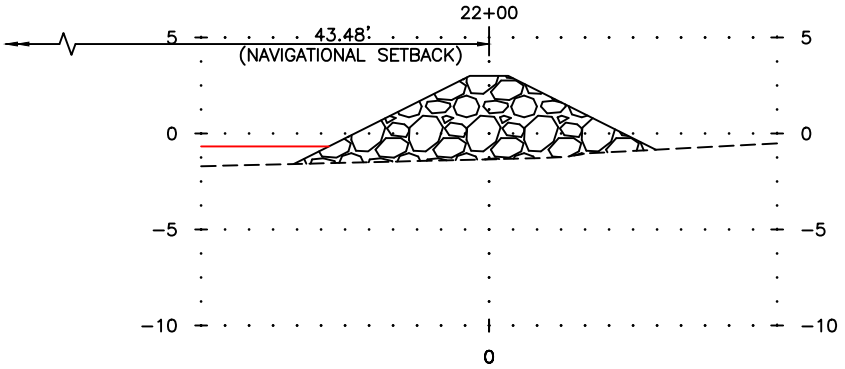












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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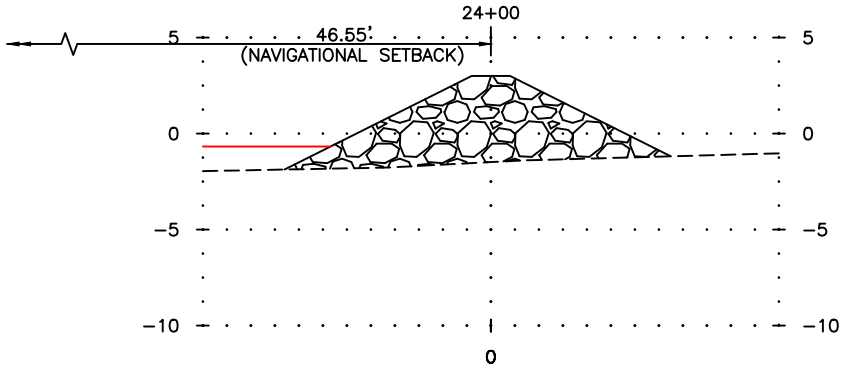
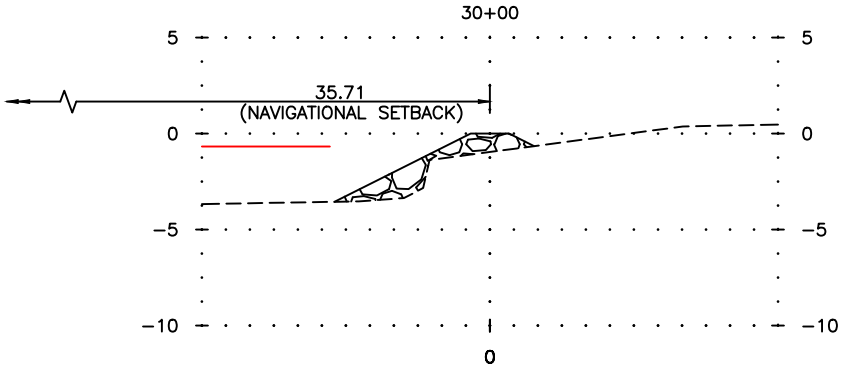
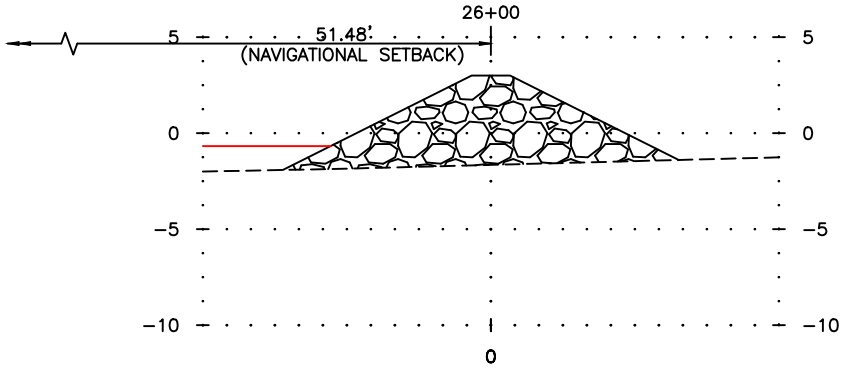
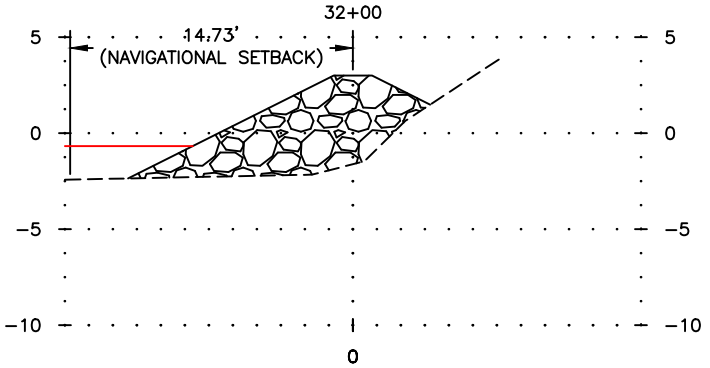
PROJECT NO. DU-TX-36-15

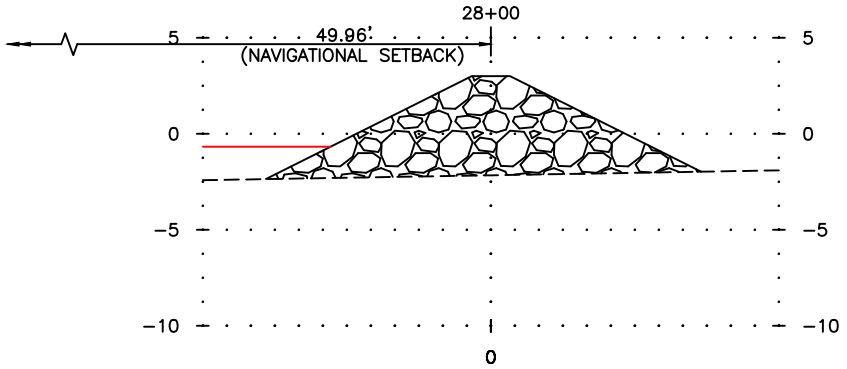
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #8 CROSS SECTIONS
SHEET 63 OF 99











LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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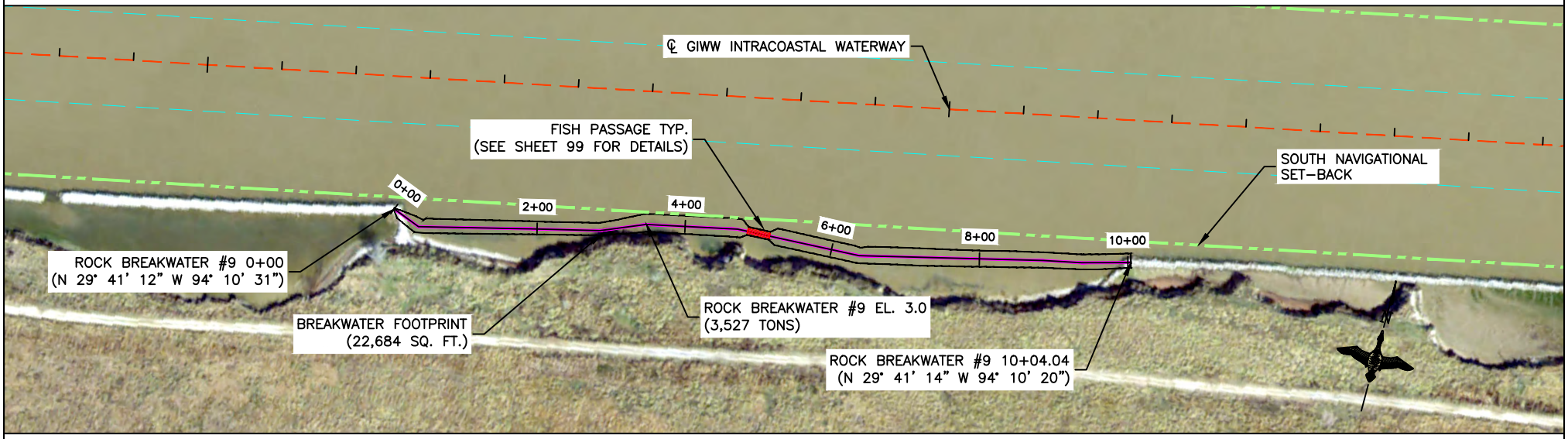
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #8 CROSS SECTIONS

SHEET 64 OF 99



ROCK BREAKWATER #9 STA. 0+00 – 10+04.04

"AUTHORIZED UNDER SWG–2020–00644 LOP"

SCALE: 1" = 200'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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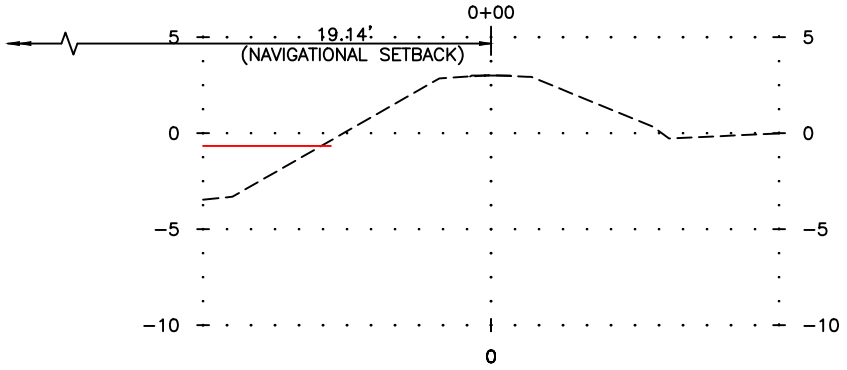
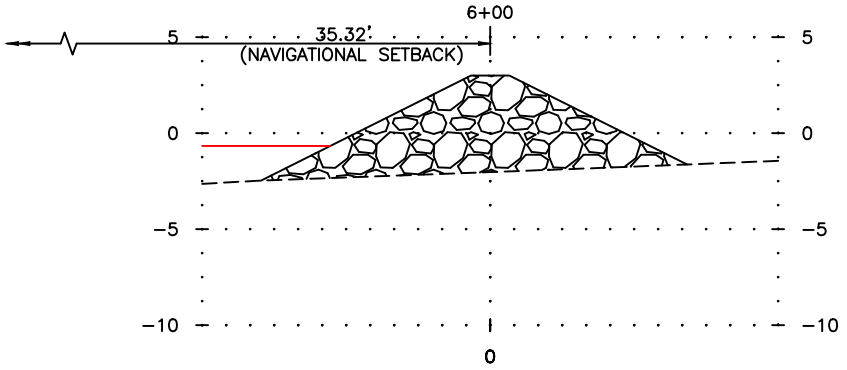
PROJECT NO. DU–TX–36–15

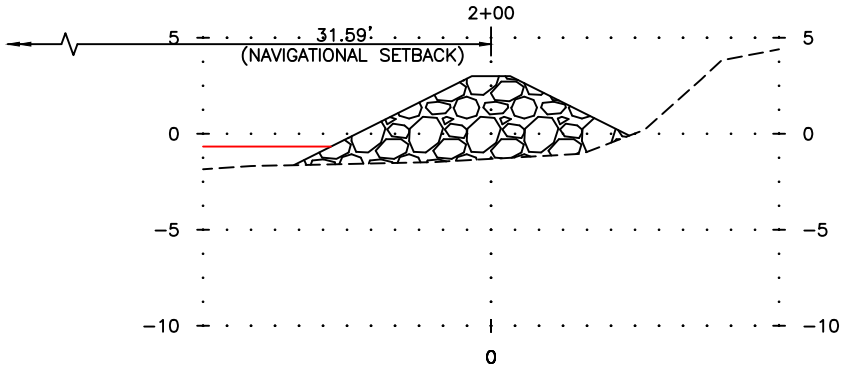
McFADDIN NWR GIWW ROCK BREAKWATER

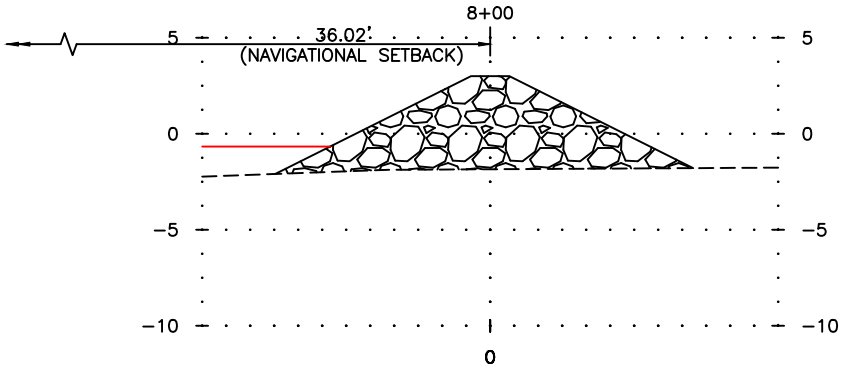
BREAKWATER #9 PLAN

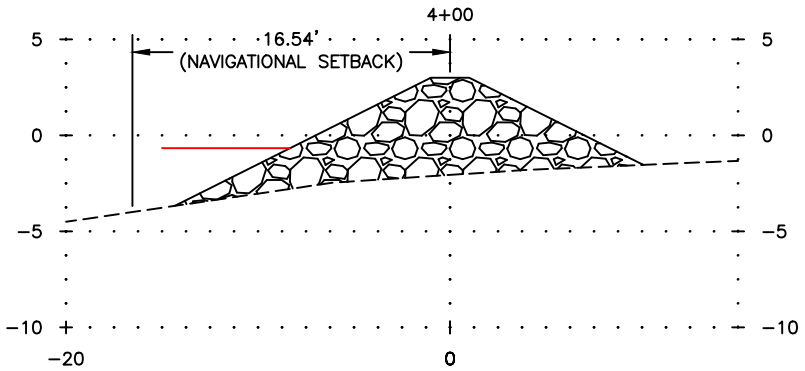
SHEET 65 OF 99

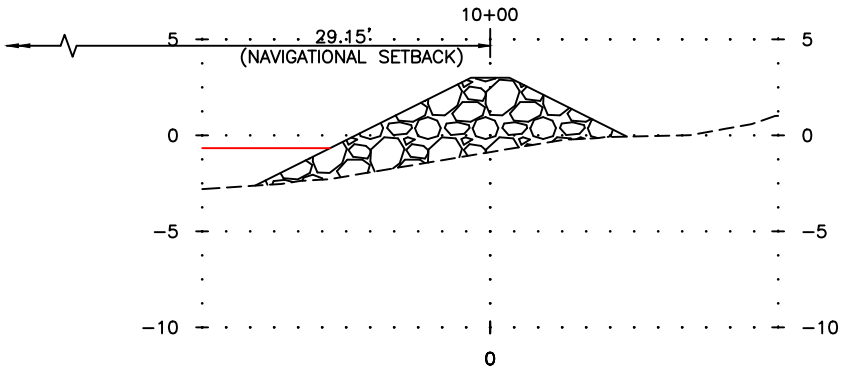












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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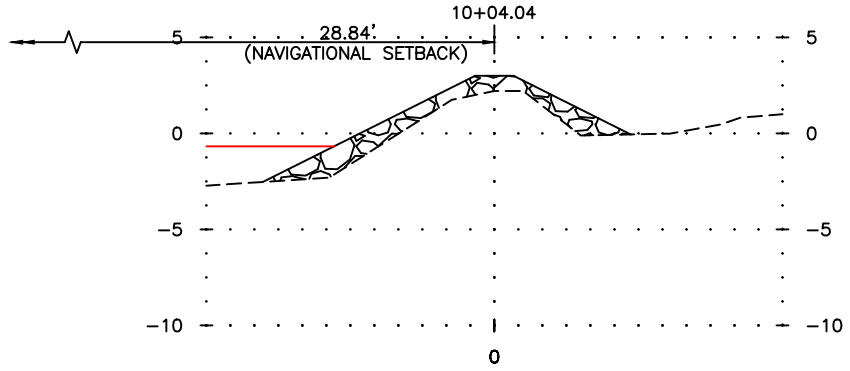
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #9 CROSS SECTIONS
SHEET 66 OF 99



LEGEND

- - - - - - - EXISTING GROUND

——————— PROPOSED ROCK RIPRAP

——————— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #9 CROSS SECTIONS

SHEET 67 OF 99

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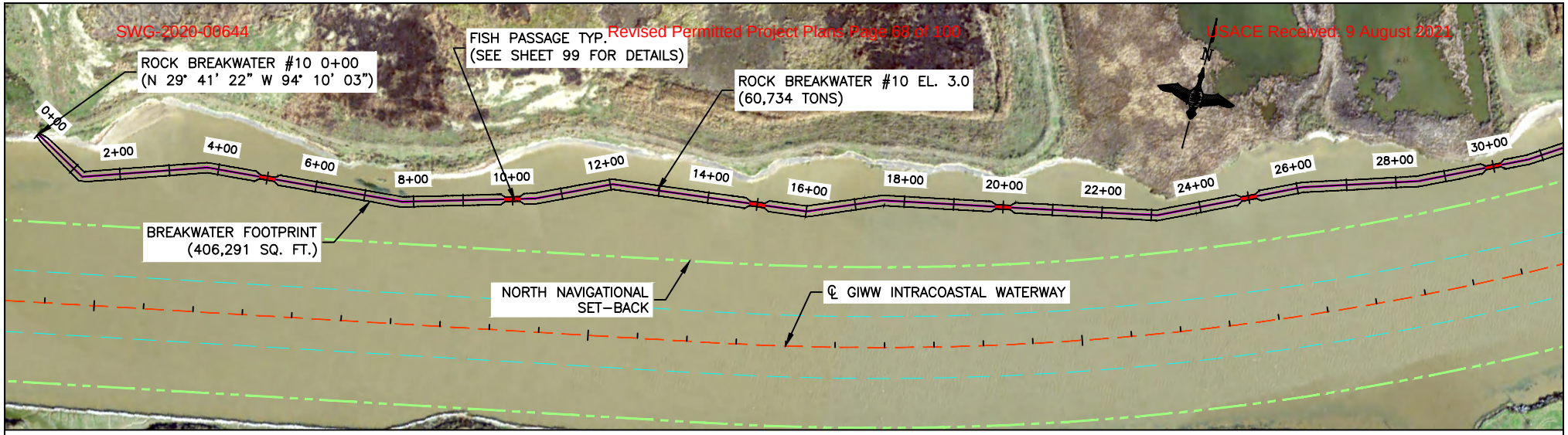
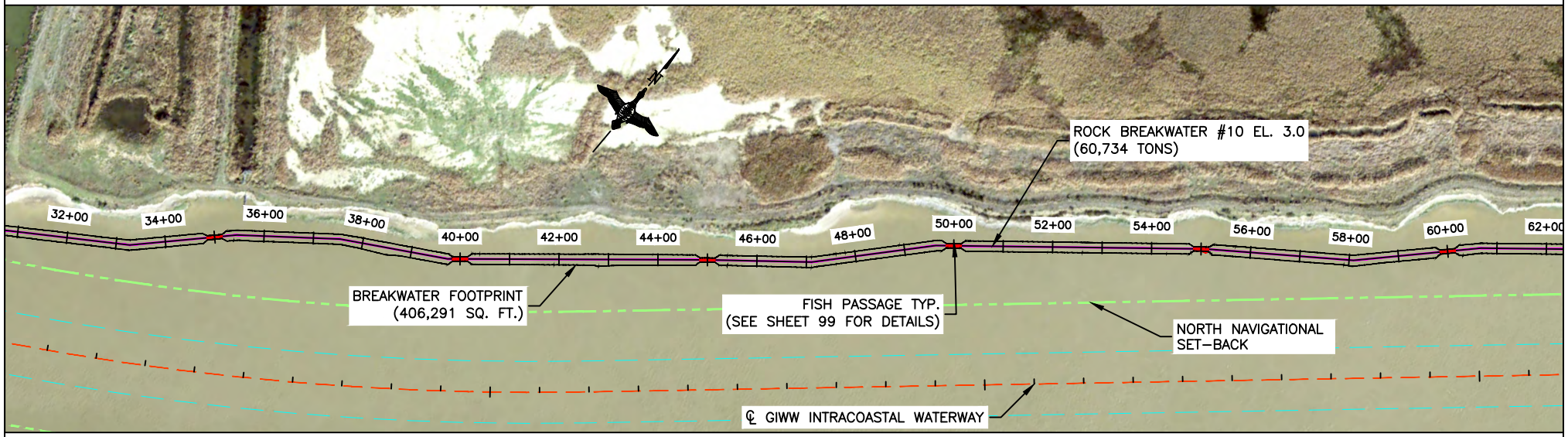


ROCK BREAKWATER #10 STA. 0+00 – 31+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'



ROCK BREAKWATER #10 STA. 31+00 – 62+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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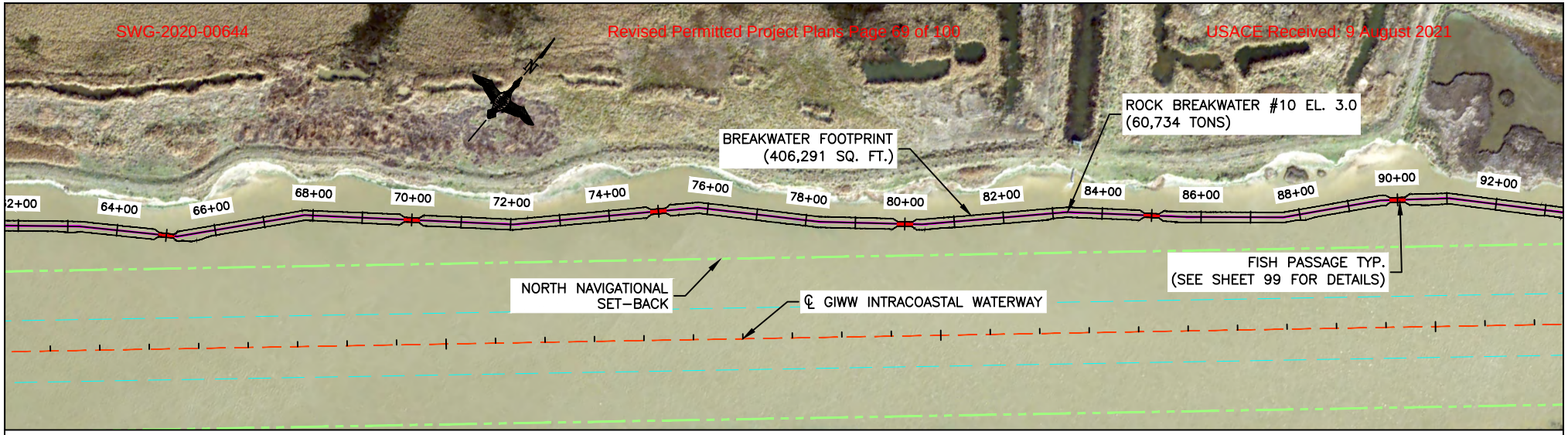
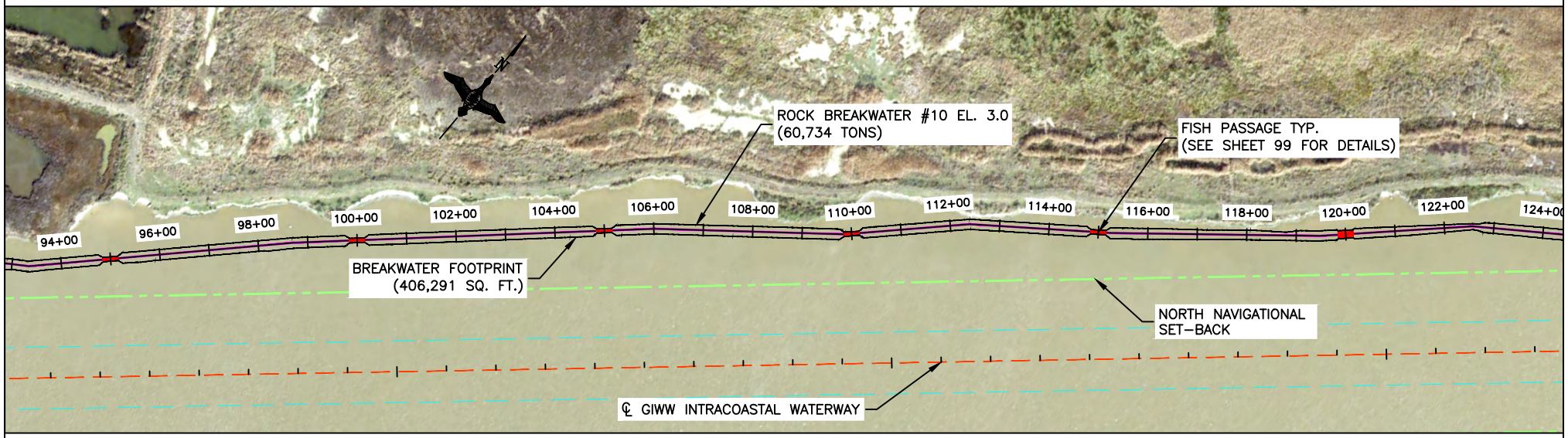
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 PLAN
SHEET 68 OF 99



ROCK BREAKWATER #10 STA. 62+00 – 93+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'



