

ADDENDUM NO. 2 TO PLANS AND CONTRACT DOCUMENTS

FOR

**RACCOON ISLAND MAINTENANCE/CONSTRUCTION FEATURE
REMOVAL PROJECT (TE-48)**



STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY

November 6, 2017

ADDENDUM NO. 2

RACCOON ISLAND MAINTENANCE/CONSTRUCTION FEATURE REMOVAL PROJECT (TE-48)

This addendum shall be considered part of the Plans, Specifications, and Contract Documents (except as noted otherwise) and is issued to change, amplify, or delete from or otherwise explain these documents where provisions of this addendum differ from those of the original documents. This addendum shall have precedence over the original documents and shall govern.

CONTRACTOR QUESTIONS

Question 1: Can the main offices be at the landing if a shelter is provided on a barge on-site for (the) company rep. and engineer?

Answer: Yes.

Question 2: Does internet service need to present in the shelter on site?

Answer: No. However, internet service at the main offices must be provided for the resident project representative.

Question 3: Can (a) Marsh Buggy track out of the 100 foot work space on the bay side to transport fabric off (the) island if (the) tide is too low to get barges and boats to (the) bank?

Answer: Yes, however, care should be taken as to not damage existing island features and/or vegetation outside of the work area. If damage is incurred by existing island features and/or vegetation outside of the designated work area, the contractor shall be responsible for restoring the damaged areas to pre-construction conditions. See GP-22 and TS-10.

TS-10 of the contract specifications states, "The Contractor shall exercise caution when accessing and driving in the project area with vehicles or Equipment. In the event that damage is caused by the Contractor outside the authorized construction areas, the Contractor shall restore all damage to existing structures, vegetation, or any other structure or natural feature to pre-construction conditions or better. The Contractor will not receive final payment until all damage is restored to the satisfaction of the Owner and Engineer".

In addition to contract specifications, the LDWF regulations also stipulate the following regarding Submerged Aquatic Vegetation (SAV) and Coastal Dune Grasslands:

"Submerged aquatic vegetation (SAV) may be present in the project vicinity. Submerged aquatic vegetation is considered critically imperiled in Louisiana due to its extreme rarity and vulnerability. This extremely productive community type is known to provide food for a number of species, including the federally endangered manatee (*Trichechus manatus*). SAV acts as nursery areas and provide refuge for the young of many fishes and invertebrates. Work activities should be completed in such manner as to minimize the impacts to this natural community. If the project is to occur at a water depth of 4 feet (1.2 meters) or less, a field visit should be conducted at the worksite to look for evidence of SAV. If no SAV is found near the proposed project, no further consultation with LDWF will be necessary. If SAV is found near the proposed project, further consultation with LDWF will be required. Contact Chris Reid at (225) 765-2820 to coordinate activities.

Coastal Dune Grassland

The database indicates that Coastal Dune Grassland is located within the study area. This community is considered critically imperiled in the state of Louisiana and provides habitat for many unique species of plants. Dune sandbur (*Cenchrus tribuloides*) and Sea Oats (*Uniola paniculata*) are two imperiled plant species that can be found within Coastal Dune Grassland communities. We advise you to take the necessary measures to avoid any degradation of this ecological community. If you have any questions or need additional information, please contact Chris Reid at 225-765-2820".

Question 4: If the work area is restricted to within 100 feet from Geo Textile seaward why don't you allow access to work area such as dredging? Working during the months of December thru February will encounter many low tides making it on some days impossible to get equipment in desired area for loading.

Answer: Access dredging was not permitted for this project. The island should be accessible via low-draft barges or similar equipment. It is highly recommended that the Contractor conduct a site visit to ascertain site conditions prior to placing a bid on the project.

Care should be taken as to not damage existing island features and/or vegetation outside of the work area. If damage is incurred by existing island features and/or vegetation outside of the designated work area, the contractor shall be responsible for restoring the damaged areas to pre-construction conditions. See GP-22 and TS-10.

Question 5: What type of transportation on site at a minimum is required to be provided for engineer and company rep?

Answer: SP-15 stipulates the Contractor's obligations for on-site transportation to be provided for the Owner, Engineer, and Resident Project Representative. For reference, the relevant section of SP-15 is stated as follows:

"The Contractor shall provide a safe and reasonable means of transportation around the Project Site for the Resident Project Representative, Owner, and Engineer for the duration of the Work. The Contractor shall transport the Resident Project Representative and Engineer around the project site as requested within a reasonable timeframe. The schedule and pickup location shall be arranged by the Engineer/Resident Project Representative and the Contractor prior to mobilization. The Contractor shall provide a boat and land transportation for the exclusive use of the Engineer and/or Resident Project Representative to tour the Project Site during the Work".

The minimum requirements are outlined in Section SP-15. Depending on weather conditions, a larger vessel than the one required for on-site use in SP-15 may be needed to transport personnel and owner representatives from the landing to the project site in a safe and reasonable means. Should the Engineer determine that transportation of the RPR and contractor personnel is not safe due to limitations of the boat provided by the contractor, the Owner may obtain and use other necessary transportation at the expense of the contractor.

Question 6: If (the) contractor is directed by CPRA to which side of island is to be started on and gets interrupted by whatever means will contractors be compensated for the change up?

Answer: No additional compensation will be provided by the Owner. Attached is a sequence of construction provided for completing the work to avoid pelican nesting. It should also be noted that this work is anticipated to be performed before waterbird nesting season. However, the following language from the LDWF regulations should be noted. The permits are attached.

"Our database indicates the presence of bird nesting colonies within one mile of this proposed project. Please be aware that entry into or disturbance of active breeding colonies is prohibited

by the Louisiana Department of Wildlife and Fisheries (LDWF). In addition, LDWF prohibits work within a certain radius of an active nesting colony.

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

1. qualifications of survey personnel;
2. survey methodology including dates, site characteristics, and size of survey area;
3. species of birds present, activity, estimates of number of nests present, and general vegetation type including digital photographs representing the site; and
4. topographic maps and ArcView shapefiles projected in UTM NAD83 Zone 15 to illustrate the location and extent of the colony.

Please mail survey reports on CD to: Louisiana Natural Heritage Program

La. Dept. of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000

To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).
- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1)".

The permit and requirements are attached. The Contractor's proposed sequence of construction and construction schedule shall be submitted as stipulated in GP-8 of the project specifications.

Question 7: Can a pipe or post be driven on shore for winching? Which will be removed after it's usage.

Answer: This is permitted within the construction limits. However, the contractor shall be aware of SP4.7, which states, "The Contractor shall be responsible for investigating, locating, and protecting all existing facilities, structures, services, and pipelines on, above, or under the surface of the area where operations are to be performed." In addition, TS-2.3 states, "Prior to any excavation, the Contractor shall call Louisiana One Call at 1- 800-272-3020 to locate any utility lines in the area. The Contractor shall then perform a magnetometer survey near any identified existing infrastructure as well as the alignment of containment dike to be degraded." If the Contractor intends to use a winch and drive a post or pipe into the ground, this plan should be submitted in the Work Plan for approval along with the Contractor's

methodology for mitigating damage to existing island features and proposed magnetometer survey lines to ensure that there are no existing pipelines in the area.

Question 8: Is any trash, debris and visqueen outside of the work area the responsibility of the contractors?

Answer: Any trash or debris resulting from the Work, from the Contractor and its subcontractors, and/or resulting from the Contractor's work and presence on the island shall conform to GP-27 and TS-12 of the project specifications.

Question 9: Do you know how many cubic yards of visqueen is in the site?

Answer: We do not have any available quantities related to the visqueen installed during construction.

Question 10: How much per cubic yard does the Geo Textile weigh?

Answer: Attached are the specifications of the geotextile fabric installed during the original Raccoon Island (TE-48) project. It is the responsibility of the contractor to determine the weight and composition of the material based upon this information provided. Based on information provided the NRCS, only geotextile fabric and visqueen was used during the construction of the containment dike. Note that the Geotextile fabric previously installed has ripped and become degraded over time. Therefore, existing sections of geotextile fabric on-site are not uniform.

Question 11: Is the Geo Textile or any other material to be removed at the site considered hazardous or contains Asbestos?

Answer: See answer to question 17.

Question 12: Coast Guard does not certify any vessel under 5 tons. The boat that will be provided to the engineer and company rep is under 5 tons but meets all other CPRA requirements in bid and is registered with the Wildlife and Fisheries and will be equipped with all items onboard as deem necessary by Wildlife and Fisheries.

Answer: SP-15 of the project specifications states the follow:

"The boat shall have the following features:

- 15.1 An enclosed cabin space;
- 15.2 Capable of maintaining 25 knots (29 mph);
- 15.3 Six (6) passenger capacity;
- 15.4 Coast Guard certified;
- 15.5 Operable marine radio;
- 15.6 All safety equipment required by the Coast Guard for the size and type of that boat;
- 15.7 Draft of two feet (2') or less.

The Contractor shall supply the fuel and maintain the boat and land transportation resources. All mechanical malfunctions shall be repaired within twelve (12) hours.

In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use other necessary transportation at the expense of the Contractor. The costs associated with providing transportation shall be included in the lump sum price for Bid Item No. 1, "Mobilization and Demobilization".

In addition to the project specifications, the USCG website notes that only inspected and certified vessels are allowed to transport 6 or more people. It is expected that a crew boat with this capacity (at a minimum) will be required for this project. An excerpt from the USCG website regarding inspected vessels and Captain's licensure requirements is listed below.

"A Master license is required if you operate "inspected" vessels. Inspected vessels are allowed to carry more than 6 passengers. To become Inspected, the vessel must be built in accordance with rigid USCG Commercial Vessel Inspection standards".

Question 13: Anchor tubes to remain are they attached to geotextile material? Anchor tubes were attached to the geotextile material at the time of construction. Anchor tubes located on the bay side of the existing containment dike to be degraded shall remain in place. Anchor tubes located seaward of the existing containment dike shall be removed.

Question 14: March platform elev. Is it highest are lowest elev. that we have to degrade dike too? The degraded area shall match the existing marsh platform elevation. The allowable tolerance for the elevation of the degraded containment dike is $\pm 0.5'$.

Question 15: Geotube 410'- where does it run? The existing geotube is located at the eastern end of the island on the bay side as shown on Sheet 3 of the construction plans.

Question 16: Work area scales to 200', is that correct? The work area for the containment dike degradation is approximately 200'. The work limits shall be 100' landward of the landward toe of the containment dike to be degraded and 60' seaward of the seaward toe of the containment dike to be degraded.

Question 17: Can we get on dike to be degraded with equipment or has to be amphibious? What was used to build dike conventional are amphibious excavator? Equipment is allowed on the dike proposed to be degraded. A bucket dredge was used to construct the existing dike.

Question 18: Are there any known pipe lines or flow lines in area? All known pipelines are shown on the Plans. It should be noted that the Plans specify "THE CONTRACTOR SHALL LOCATE INFRASTRUCTURE IN ALL AREAS OF EXCAVATION AND REMOVAL AND OTHER WORK THAT MAY POTENTIALLY DAMAGE OR INTERFERE WITH EXISTING INFRASTRUCTURE, PRIOR TO ANY WORK. LOCATION OF INFRASTRUCTURE (PIPELINES, WELL HEADS, ETC.) ARE PROVIDED IN THE CONTRACT DOCUMENTS FOR INFORMATIONAL PURPOSES ONLY.

Question 19: What are the water depths on bay side? Can it be approached with a barge? No recent bathymetry data is available near the project site. It is highly recommended that the contractor conduct a site visit to determine accessibility of the project site. The original project was constructed without dredging for access.

Question 20: When is construction scheduled to begin? It is anticipated that construction would begin by mid-December.

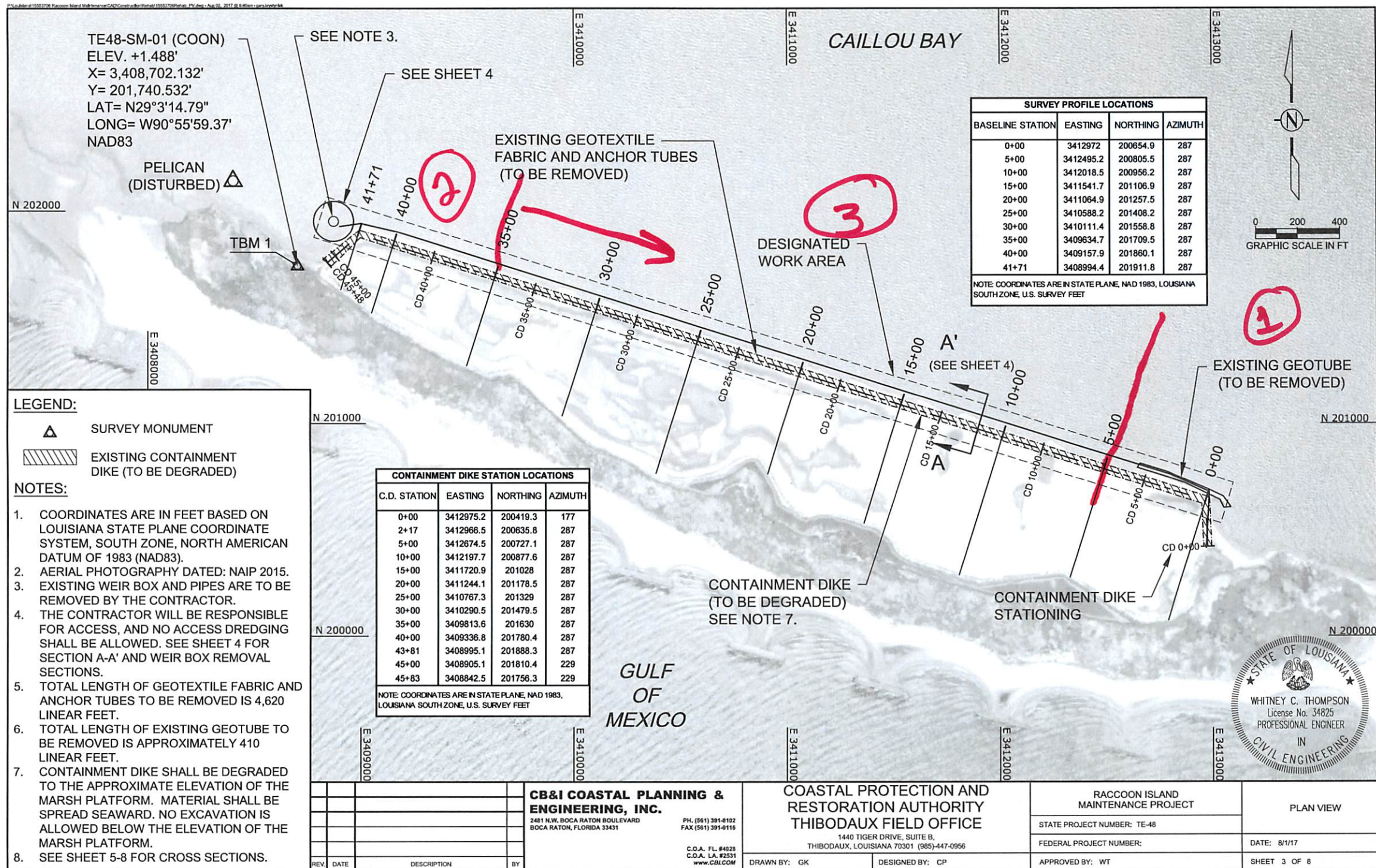
2015 Project Site Photos







Sequence of Construction



Project Permits

5822

11356
62

DEPARTMENT OF THE ARMY PERMIT

Permittee: Louisiana Department of Wildlife and Fisheries

29-03-14,792N
90-55-59.374W

Permit No. MVN-2008-0143-CQ

Issuing Office: New Orleans District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Dredge and deposit earthen material to construct and maintain a back bay vegetated marsh platform along the northern shoreline of Raccoon Island to implement the Raccoon Island Marsh Creation Project- Phase B (CWPPRA TE-48)., in accordance with the drawings attached in fifteen sheets, dated August 2007, September 2007, and December 2007 and no revisions.

