

1 0455. I repeat, that number is (855) 680-0455.

2 All comments received during the formal
3 commenting period through July 3rd will carry the
4 same weight as the comments submitted today. You
5 do not have to submit a comment today, and you
6 will be heard just as clearly as those who speak
7 today. Additional information about submitting
8 comments is provided on the project website.

9 We will begin with comments from public
10 officials.

11 Connor, do we have any public officials
12 that wish to provide comment today?

13 MR. STOKES: Thank you, Jayson. We do
14 not have any public officials that would like to
15 provide comment today.

16 MR. HUDSON: Okay. We will begin with
17 the public speakers.

18 Connor, who are the first five speakers?

19 MR. STOKES: Our first five speakers are
20 Cathy Fulton, James King, Kenneth Teague, Rick
21 Stockton, and Joe Kruger. We'll begin with Cathy
22 Fulton.

23 Cathy, your microphone is now unmuted,
24 and you can begin providing comments at this
25 time.

1 MS. FULTON: Yes, hello. My name is
2 Cathy Fulton, and I live in Port Aransas, Texas.
3 And I would like to say that -- I want to say
4 that Sarah Searight is here also, and Barney
5 Farley, along with Jo Ellen Kruger. So whenever
6 they come up, if you'll unmute this mic.

7 I mainly just wanted to point out that
8 at normal public meetings -- and I realize this
9 doesn't have to do with the EIS -- but at normal
10 public meetings, we would be able to see who is
11 attending. And I want to know why we are being
12 blocked from seeing everybody that's in
13 attendance. All we can see is the panel people.

14 But moving on, I would like to submit
15 that the memorandum for record by the policy
16 analysis branch that was done on March -- 7th of
17 March, 2019 with various recommendations of why
18 an EIS is required, I would like to submit that
19 that needs to be considered. Everything that's
20 in that memorandum from your department needs to
21 be submitted as part of the EIS.

22 And in particular, the issue with
23 cumulative impacts that addresses other projects
24 that have happened here, like the Lydia Ann, the
25 barge facility and then these future projects

1 like the Occidental Petroleum facility VLCC site.
2 The Buckeye Partners site that is going on right
3 now, the Moda sight that just finished up there
4 and that they're still working on, and all these
5 actually all tie in together at some point. And
6 we need to consider all those cumulative impacts.

7 And that's all I'm going to say. I've
8 already emailed comments in also. Thank you.

9 MR. STOKES: Thank you for your
10 comments. We will move along to our next
11 speakers.

12 Our next three speakers, James King,
13 Kenneth Teague, and Rick Stockton are not in
14 attendance with us today. So we will go to Jo
15 Kruger.

16 Jo, your microphone is unmuted, and you
17 can begin providing comments at this time.

18 MS. KRUGER: Okay. Jo Kruger, Port
19 Aransas, Texas. This EIS needs to include all
20 the proposed projects for this area, and needs to
21 use real measurements and studies, not desktop
22 calculations and modeling. It needs to establish
23 the effects of not-yet-complete 55-foot dredging
24 projects that have already caused increased
25 noise, light, air pollution, diesel exhaust,

1 backwash, erosion, wake damage and shipping
2 congestion, as citizens have been concerned from
3 the time this project was first proposed.

4 The EIS should also include the safety
5 issues that are already manifesting since the 55-
6 foot project began: the barge groundings; the
7 barge drowning; tankers losing steering and near-
8 collision with the TxDOT ferry carrying
9 passengers and automobiles.

10 An oil spill accident in the narrow
11 channel entering this area would shut down all
12 traffic. Full attention should be paid to the
13 alternative -- alternate of an offshore monobuoy,
14 which would render this project completely
15 unnecessary.

16 Also, all these projects should be
17 cumulative and all of them should be considered
18 all together. Increased channel depth could
19 negatively affect larvae transport. Dredging and
20 trenching causes suspension of silt, clay and
21 coat and blocks light, smothering vital
22 seagrasses. These activities would impact
23 redfish, flounder, sheepshead, trout, blue crabs
24 and many more species including bird populations.

25 Also I am concerned about the dredge

1 spoil and about taking it offshore and dumping
2 it. It's such contaminated soil, and when the
3 last dredge was here and they dumped it offshore
4 it all ended back up on our beaches. And it
5 killed a lot of sea turtles, et cetera. I'm
6 really concerned about that because it really was
7 a problem.

8 Oil spills from loading operations or
9 pipelines, ruptures in neighborhoods or in
10 wetlands would be catastrophic. Emissions from
11 tugs, VLCC, daily operations and burning of
12 vapors.

13 Also, all these have occurred before --
14 all of this have occurred before the other
15 segments of the 55-foot permitted projects are
16 completed. And here is the Port of Corpus
17 Christi, they want more. They want to do an 80-
18 foot dredge which has never been done anywhere.