ROCK BREAKWATER #10 STA. 93+00 – 124+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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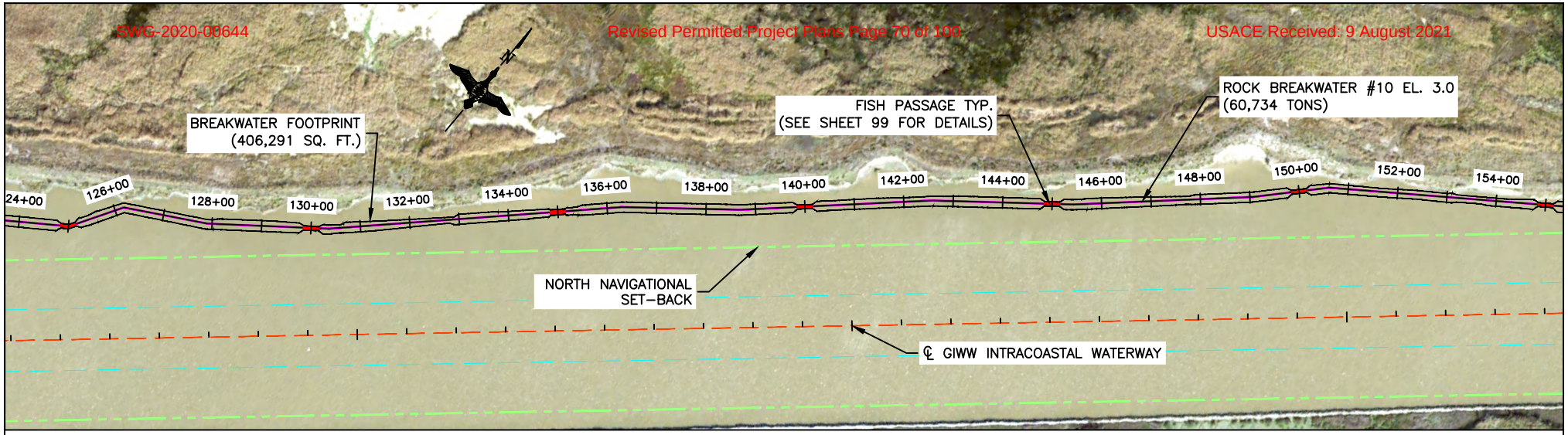
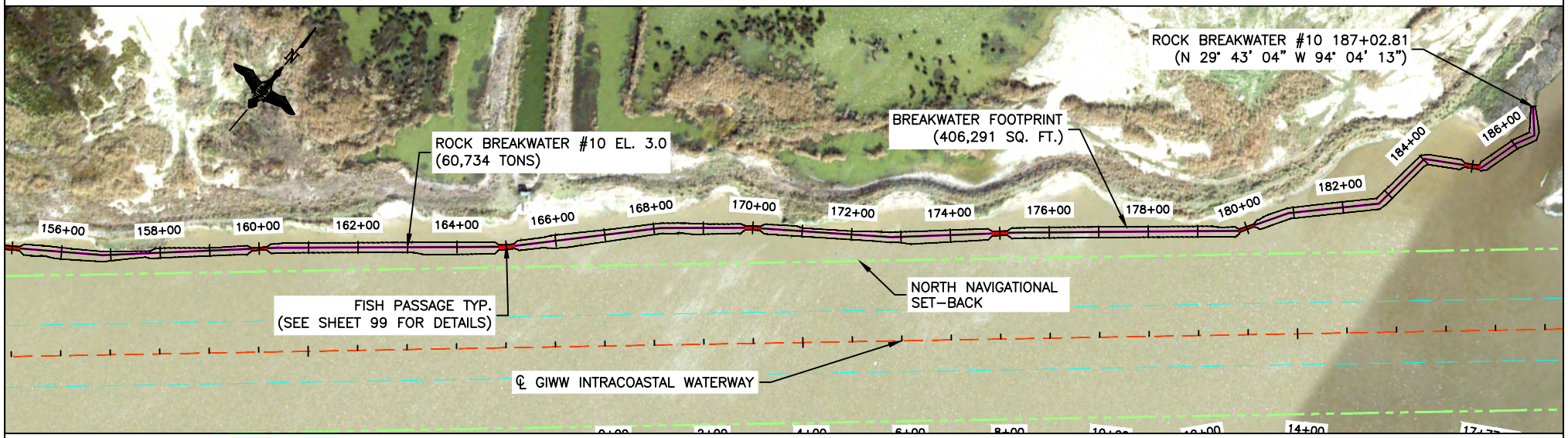
PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #10 PLAN
SHEET 69 OF 99



ROCK BREAKWATER #10 STA. 124+00 – 155+00

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'



ROCK BREAKWATER #10 STA. 155+00 – 187+02.81

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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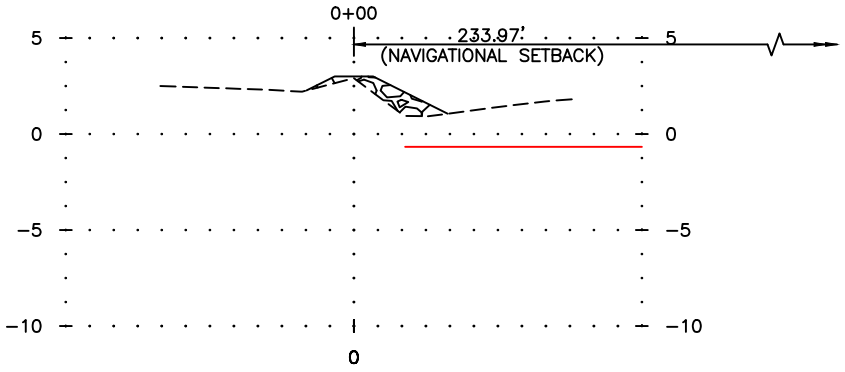
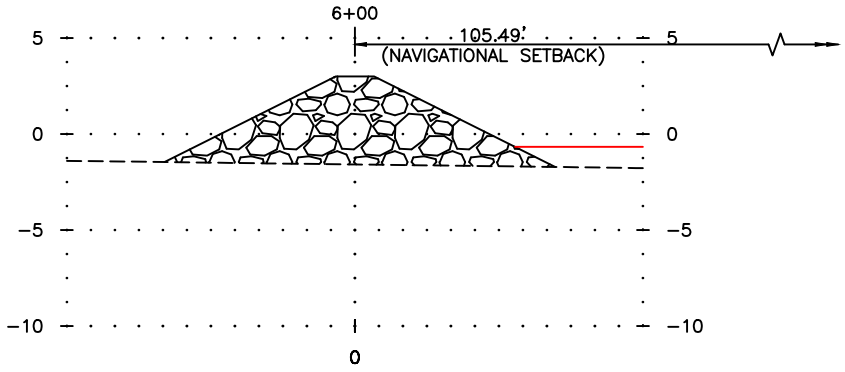
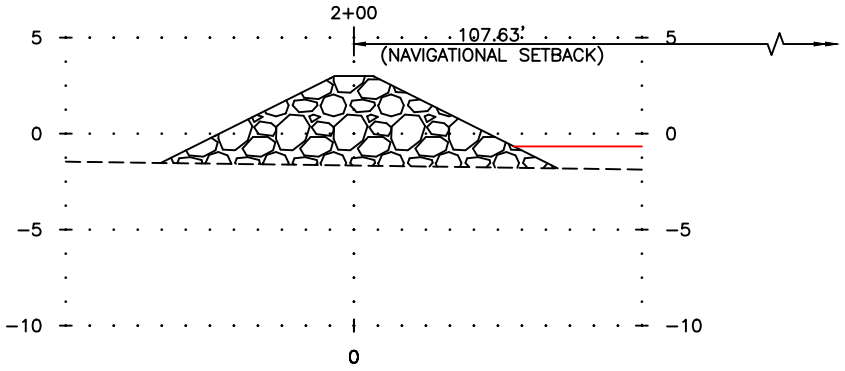
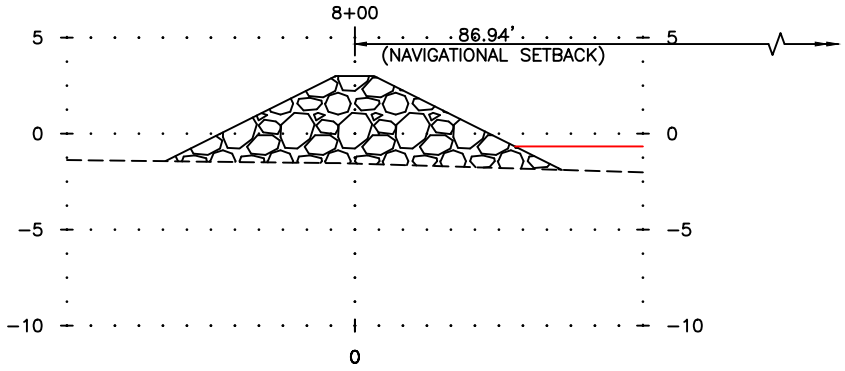
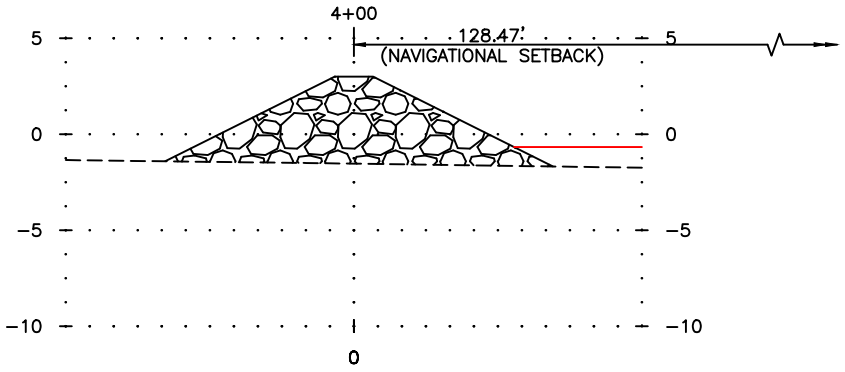
PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #10 PLAN
SHEET 70 OF 99

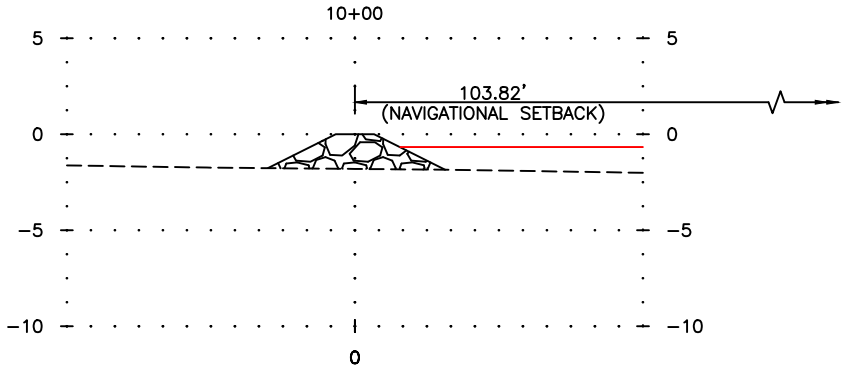












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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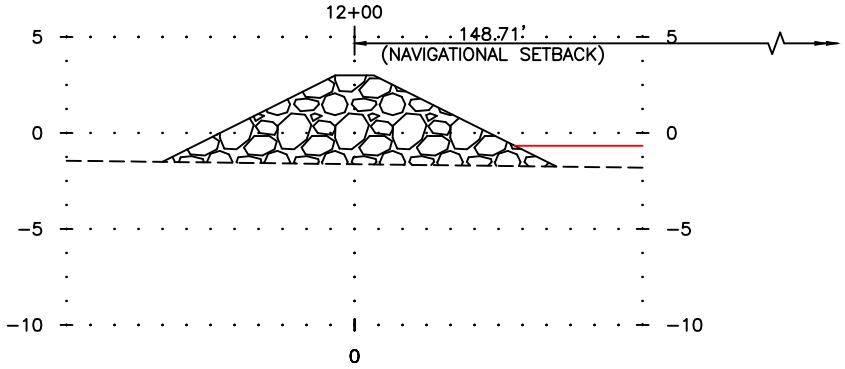
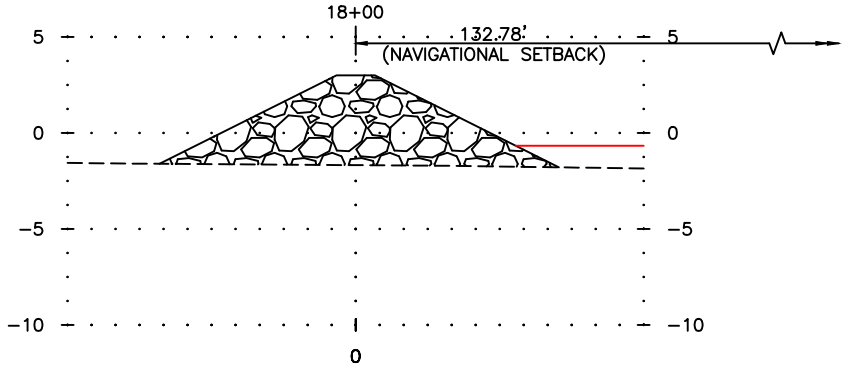
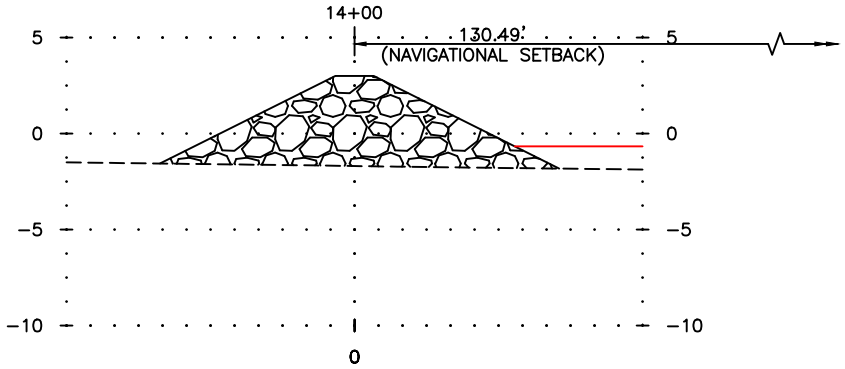
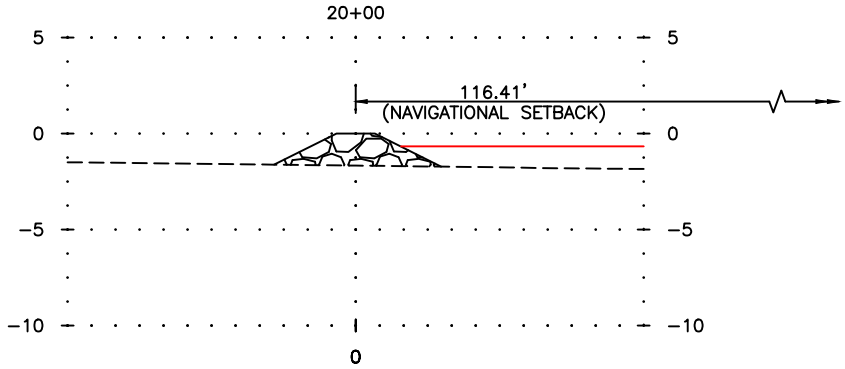
PROJECT NO. DU-TX-36-15

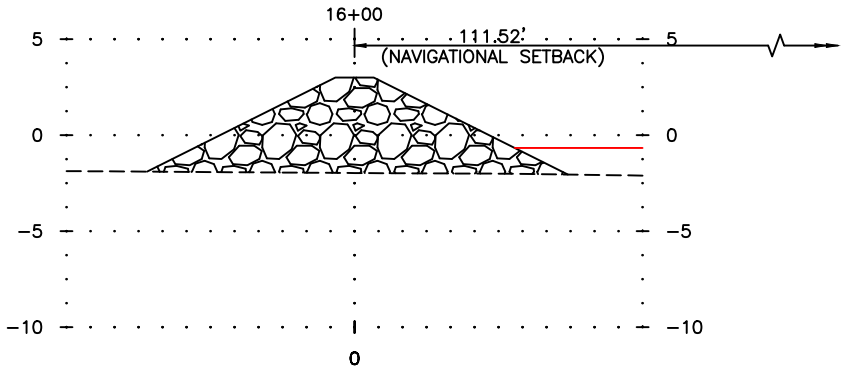
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 71 OF 99

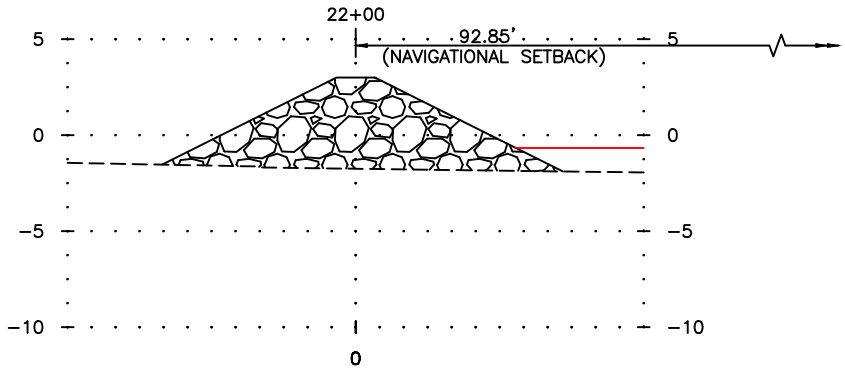












LEGEND

- - - - - - - EXISTING GROUND

——— PROPOSED ROCK RIPRAP

——— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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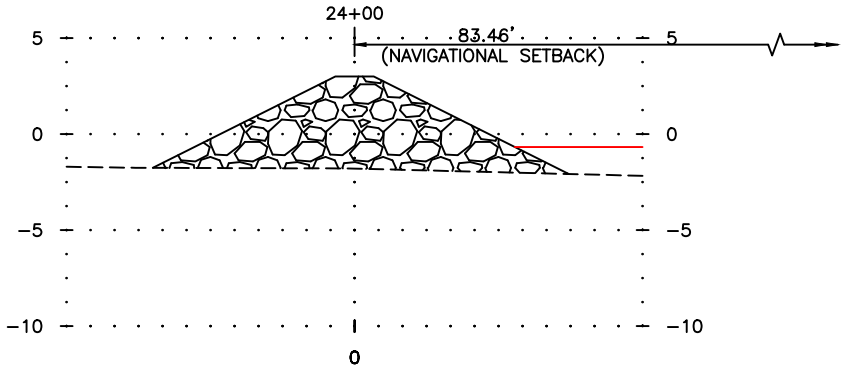
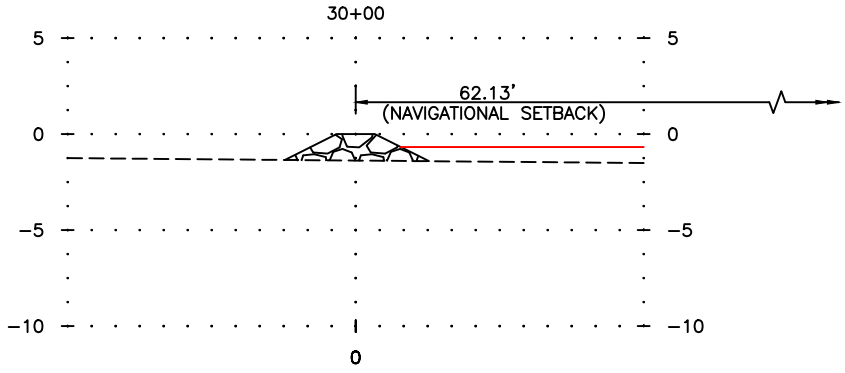
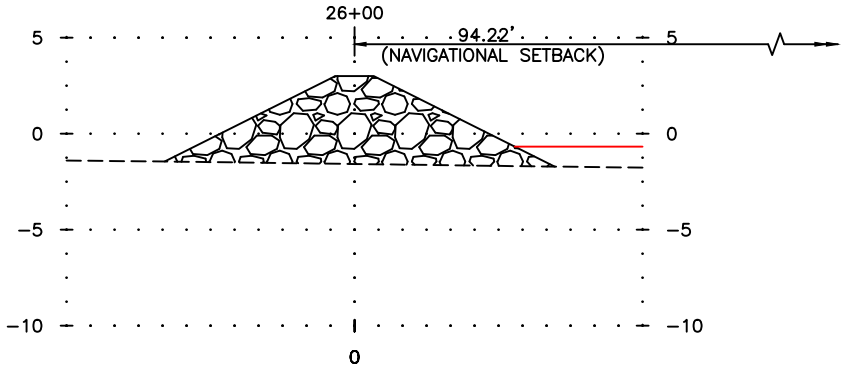
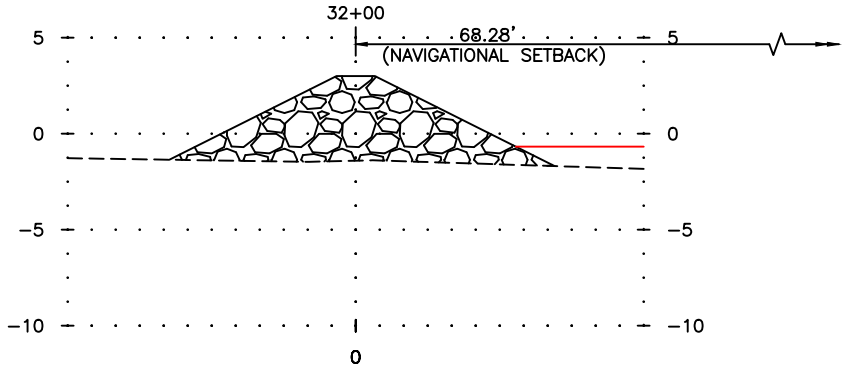
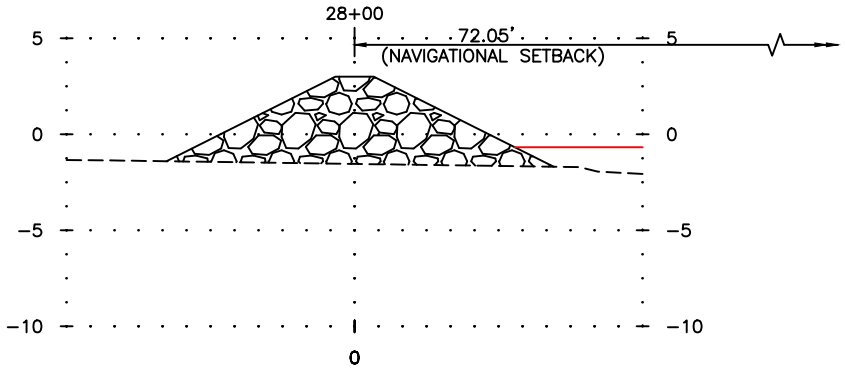
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 72 OF 99

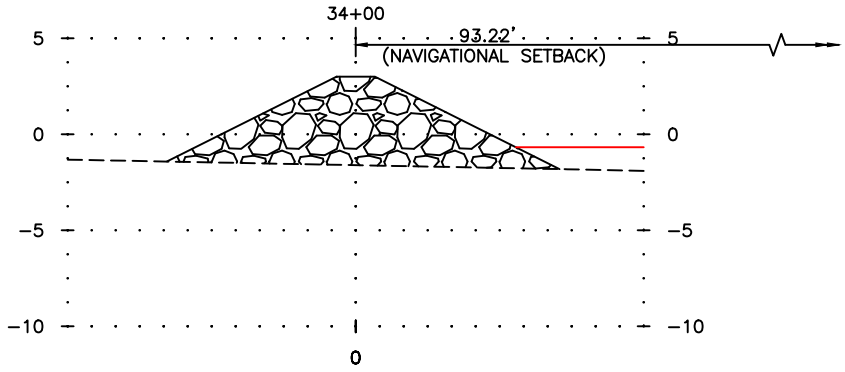












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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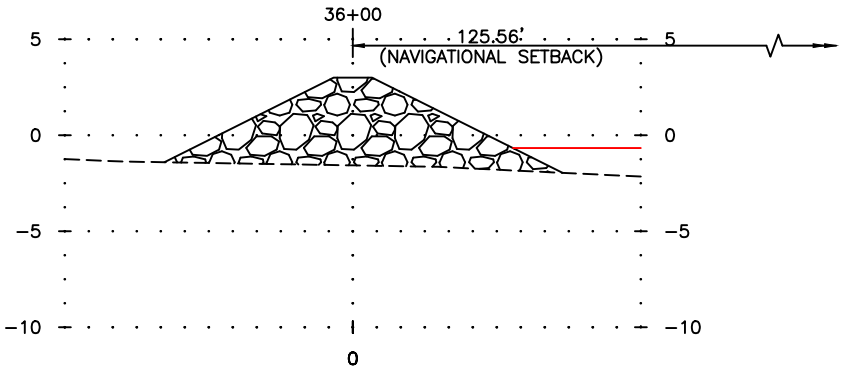
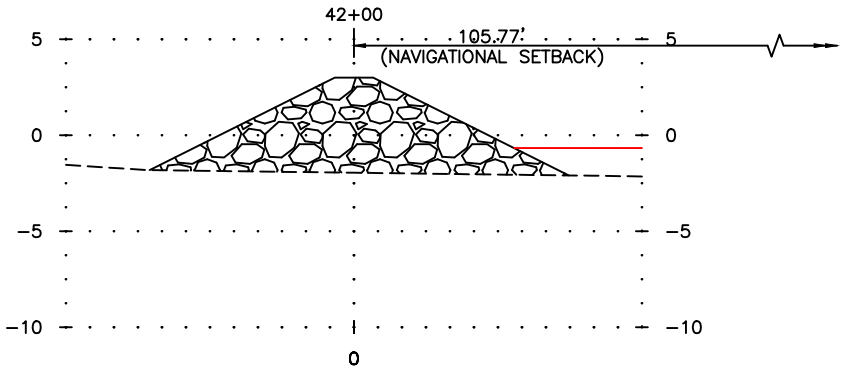
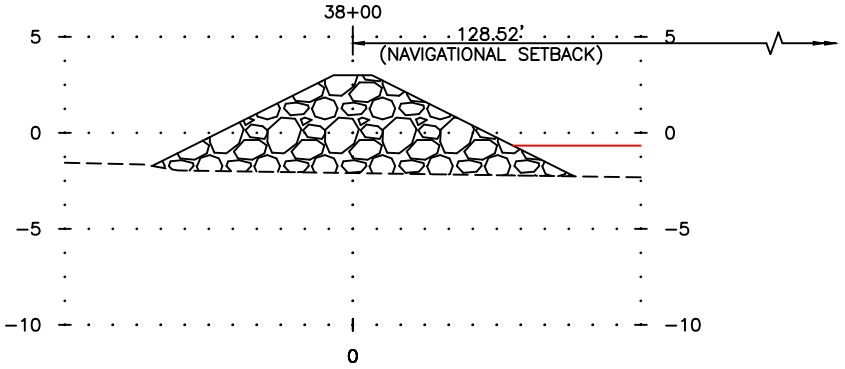
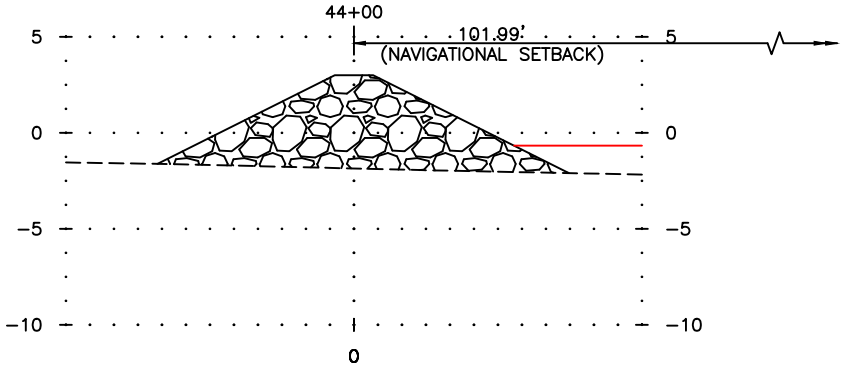
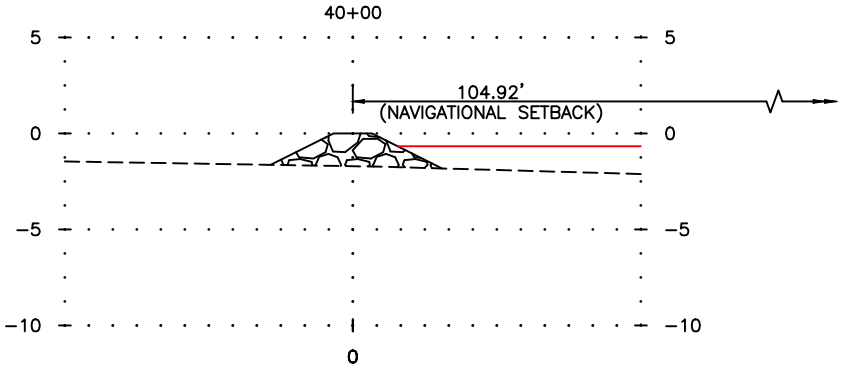
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 73 OF 99