Project Location: At a location central to a point approximately 21.0 miles southwesterly of Cocodrie, Louisiana, in Terrebonne Parish.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **May 31, 2013**. 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 1 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: Page 4.

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).
- (X) 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 any 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 is 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 this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

X 
(PERMITTEE)

X 5-29-08
(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



18 June 2008
(DATE)

Martin S. Mayer, Chief, Central Evaluation Section

for Alvin B. Lee, District Commander

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)

(DATE)

SPECIAL CONDITIONS: MVN-2008-0143-CQ

7. The Chitimacha Tribe of Louisiana has stated that the project area is part of the aboriginal Chitimacha homelands. If during the course of work at the site, prehistoric and/or historic aboriginal cultural materials are discovered, the permittee will contact the Chitimacha Tribe of Louisiana at P.O. Box 661, Charenton, LA 70523, and the Army Corps of Engineers, New Orleans District Regulatory Branch (CEMVN). CEMVN will initiate the required Federal, State, and Tribal coordination to determine the significance of the cultural materials and the need, if applicable, for additional cultural resource investigations.

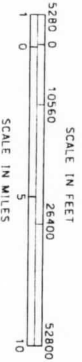
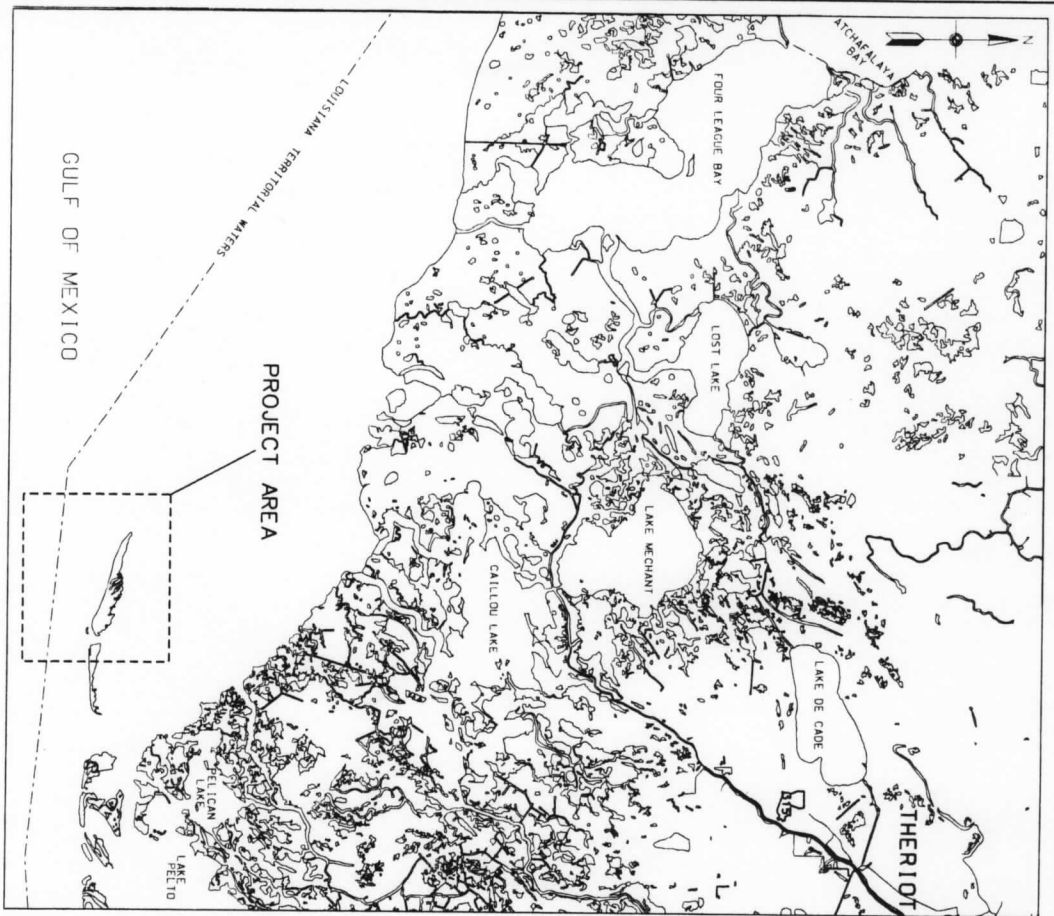
8. Many local governing bodies have instituted laws and/or ordinances in order to regulate dredge and/or fill activities in floodplains to assure maintenance of floodwater storage capacity and avoid disruption of drainage patterns that may affect surrounding properties. Your project involves dredging and/or placement of fill, therefore, you must contact the local municipal and/or parish governing body regarding potential impacts to floodplains and compliance of your proposed activities with local floodplain ordinances, regulations or permits.

9. If the proposed project requires any additional work not expressly permitted herein, or impacts any wetlands other than the areas indicated on the attached drawings, the permittee must apply for an amendment to this authorization, prior to commencement of work in such areas.

10. The use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

11. The permittee must install and maintain, at permittee's expense, any safety lights, signs and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on the authorized facilities.

12. The permittee is aware that all local, state and parish approvals must be obtained prior to the commencement of work at the project site.



RACCOON ISLAND SHORE PROTECTION/MARSH CREATION PROJECT PHASE B (TE-48)

STATE SPONSOR
L.A. DEPT. OF NATURAL RESOURCES
FEDERAL SPONSOR
NATURAL RESOURCES CONSERVATION SERVICE
OF THE
UNITED STATES DEPARTMENT OF AGRICULTURE
2007

LOCATION IN LOUISIANA (RACCOON ISLAND)



INDEX OF DRAWINGS

- 1 COVER SHEET - VICINITY MAP
- 2 SITE LOCATION MAP
- 3 GRADE STAKE LOCATIONS
- 4 TOP MAP - EAST SIDE
- 5 TOP MAP - WEST SIDE
- 6 BORROW AREA - LOCATION MAP
- 7 BORROW AREA - PLAN VIEW
- 8 BORROW AREA - PROFILE & SECTIONS
- 9 TYPICAL - CONTAINMENT DIKE & DREDGE FILL DETAILS
- 10 TYPICAL - CONTAINMENT DIKE - PROFILE
- 11 TYPICAL - DREDGE FILL
- 12 SECTIONS - DREDGE FILL
- 13 SECTIONS - DREDGE FILL
- 14 SOIL BORING LOGS-81 THRU 84
- 15 SOIL BORING LOGS-85 THRU 87

PRELIMINARY

THIS DOCUMENT SHALL

NOT BE USED FOR

CONSTRUCTION, BIDDING,

RECORDATION, CONVEYANCE,

SALES OR AS THE BASIS

FOR THE ISSUANCE

OF A PERMIT

REVISIONS

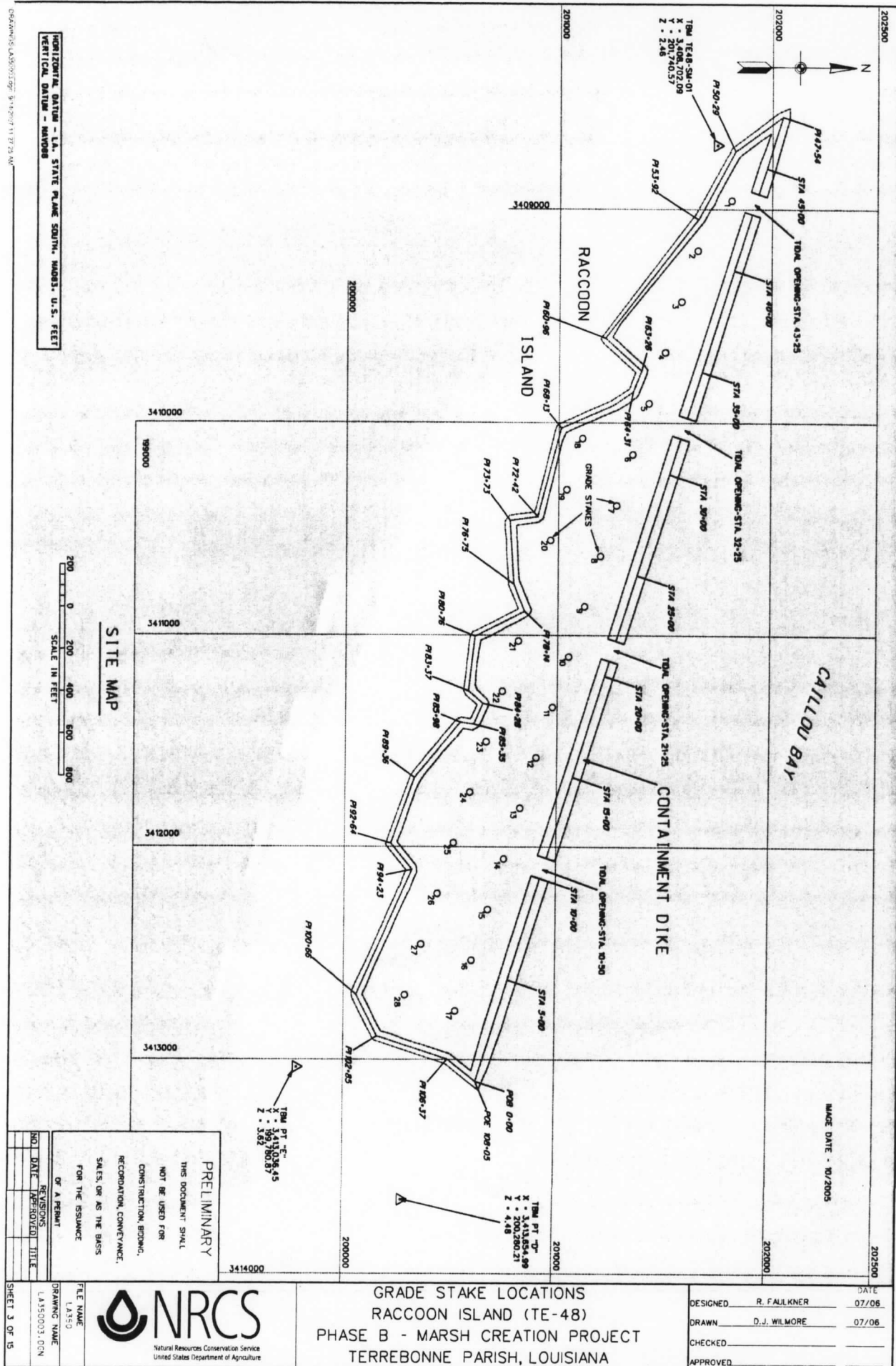
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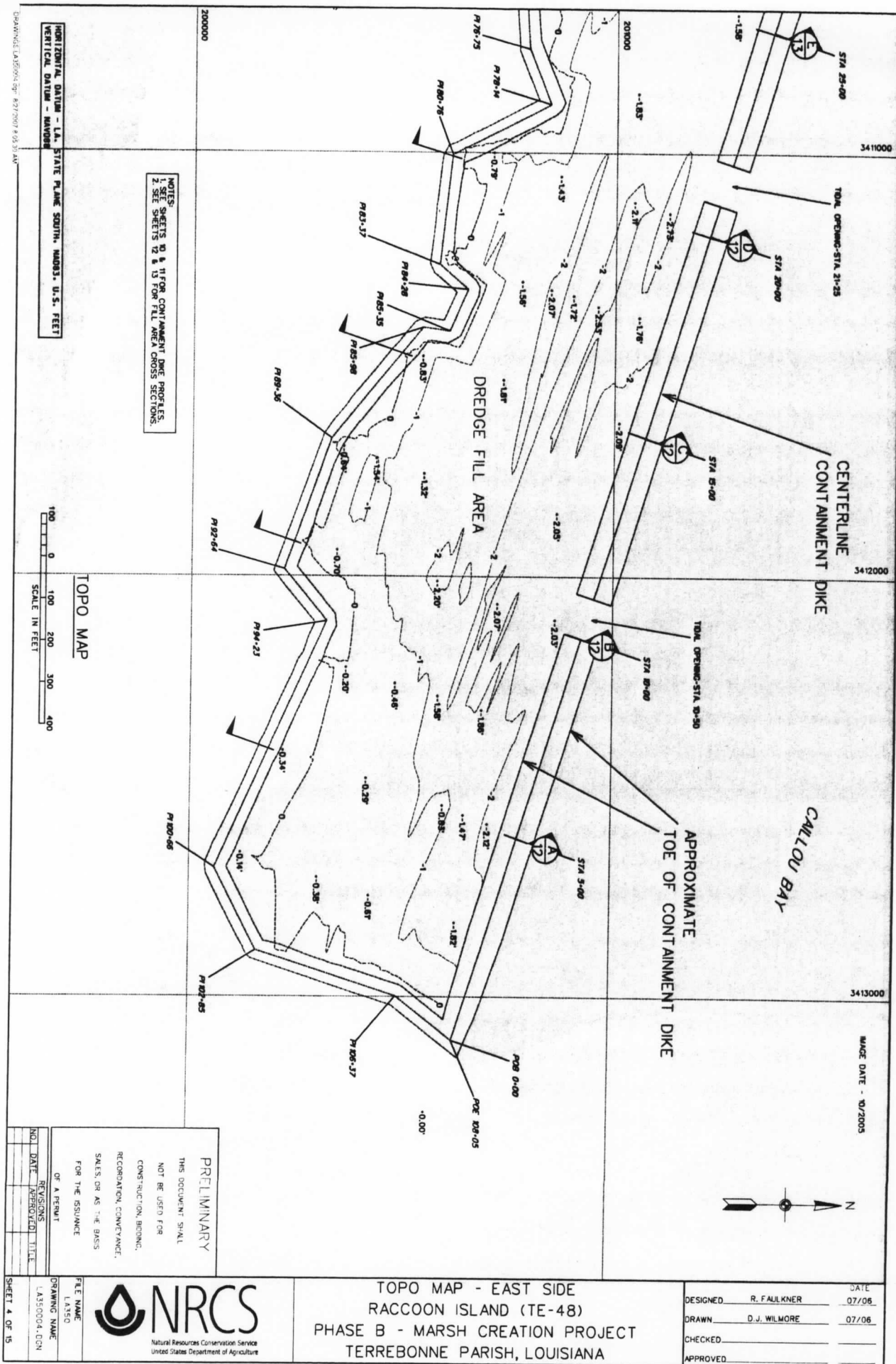
SHEET 1 OF 15

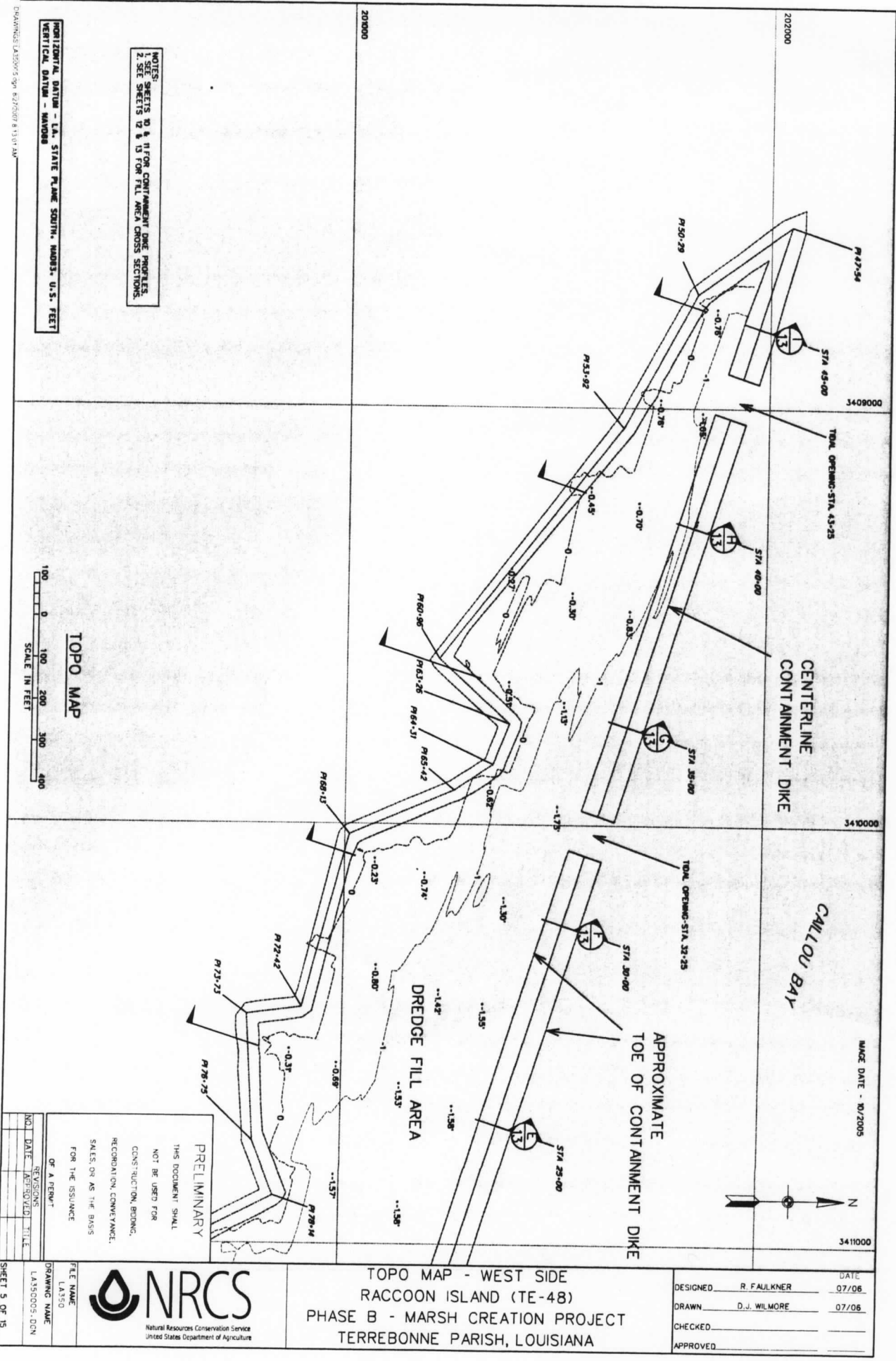


COVER SHEET - VICINITY MAP
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

DESIGNED	R. FAULKNER	DATE	07/06
DRAWN	D.J. WILMORE		07/06
CHECKED			
APPROVED			







NOTES:
1. SEE SHEETS 12 & 13 FOR CONTAINMENT DIKE PROFILES.
2. SEE SHEETS 12 & 13 FOR TYPICAL CROSS SECTIONS.

HORIZONTAL DATUM - L.A. STATE PLANE SOUTH. MAGN. 11.5. FEET
VERTICAL DATUM - NAVD83

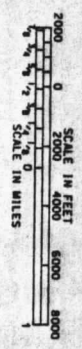
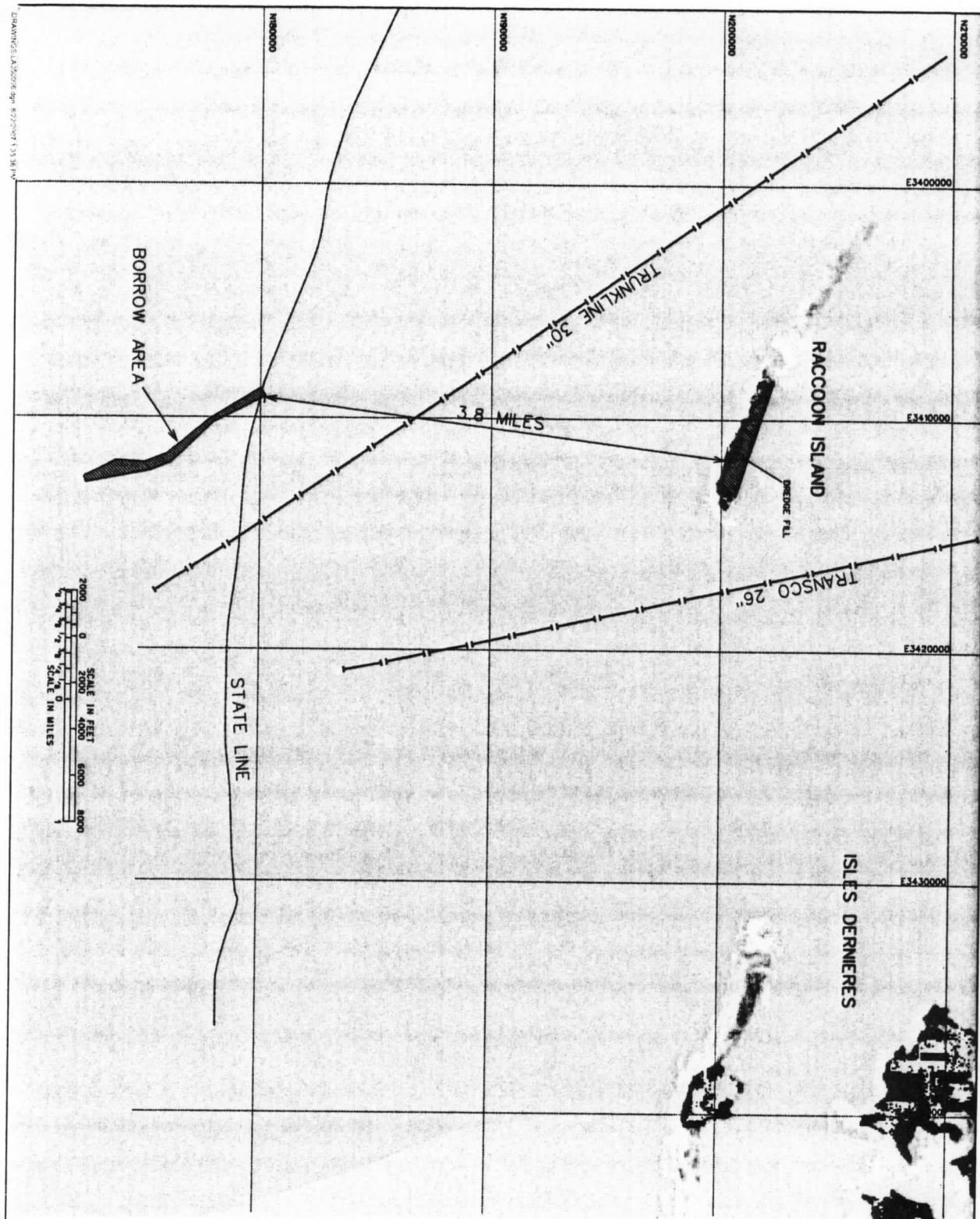
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PRELIMINARY	
THIS DOCUMENT SHALL NOT BE USED FOR CONSTRUCTION, DESIGN, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.	
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TOPO MAP - WEST SIDE
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

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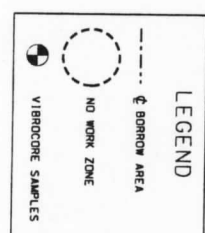


<p>PRELIMINARY</p> <p>THIS DOCUMENT SHALL NOT BE USED FOR CONSTRUCTION, EROSION, RECREATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.</p>	
<p>NO. DATE</p> <p>1 07/06</p>	<p>REVISIONS</p> <p>APPROVED</p>
<p>FILE NAME: L4350</p> <p>DRAWING NAME: L4350006.DGN</p>	

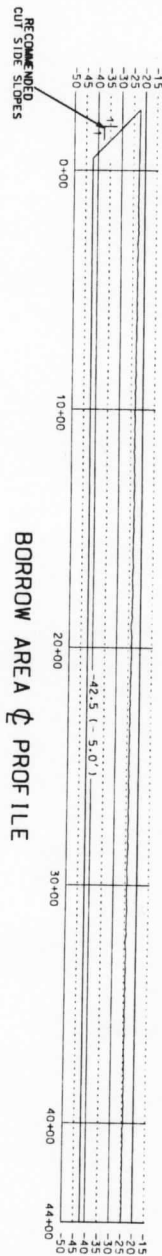
BORROW AREA - LOCATION MAP
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA



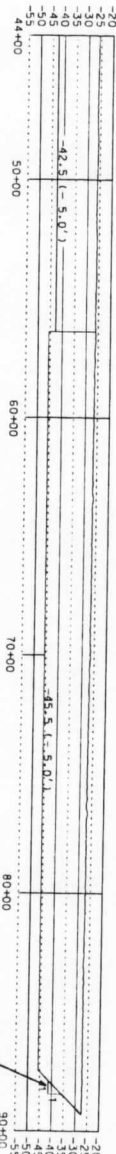
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APPROVED			



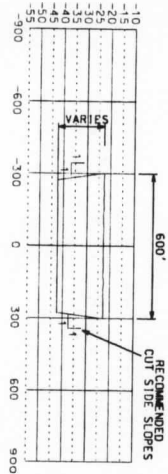
DESIGNED	R. FAULKNER	DATE 07/06
DRAWN	D. J. WILMORE	07/06
CHECKED		
APPROVED		



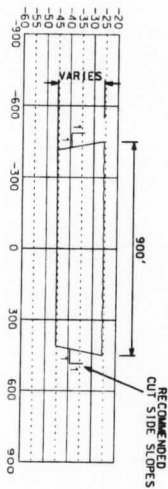
BORROW AREA ϕ PROFILE
SCALE - 10V/1H



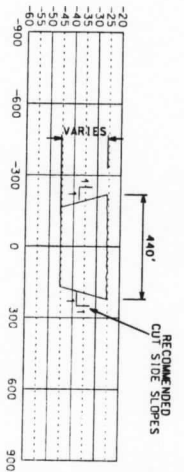
BORROW AREA ϕ PROFILE
SCALE - 10V/1H



BORROW AREA SECTION J
STA. 0+00-STA. 59+00
SCALE - 10V/1H



BORROW AREA SECTION K
STA. 72+58
SCALE - 10V/1H



BORROW AREA SECTION L
STA. 87+50-STA. 88+50
SCALE - 10V/1H

- NOTES:
1. THE MAXIMUM DEPTH OF CUT IN THE BORROW AREA IS 20 FEET BELOW EXISTING GROUND. THE CUT TOLERANCE SHALL BE -5.0 FEET BELOW EXISTING GROUND. THE CUT TOLERANCE SHALL BE -5.0 FEET BELOW EXISTING GROUND. THE CUT TOLERANCE SHALL BE -5.0 FEET BELOW EXISTING GROUND.
 2. BORROWING SHALL BEGIN AT STA. 59+00 AND PROCEED TO STA. 87+50. BORROWING SHALL BEGIN AT STA. 87+50 AND PROCEED TOWARD STA. 0+00 UNTIL PROJECT COMPLETION.