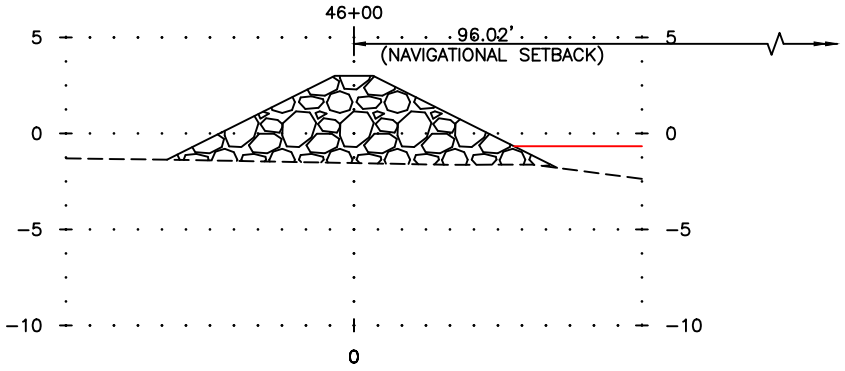












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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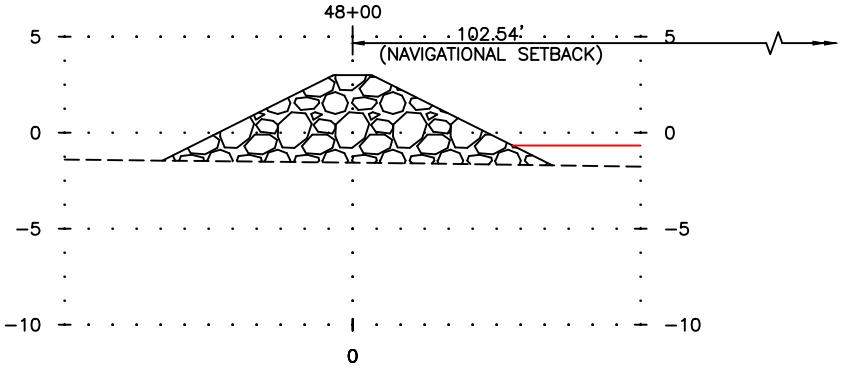
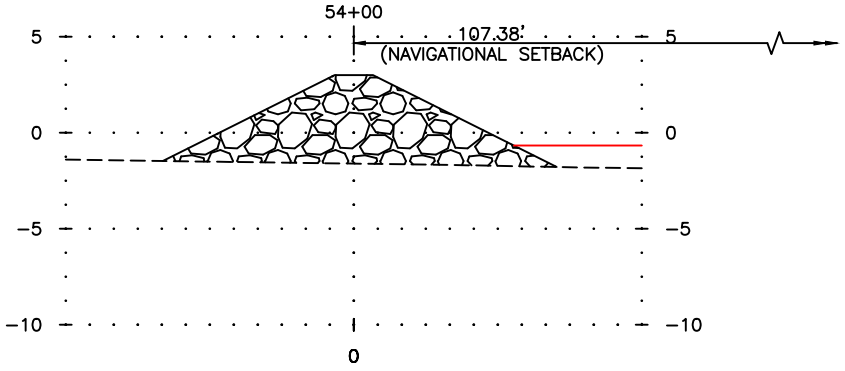
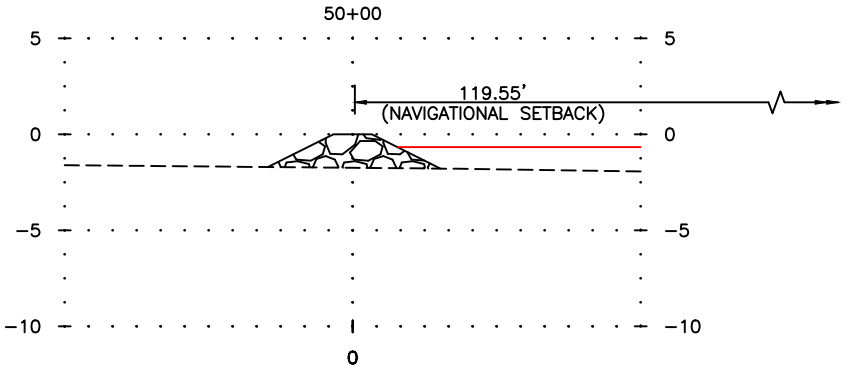
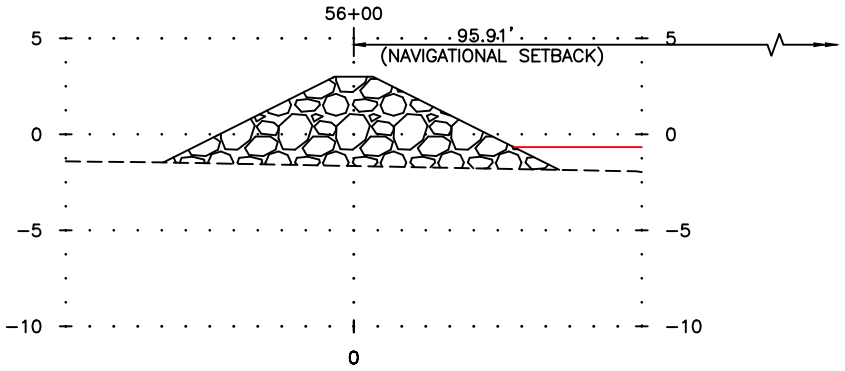
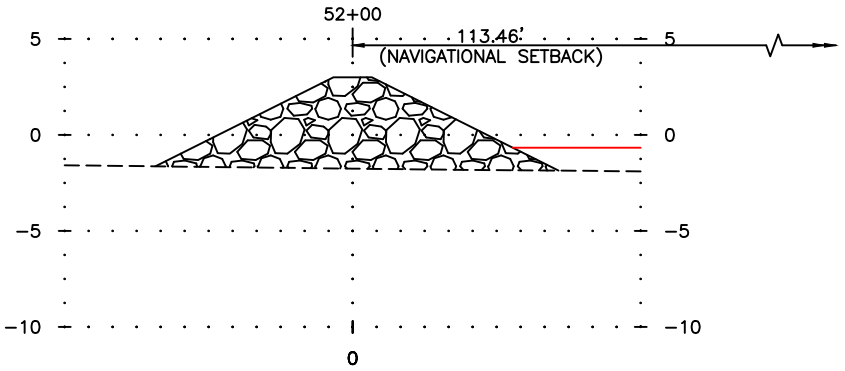
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 74 OF 99

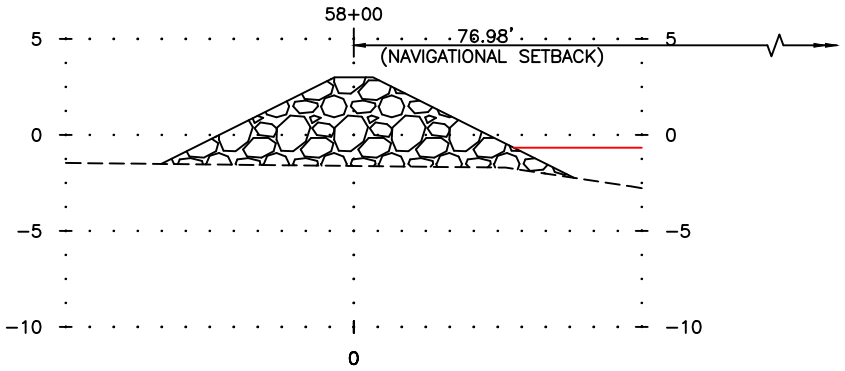












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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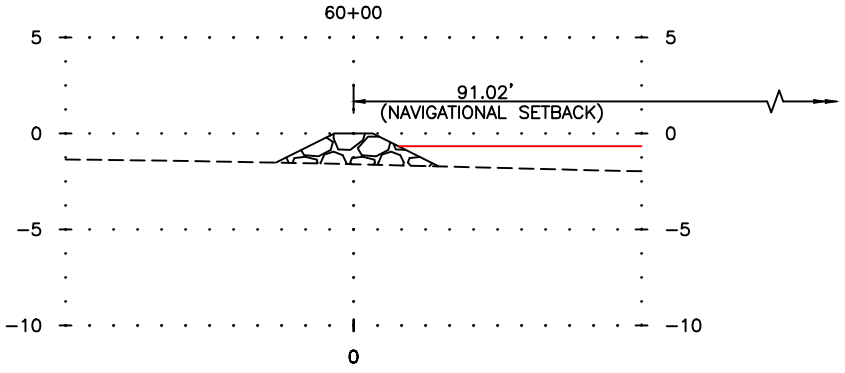
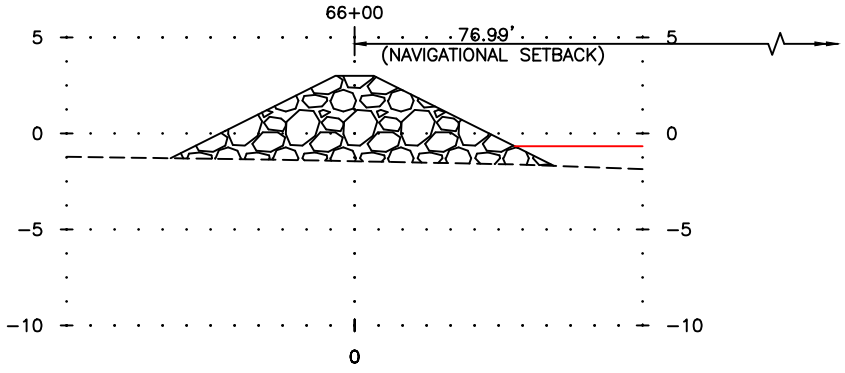
PROJECT NO. DU-TX-36-15

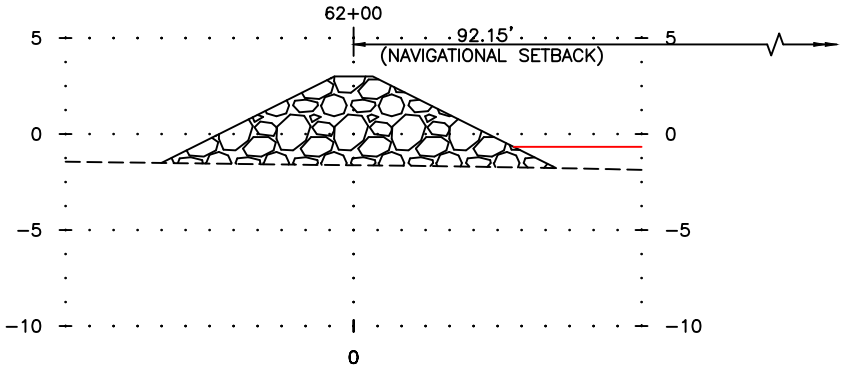
McFADDIN NWR GIWW ROCK BREAKWATER

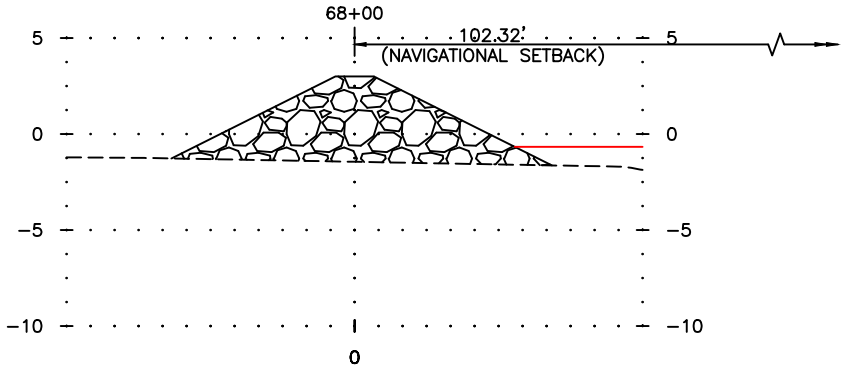
BREAKWATER #10 CROSS SECTIONS

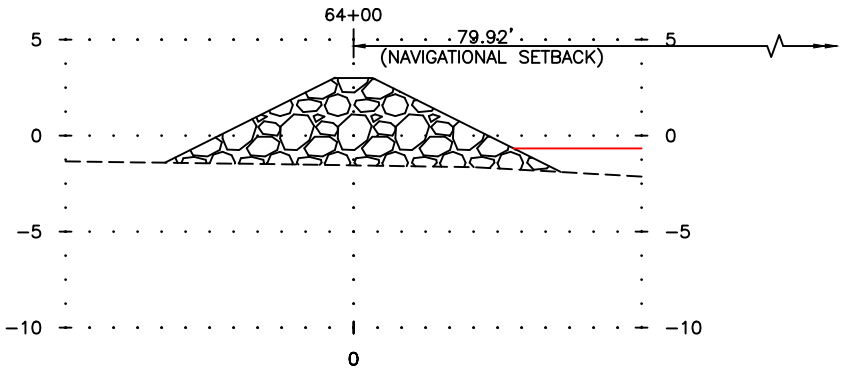
SHEET 75 OF 99

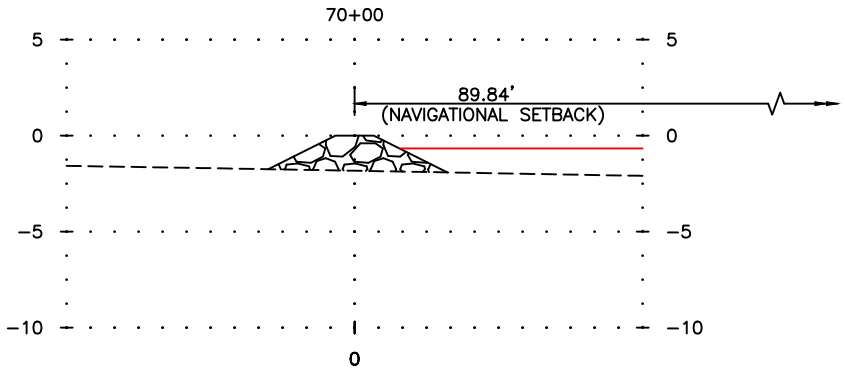












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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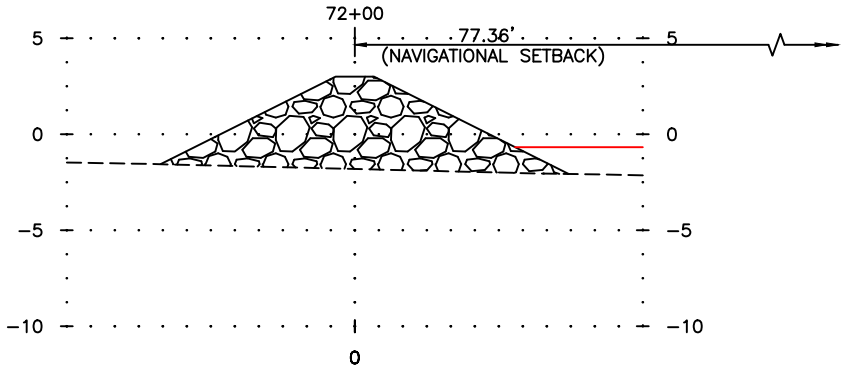
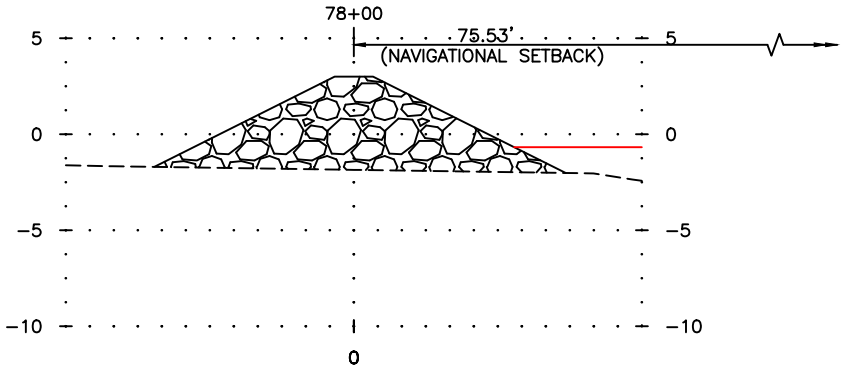
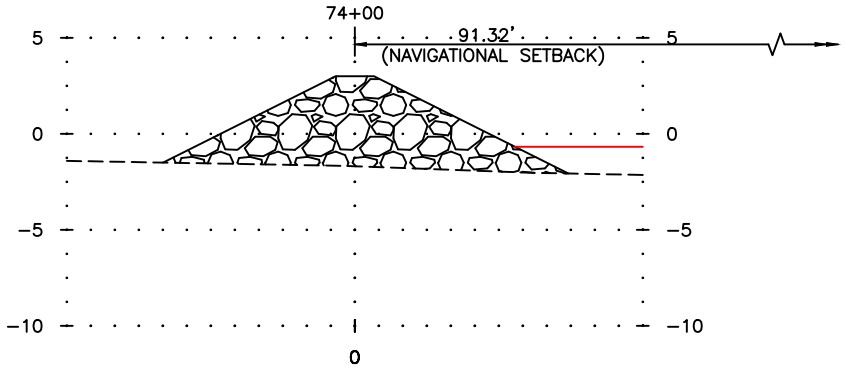
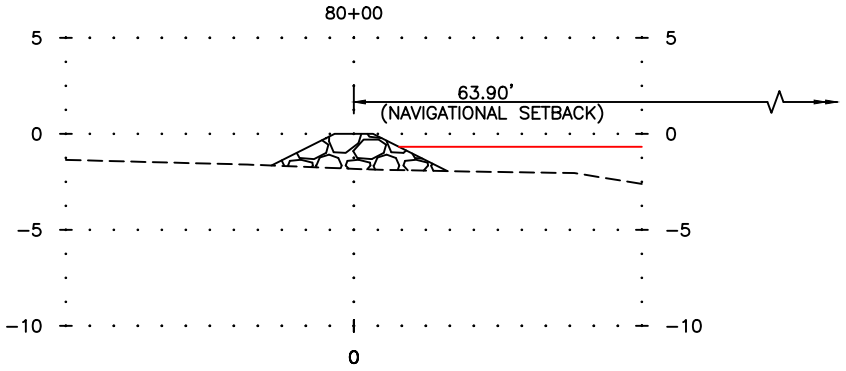
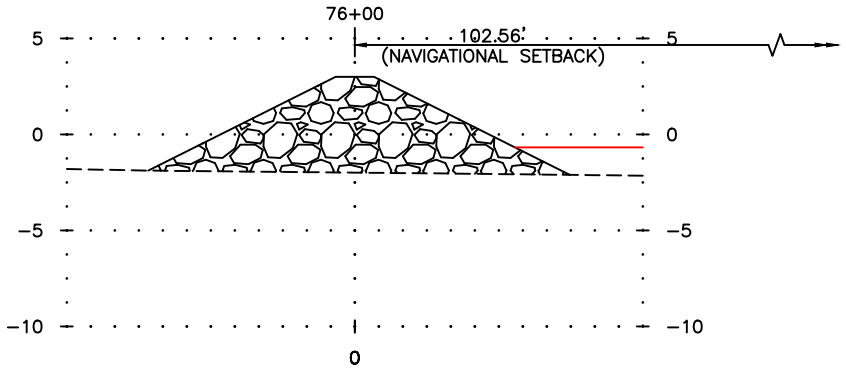
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 76 OF 99

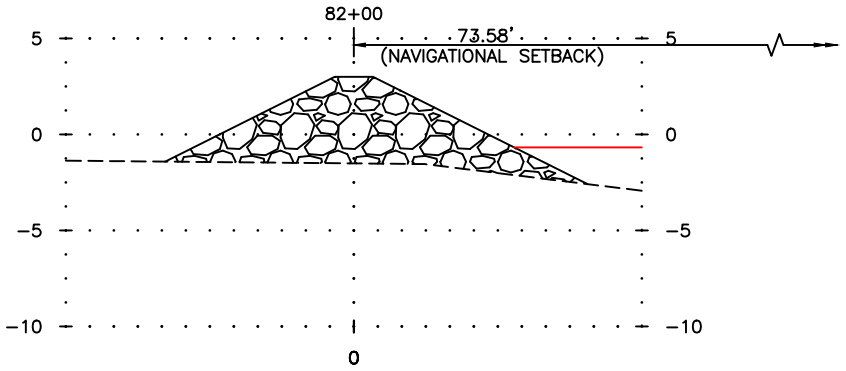












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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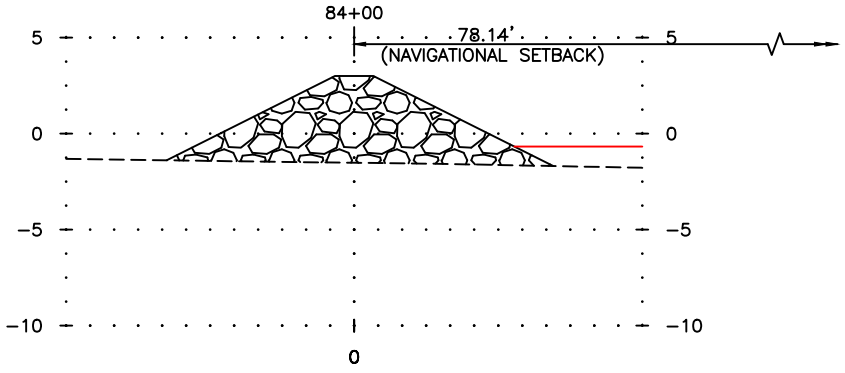
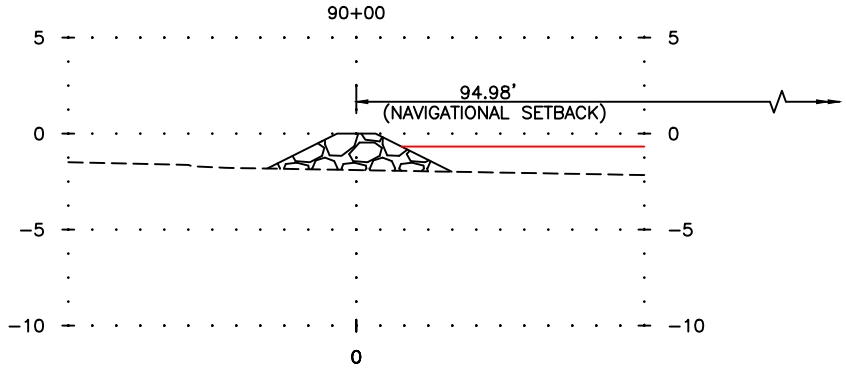
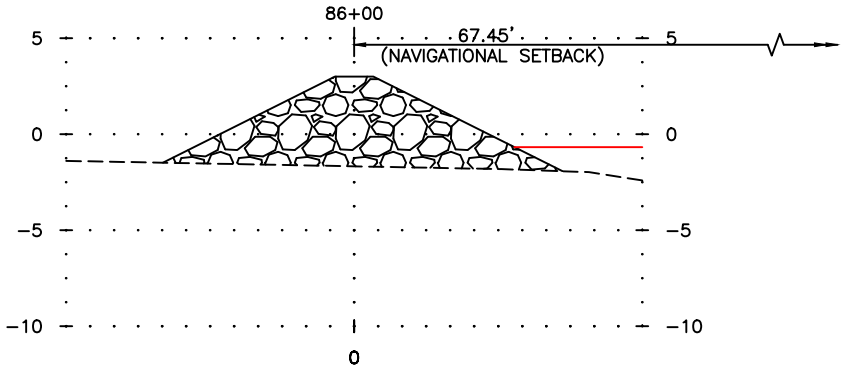
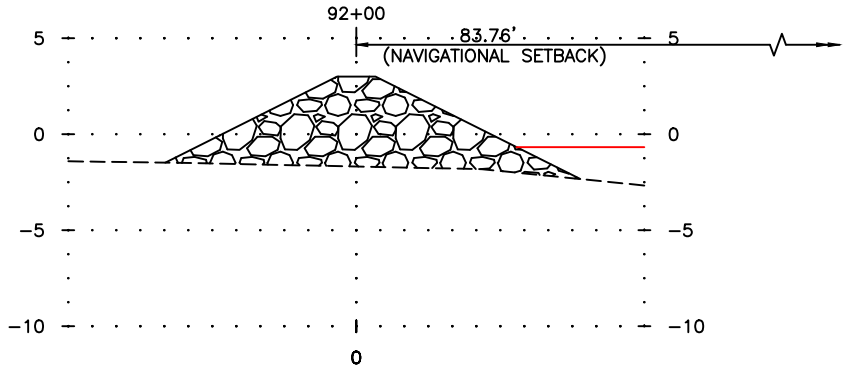
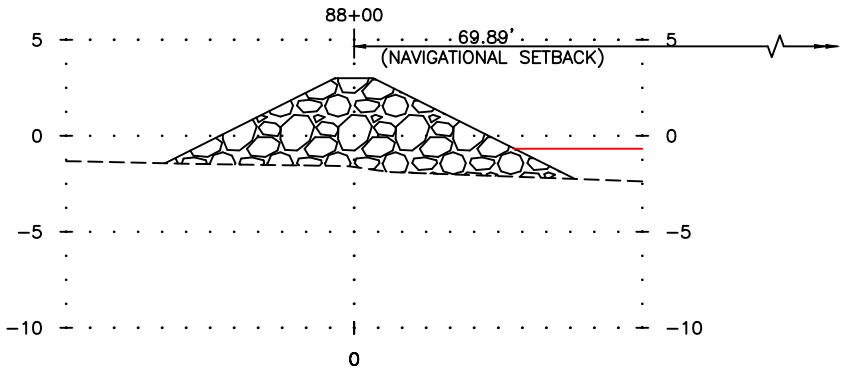
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 77 OF 99

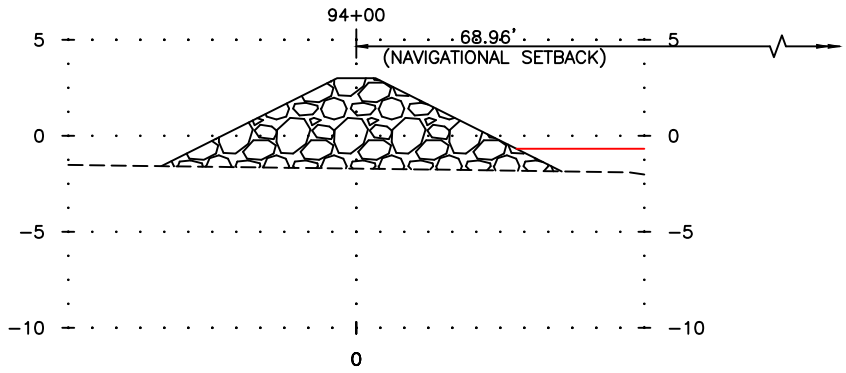












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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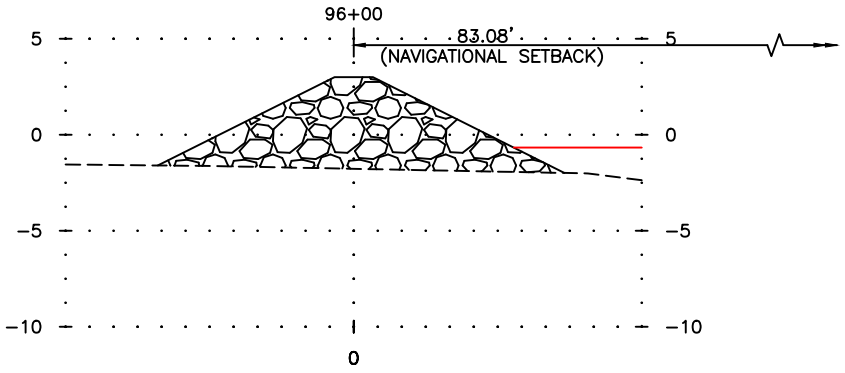
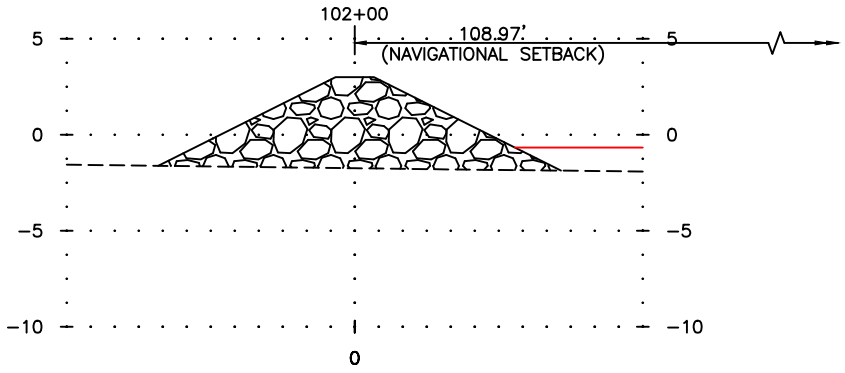
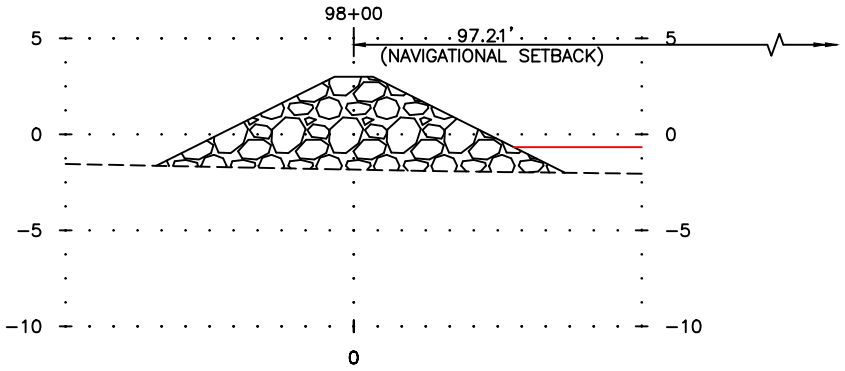
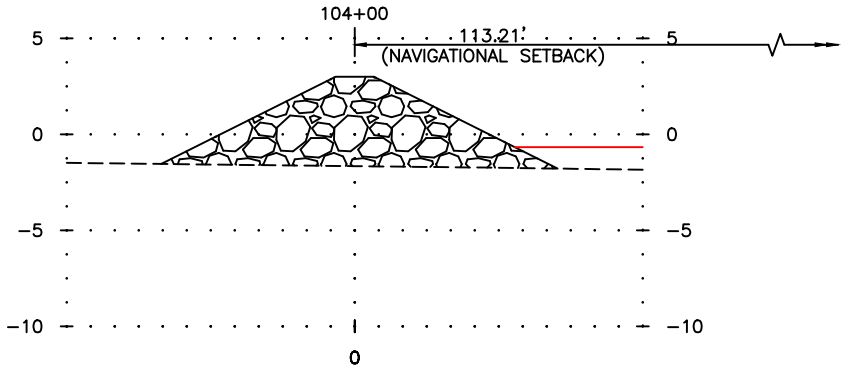
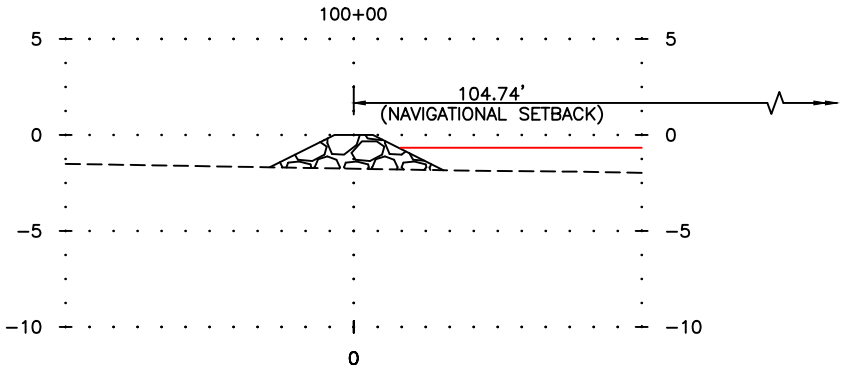
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 78 OF 99

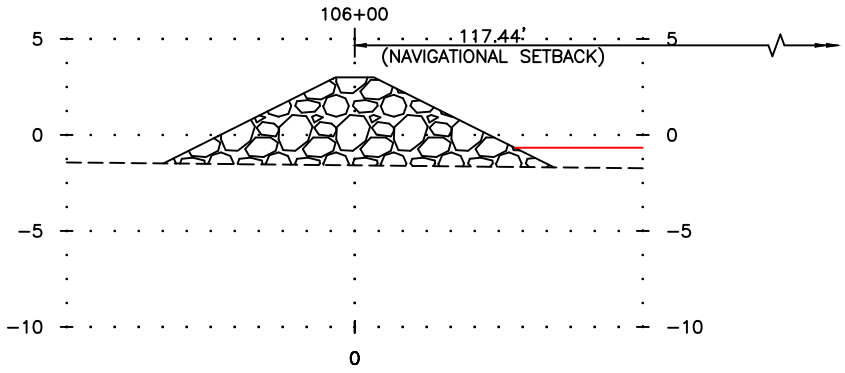












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

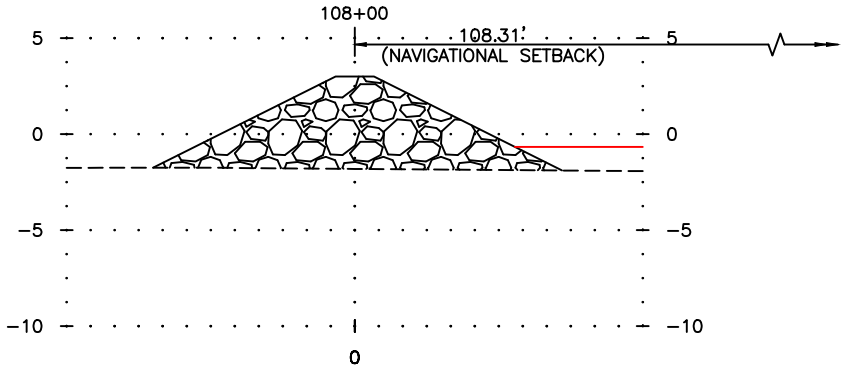
MLLW = −0.67' (NAVD88)

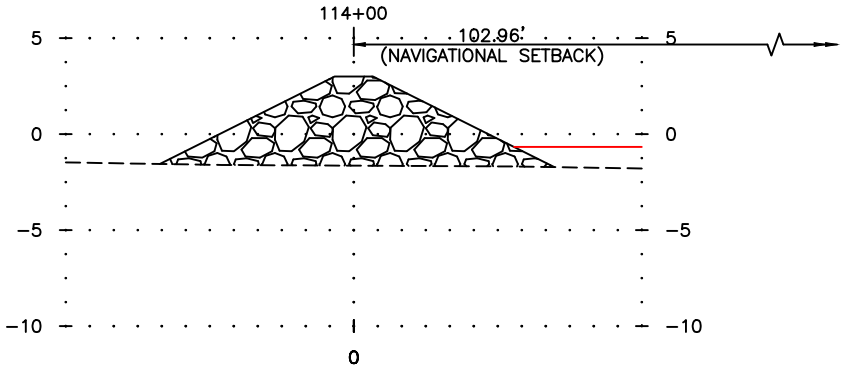
VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

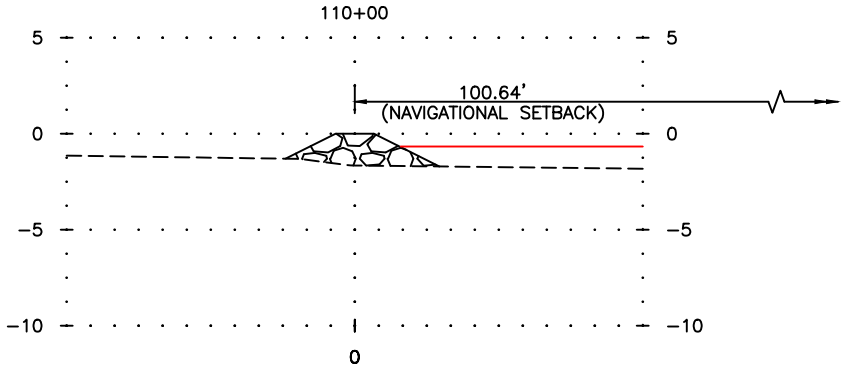
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

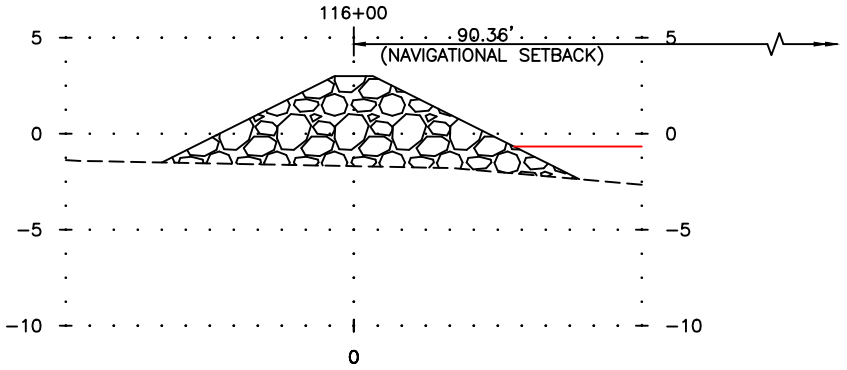
PROJECT NO. DU-TX-36-15

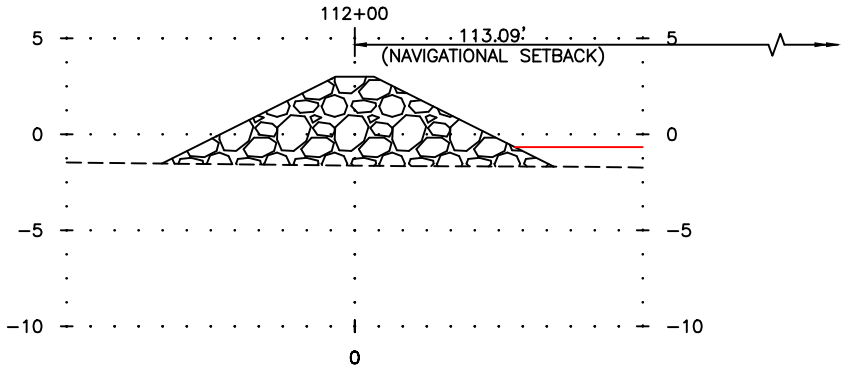
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 79 OF 99

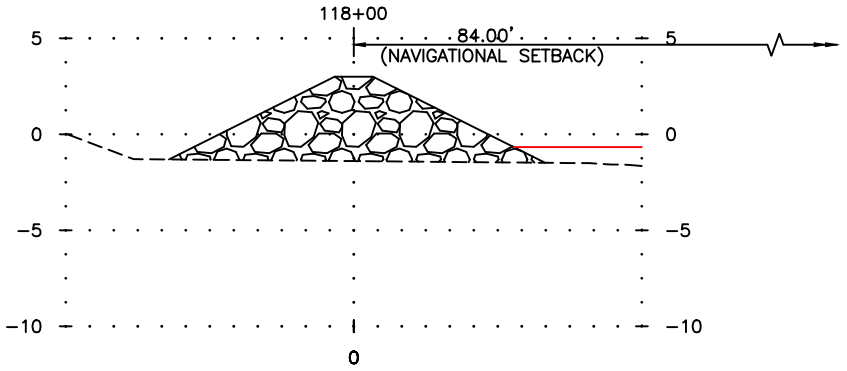












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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HORIZONTAL SCALE: 1" = 10'

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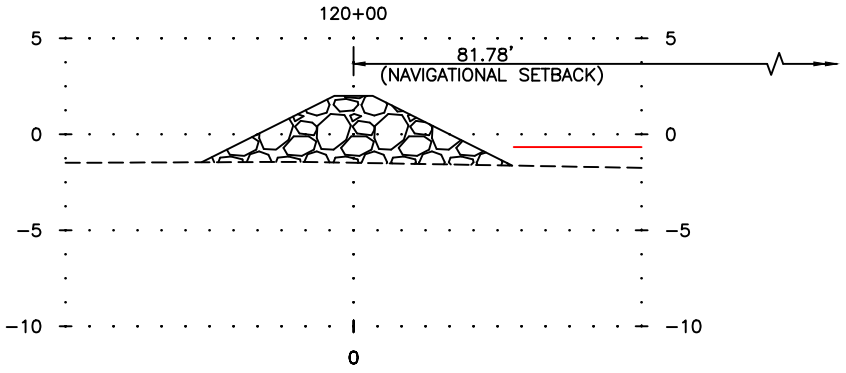
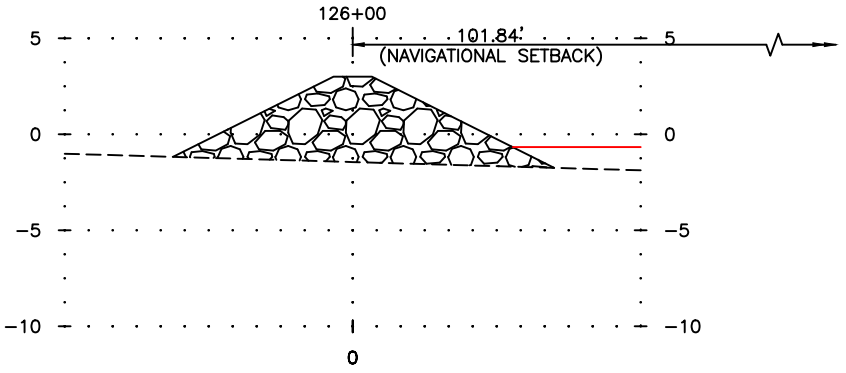
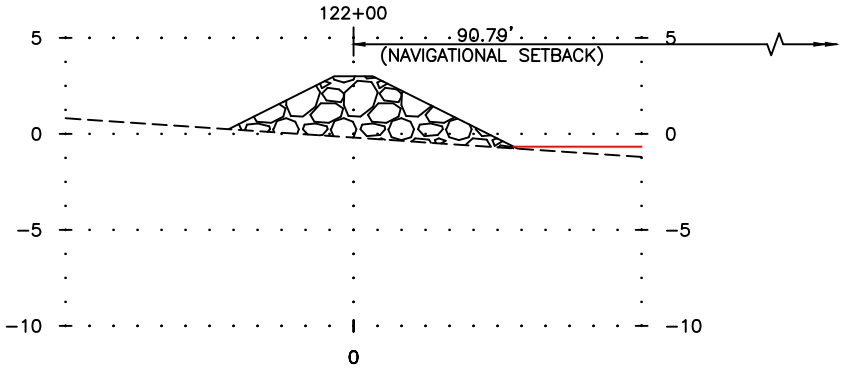
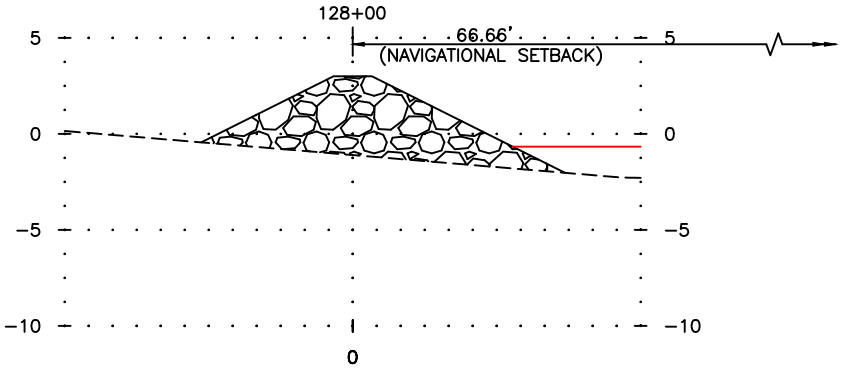
PROJECT NO. DU-TX-36-15

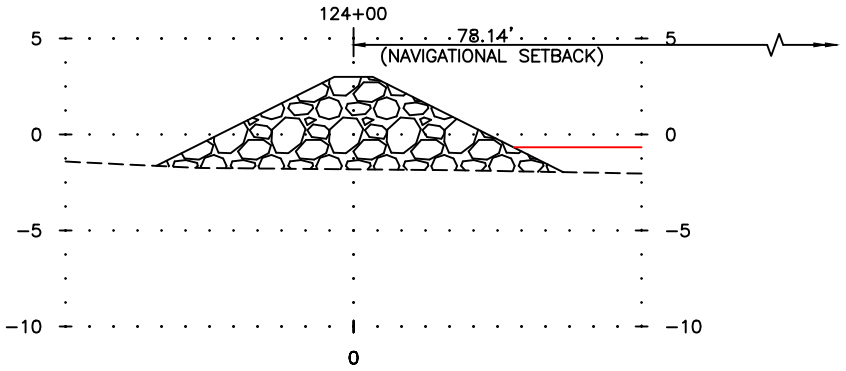
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 80 OF 99

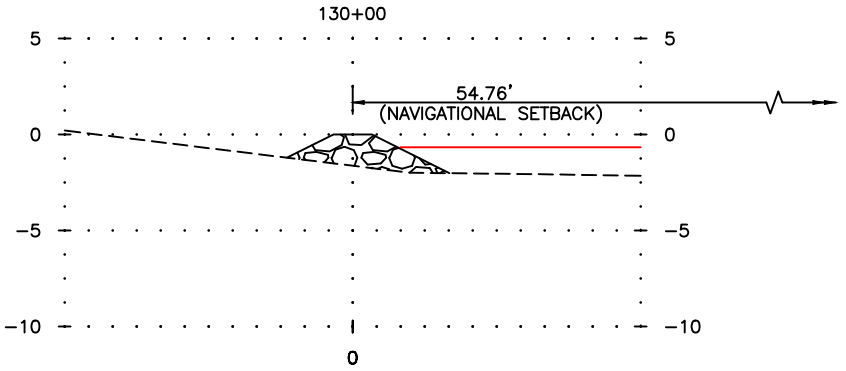












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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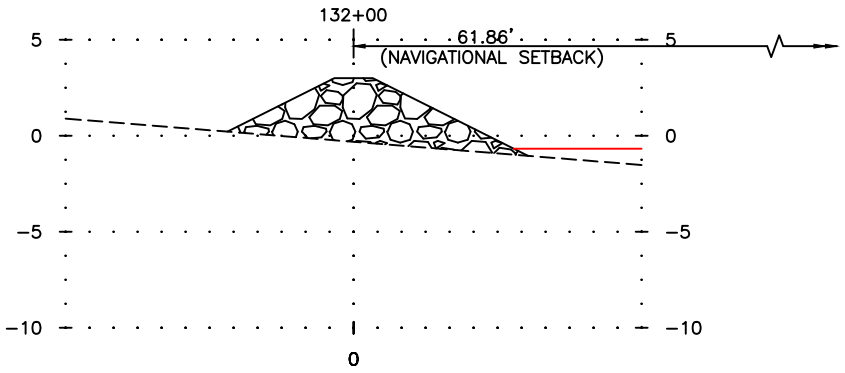
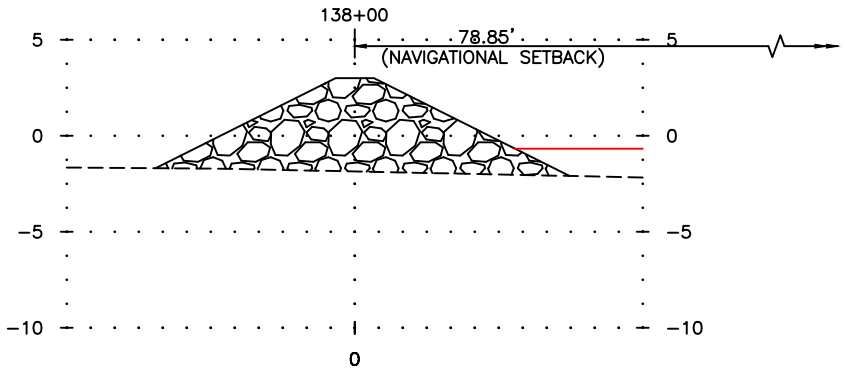
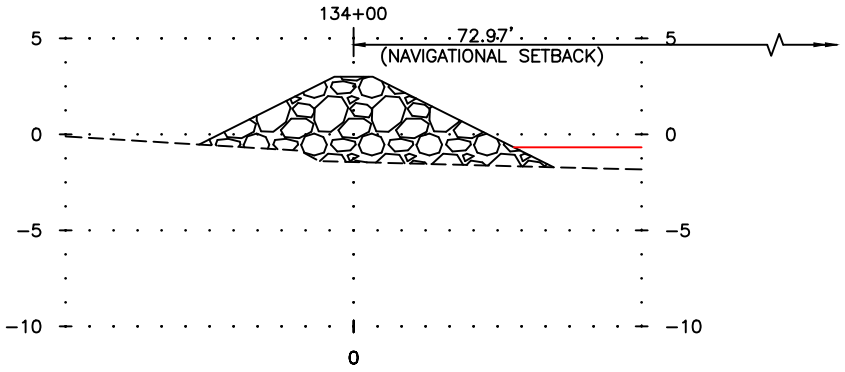
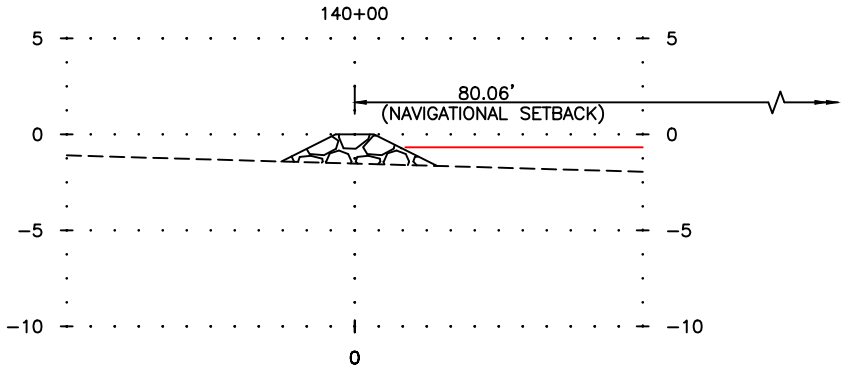
PROJECT NO. DU-TX-36-15