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SALES, OR AS THE BASIS
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OF A PERMIT

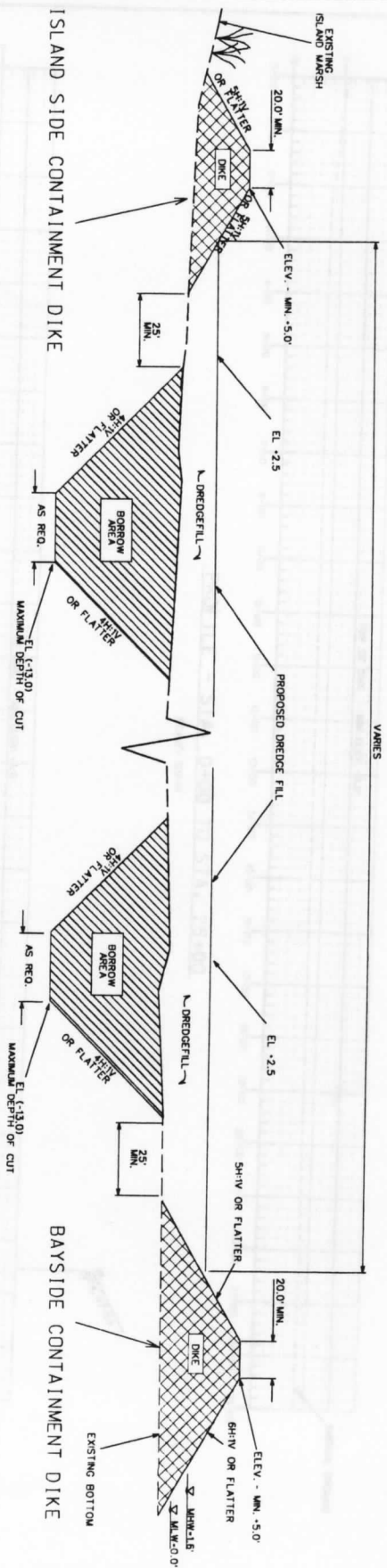
NO.	DATE	REVISIONS	TITLE
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2	07/06	DRAWN	D.J. WILMORE
3		CHECKED	
4		APPROVED	

SHEET 8 OF 15

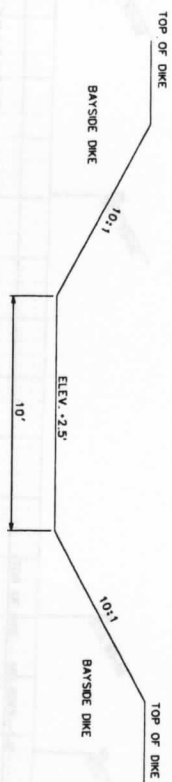


BORROW AREA - PROFILE & SECTIONS
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

DESIGNED	DATE
R. FAULKNER	07/06
DRAWN	DATE
D.J. WILMORE	07/06
CHECKED	
APPROVED	



TYPICAL CONTAINMENT DIKE LAYOUT
N.T.S.



TYPICAL TIDAL OPENING
N.T.S.

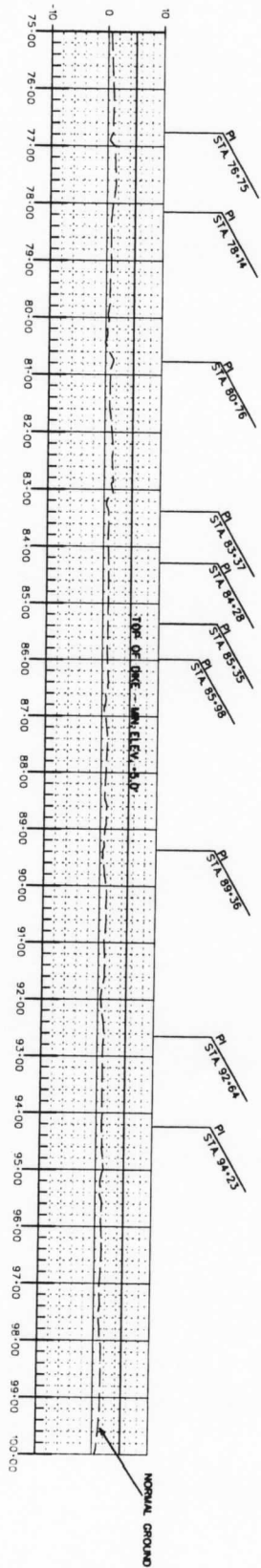
- NOTES:
1. ALL VERTICAL DATUM - NAVD 1988
 2. SEE SHEETS 12 & 13 FOR SCALED CROSS SECTIONS OF CONTAINMENT AREA AND CONTAINMENT DIKES.

PRELIMINARY	
THIS DOCUMENT SHALL NOT BE USED FOR CONSTRUCTION, BIDDING, RECONSTRUCTION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT	
NO.	DATE
1	1/15/00
DRAWING NAME	
1. A350	
SHEET 9 OF 15	



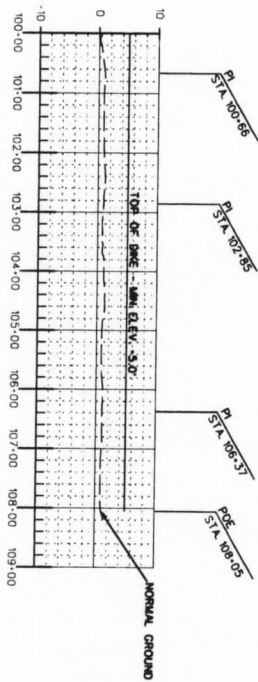
TYPICAL-CONTAINMENT DIKE & DREDGEFILL DETAILS
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

DESIGNED	R. FAULKNER	DATE	07/06
DRAWN	D.J. WILMORE	DATE	07/06
CHECKED			
APPROVED			



PROFILE - STA. 75+00 TO STA. 100+00

SCALE: 10V/1H



PROFILE - STA. 100+00 TO STA. 108+05

SCALE: 10V/1H



SCALE IN FEET

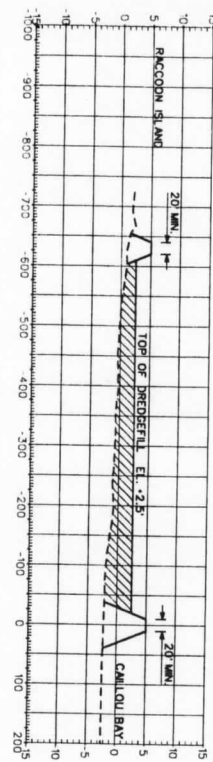
LA35001.dwg 09/26/07 12:24 PM

<p>PRELIMINARY</p> <p>THIS DOCUMENT SHALL NOT BE USED FOR CONSTRUCTION, BIDDING, RECOGNITION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT</p>		<p>FILE NAME LA350</p> <p>DRAWING NAME LA35001.DWG</p>
NO.	DATE	APPROVED BY

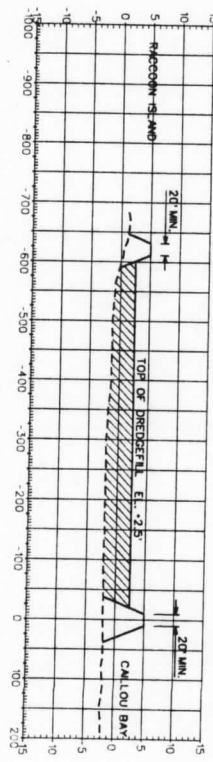


CONTAINMENT DIKE - PROFILE
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

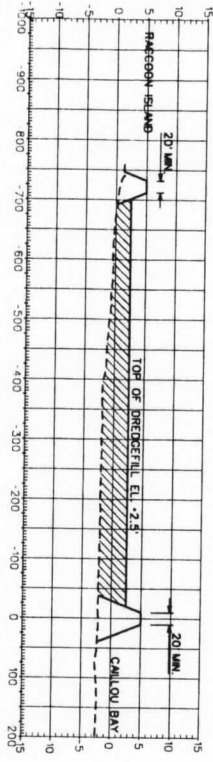
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DRAWN	D.J. WILMORE	DATE	07/06
CHECKED			
APPROVED			



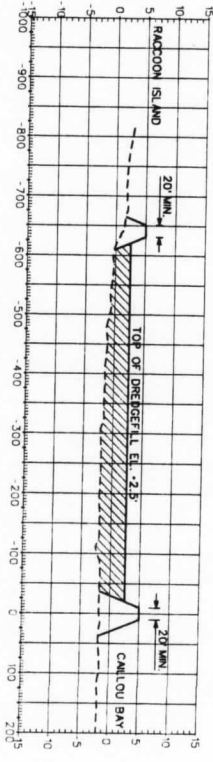
5+00
SECTION A
SCALE: 10V/1H



15+00
SECTION C
SCALE: 10V/1H



10+00
SECTION B
SCALE: 10V/1H



20+00
SECTION D
SCALE: 10V/1H

NOTE:
SEE PLAN SHEET 4.

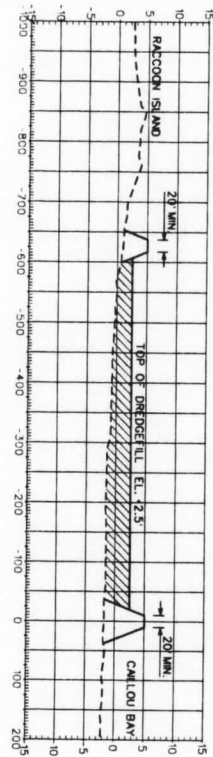


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NO.	DATE
1	APPROVED
2	TITLE
3	REVISIONS
4	OF A PERMIT
5	FILE NAME
6	DRAWING NAME
7	LA550
8	LA550012.DGN
9	SHEET 12 OF 15

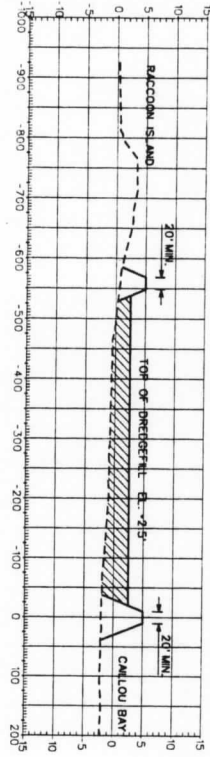


SECTIONS - DREDGE FILL
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

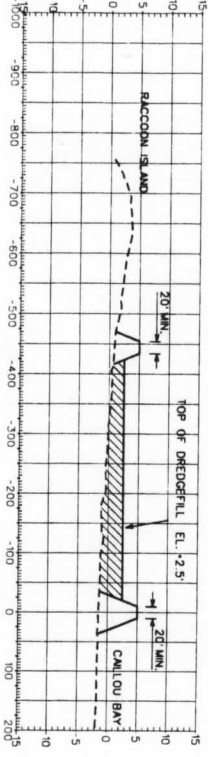
DESIGNED	R. FAULKNER	DATE	07/06
DRAWN	D.J. WILMORE	DATE	07/06
CHECKED			
APPROVED			



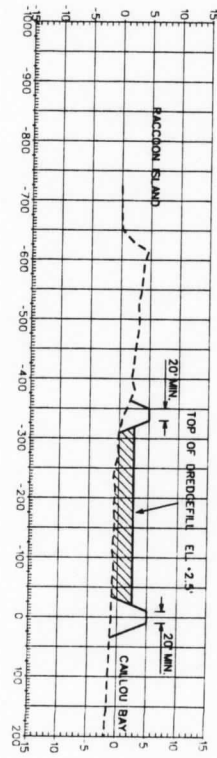
SECTION 25+00
E 5



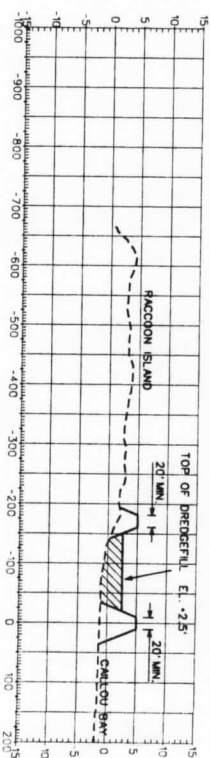
SECTION 30+00
E 5



SECTION 35+00
E 5



SECTION 40+00
H 5



SECTION 45+00
H 5

NOTE:
SEE PLAN SHEET 3.