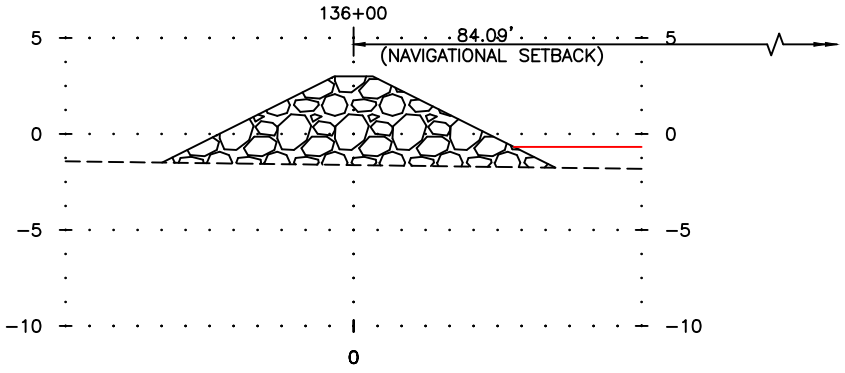
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 81 OF 99

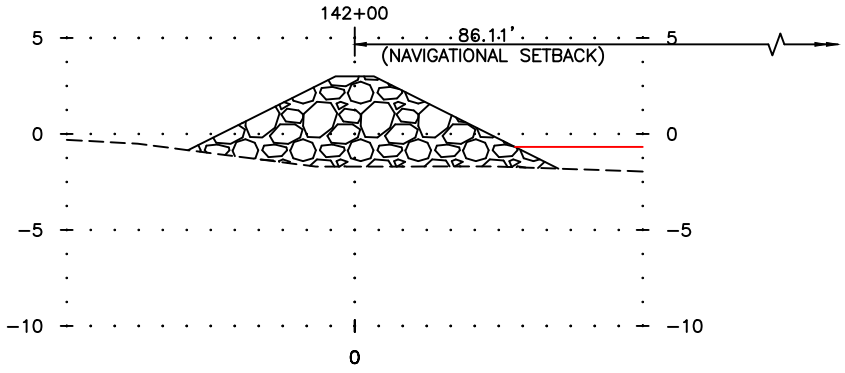












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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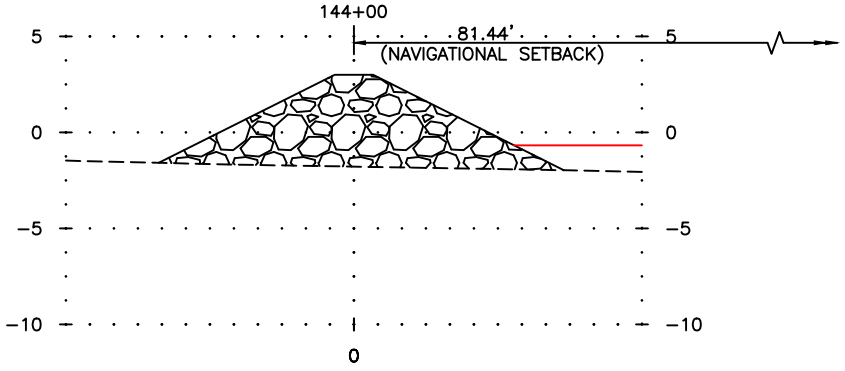
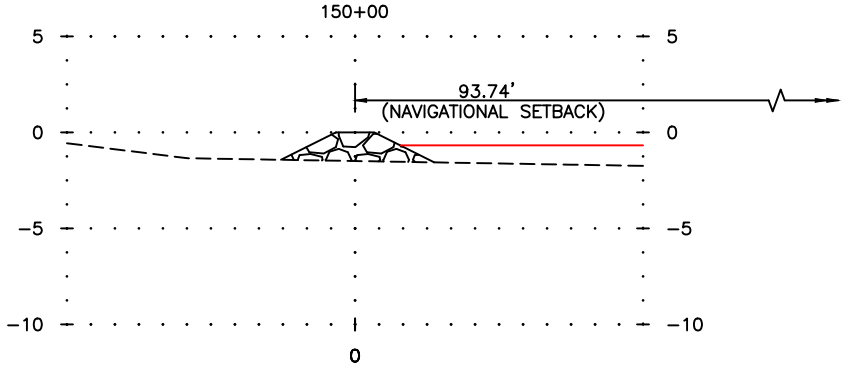
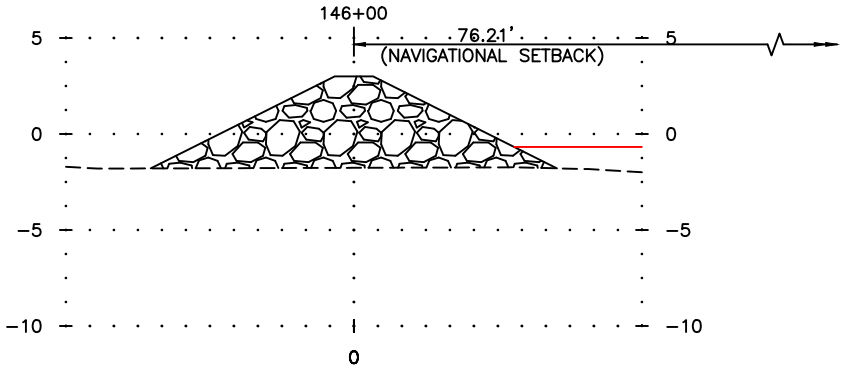
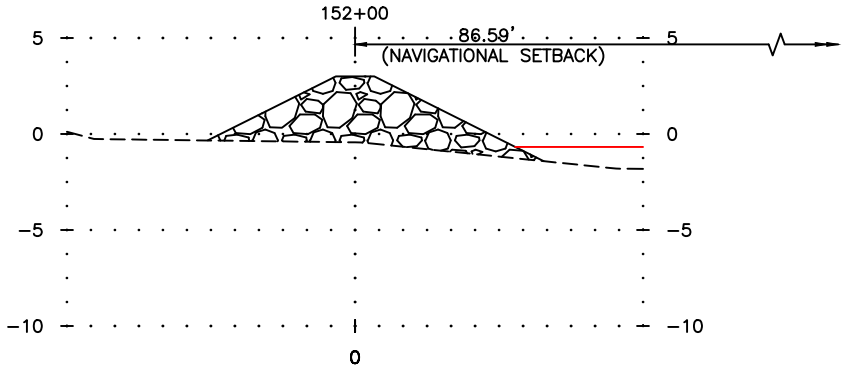
PROJECT NO. DU-TX-36-15

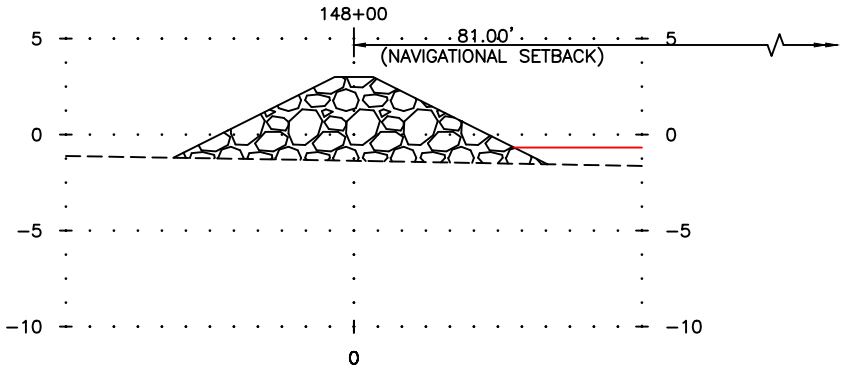
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 82 OF 99

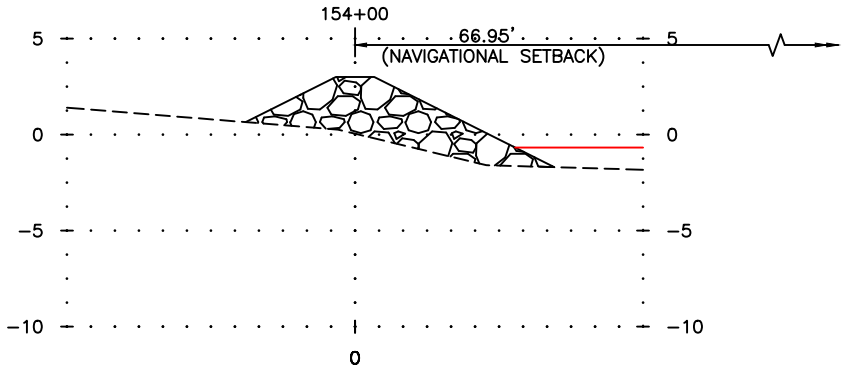












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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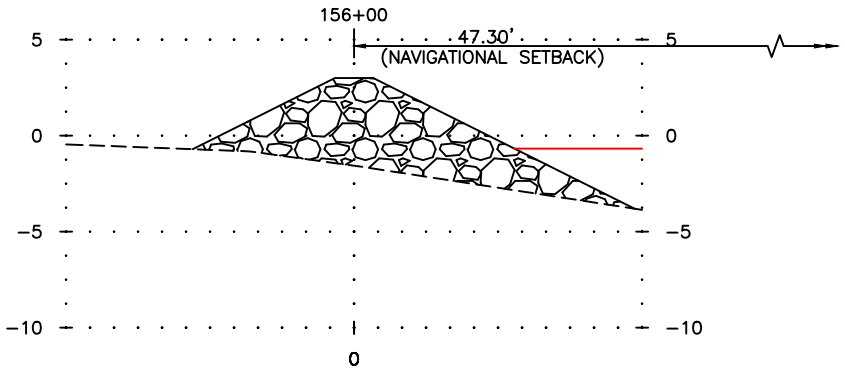
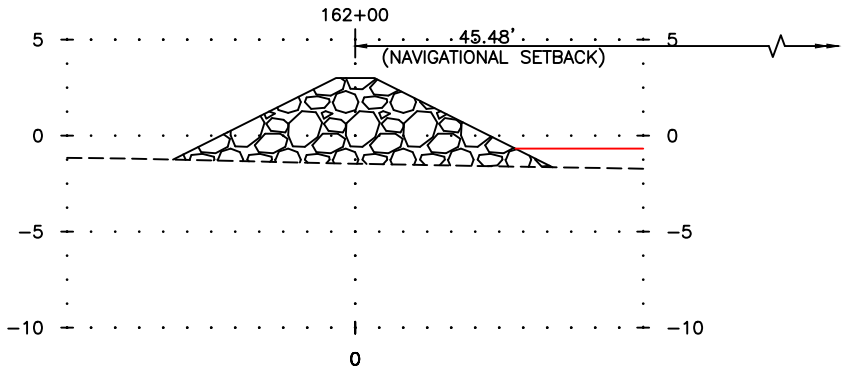
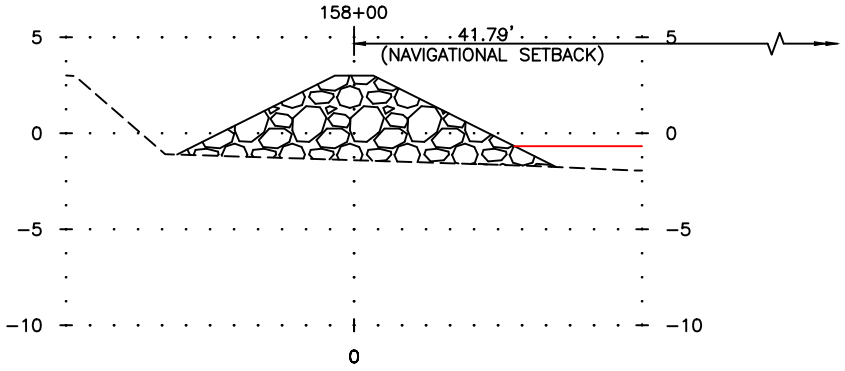
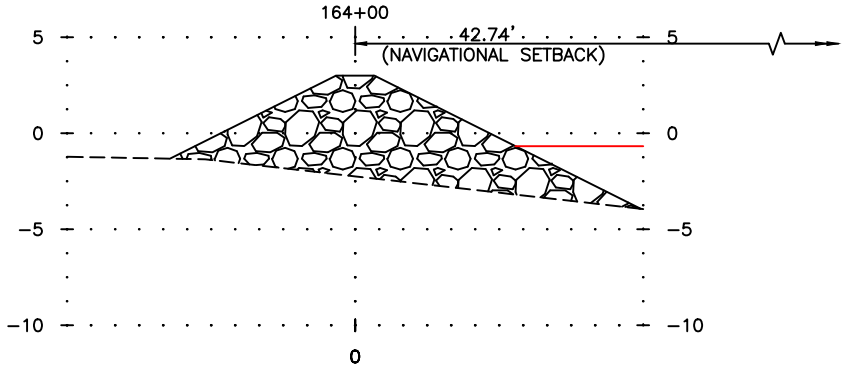
PROJECT NO. DU-TX-36-15

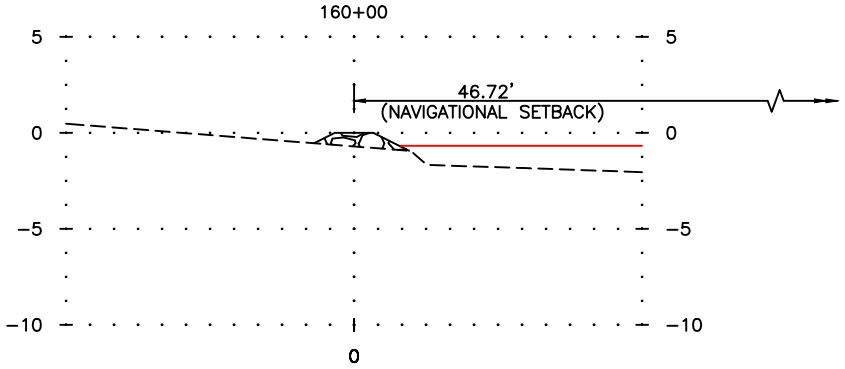
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 83 OF 99

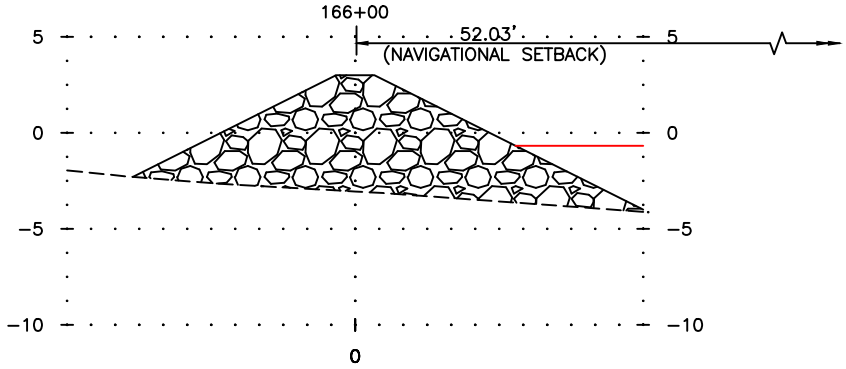












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
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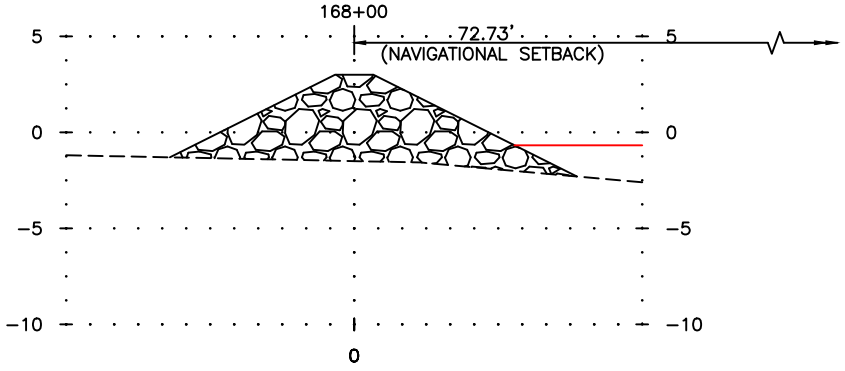
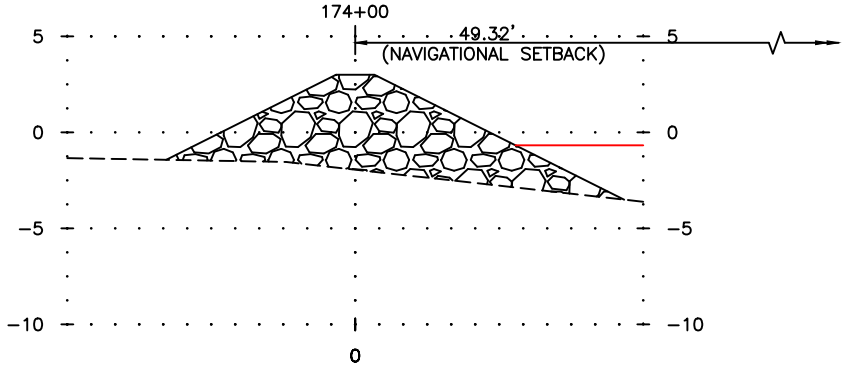
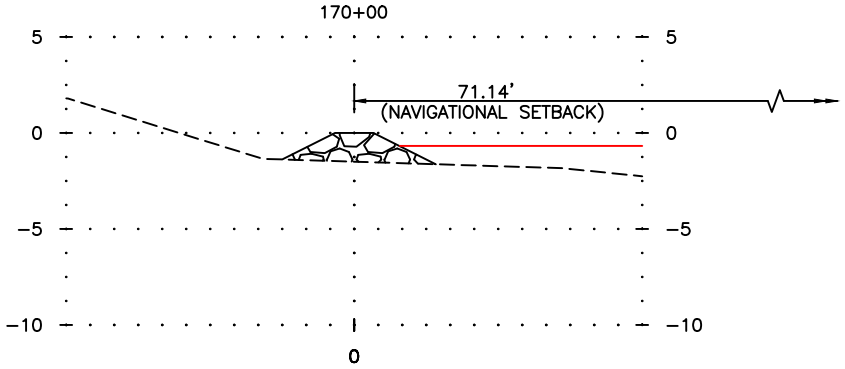
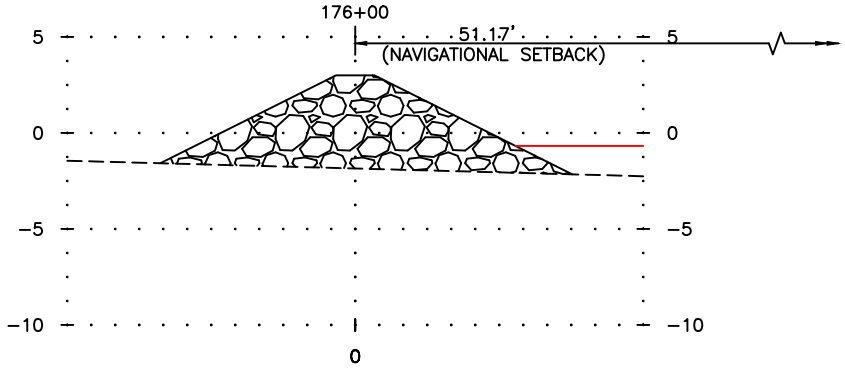
PROJECT NO. DU-TX-36-15

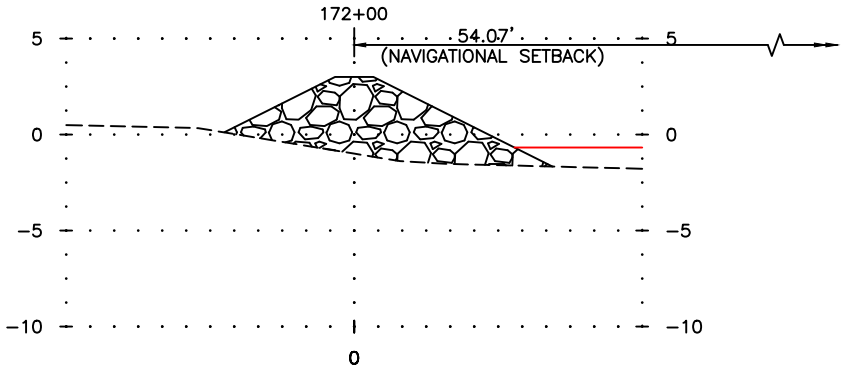
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 84 OF 99

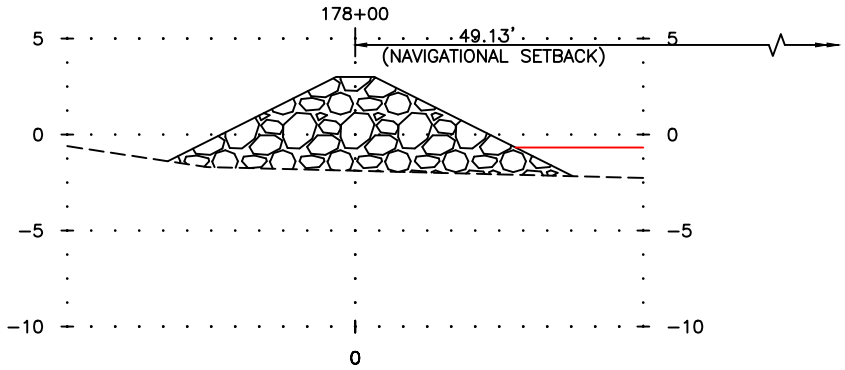












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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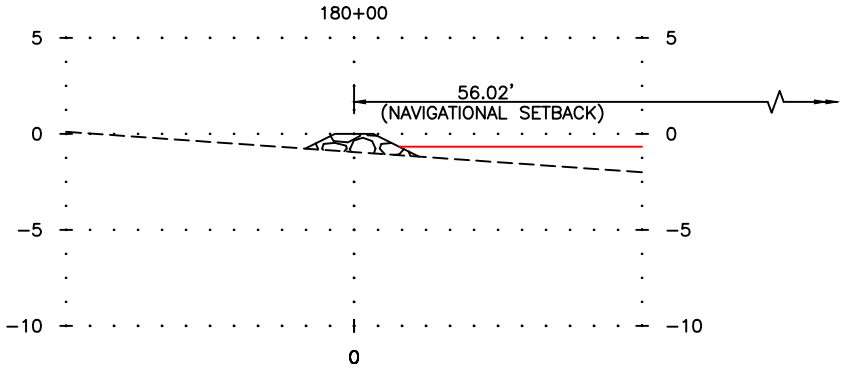
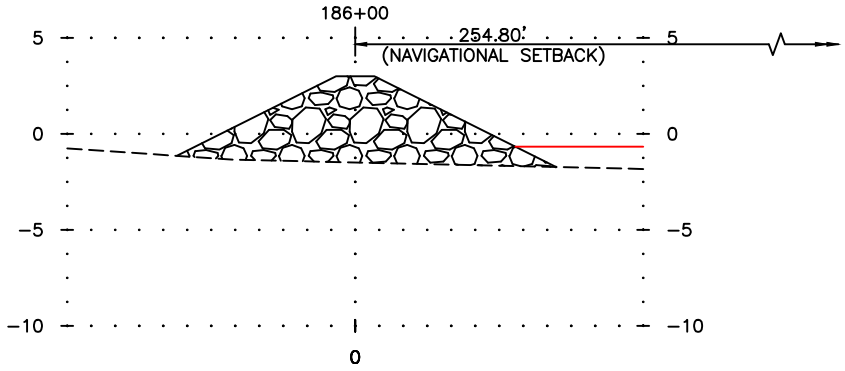
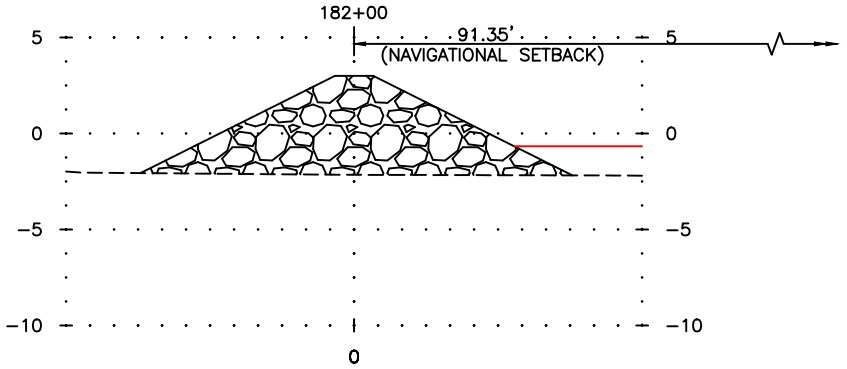
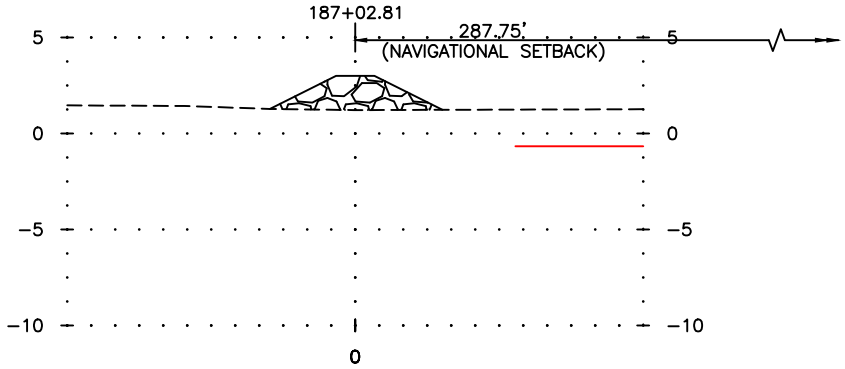
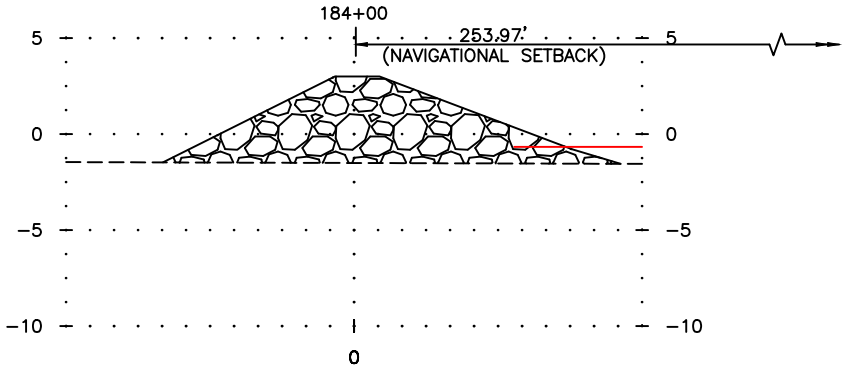
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 85 OF 99











LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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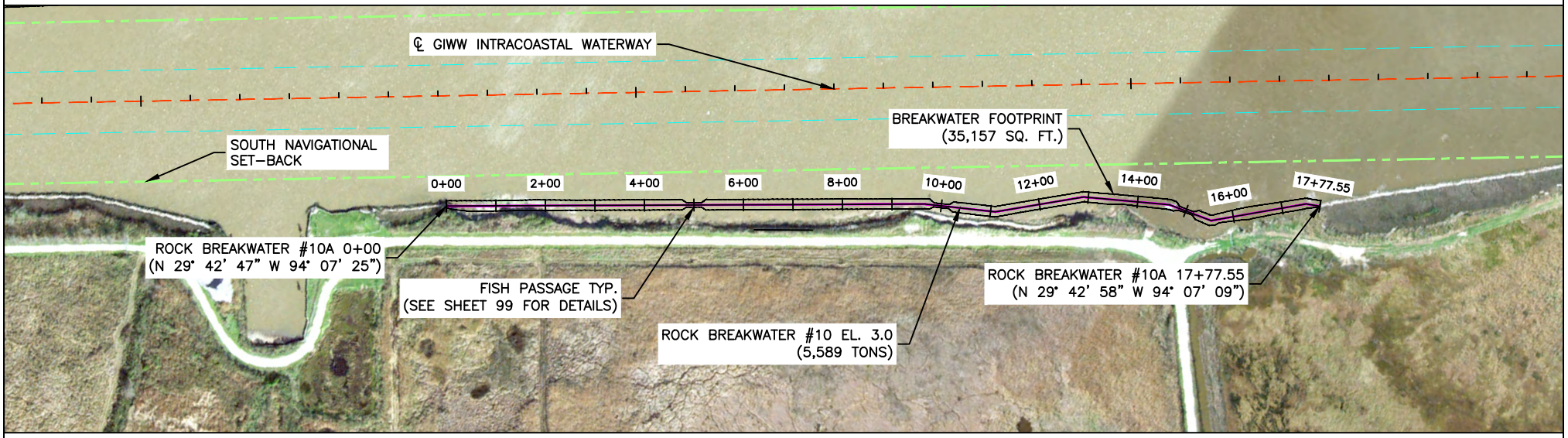
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10 CROSS SECTIONS
SHEET 86 OF 99



ROCK BREAKWATER #10A STA. 0+00 – 17+77.55

SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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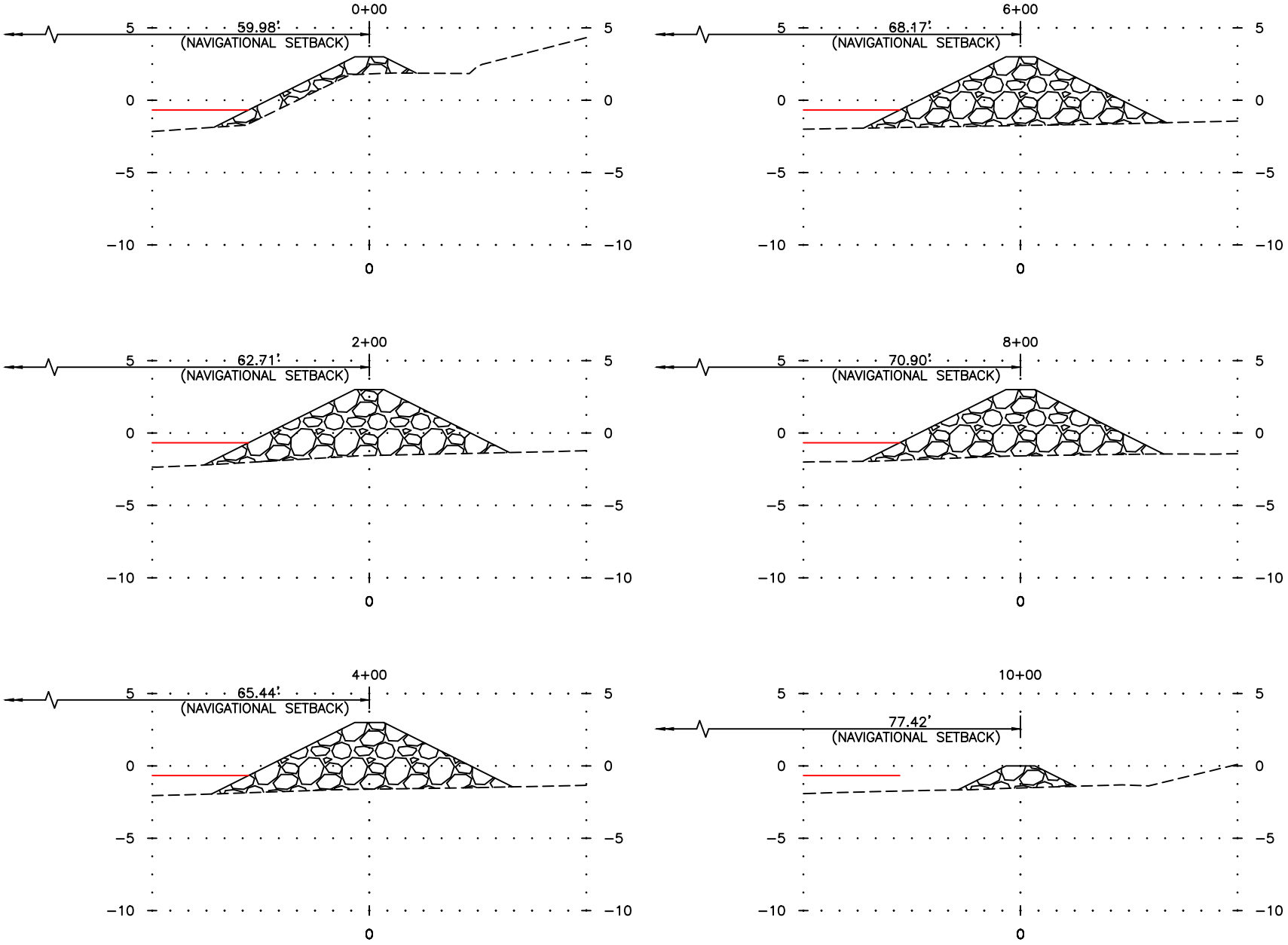
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10A PLAN
SHEET 87 OF 99



LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

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HORIZONTAL SCALE: 1" = 10'

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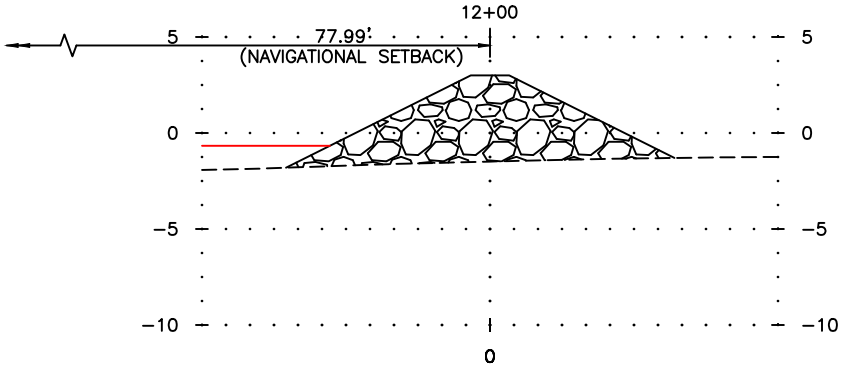
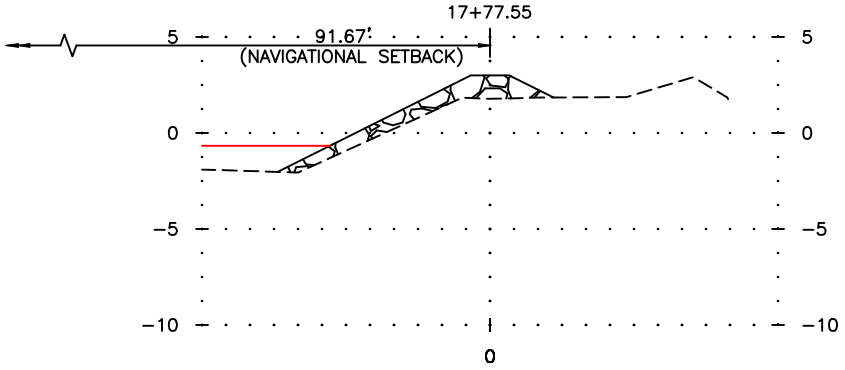
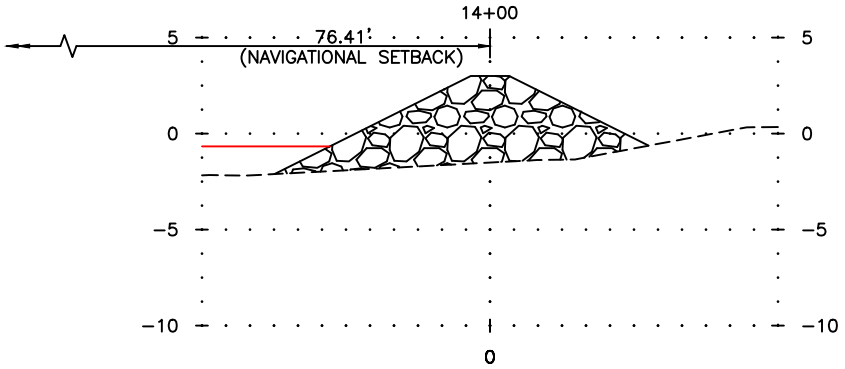
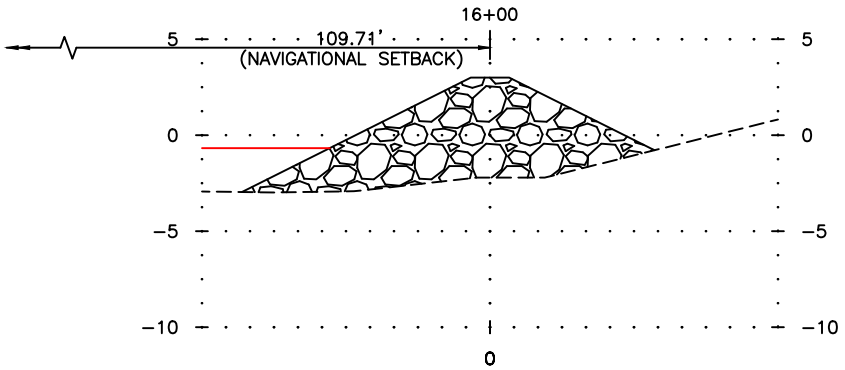
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10A CROSS SECTIONS
SHEET 88 OF 99









LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

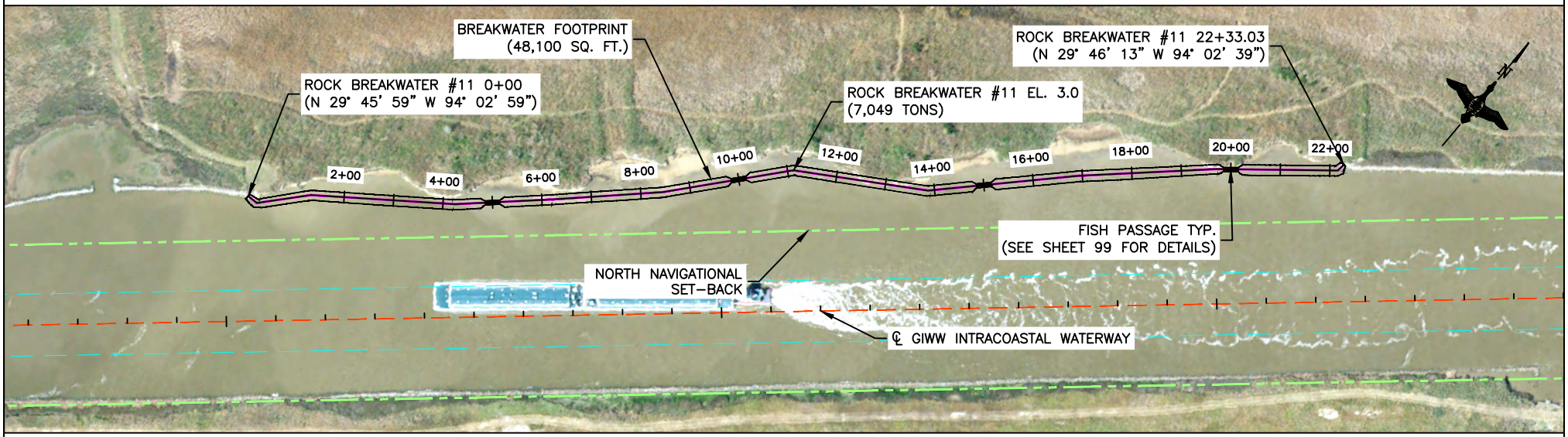
MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #10A CROSS SECTIONS
SHEET 89 OF 99



ROCK BREAKWATER #11 STA. 0+00 – 22+33.03

"AUTHORIZED UNDER SWG-2020-00644 LOP"

SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:

℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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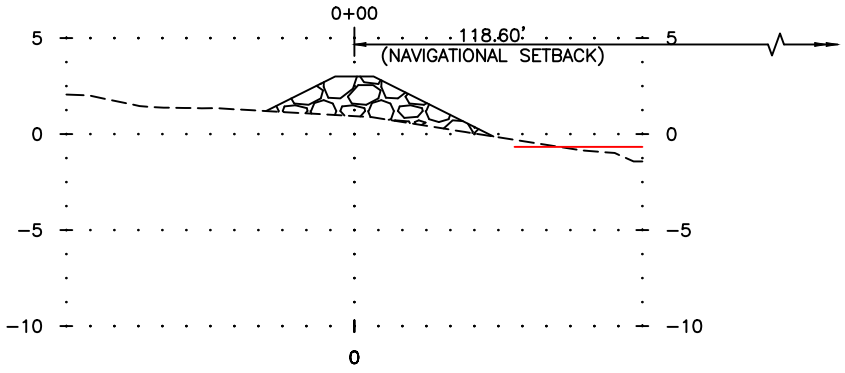
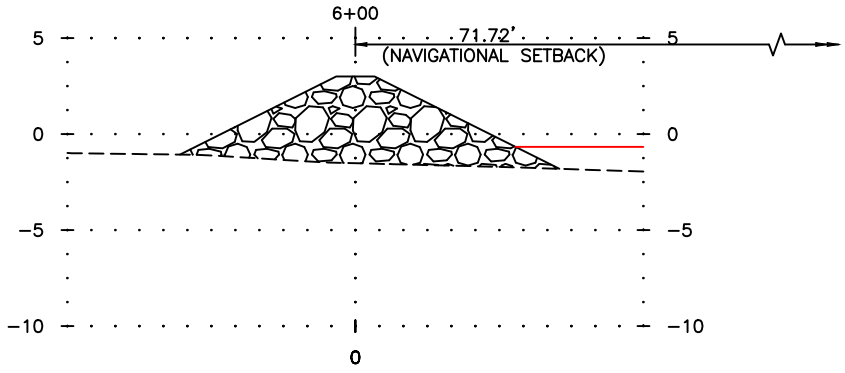
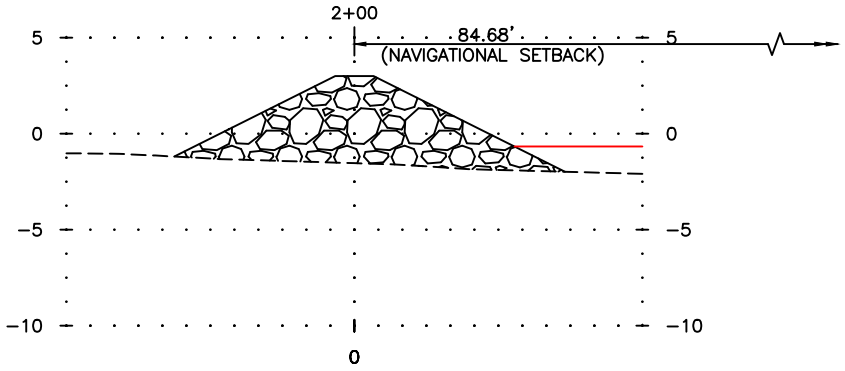
McFADDIN NWR GIWW ROCK BREAKWATER

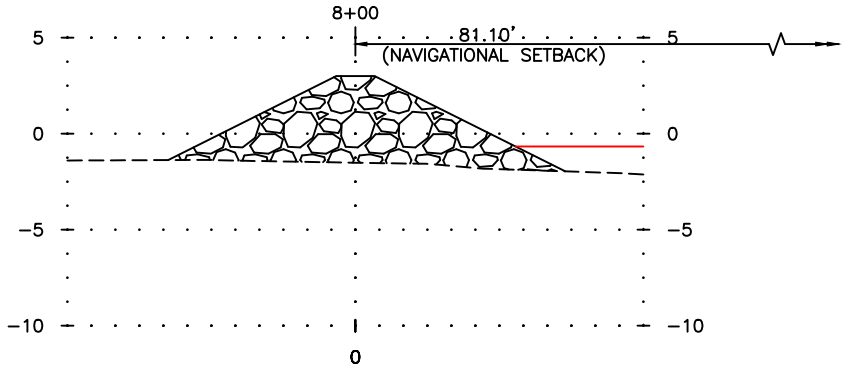
BREAKWATER #11 PLAN

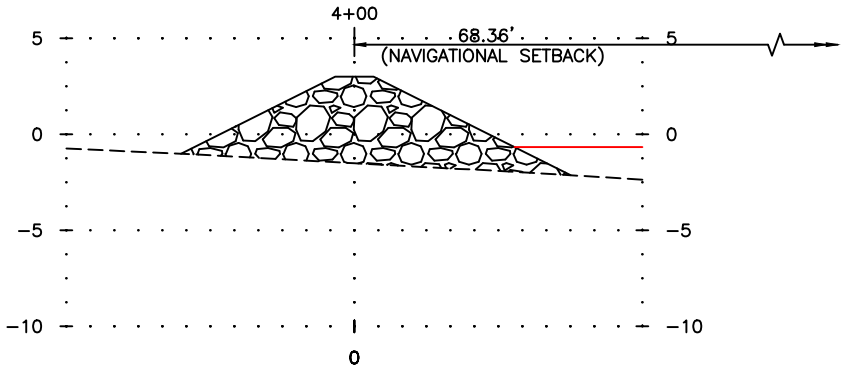
SHEET 90 OF 99

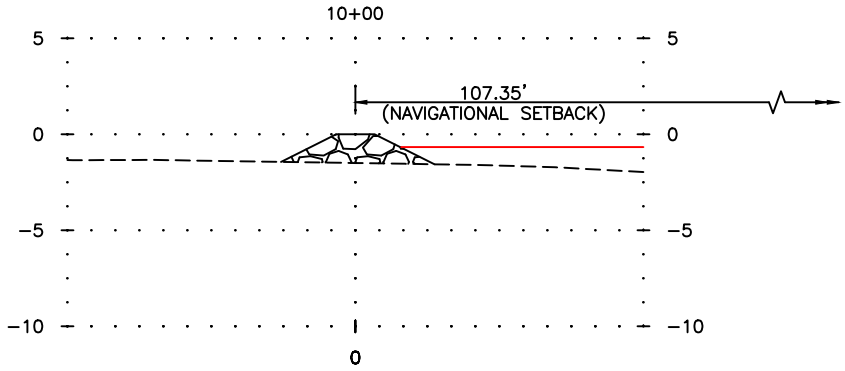












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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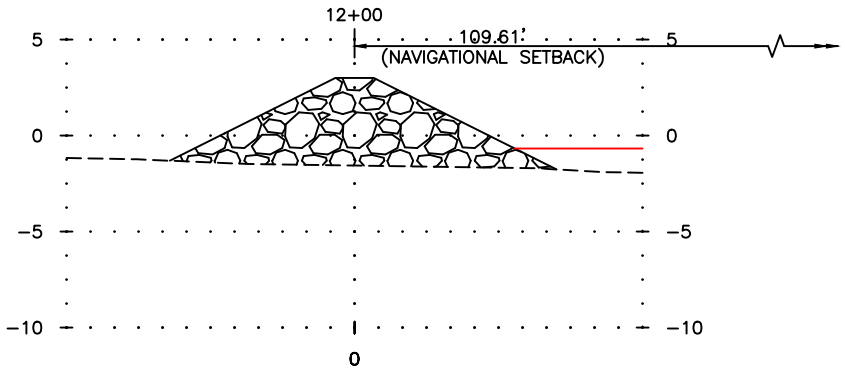
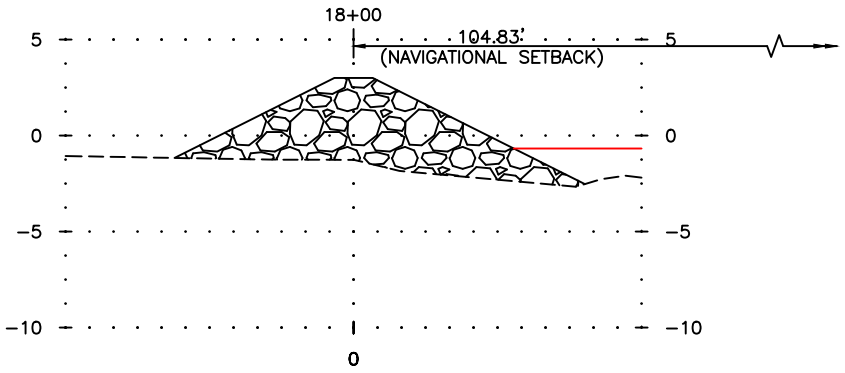
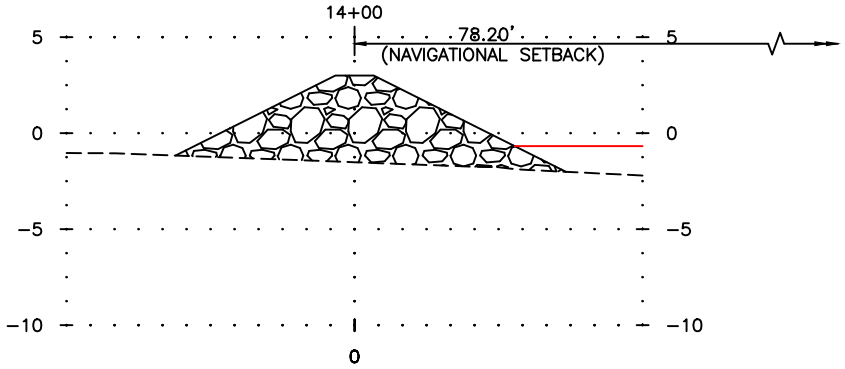
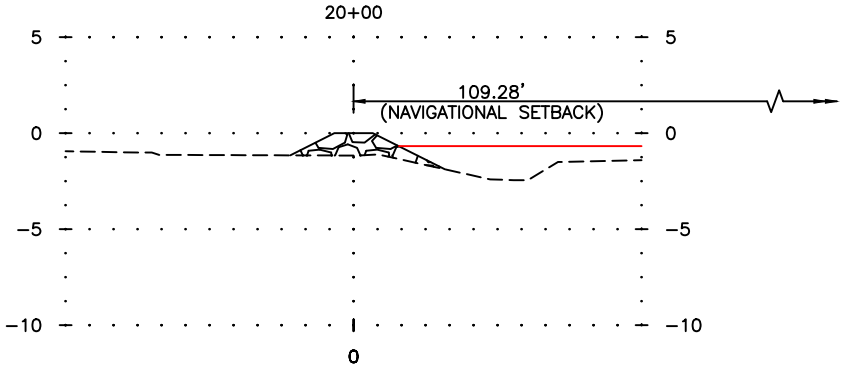
PROJECT NO. DU-TX-36-15