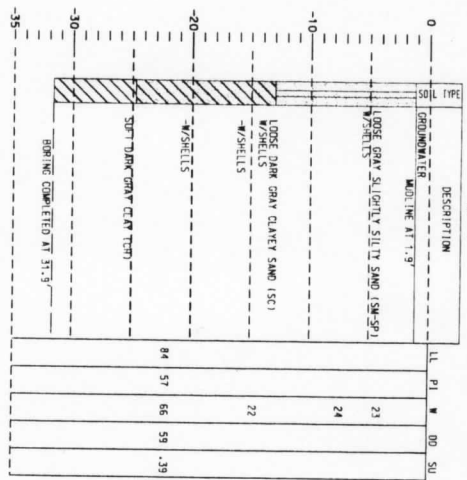
PRELIMINARY	
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SALES, OR AS THE BASIS	
FOR THE ISSUANCE	
OF A PERMIT	
NO. DATE APPROVED	FILE NAME
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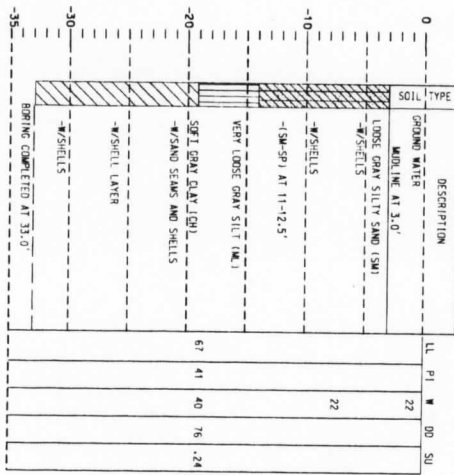
SECTIONS - DREDGE FILL
RACCOON ISLAND (TE-48)
PHASE B - MARSH CREATION PROJECT
TERREBONNE PARISH, LOUISIANA

DESIGNED	R. FAULKNER	DATE	07/06
DRAWN	D.J. WILMORE	DATE	07/06
CHECKED			
APPROVED			

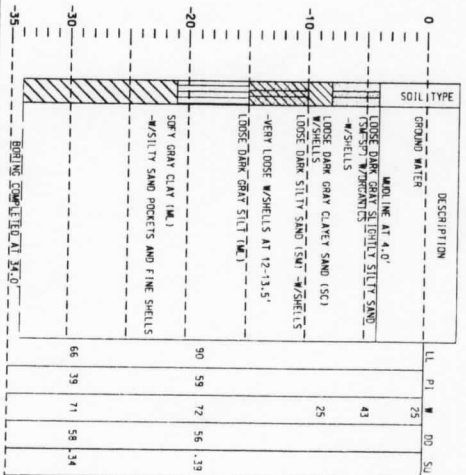
B-1



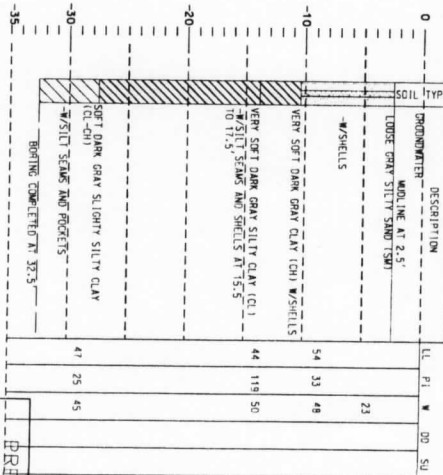
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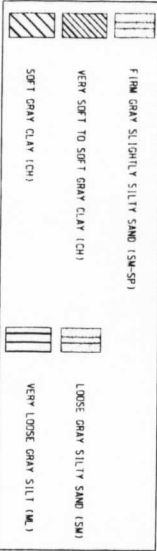
B-2



B-4



SOIL TYPE



SOIL BORINGS LOGS-B1 THRU B4 RACCOON ISLAND (TE-48)

LEGEND

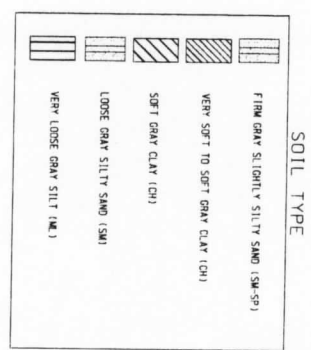
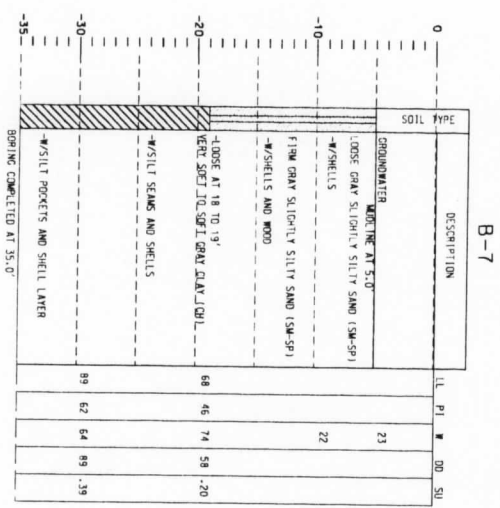
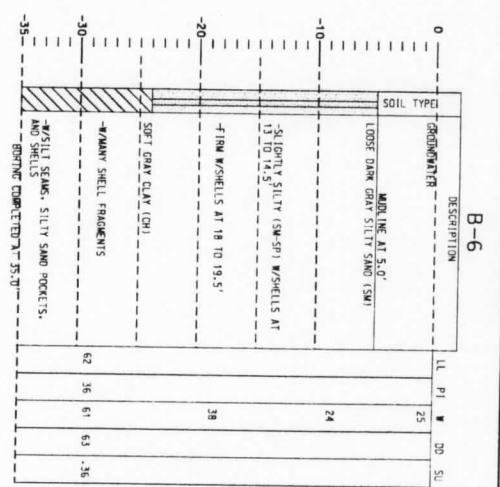
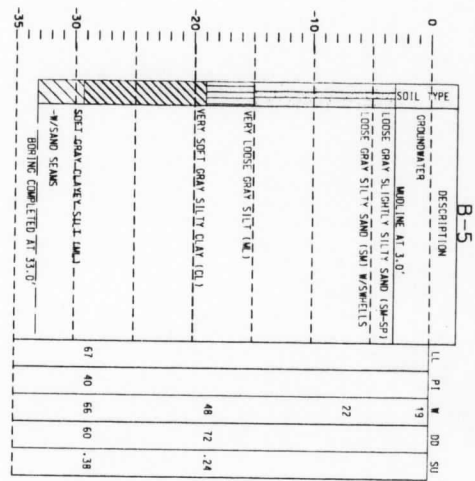
LL LIQUID LIMIT (%)
 PI PLASTICITY LIMIT (%)
 W WATER CONTENT (%)
 DO DRY DENSITY (pcf)
 SU UNDRAINED SHEAR STRENGTH (ksf)

PRELIMINARY
 THIS DOCUMENT SHALL
 NOT BE USED FOR
 CONSTRUCTION, BRIDG,
 RECORDATION, CONVEYANCE,
 SALES, OR AS THE BASIS
 FOR THE ISSUANCE
 OF A PERMIT
 NO. DATE REVISIONS TITLE



SOIL BORING LOGS - B1 THRU B4
 RACCOON ISLAND (TE-48)
 PHASE B - MARSH CREATION PROJECT
 TERREBONNE PARISH, LOUISIANA

DESIGNED R. FAULKNER 07/06
 DRAWN D.J. WILMORE 07/06
 CHECKED
 APPROVED



LEGEND

LL LIQUID LIMIT (%)
 PI PLASTICITY LIMIT (%)
 W WATER CONTENT (%)
 DO DRY DENSITY (pcf)
 SU UNGRAINED SAND STRENGTH (ksf)

**SOIL BORINGS LOGS-B5 THRU B7
 RACCOON ISLAND (TE-48)**

Natural Resources Conservation Service
 United States Department of Agriculture

PRELIMINARY

THIS DOCUMENT SHALL NOT BE USED FOR CONSTRUCTION, BORING, RECONSTRUCTION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT

FILE NAME
 L1350

DRAWING NAME
 L1350'S.DCN

NO. DATE REVISIONS FILE

SHEET 15 OF 15

SOIL BORINGS LOGS - B5 THRU B7
 RACCOON ISLAND (TE-48)
 PHASE B - MARSH CREATION PROJECT
 TERREBONNE PARISH, LOUISIANA

DESIGNED R. FAULKNER 07/06
 DRAWN D.J. WILMORE 07/06
 CHECKED
 APPROVED

June 7, 2016

Mr. Karl Morgan
Department of Natural Resources
Office of Coastal Management
P.O. Box 44487
Baton Rouge, LA 70804

Re: DWF ID# 2816016, Coastal Protection and Restoration Authority (CPRA), Proposed Raccoon Island Breakwater Rehabilitation and Removal of Structures Associated with TE-48, Isles Dernieres Barrier Island Refuge (IDBIR)

Dear Mr. Morgan:

The Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced project and will offer this Letter of Clearance in accordance with the Memorandum of Understanding between our two agencies provided that the following conditions are made a part of the Coastal Use Permit.

1. Prior to the initiation of the proposed project, CPRA shall notify Vaughan McDonald, in writing their intent to begin the project and give a brief outline of the project schedule. Upon receipt of this notification, LDWF may request a pre-project meeting with CPRA to coordinate project details.
2. CPRA shall notify Mr. Lance Campbell prior to any activities within IDBIR. Mr. Campbell may be reached at (337) 373-0032.
3. CPRA shall be responsible for repairing any damages to IDBIR as a result of their operations.
4. GRANTEE (i.e., CPRA) shall hold harmless, defend and indemnify GRANTOR, the state, the Louisiana Wildlife and Fisheries Commission, their assigns, agents, and employees (including volunteers) against any and all claims for property damage and bodily injury (including death) which may arise as a result of the proposed project, including all claims which are alleged to be a result of the negligence of the GRANTOR, the state, the Wildlife and Fisheries Commission, their assigns, agents, or employees (including volunteers).

After review of "Louisiana's Comprehensive Master Plan for a Sustainable Coast" (Master Plan), it is the opinion of LDWF that the portion of the proposed project that lies within the IDBIR does not conflict with the goals and objectives of the Master Plan. LDWF has determined that the portion of the proposed project that lies within the IDBIR has been designed in such a way that is consistent with the Louisiana Coastal Resources Program to the maximum extent practicable.

Additionally, the project has been reviewed for potential impacts to resources of concern to the Louisiana Natural Heritage Program for the portion of the project that lies within IDBIR. Three species of concern

may potentially be impacted as a result of your project (Piping Plover – *Charadrius melodus*, Wilson's Plover – *Charadrius wilsonia*, and Snowy Plover – *Charadrius alexandrius*). Additionally, Waterbird nesting colonies, Coastal Dune Grasslands, and Marine submergent vascular vegetation may be impacted as a result of the proposed project

Piping Plover:

The piping plover (*Charadrius melodus*) may occur within one mile of the project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Piping Plovers winter in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: <http://endangered.fws.gov>. Contact Bridgette Firmin with the United States Fish & Wildlife Service at (337) 291-3132 to coordinate activities.

Wilson's Plover

Our database indicates an occurrence of Wilson's Plover (*Charadrius wilsonia*) in your project area. This is a species of special concern. It holds a state rank of S1S3B, S3N and is considered critically imperiled/rare in Louisiana. During the breeding season, the Wilson's Plover occurs in eastern and southern coastal areas of the United States. It winters from southern coastal Florida south to northern South America, usually along the Atlantic and Gulf coasts. Wilson's plover is locally common on beaches, sand flats, and fresh dredged-material. The birds feed on tidal mudflats and sandy beaches where marine invertebrates are abundant. The breeding season begins in early April and extends into August. Nesting occurs on sandy beaches near the coast. The Wilson's Plover is a colonial nester nesting in loose groups sometimes with oystercatchers and terns. Threats include habitat loss/degradation due to coastal development, beach stabilization and renourishment, and sediment diversion; disturbance by humans and their pets to roosting and/or breeding birds; environmental contaminants; and un-naturally high populations of predators.

Snowy Plover

Our database also indicates an occurrence of Snowy Plover (*Charadrius alexandrinus*) in your project area. This species holds a state rank of SIB, SN and is considered critically imperiled in Louisiana. The Snowy Plover winters along the Gulf Coast and can be found year round in southwest Louisiana. This species occurs on beaches, dry mud or salt flats, and the sandy shores of rivers, lakes, and ponds, and nests where vegetation is sparse or absent. A major threat to the Snowy Plover is the alteration of coastal habitat. We recommend that you take the necessary precautions to protect the critical habitat of this species. If you have any questions or need additional information, please call Michael Seymour at 225-763-3554.

Waterbird Nesting Colonies

Our database indicates the presence of bird nesting colonies within one mile of this proposed project. Please be aware that entry into or disturbance of active breeding colonies is

prohibited by the Louisiana Department of Wildlife and Fisheries (LDWF). In addition, LDWF prohibits work within a certain radius of an active nesting colony.

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

1. qualifications of survey personnel;
2. survey methodology including dates, site characteristics, and size of survey area;
3. species of birds present, activity, estimates of number of nests present, and general vegetation type including digital photographs representing the site; and
4. topographic maps and ArcView shapefiles projected in UTM NAD83 Zone 15 to illustrate the location and extent of the colony.

Please mail survey reports on CD to: Louisiana Natural Heritage Program
La. Dept. of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000

To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).
- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1).

Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) may be present in the project vicinity. Submerged aquatic vegetation is considered critically imperiled in Louisiana due to its extreme rarity and vulnerability. This extremely productive community type is known to provide food for a number of species, including the federally endangered manatee (*Trichechus manatus*). SAV acts as nursery areas and provide refuge for the young of many fishes and invertebrates. Work activities should be completed in such manner as to minimize the impacts to this natural community. If the project is to occur at a water depth of 4 feet (1.2 meters) or less, a field visit should be conducted at the worksite to look for evidence of SAV. If no SAV is found near the proposed project, no

6/07/2016

DWF ID# 2816016

Coastal Protection and Restoration Authority

further consultation with LDWF will be necessary. If SAV is found near the proposed project, further consultation with LDWF will be required. Contact Chris Reid at (225) 765-2820 to coordinate activities.

Coastal Dune Grassland

The database indicates that Coastal Dune Grassland is located within the study area. This community is considered critically imperiled in the state of Louisiana and provides habitat for many unique species of plants. Dune sandbur (*Cenchrus tribuloides*) and Sea Oats (*Uniola paniculata*) are two imperiled plant species that can be found within Coastal Dune Grassland communities. We advise you to take the necessary measures to avoid any degradation of this ecological community. If you have any questions or need additional information, please contact Chris Reid at 225-765-2820.

LNHP reports summarize the existing information known at the time of the request regarding the location in question. These reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. If at any time LNHP tracked species are encountered within the project area, please contact our biologist at 225-765-2643.

This Letter of Clearance will be valid for a period of six (6) months from the date of this letter. Should the applicant not submit the Coastal Use Permit Application within this time frame a new Letter of Clearance must be obtained from LDWF prior to applying for the Coastal Use Permit.