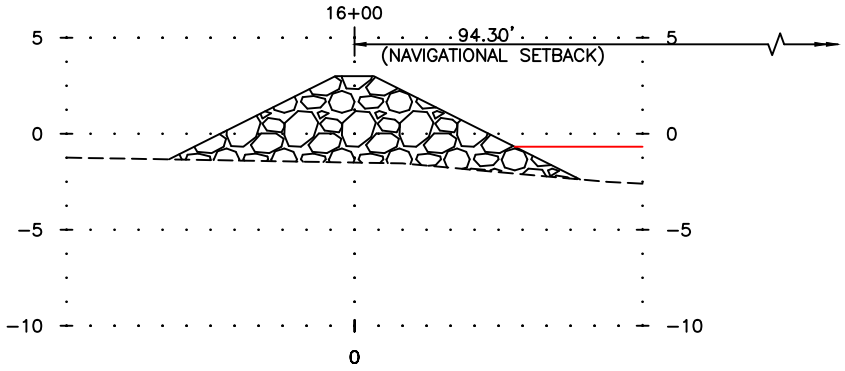
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #11 CROSS SECTIONS
SHEET 91 OF 99

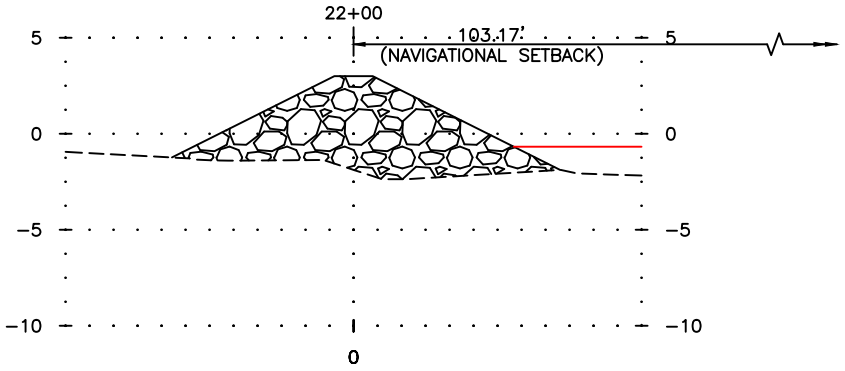












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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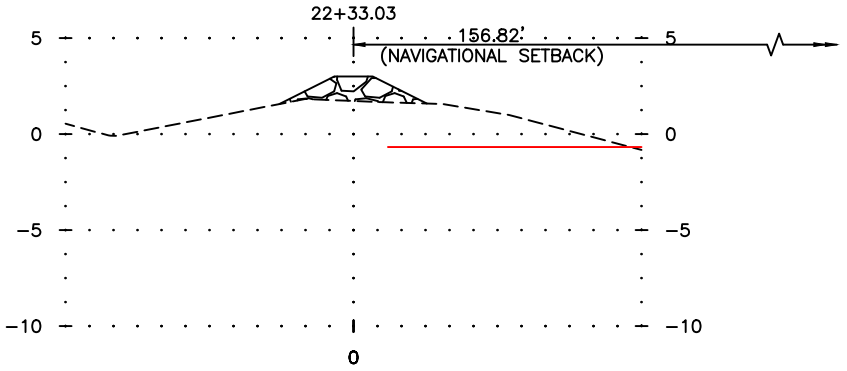
PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #11 CROSS SECTIONS
SHEET 92 OF 99



LEGEND

- - - - - - - EXISTING GROUND

——————— PROPOSED ROCK RIPRAP

——————— MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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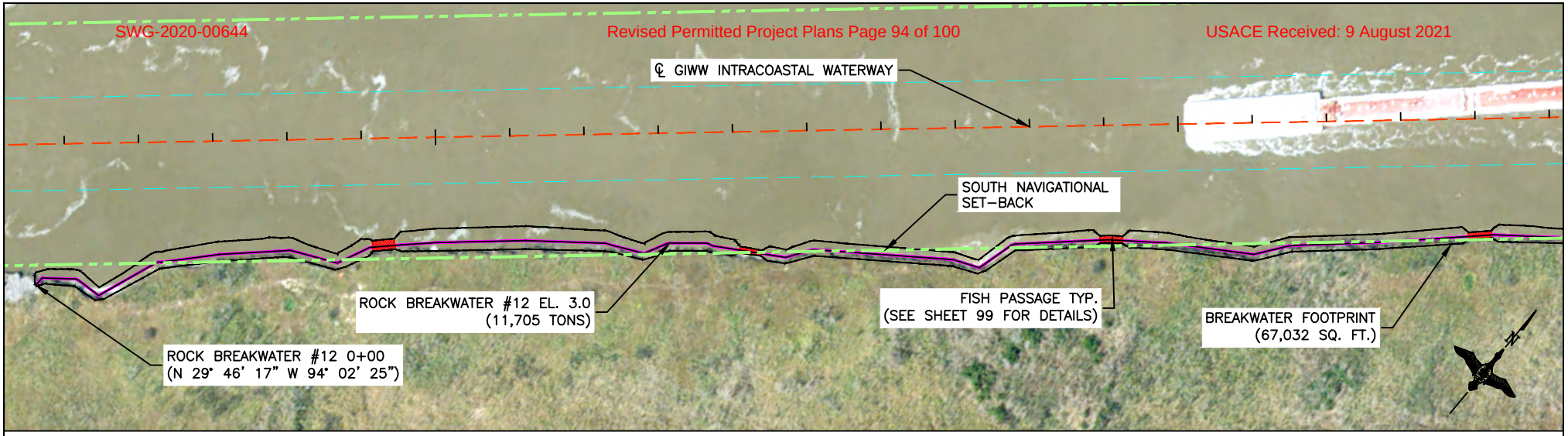
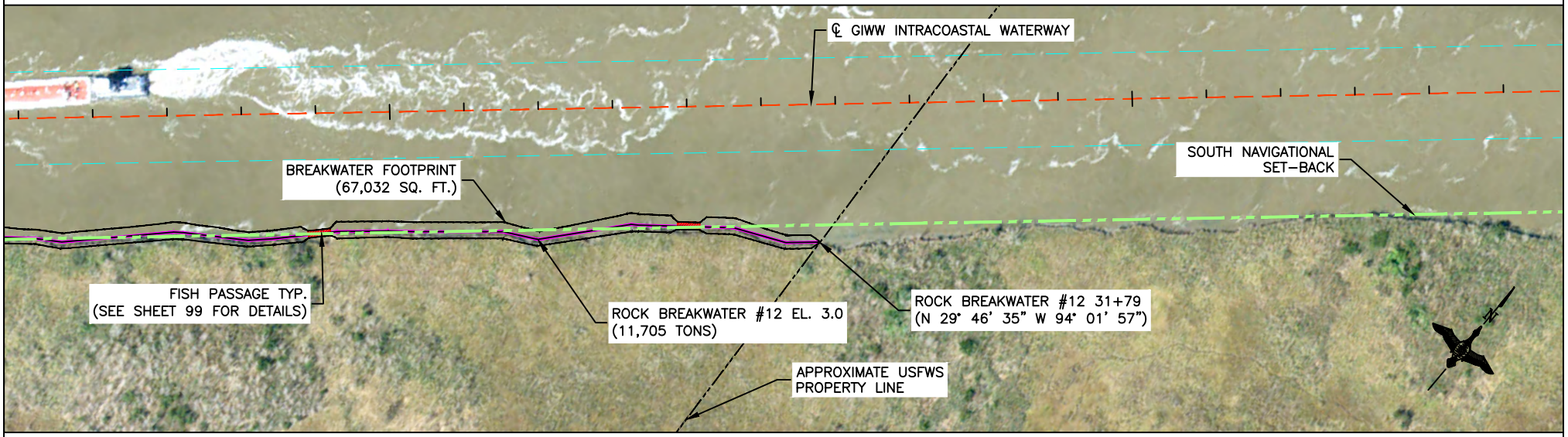
McFADDIN NWR GIWW
ROCK BREAKWATER
BREAKWATER #11 CROSS SECTIONS
SHEET 93 OF 99



ROCK BREAKWATER #12 STA. 0+00 – 20+50

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #12 STA. 20+50 – 31+79

"AUTHORIZED UNDER SWG–2020–00644 LOP"
SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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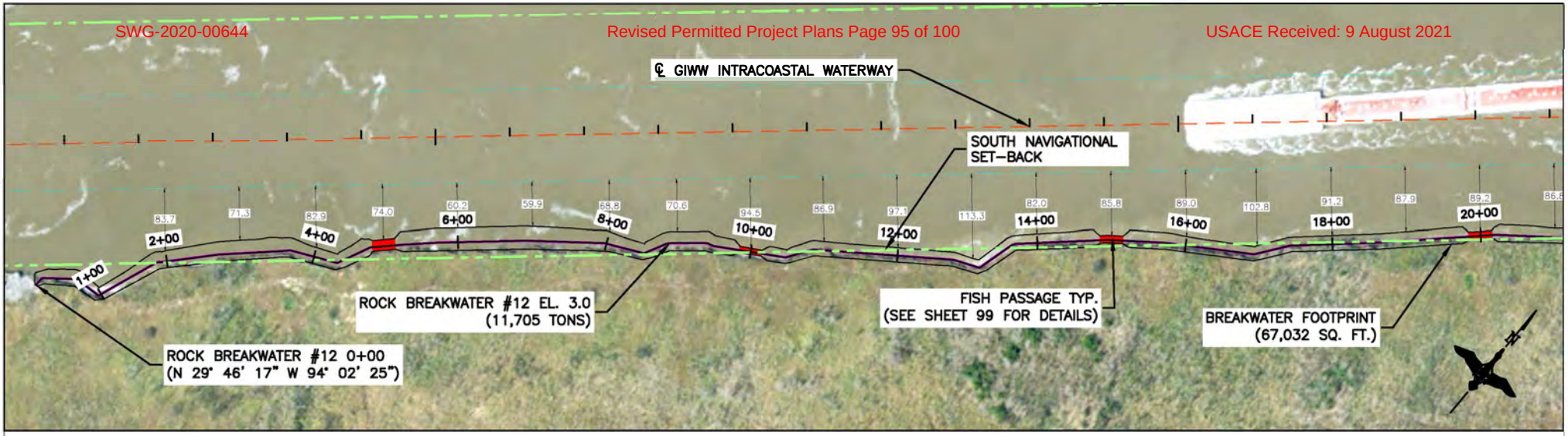
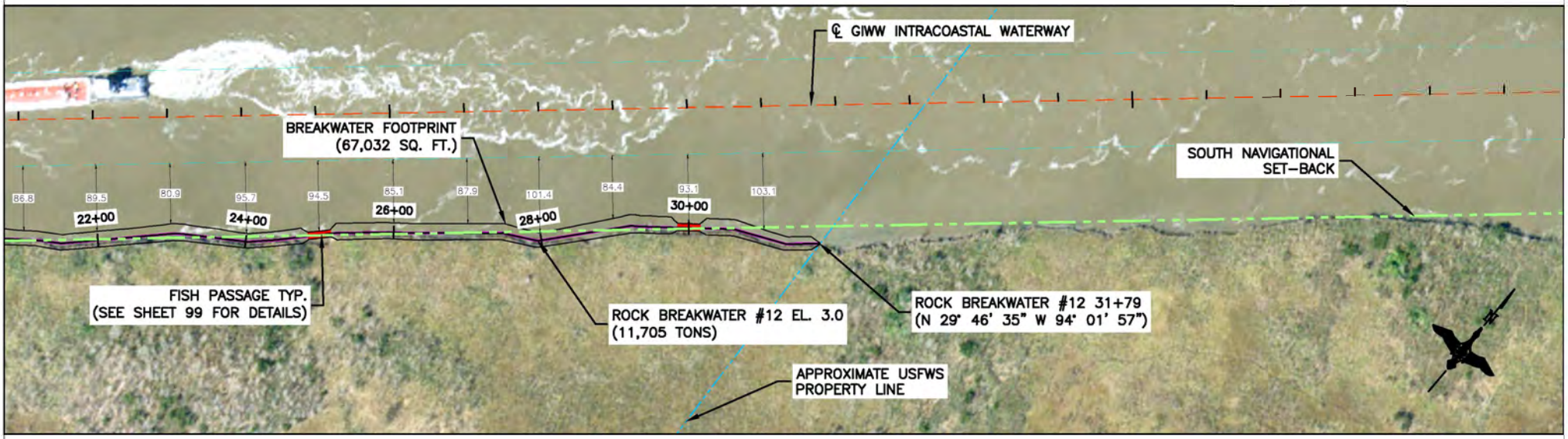
PROJECT NO. DU–TX–36–15

McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #12 PLAN
SHEET 94 OF 99



ROCK BREAKWATER #12 STA. 0+00 – 20+50

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 200'



ROCK BREAKWATER #12 STA. 20+50 – 31+79

"AUTHORIZED UNDER SWG-2020-00644 LOP"
SCALE: 1" = 300'

LEGEND

- PROPOSED BREAKWATER CENTERLINE
- GIWW NAVIGATIONAL SETBACK
- GIWW CHANNEL TOE
- GIWW CENTERLINE

NOTE:
℄ GIWW COORDINATES AT STATION PROVIDED BY CLIFFORD DOMINEY, USACOE PROJECT ENGINEER

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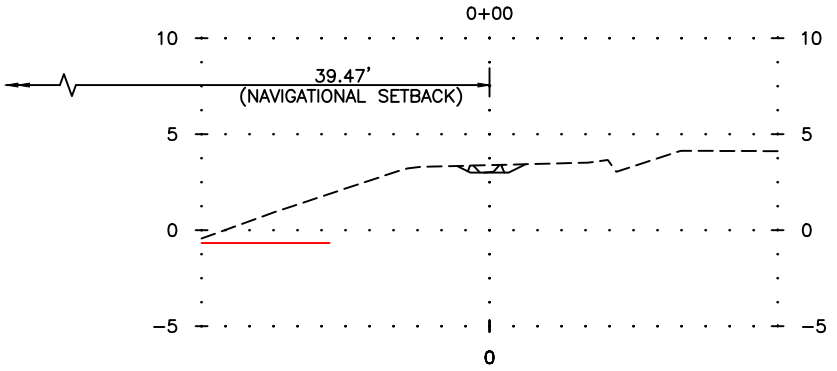
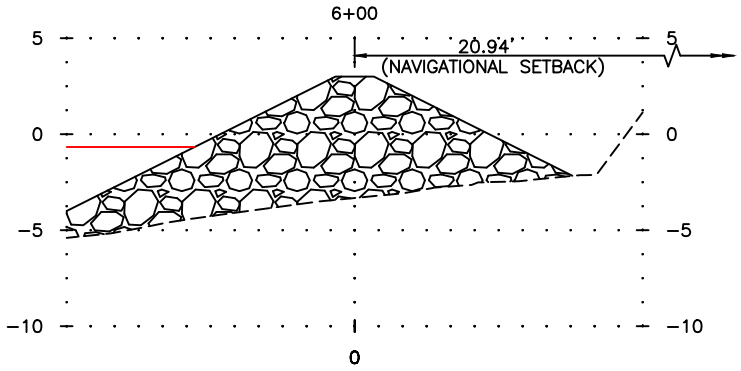
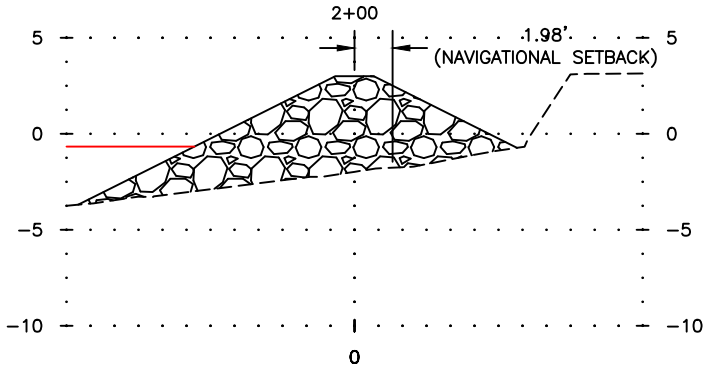
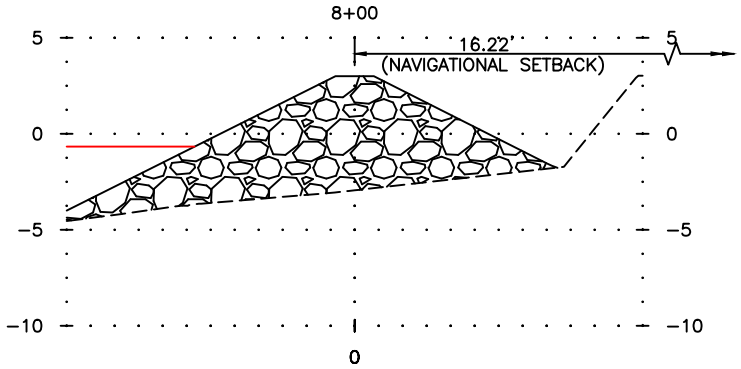
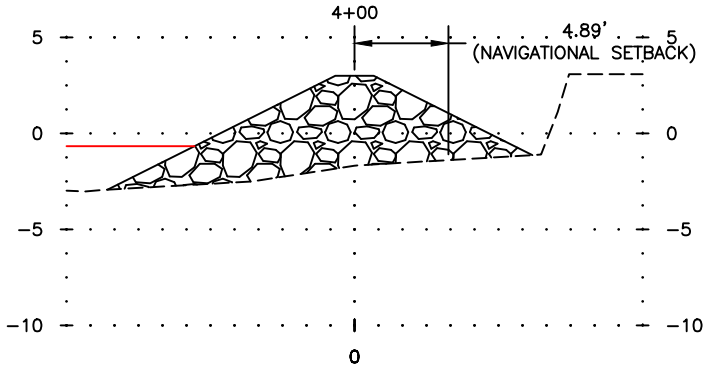
PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
BREAKWATER #12 PLAN
SHEET 94A OF 99

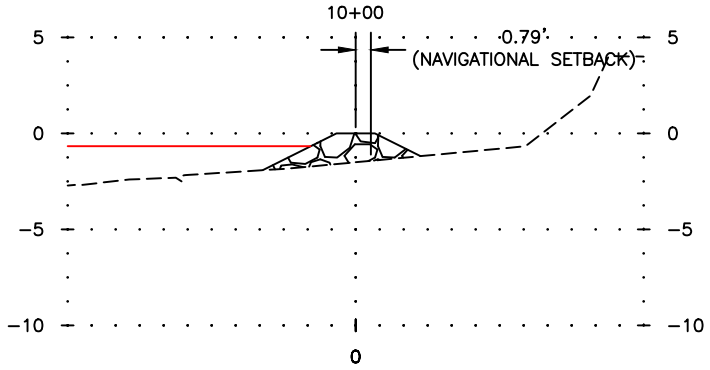












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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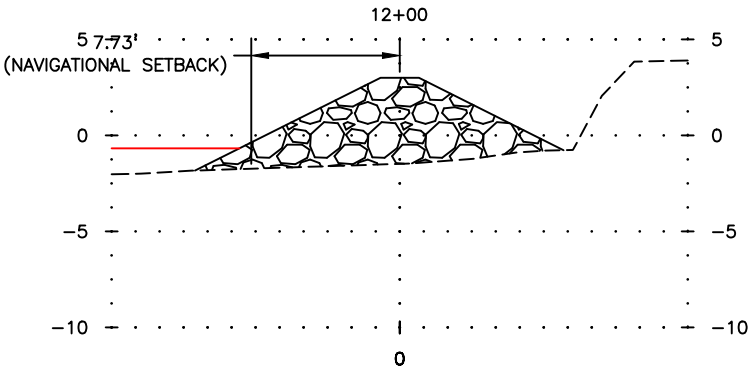
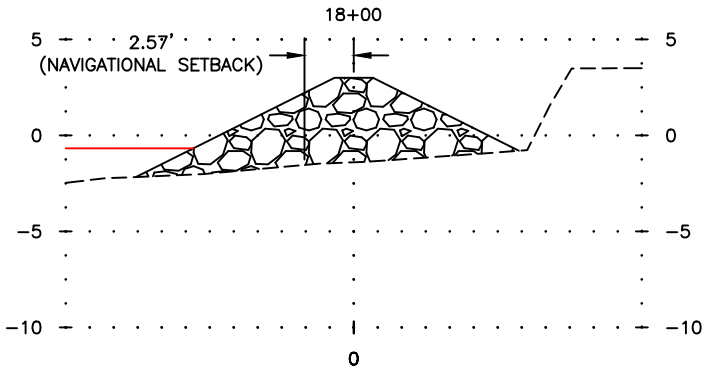
PROJECT NO. DU-TX-36-15

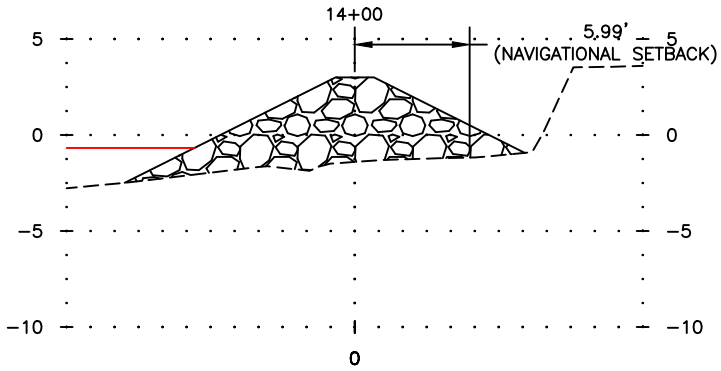
McFADDIN NWR GIWW ROCK BREAKWATER

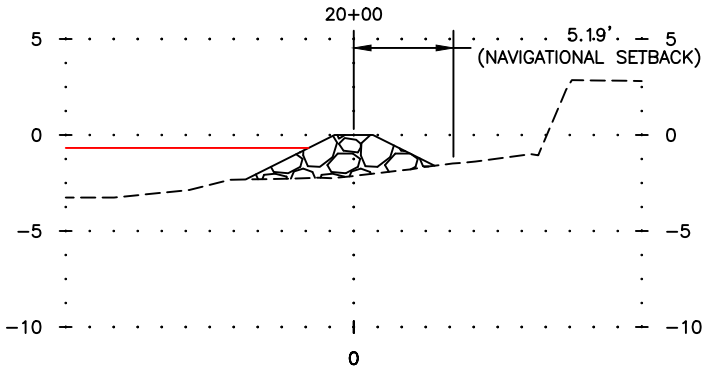
BREAKWATER #12 CROSS SECTIONS

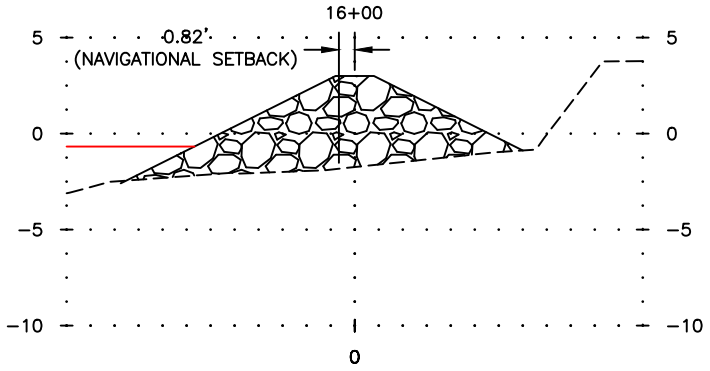
SHEET 95 OF 99

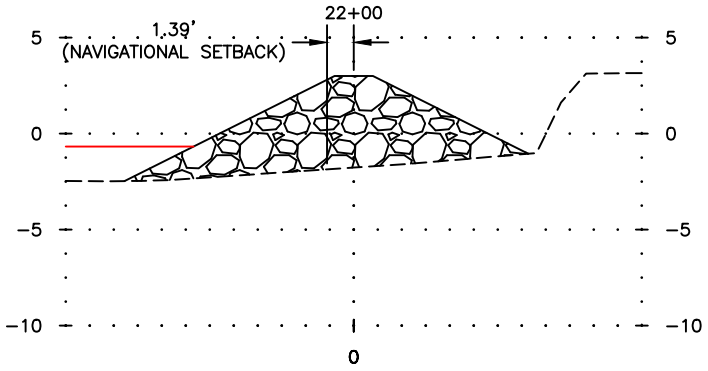












LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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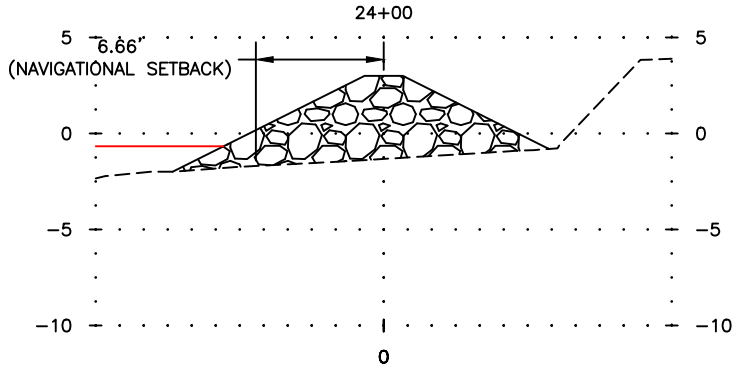
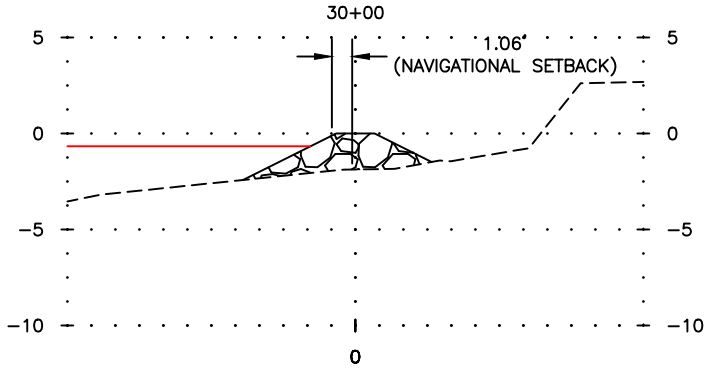
PROJECT NO. DU-TX-36-15