If you have any questions concerning this project please contact Vaughan McDonald at (225) 763-8807.

Sincerely,

Randell S. Myers
Assistant Secretary

VM

cc: Coastal Protection and Restoration Authority
c/o Brian Babin (CPRA)
Lance Campbell - LDWF

Geotextile Fabric Specifications

Appendix B – Material Certifications

1853-210" Shipped 12-28-12, PL #28363

Belton Test Results

Belton Test Results							Tensile Strength				Elongation			Trap Tear				
Roll #	Source Roll #	Date	Style	Width	Yards	Square Yards	Wedge Grips		Roller Grips		Roller Grips		MASS	MD	CD	Puncture	A.O.S.	Water Flow Rate
							MD	CD	MD	CD	MD	CD						
100539515	1724356	11/19/2012	1853	210	159	928	445	610	445	606	18	11.6	16.2	338	520	282	0.375	20.2
100539519	1724276	11/16/2012	1853	210	137	799	438	573	445	606	18	11.6	16.4	338	520	282	0.375	20.2
100539520	1724276	11/16/2012	1853	210	133	776	438	573	445	606	18	11.6	16.4	338	520	282	0.375	20.2



TRI / Environmental, Inc.
A Texas Research International Company

GEOTEXTILE TEST RESULTS

TRI Client: Belton Industries, Inc.

Material: Belton 1853 Woven Geotextile

Sample Identification: 1657741

TRI Log #: E2341-05-02

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5199)													
Thickness (mils)	82	82	83	83	81	83	87	84	86	88	84 81	2 << min	
Mass/Unit Area (ASTM D 5261)													
5" diameter circle (grams)	6.69	6.77	6.74	6.21	6.91	6.88	6.94	6.83	6.90	7.03	6.79	0.23	
Mass/Unit Area (oz/sq.yd)	15.6	15.7	15.7	14.4	16.1	16.0	16.1	15.9	16.0	16.4	15.8	0.5	
Puncture Resistance (ASTM D 4833)													
Puncture Strength (lbs)	333	339	296	272	344	308	286	341	278	300	302	36	
	254	226	287	312	352								
Trapezoidal Tear (ASTM D 4533)													
MD - Tear Strength (lbs)	290	301	301	319	322	308	278	284	308	294	301	14	
TD - Tear Strength (lbs)	269	473	395	288	275	362	387	248	365	287	335	72	
Mullen Burst Strength (ASTM D 3786, modified)													
Tare (psi):	30												
Burst Strength (psi) *	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	0	
												Tare Not Subtracted	

*Note : Burst not achieved for all specimens. Measurements represent the maximum pressure to the limit of testing equipment.

MD Machine Direction TD Transverse Direction NA Not Available

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



TRI / Environmental, Inc.
A Texas Research International Company

GEOTEXTILE TEST RESULTS

TRI Client: Belton Industries, Inc.

Material: Belton 1853 Woven Geotextile

Sample Identification: 1657100

TRI Log #: E2339-97-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Thickness (ASTM D 5199)												
Thickness (mils)	78	79	80	80	81	79	78	79	78	77	79 77	1 << min
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	6.90	6.83	6.73	6.90	6.93	6.87	6.80	6.84	6.84	6.87	6.85	0.06
Mass/Unit Area (oz/sq.yd)	16.0	15.9	15.7	16.0	16.1	16.0	15.8	15.9	15.9	16.0	15.9	0.1
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	247 297	299 290	358 288	242 264	346 292	277	307	307	325	297	296	32
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	283	313	313	332	298	310	326	324	326	312	314	15
TD - Tear Strength (lbs)	340	329	310	368	359	338	310	333	352	363	338	20
Mullen Burst Strength (ASTM D 3786, modified)												
Tare (psi):	30											
Burst Strength (psi)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	0 Tare Not Subtracted

*Note : Burst not achieved for all specimens. Measurements represent the maximum pressure to the limit of testing equipment.

MD Machine Direction TD Transverse Direction NA Not Available

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI Test Results - Permeability

Current Roll #	Source Roll #	Date	Thickness (mils)	Thickness (cm)	Permittivity (sec ⁻¹)	Permeability (cm/sec)
100437871	1707272	1/14/2012	74.6	0.189	0.320	0.06
100471902	1710584	2/25/2012	78.8	0.200	0.300	0.06
1719402	1719402	8/16/2012	76.2	0.194	0.330	0.06
1719410	1719410	8/16/2012	72.9	0.185	0.400	0.07
1720472	1720472	9/6/2012	73.1	0.186	0.283	0.05
1720790	1720790	9/12/2012	77.1	0.196	0.299	0.06
1722174	1722174	10/8/2012	67.6	0.172	0.490	0.08
1722476	1722476	10/12/2012	74.1	0.188	0.310	0.06
1723290	1723290	10/29/2012	77.2	0.196	0.530	0.10
1724276	1724276	11/16/2012	<u>76.9</u>	<u>0.195</u>	<u>0.400</u>	<u>0.08</u>
	Average		74.9	0.190	0.366	0.07
	Std Dev					0.02
	MARV					0.04

Appendix C - Product Specification & Seam Strength Data



Distributed by



Beltech 4 x 6 Style 1853 Product Data Sheet November 2011

A woven geotextile fabric, produced from polypropylene slit-film tapes, which will meet or exceed the following MARV's.
This fabric is produced for use in Filtration and Dewatering application. Its sand color makes it more appealing than traditional black fabrics in many applications.

Property	Test Method	English Units			SI Units		
		MARV			MARV		
		MD	CD		MD	CD	
Grab Tensile Strength	ASTM D-4632	600	700	lbs	2670	3115	N
Grab Tensile Elongation	ASTM D-4632	20	15	%	20	15	%
Wide Width Tensile Ultimate	ASTM D-4595	400	600	lbs/in	70	105	kN/m
Wide Width Elongation	ASTM D-4595	17	13	%	17	13	%
Wide Width @ 5%	ASTM D-4595	100	220	lbs/in	17.5	38.5	kN/m
Trapezoid Tear	ASTM D-4533	280	300	lbs	1246	1335	N
"CBR" Puncture - Typical	ASTM D-6241	2950 *		lbs	13.1 *		kN
Puncture	ASTM D-4833	250		lbs	1113		N
Permittivity	ASTM D-4491	0.260		sec ¹	0.260		sec ¹
A.O.S.	ASTM D-4751	40		U.S. Sieve	0.425		mm
UV Resistance (1200 hrs)	ASTM D-4355	70		%	70		%
Water Flow Rate	ASTM D-4491	20		gpm/ft ²	815		l/min/m ²
Pore Size Distribution (O ₅₀)	ASTM D-6767	~ 175 *		U.S. Sieve	85 *		micron
Pore Size Distribution (O ₉₅)	ASTM D-6767	~ 50 *		U.S. Sieve	307 *		micron

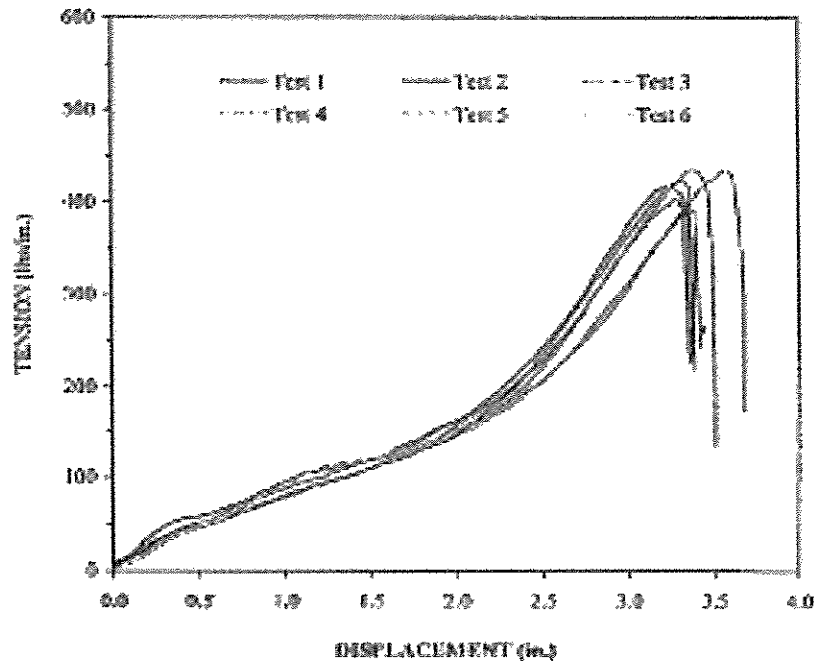
* Typical value rather than MARV

Produced in Belton, South Carolina, U.S.A.

The foregoing is believed to be an accurate representation of information compiled from inside and/or outside sources, however, because test values, statistical data, and other information presented may be based solely on results of unverified tests made on random samples, information presented may relate only to tested samples and because the conditions in which such information may be used are beyond the control of Belton Industries, Inc., Belton does not guarantee either the accuracy or reliability of the information or the suggestions and recommendations contained herein. Belton assumes no responsibility for the use of information presented herein and hereby disclaims all liabilities which may arise in connection with the use of information herein presented. All specifications, properties, values, statistical data and applications listed herein are provided as information only, without charge or obligation to the recipient or user, and in no way either makes or creates any warranty with respect to any product or modifies, amends or enlarges any warranty made with respect to any product. Final determination of the suitability, reliability and accuracy of the information and suggested uses is solely the responsibility of the user. The property values expressed are effective on the date shown above, supersede any values previously published, and are subject to change without notice.

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GEO-SYNTHETICS, INC.
SEAM STRENGTH TESTING (ASTM D 4894)
 Butterfly Seam of Belton 1853 Geosyncline with 2 Rows of Stitches at Seams, 3.5 SPI
 Geosyncline Roll # 100397082
 SGI Sample ID No. S16035



Test No.	Maximum Seam Strength (lbs/in.)	Displacement at Maximum (in.)	Time to Rupture (min.)	Failure Mode (c)	Minimum Strength in XD (lbs/in.)	Seam Efficiency (%)
1	404	3.3	8.1	Rupture of XD Yarns		
2	418	3.2	8.0	Rupture of XD Yarns		
3	392	3.4	8.4	Rupture of XD Yarns		
4	423	3.3	8.3	Rupture of XD Yarns		
5	436	3.4	8.5	Rupture of XD Yarns		
6	436	3.6	8.9	Rupture of XD Yarns		
Avg	418	3.4	8.4	NA	NA	NA
STD	18	0.1	0.3	NA	NA	NA

NOTES:

Clasp:	Roller
Tacking:	None
Specimen Width (in.):	2.0
Clasp Length (in.):	4.0
Stitch Rate (% per minute):	10
MD:	Machine direction
XD:	Cross-machine direction
NA:	Not Applicable

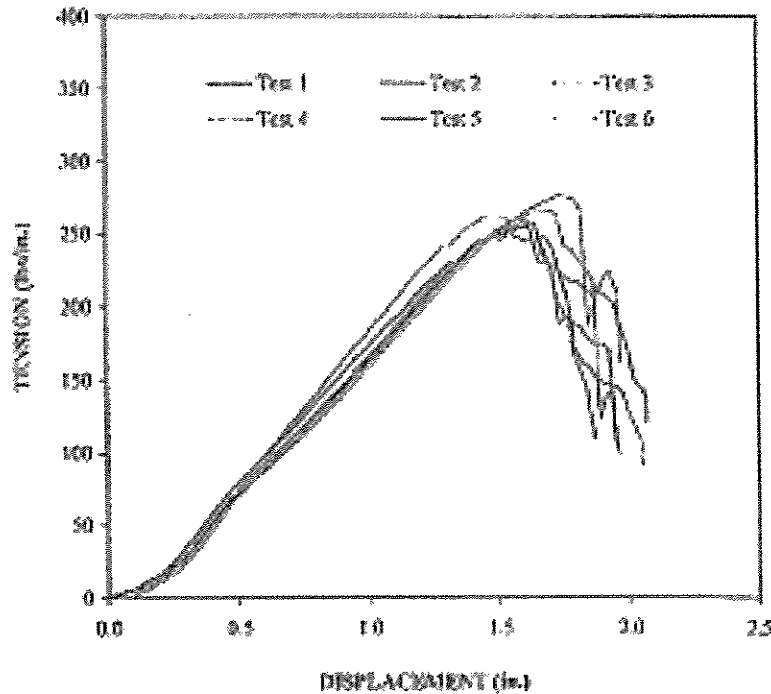
DATE TESTED: 7/15/04



SGI TESTING SERVICES, LLC

FIGURE NO.	6
PROJECT NO.	SG16012
DOCUMENT NO.	
FILE NO.	