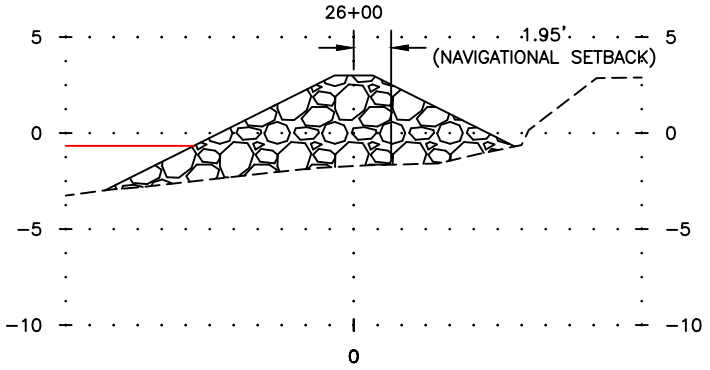
McFADDIN NWR GIWW ROCK BREAKWATER

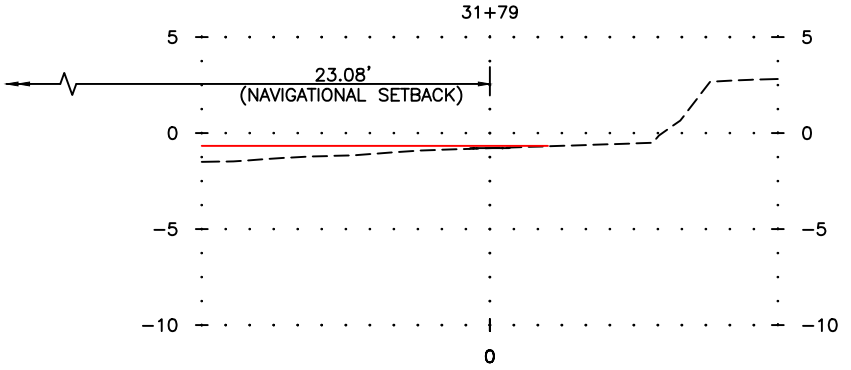
BREAKWATER #12 CROSS SECTIONS

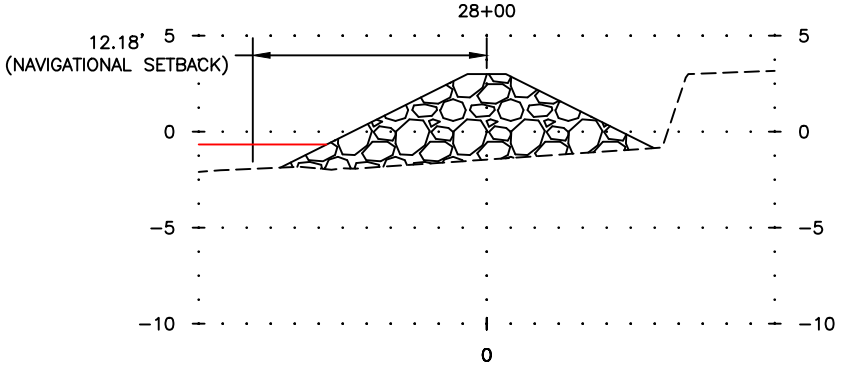
SHEET 96 OF 99











LEGEND

EXISTING GROUND

PROPOSED ROCK RIPRAP

MLLW = −0.67' (NAVD88)

VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 10'

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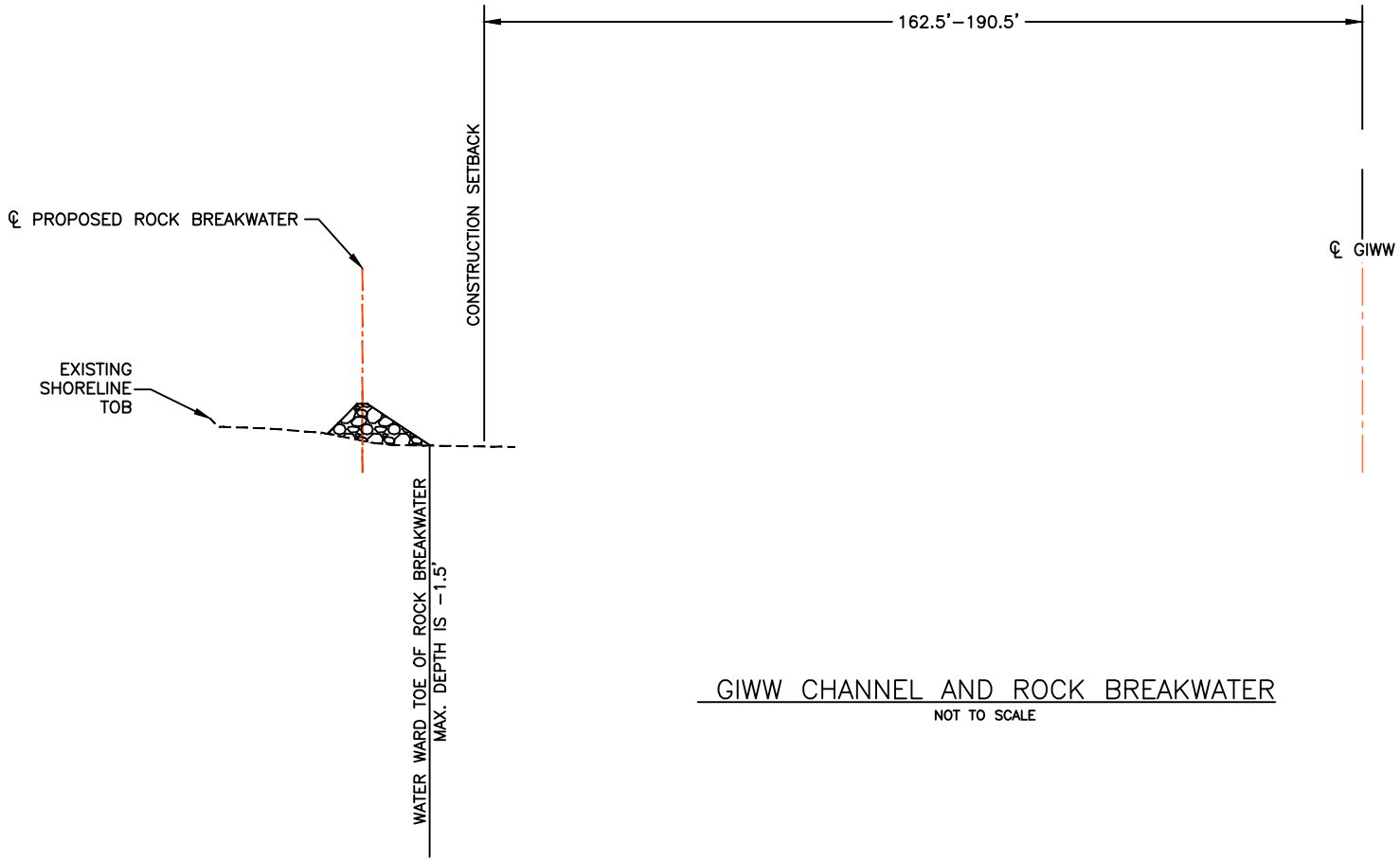
McFADDIN NWR GIWW ROCK BREAKWATER

BREAKWATER #12 CROSS SECTIONS

SHEET 97 OF 99



GIWW CHANNEL AND ROCK BREAKWATER
NOT TO SCALE

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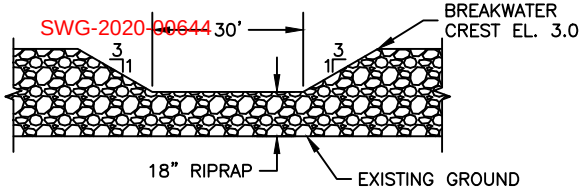
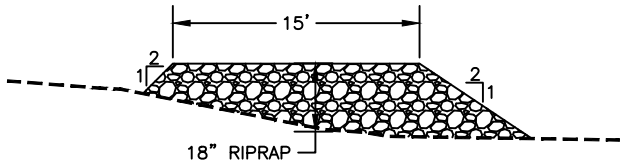
PROJECT NO. DU-TX-36-15
McFADDIN NWR GIWW ROCK BREAKWATER
TYPICAL CROSS SECTION
SHEET 98 OF 99



PROFILE OF FISH PASSAGE

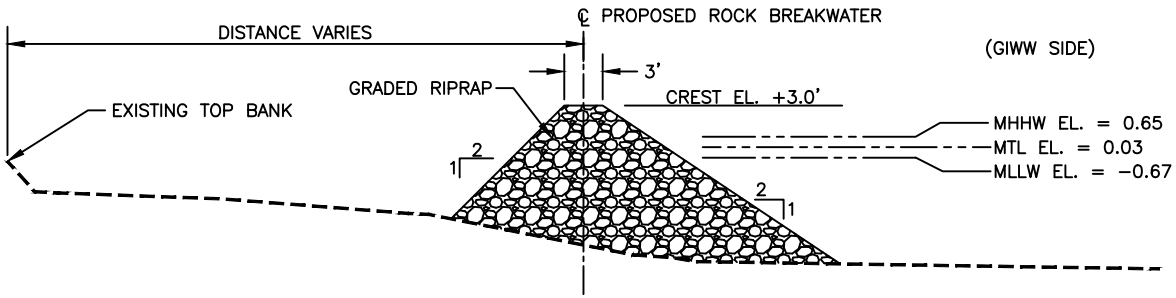
NOT TO SCALE
FISH PASSAGES SHALL OCCUR EVERY 500 L.F. ON CENTER THROUGHOUT THE ENTIRE BREAKWATER



TYPICAL SECTION OF FISH PASSAGE

NOT TO SCALE
FISH PASSAGES SHALL OCCUR EVERY 500 L.F. ON CENTER THROUGHOUT THE ENTIRE BREAKWATER

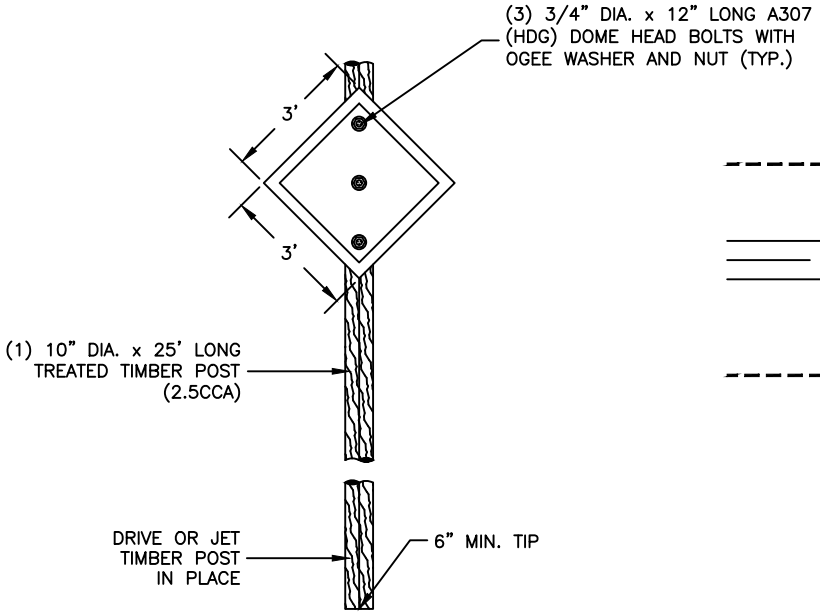
(SHORELINE SIDE)



TYPICAL SECTION – ROCK BREAKWATER

NOT TO SCALE

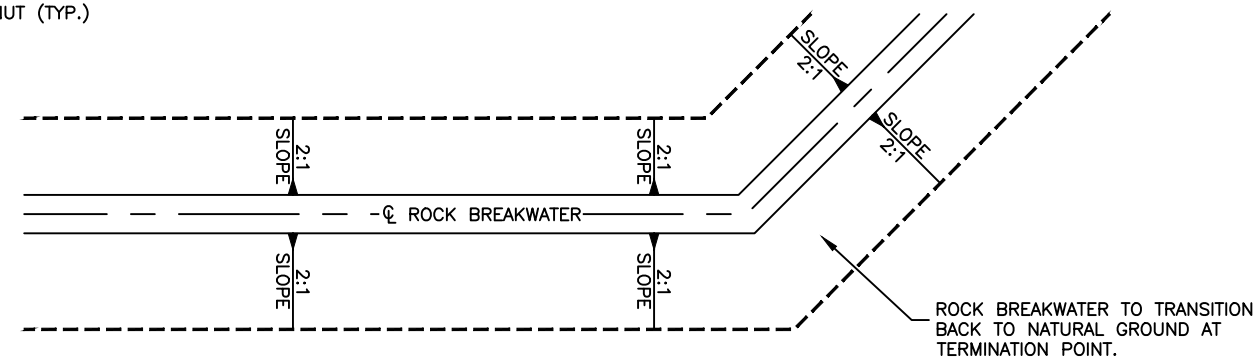
NOTE:
1) WATER ELEVATIONS BASED ON HIGH ISLAND TIDE GAGE. PERIOD OF ANALYSIS 1-1-2017 TO 12-31-2018.
2) ALL ELEVATIONS ARE NAVD 88



TYPICAL DETAIL – DAY BECON

NOT TO SCALE

NOTE:
1. SIGN LOCATIONS AND SIGNAGE DETAILS TO BE DETERMINED PER USCG PRIVATE AIDS TO NAVIGATION MARKING DETERMINATION REQUEST.



DETAIL – ROCK BREAKWATER TERMINATION

NOT TO SCALE

NOTE:
GRADED RIP RAP IS COE 650# GRADATION.

GRADATION COE 650# STONE GRADATION	
PARTICLE MASS. lb.	% LIGHTER
280–650	100
130–280	50
40–130	25
0–40	5 MAX.

DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive; Suite E
Ridgeland, MS 39157
C.O.A. No. F-001112 Expires 9/30/21

PROJECT NO. DU-TX-36-15

McFADDIN NWR GIWW ROCK BREAKWATER
TYPICAL DETAILS
SHEET 99 OF 99

Conditions for Letter of Permission:

General Conditions:

1. The time limit for completing the activity authorized ends on **31 December 2027**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

See Authorization Letter

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

   (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

   ( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).

   ( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization:

   a. This permit does not obviate the need to obtain other Federal, state or local authorizations required by law.

   b. This permit does not grant property rights or exclusive privileges.

   c. This permit does not authorize any injury to the property or rights of others.

   d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

    a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

    b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

    c. Damages to persons, property or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

    d. Design or construction deficiencies associated with the permitted work.

    e. Damage claims associated with any future modification, suspension or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

    a. You fail to comply with the terms and conditions of this permit.

    b. The information provided by you in support of your permit application proves to have been false, incomplete or inaccurate (See 4 above).

    c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it in appropriate to use the suspension, modification and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of time limit.

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE – Typed/Printed Name) *(DATE)*

_____ _____

(TRANSFEREE - Signature) (*Mailing Address)*

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: USFWS	File Number: SWG-2020-00644	Date: 5/5/2022
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/appeals.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Andria Davis
U.S. Army Corps of Engineers
Galveston District
2000 Fort Point Road
Galveston, Texas 77550

If you only have questions regarding the appeal process you may also contact:

Mr. Jamie Hyslop
Administrative Appeals Review Officer,
Southwestern Division (CESWD-PD-O)
U.S. Army Corps of Engineers
1100 Commerce Street, Suite 831
Dallas, Texas 75242-1317
Phone: 469-216-8324
Email: jamie.r.hyslop@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

CONSISTENCY WITH THE TEXAS COASTAL MANAGEMENT PROGRAM

THE APPLICANT SHOULD SIGN THIS STATEMENT AND RETURN WITH APPLICATION PACKET TO:

COASTAL PERMIT SERVICE CENTER
TAMU-GALVESTON
P.O. BOX 1675
GALVESTON, TX 77553-1675
FAX: (409) 741-4010

FOR USACE USE ONLY:

PERMIT #:_____

PROJECT MGR:_____

APPLICANT'S NAME AND ADDRESS (PLEASE PRINT):

Title | First: Douglas | Last: Head | Suffix

Mailing Address: P.O. Box 358

Home:

Work: (409) 971-2909

City: Sabine Pass | State: TX | Zip Code: 77655

Mobile: (409) 284-1360

Country: USA | Email: douglas_head@fws.gov

Fax:

The Texas Coastal Management Program (CMP) coordinates state, local, and federal programs for the management of Texas coastal resources. Activities within the CMP boundary must comply with the enforceable policies of the Texas Coastal Management Program and be conducted in a manner consistent with those policies. The boundary definition is contained in the CMP rules (31 TAC §503.1).

- To determine whether your proposed activity lies within the CMP boundary, please contact the Permit Service Center at permitting.assistance@glo.texas.gov

PROJECT DESCRIPTION:

Is the proposed activity at a waterfront site or within coastal, tidal, or navigable waters? ☑ Yes ☐ No

If Yes, name affected coastal, tidal, or navigable waters: Gulf Intracoastal Waterway

Is the proposed activity water dependent? ☑ Yes ☐ No (31 TAC §501.3(a)(14))

http://tinyurl.com/CMPdefinitions

Please briefly describe the project and all possible effects on coastal resources:

The U.S. Fish and Wildlife Service (USFWS) proposes to construct approximately 14.15 linear miles of rock breakwaters in the Gulf Intracoastal Waterway (GIWW) along the McFaddin National Wildlife Refuge (MNWR) shoreline in Chambers and Jefferson Counties, Texas. The purpose of this proposed action is to slow erosion of the MNWR shoreline along the GIWW due to tidal scour, wave action, and other natural processes. The need for the proposed action is to protect/conserve valuable assets/resources of importance to the management of the Refuge further inland. This project is also expected to result in the creation of wetlands behind the breakwaters as a result of sediment accretion as is evidenced by existing breakwaters that were constructed in 2011 by the USFWS under USACE permit SWG-2008-00839. The project should have no adverse effects on coastal resources. Conversely, the breakwaters are designed to protect coastal resources.

Indicate area of impact: 12 breakwater segments, totaling 37.329 acres ☑ acres or ☐ square feet

ADDITIONAL PERMITS/ AUTHORIZATIONS REQUIRED:

- ☐ Coastal Easement - Date application submitted:
- ☐ Coastal Lease - Date application submitted:
- ☐ Stormwater Permit- Date application submitted:
- ☐ Water Quality Certification - Date application submitted:
- ☑ Other state/federal/local permits/authorizations required:

USFWS FONSI and Authorization

The proposed activity must not adversely affect coastal natural resource areas (CNRAs).

PLEASE CHECK ALL COASTAL NATURAL RESOURCE AREAS THAT MAY BE AFFECTED:

- ☐ Coastal Barriers
- ☐ Coastal Historic Areas
- ☐ Coastal Preserves
- ☐ Coastal Shore Areas
- ☐ Coastal Wetlands
- ☐ Critical Dune Areas
- ☐ Critical Erosion Areas
- ☐ Gulf Beaches
- ☐ Hard Substrate Reefs
- ☐ Oyster Reefs
- ☐ Special Hazard Areas
- ☐ Submerged Lands
- ☐ Submerged Aquatic Vegetation
- ☐ Tidal Sand or Mud Flats
- ☐ Waters of Gulf of Mexico
- ☑ Waters Under Tidal Influence

The applicant affirms that the proposed activity, its associated facilities, and their probable effects comply with the relevant enforceable policies of the CMP, and that the proposed activity will be conducted in a manner consistent with such policies.

PLEASE CHECK ALL APPLICABLE ENFORCEABLE POLICIES:

http://tinyurl.com/CMPpolicies

☐	§501.15 Policy for Major Actions
☐	§501.16 Policies for Construction of Electric Generating and Transmission Facilities
☐	§501.17 Policies for Construction, Operation, and Maintenance of Oil and Gas Exploration and Production Facilities
☐	§501.18 Policies for Discharges of Wastewater and Disposal of Waste from Oil and Gas Exploration and Production Activities
☐	§501.19 Policies for Construction and Operation of Solid Waste Treatment, Storage, and Disposal Facilities
☐	§501.20 Policies for Prevention, Response and Remediation of Oil Spills
☐	§501.21 Policies for Discharge of Municipal and Industrial Wastewater to Coastal Waters
☐	§501.22 Policies for Nonpoint Source (NPS) Water Pollution
☐	§501.23 Policies for Development in Critical Areas
☐	§501.24 Policies for Construction of Waterfront Facilities and Other Structures on Submerged Lands
☐	§501.25 Policies for Dredging and Dredged Material Disposal and Placement
☐	§501.26 Policies for Construction in the Beach/Dune System
☐	§501.27 Policies for Development in Coastal Hazard Areas
☐	§501.28 Policies for Development Within Coastal Barrier Resource System Units and Otherwise Protected Areas on Coastal Barriers
☐	§501.29 Policies for Development in State Parks, Wildlife Management Areas or Preserves
☐	§501.30 Policies for Alteration of Coastal Historic Areas
☐	§501.31 Policies for Transportation Projects
☐	§501.32 Policies for Emission of Air Pollutants
☐	§501.33 Policies for Appropriations of Water
☐	§501.34 Policies for Levee and Flood Control Projects

Please explain how the proposed project is consistent with the applicable enforceable policies identified above. Please use additional sheets if necessary. *For example: If you are constructing a pier with a covered boathouse, then the applicable enforceable policy is: §501.24 Policies for Construction of Waterfront Facilities and Other Structures on Submerged Lands. The project is consistent because it will not interfere with navigation, natural coastal processes, and avoids/minimizes shading.*

None of the policies identified above are applicable to the proposed project.

BY SIGNING THIS STATEMENT, THE APPLICANT IS STATING THAT THE PROPOSED ACTIVITY COMPLIES WITH THE TEXAS COASTAL MANAGEMENT PROGRAM AND WILL BE CONDUCTED IN A MANNER CONSISTENT WITH SUCH PROGRAM

Signature of Applicant/Agent

Date

Any questions regarding the Texas Coastal Management Program should be referred to:

Allison Buchtien
Texas General Land Office
1001 Texas Clipper Road, BLDG 3026, Room 912
Galveston, Texas 77554
Phone: (409) 741-4057
Fax: (409) 741-4010
Toll Free: 1-866-894-7664

Texas General Land Office
Coastal Protection Division
1700 North Congress Avenue, Room 330
Austin, Texas 78701-1495
Toll Free: 1-800-998-4GLO
federal.consistency@glo.texas.gov

Print Form

Information collected by electronic mail and by web form is subject to the Public Information Act, Chapter 552, Government Code.

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes and documentation uploads (e.g., title and date of document, permit number, weblink etc.) [1]
National Environmental Policy Act	_☒_ Yes ___ No ___ N/A	USFWS analyzed potential project effects through the NEPA process in the USFWS Final Environmental Assessment, Anahuac & McFaddin National Wildlife Refuges GIWW Breakwaters (DESCO, 2022) and issued a FONSI on December 8, 2023.
Endangered Species Act	_☒_ Yes ___ No ___ N/A	NMFS SERO-2020-03263, concurrence issued February 18, 2021 & USFWS Intra-Service Section 7 Biological Evaluation Form, Anahuac and McFaddin National Wildlife Refuges – Construction of GIWW Breakwaters, signed November 6, 2023
National Historic Preservation Act	_☒_ Yes ___ No ___ N/A	THC Tracking #202015892, Concurrence received on August 19, 2020.
Magnuson-Stevens Act	_☒_ Yes ___ No ___ N/A	NMFS received the USACE Interagency Coordination Notice for the project (ICN - SWG-2020-00644 January 6, 2021) and provided no objections on January 11, 2021 via email to USACE related to EFH/ Magnuson-Stevens Act
Fish and Wildlife Coordination Act	_☒_ Yes ___ No ___ N/A	USFWS, NMFS, and TPWD were provided with opportunities to comment on the project through direct coordination, public review of the EA, and the USACE Interagency Coordination Notice review process. All comments were addressed prior to project authorization.
Coastal Zone Management Act	_☒_ Yes ___ No ___ N/A	The project was determined to be consistent with the Texas Coastal

[1] Note: PIPER will allow for EC documentation uploads under each environmental requirement shown in the checklist.

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes and documentation uploads (e.g., title and date of document, permit number, weblink etc.) [1]
		Management Program through the USACE permit process (SWG 2020-00644)
Coastal Barrier Resources Act	___ Yes ___ No _☐_ N/A	
Farmland Protection Policy Act	___ Yes ___ No _☐_ N/A	
Clean Water Act Section 404	_☐_ Yes ___ No ___ N/A	USACE permit SWG-2020-00644, issued on April 6, 2022, with an administrative modification issued on May 5, 2022.
River and Harbors Act Section 10	_☐_ Yes ___ No ___ N/A	USACE permit SWG-2020-00644, issued on April 6, 2022, with an administrative modification issued on May 5, 2022.
Clean Water Act Section 401	_☐_ Yes ___ No ___ N/A	USACE permit SWG-2020-00644, issued on April 6, 2022, with an administrative modification issued on May 5, 2022.
Marine Protection, Research and Sanctuaries Act	___ Yes ___ No _☐_ N/A	
Marine Mammal Protection Act	_☐_ Yes ___ No ___ N/A	Vessel strike avoidance measures are incorporated for protection of marine mammals. USFWS consulted with NMFS during the permit process, provided NMFS with a copy of the draft EA for comment, and the USACE provided opportunity for NMFS to comment through the Interagency Coordination Notice (ICN - SWG-2020-00644). No additional protection measures were requested.
National Marine Sanctuaries Act	___ Yes ___ No _☐_ N/A	
Migratory Bird Treaty Act	_☐_ Yes ___ No ___ N/A	USFWS analyzed potential project effects on migratory birds in the EA and determined that there would be no effect based on the project being constructed in open water and the presence of a

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes and documentation uploads (e.g., title and date of document, permit number, weblink etc.) [1]
		multitude of adjacent suitable habitat for any disturbed birds to move into.
Bald and Golden Eagle Protection Act	___ Yes ___ No _☐_ N/A	No suitable habitat in the project area
Clean Air Act	_☐_ Yes ___ No ___ N/A	USFWS analyzed potential project effects on air quality in the EA and determined that construction emissions would be minimal and would not adversely affect air quality.
Other application environmental laws or regulations	_☐_ Yes ___ No ___ N/A	The USFWS and USACE through their permit processes reviewed the project to ensure that it was in compliance with all other applicable laws and regulations.