GEO-SYNTHETICS, INC.
SEAM STRENGTH TESTING (ASTM D 4884)
J Seam of Belton 1853 Geotextile with 2 Rows of Stitches Parallel to XD, 3.5 SPI
 Geotextile Roll # 100397082
 SGI Sample ID No. S16034



Test No.	Maximum Seam Strength (lb/in.)	Displacement at Maximum (in.)	Time to Rupture (min.)	Failure Mode (i)	Ultimate Strength in MD (lb/in.)	Seam Efficiency (%)
1	253	1.6	4.0	Rupture of MD Yarns		
2	251	1.5	3.4	Rupture of MD Yarns		
3	276	1.7	4.3	Rupture of MD Yarns		
4	258	1.6	4.1	Rupture of MD Yarns		
5	265	1.6	4.1	Rupture of MD Yarns		
6	263	1.5	3.7	Rupture of MD Yarns		
Mean	263	1.6	4.0	NA	NA	NA
STD	9	0.1	0.3	NA	NA	NA

NOTES:

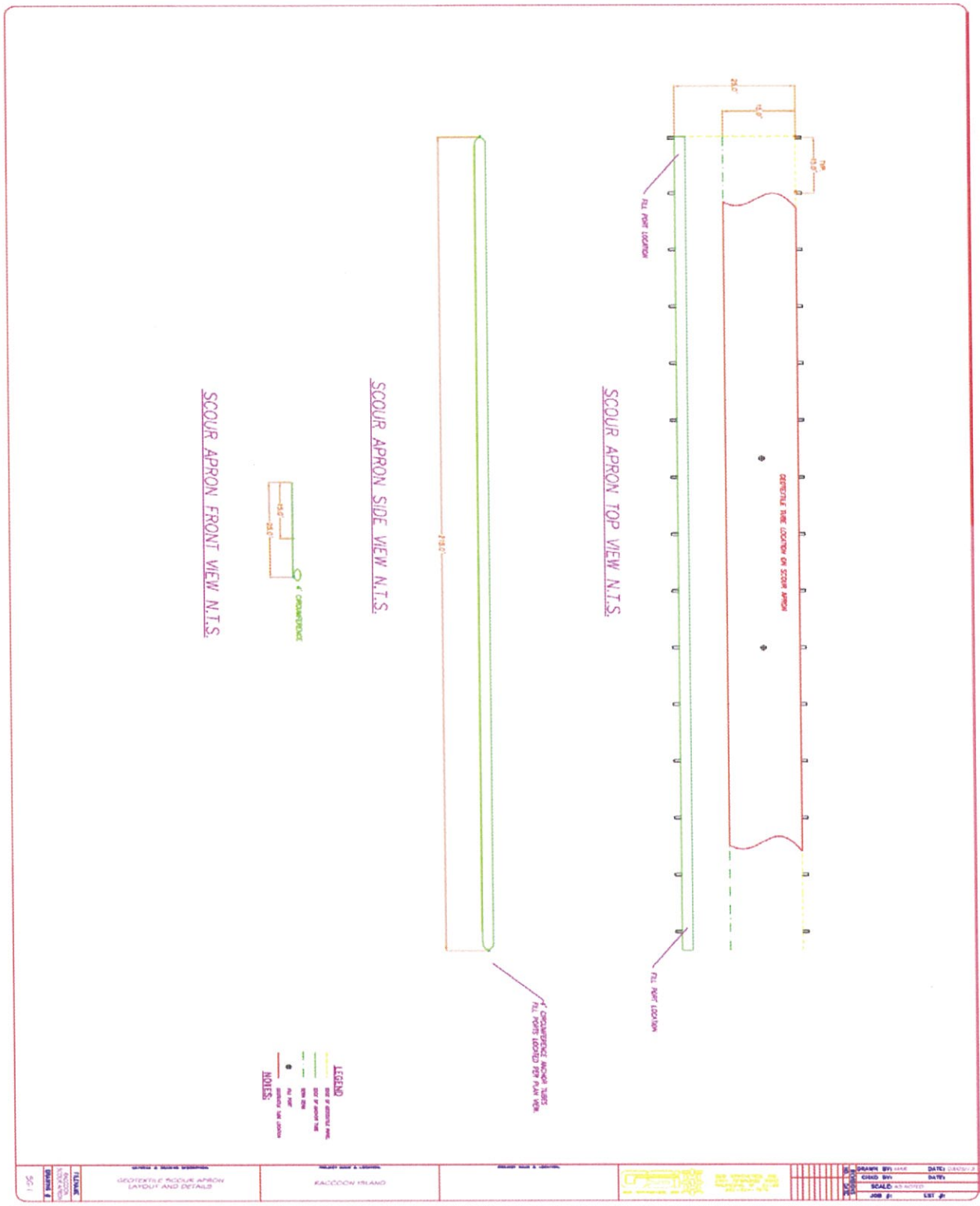
Clamp:	Roller
Paddling:	None
Specimen Width (in.):	2.0
Gage Length (in.):	1.0
Stretch Rate (% per minute):	10
MD:	Machine direction
MT:	Cross-machine direction
NA:	Not Applicable

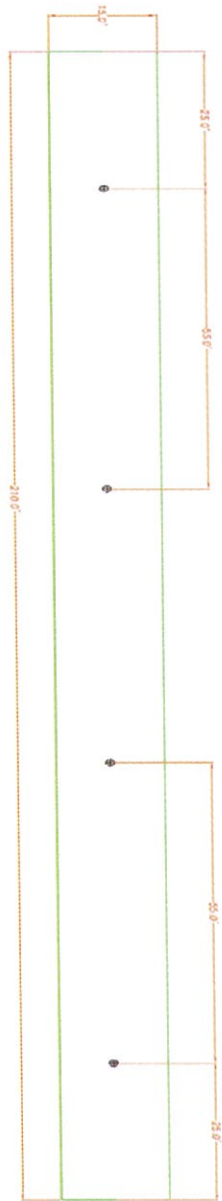


SGI TESTING SERVICES, LLC

DATE TESTED:	7/7/2011
FOURD NO.	5
PROJECT NO.	SCH2012
DOCUMENT NO.	
FILE NO.	

Appendix D – Manufacturers Shop Drawings





GEOTRUPX TUBE SIDE VIEW N.T.S.



GEOTRUPX BUTT JOINT SIDE VIEW N.T.S.

1) The joint is constructed from the
 final product of the tube. The joint
 is 3' long per tube section.

NOTES:

- 1. Final Prod
- 2. Final Shoring
- 3. Final Joint

LEGEND

- 1. Final Prod
- 2. Final Shoring
- 3. Final Joint

Appendix E – Schedule



GEOSTRUX™ GEOTEXTILE TUBE HANDLING AND STORAGE¹

- Product Delivery, Handling, and Storage
 - Product Delivery
 - The Geotextile tube shall be delivered wrapped in a protective wrap that consists of a nonwoven geotextile and a black plastic wrap. There will be product identification on the outside wrap as well as on the Geotextile tube itself. The identification on the wrap will be the tube size. The information on the tube proper will be the size, weight, and production date. The tube will be rolled on a steel/cardboard core depending on the size of the tube.
 - Product Handling
 - No hooks, tongs, forks, or other sharp devices shall be used to handle the Geotextile Tube. If practical use machinery fitted with poles that can be inserted into the core for moving the Geotextile tube around. Care should be taken so as to not damaging the protective wrap by sliding, dragging, or prodding the roll. Care should be taken to not damage the core with a pole that is not at least two thirds the length of the core. Straps and slings may be used to carry relatively rigid rolls of material provided the slings do not cause damage to the rolls.
 - Product Storage
 - When storing the Geotextile Tube care should be taken to elevate the tube so as to keep the product out of standing/accumulated water. Care should be taken to protect the product from environmental conditions that could reduce the performance of the Geotextile Tube. The protective wrap should remain in place until the product is to be installed on site to assure protection from sunlight and other environmental conditions over extended periods of time. Care should be taken to assure that there are no sharp objects in the storage area that may damage the tube.

Geotextile Tube Repair

It is always best to enlist an experienced geotextile tube installer on the project. They have the ability to assess the damage and provide solutions at the time of the mishap. The first step in repair of a geotextile tube should be to determine the cause for the damage to the tube, if the damage was created by internal or external forces or debris, the process for pumping should be reviewed in order to prevent further damage.

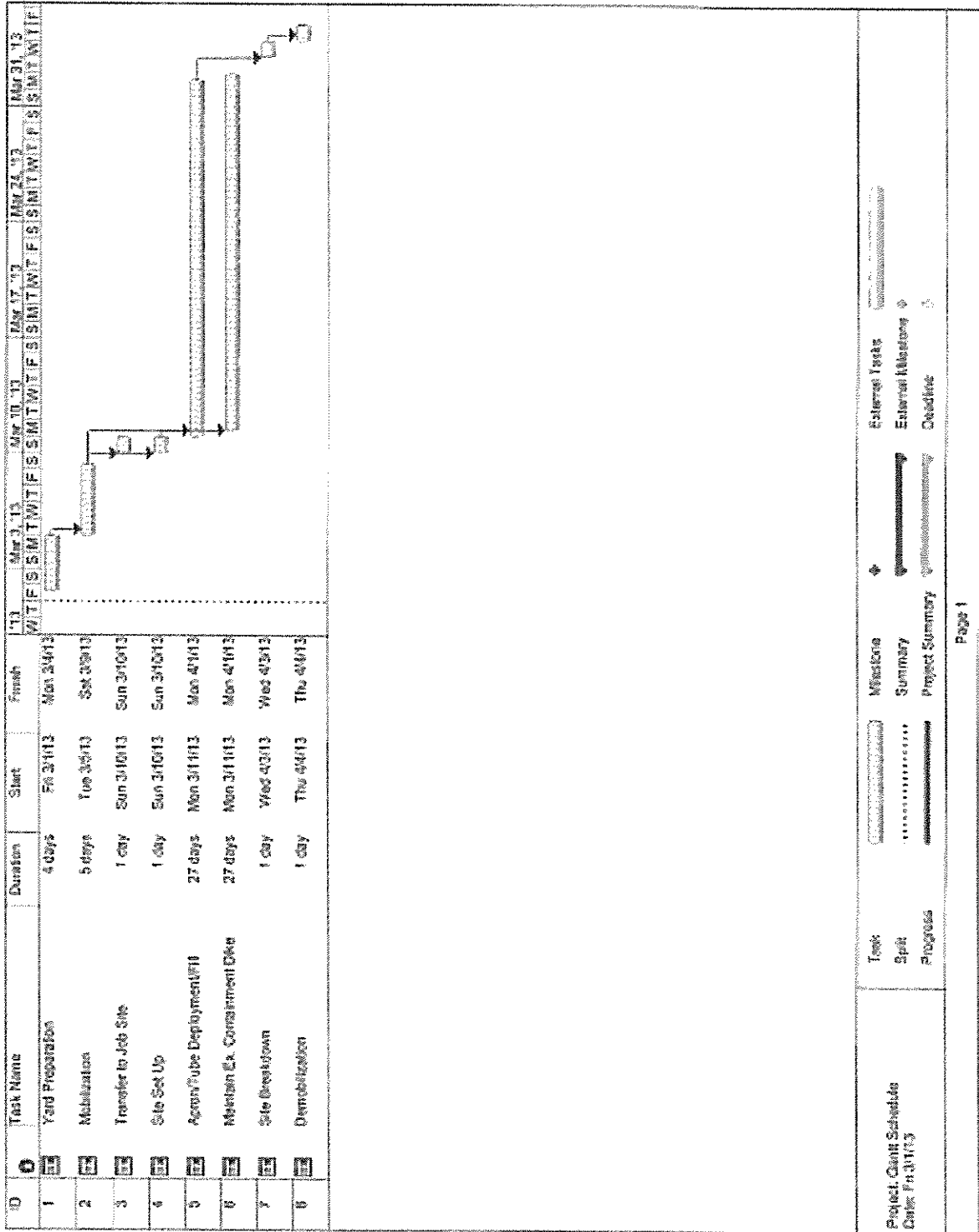
Should a hole develop in the fabric of the tube first clean the area around the hole. Cut a piece of fabric that is 6 inches wider than the hole. Insert the patch material into the hole and spread the patch out to create good contact with the inside of the tube. Then if the inside pressure does not hold the patch in place use the hook needle and thread supplied to attach the patch to the side wall of the tube. If the hole is more of a slit then use the needle and thread supplied to sew the slit together.

Nylon zip ties are also supplied to make a quick repair of a slit area in the wall of the tube. This works for damaged areas less than 18" in length. In areas that are larger then clamp the area with two pieces of wood and "C" clamps and use all weather screws and screw the wood together creating a new "seam".

If the damage is in the seam there may not be a repair solution that will allow for maximum filling of the tube. A replacement may be the only solution. Working around the tube with sharp edges and mechanical equipment should warrant care and where necessary a second person to spot the activity to prevent moving too close to the geotextile tube.

The immediate filling period is when the tube will experience the greatest pressures. As consolidation develops there will be less outward pressure on the damaged area. At that time it is a matter of sealing the hole to prevent migration of the contained materials.

Appendix F – Schedule



Appendix C - Product Specification & Seam Strength Data



Distributed by



Beltech 4 x 6

Style 1853

Product Data Sheet

November 2011

A woven geotextile fabric, produced from polypropylene slit-film tapes, which will meet or exceed the following MARV's.
This fabric is produced for use in Filtration and Dewatering application. Its sand color makes it more appealing than traditional black fabrics in many applications.

Property	Test Method	English Units			SI Units		
		MARV			MARV		
		MD	CD		MD	CD	
Grab Tensile Strength	ASTM D-4632	600	700	lbs	2670	3115	N
Grab Tensile Elongation	ASTM D-4632	20	15	%	20	15	%
Wide Width Tensile Ultimate	ASTM D-4595	400	600	lbs/in	70	105	kN/m
Wide Width Elongation	ASTM D-4595	17	13	%	17	13	%
Wide Width @ 5%	ASTM D-4595	100	220	lbs/in	17.5	38.5	kN/m
Trapezoid Tear	ASTM D-4533	280	300	lbs	1246	1335	N
"CBR" Puncture - Typical	ASTM D-6241	2950 *		lbs	13.1 *		kN
Puncture	ASTM D-4833	250		lbs	1113		N
Permittivity	ASTM D-4491	0.260		sec ¹	0.260		sec ⁻¹
A.O.S.	ASTM D-4751	40		U.S. Sieve	0.425		mm
UV Resistance (1200 hrs)	ASTM D-4355	70		%	70		%
Water Flow Rate	ASTM D-4491	20		gpm/ft ²	815		l/min/m ²
Pore Size Distribution (O ₅₀)	ASTM D-6767	~ 175 *		U.S. Sieve	85 *		micron
Pore Size Distribution (O ₉₅)	ASTM D-6767	~ 50 *		U.S. Sieve	307 *		micron

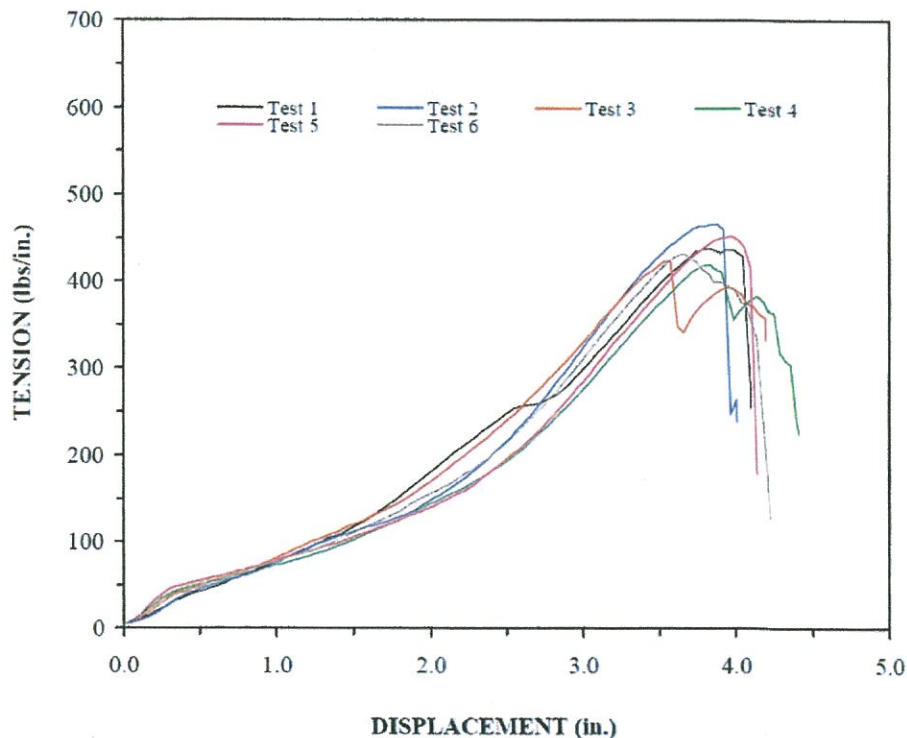
* Typical value rather than MARV

Produced in Belton, South Carolina, U.S.A.

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GEO-SYNTHETICS, INC.
SEAM STRENGTH TESTING (AST.M D 4884)
 Butterfly Seam with 2 Rows of Stitches at Selvage and 4.0 SPI
 Geotextile: Belton 1853 Woven Geotextile
 Geotextile Roll # 100525870 and 100532816
 SGI Sample ID No. S17161



Test No.	Maximum Seam Strength (lbs/in.)	Displacement at Maximum (in.)	Time to Rupture (min.)	Failure Mode (-)	Ultimate Strength in XD (lbs/in.)	Seam Efficiency (%)
1	440	3.8	9.6	Rupture of XD Yarns		
2	467	3.8	9.6			
3	424	3.5	8.9			
4	421	3.8	9.5			
5	453	4.0	9.9			
6	433	3.7	9.1			
Mean	440	3.8	9.4	NA	NA	NA
STD	18	0.1	0.4	NA	NA	NA

NOTES:

Clamp:	Roller
Padding:	None
Specimen Width (in.):	8.0
Gage Length (in.):	4.0
Strain Rate (% per minute):	10
MD:	Machine direction
XD:	Cross-machine direction
NA:	Not Applicable

DATE TESTED: 12/11/2012



SGI TESTING SERVICES, LLC

FIGURE NO.	1
PROJECT NO.	SGI10012
DOCUMENT NO.	
FILE NO.	

[illegible]

Appendix E – Schedule

Task Name		Duration	Start	Finish	TH	Mon 3/12	Tue 3/13	Wed 3/14	Thu 3/15	Fri 3/16	Sat 3/17	Sun 3/18	Mon 3/19	Tue 3/20	Wed 3/21	Thu 3/22	Fri 3/23	Sat 3/24	Sun 3/25	Mon 3/26	Tue 3/27	Wed 3/28	Thu 3/29	Fri 3/30	Sat 3/31	Sun 4/1	Mon 4/2	Tue 4/3	Wed 4/4	Thu 4/5	Fri 4/6	Sat 4/7	Sun 4/8	Mon 4/9	Tue 4/10	Wed 4/11	Thu 4/12	Fri 4/13	Sat 4/14	Sun 4/15	Mon 4/16	Tue 4/17	Wed 4/18	Thu 4/19	Fri 4/20	Sat 4/21	Sun 4/22	Mon 4/23	Tue 4/24	Wed 4/25	Thu 4/26	Fri 4/27	Sat 4/28	Sun 4/29	Mon 4/30	Tue 5/1	Wed 5/2	Thu 5/3	Fri 5/4	Sat 5/5	Sun 5/6	Mon 5/7	Tue 5/8	Wed 5/9	Thu 5/10	Fri 5/11	Sat 5/12	Sun 5/13	Mon 5/14	Tue 5/15	Wed 5/16	Thu 5/17	Fri 5/18	Sat 5/19	Sun 5/20	Mon 5/21	Tue 5/22	Wed 5/23	Thu 5/24	Fri 5/25	Sat 5/26	Sun 5/27	Mon 5/28	Tue 5/29	Wed 5/30	Thu 5/31	Fri 6/1	Sat 6/2	Sun 6/3	Mon 6/4	Tue 6/5	Wed 6/6	Thu 6/7	Fri 6/8	Sat 6/9	Sun 6/10	Mon 6/11	Tue 6/12	Wed 6/13	Thu 6/14	Fri 6/15	Sat 6/16	Sun 6/17	Mon 6/18	Tue 6/19	Wed 6/20	Thu 6/21	Fri 6/22	Sat 6/23	Sun 6/24	Mon 6/25	Tue 6/26	Wed 6/27	Thu 6/28	Fri 6/29	Sat 6/30	Sun 7/1	Mon 7/2	Tue 7/3	Wed 7/4	Thu 7/5	Fri 7/6	Sat 7/7	Sun 7/8	Mon 7/9	Tue 7/10	Wed 7/11	Thu 7/12	Fri 7/13	Sat 7/14	Sun 7/15	Mon 7/16	Tue 7/17	Wed 7/18	Thu 7/19	Fri 7/20	Sat 7/21	Sun 7/22	Mon 7/23	Tue 7/24	Wed 7/25	Thu 7/26	Fri 7/27	Sat 7/28	Sun 7/29	Mon 7/30	Tue 7/31	Wed 8/1	Thu 8/2	Fri 8/3	Sat 8/4	Sun 8/5	Mon 8/6	Tue 8/7	Wed 8/8	Thu 8/9	Fri 8/10	Sat 8/11	Sun 8/12	Mon 8/13	Tue 8/14	Wed 8/15	Thu 8/16	Fri 8/17	Sat 8/18	Sun 8/19	Mon 8/20	Tue 8/21	Wed 8/22	Thu 8/23	Fri 8/24	Sat 8/25	Sun 8/26	Mon 8/27	Tue 8/28	Wed 8/29	Thu 8/30	Fri 8/31	Sat 9/1	Sun 9/2	Mon 9/3	Tue 9/4	Wed 9/5	Thu 9/6	Fri 9/7	Sat 9/8	Sun 9/9	Mon 9/10	Tue 9/11	Wed 9/12	Thu 9/13	Fri 9/14	Sat 9/15	Sun 9/16	Mon 9/17	Tue 9/18	Wed 9/19	Thu 9/20	Fri 9/21	Sat 9/22	Sun 9/23	Mon 9/24	Tue 9/25	Wed 9/26	Thu 9/27	Fri 9/28	Sat 9/29	Sun 9/30	Mon 10/1	Tue 10/2	Wed 10/3	Thu 10/4	Fri 10/5	Sat 10/6	Sun 10/7	Mon 10/8	Tue 10/9	Wed 10/10	Thu 10/11	Fri 10/12	Sat 10/13	Sun 10/14	Mon 10/15	Tue 10/16	Wed 10/17	Thu 10/18	Fri 10/19	Sat 10/20	Sun 10/21	Mon 10/22	Tue 10/23	Wed 10/24	Thu 10/25	Fri 10/26	Sat 10/27	Sun 10/28	Mon 10/29	Tue 10/30	Wed 10/31	Thu 11/1	Fri 11/2	Sat 11/3	Sun 11/4	Mon 11/5	Tue 11/6	Wed 11/7	Thu 11/8	Fri 11/9	Sat 11/10	Sun 11/11	Mon 11/12	Tue 11/13	Wed 11/14	Thu 11/15	Fri 11/16	Sat 11/17	Sun 11/18	Mon 11/19	Tue 11/20	Wed 11/21	Thu 11/22	Fri 11/23	Sat 11/24	Sun 11/25	Mon 11/26	Tue 11/27	Wed 11/28	Thu 11/29	Fri 11/30	Sat 12/1	Sun 12/2	Mon 12/3	Tue 12/4	Wed 12/5	Thu 12/6	Fri 12/7	Sat 12/8	Sun 12/9	Mon 12/10	Tue 12/11	Wed 12/12	Thu 12/13	Fri 12/14	Sat 12/15	Sun 12/16	Mon 12/17	Tue 12/18	Wed 12/19	Thu 12/20	Fri 12/21	Sat 12/22	Sun 12/23	Mon 12/24	Tue 12/25	Wed 12/26	Thu 12/27	Fri 12/28	Sat 12/29	Sun 12/30	Mon 12/31	Tue 1/1	Wed 1/2	Thu 1/3	Fri 1/4	Sat 1/5	Sun 1/6	Mon 1/7	Tue 1/8	Wed 1/9	Thu 1/10	Fri 1/11	Sat 1/12	Sun 1/13	Mon 1/14	Tue 1/15	Wed 1/16	Thu 1/17	Fri 1/18	Sat 1/19	Sun 1/20	Mon 1/21	Tue 1/22	Wed 1/23	Thu 1/24	Fri 1/25	Sat 1/26	Sun 1/27	Mon 1/28	Tue 1/29	Wed 1/30	Thu 1/31	Fri 2/1	Sat 2/2	Sun 2/3	Mon 2/4	Tue 2/5	Wed 2/6	Thu 2/7	Fri 2/8	Sat 2/9	Sun 2/10	Mon 2/11	Tue 2/12	Wed 2/13	Thu 2/14	Fri 2/15	Sat 2/16	Sun 2/17	Mon 2/18	Tue 2/19	Wed 2/20	Thu 2/21	Fri 2/22	Sat 2/23	Sun 2/24	Mon 2/25	Tue 2/26	Wed 2/27	Thu 2/28	Fri 2/29	Sat 3/1	Sun 3/2	Mon 3/3	Tue 3/4	Wed 3/5	Thu 3/6	Fri 3/7	Sat 3/8	Sun 3/9	Mon 3/10	Tue 3/11	Wed 3/12	Thu 3/13	Fri 3/14	Sat 3/15	Sun 3/16	Mon 3/17	Tue 3/18	Wed 3/19	Thu 3/20	Fri 3/21	Sat 3/22	Sun 3/23	Mon 3/24	Tue 3/25	Wed 3/26	Thu 3/27	Fri 3/28	Sat 3/29	Sun 3/30	Mon 3/31	Tue 4/1	Wed 4/2	Thu 4/3	Fri 4/4	Sat 4/5	Sun 4/6	Mon 4/7	Tue 4/8	Wed 4/9	Thu 4/10	Fri 4/11	Sat 4/12	Sun 4/13	Mon 4/14	Tue 4/15	Wed 4/16	Thu 4/17	Fri 4/18	Sat 4/19	Sun 4/20	Mon 4/21	Tue 4/22	Wed 4/23	Thu 4/24	Fri 4/25	Sat 4/26	Sun 4/27	Mon 4/28	Tue 4/29	Wed 4/30	Thu 5/1	Fri 5/2	Sat 5/3	Sun 5/4	Mon 5/5	Tue 5/6	Wed 5/7	Thu 5/8	Fri 5/9	Sat 5/10	Sun 5/11	Mon 5/12	Tue 5/13	Wed 5/14	Thu 5/15	Fri 5/16	Sat 5/17	Sun 5/18	Mon 5/19	Tue 5/20	Wed 5/21	Thu 5/22	Fri 5/23	Sat 5/24	Sun 5/25	Mon 5/26	Tue 5/27	Wed 5/28	Thu 5/29	Fri 5/30	Sat 5/31	Sun 6/1	Mon 6/2	Tue 6/3	Wed 6/4	Thu 6/5	Fri 6/6	Sat 6/7	Sun 6/8	Mon 6/9	Tue 6/10	Wed 6/11	Thu 6/12	Fri 6/13	Sat 6/14	Sun 6/15	Mon 6/16	Tue 6/17	Wed 6/18	Thu 6/19	Fri 6/20	Sat 6/21	Sun 6/22	Mon 6/23	Tue 6/24	Wed 6/25	Thu 6/26	Fri 6/27	Sat 6/28	Sun 6/29	Mon 6/30	Tue 7/1	Wed 7/2	Thu 7/3	Fri 7/4	Sat 7/5	Sun 7/6	Mon 7/7	Tue 7/8	Wed 7/9	Thu 7/10	Fri 7/11	Sat 7/12	Sun 7/13	Mon 7/14	Tue 7/15	Wed 7/16	Thu 7/17	Fri 7/18	Sat 7/19	Sun 7/20	Mon 7/21	Tue 7/22	Wed 7/23	Thu 7/24	Fri 7/25	Sat 7/26	Sun 7/27	Mon 7/28	Tue 7/29	Wed 7/30	Thu 7/31	Fri 8/1	Sat 8/2	Sun 8/3	Mon 8/4	Tue 8/5	Wed 8/6	Thu 8/7	Fri 8/8	Sat 8/9	Sun 8/10	Mon 8/11	Tue 8/12	Wed 8/13	Thu 8/14	Fri 8/15	Sat 8/16	Sun 8/17	Mon 8/18	Tue 8/19	Wed 8/20	Thu 8/21	Fri 8/22	Sat 8/23	Sun 8/24	Mon 8/25	Tue 8/26	Wed 8/27	Thu 8/28	Fri 8/29	Sat 8/30	Sun 8/31	Mon 9/1	Tue 9/2	Wed 9/3	Thu 9/4	Fri 9/5	Sat 9/6	Sun 9/7	Mon 9/8	Tue 9/9	Wed 9/10	Thu 9/11	Fri 9/12	Sat 9/13	Sun 9/14	Mon 9/15	Tue 9/16	Wed 9/17	Thu 9/18	Fri 9/19	Sat 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