19 Thank you.

20 MR. STOKES: Thank you for your
21 comments. Your microphone is now placed back on
22 mute.

23 Our next five speakers are Julie
24 Plunkett, Maddie Darling, Ethel Moore, Sarah
25 Searight, and Charles Plunkett.

1 We will begin with Julie Plunkett.

2 Julie, your microphone is now unmuted
3 and you can begin providing comments at this
4 time.

5 MS. PLUNKETT: Hi. My name is Julie
6 Plunkett. Can you hear me? Hello?

7 MR. STOKES: Yes, ma'am. We can hear
8 you.

9 MS. PLUNKETT: My name is Julie
10 Plunkett and I have a house in (indiscernible).
11 And I would like to mention that the last three
12 scoping meetings have been a complete failure,
13 and I really feel that we should have a public
14 meeting. I get it. It's COVID and people want
15 social distancing. But I believe the Army Corps
16 can manage to have a meeting in Port Aransas at
17 the football field or wherever, to be able to
18 hear people who are unable to connect to a WebEx
19 or who are older and are not technical savvy.
20 So I feel like you're doing a disservice
21 because you're not hearing everybody who has
22 something valid to say, because they aren't
23 technical-savvy.
24 The other thing I would like to mention
25 is, in the Code of Federal Regulations, 33 part

1 (Audio cuts out - indiscernible) states in the
2 Part D, content of the application, all
3 activities -- and this is what the Army Corps
4 needs to be looking for when they get an
5 application for permit. All activities which the
6 applicant (indiscernible) to undertake which are
7 reasonably related to the same project and for
8 which a DA permit would be required should be
9 included in the same permit application, meaning
10 we know that the Port of Corpus Christi wants to
11 make shipping berths, and they want the dredge,
12 and all other things. And it says that the U.S.
13 Army Corps of Engineers should reject as
14 incomplete any permit application which fails to
15 comply with this requirement.

16 The fact that you are not looking at the
17 EIS in a cumulative (Audio cuts out -
18 indiscernible) affects (indiscernible) proposed
19 projects is absolutely devastating to Port
20 Aransas. You need to realize how much this can
21 affect our little town.

22 (Indiscernible) does this one
23 (indiscernible) but put all permits together and
24 then add the desalination plant and everything
25 else. I (indiscernible) and I love oil

1 (indiscernible) export the oil. However, there
2 is a safer way to do it that won't affect our
3 environment, and I think you should take it
4 offshore. Thank you.

5 MR. STOKES: Thank you for your
6 comments. Your microphone is now placed back on
7 mute.

8 Our next two speakers, Maddie Darling
9 and Ethel Moore, are not in attendance with us so
10 we will move along to Sarah Searight.

11 Sarah, your microphone is now unmuted
12 and you can begin providing comments at this
13 time.

14 MS. SEARIGHT: Hi. Sarah Searight
15 here. This is not a complete project. Dredging
16 for what? The Port has not been approved for
17 what they are planning on building. Dredging the
18 channel for a VLCC terminal will be a disruption
19 and a never-ending battle.

20 Example, North Carolina Inlet, Ocracoke
21 Inlet, Oregon Inlet, Packery Channel, all are
22 constantly trying -- constantly trying to be kept
23 -- keeping their levels at expense of the state
24 and federal. Carlon Group (phonetic) is not
25 included in this expense and they're not paying

1 the bill anymore.

2 Last year, dredging costs, light, noise,
3 air pollution in Port Aransas which I am an
4 affected person, because it was -- I'm near the
5 channel. I heard everything. I smelled
6 everything.

7 I'm handing you a U.S. Corps of
8 Engineers study on the effects of the channel
9 deepening on tide and storm surge, a case study
10 of Wilmington, North Carolina. It's not a pretty
11 picture for the estuaries or industry near the
12 channel and residents of Port Aransas.

13 So in your effects that we have here, on
14 this piece of paper, it's a study that it says
15 the amplifications in both tide, storm and surge
16 is influenced by the reduced hydraulic drag
17 caused by greater mean depths. So the deeper the
18 channel, the bigger the surge, and the more flow
19 of the water that's going to come through and
20 affect all those industries and cause pollution
21 and disaster to the estuaries and the grasses.

22 Okay. The same tropical cyclone making
23 landfall today will produce a significant larger
24 water levels than in the 19th century. Since
25 many harbors worldwide have deepened since the

1 19th century and because many locations worldwide
2 exhibit substantial trends and tide properties,
3 world (indiscernible) 2010, 2015, it's probable
4 that the secular changes in storm surge risk has
5 also occurred in other estuaries to an extent
6 related to tide changes.

7 In the future, local depth changes due
8 to accelerated sea levels, Church, et 2013, and
9 additional developments may further alter storm
10 surge characteristics of flood hazards.

11 Please take it offshore. And this was a
12 document that I pulled off the internet. Funding
13 was by the Office of Naval Research and the U.S.
14 Corps of Engineers 2015.

15 Thank you.

16 MR. STOKES: Thank you for your
17 comments. Your microphone is now placed back on
18 mute. Our next speaker is Charles Plunkett.

19 Charles, your microphone is now unmuted
20 and you can begin providing comments at this
21 time.

22 MR. PLUNKETT: Okay. Excuse me, good
23 afternoon. This is Charles Plunkett. Can you
24 hear me?

25 MR. STOKES: Yes, we can.

1 MR. PLUNKETT: Okay. So as many people
2 have already said, and I'm sure you've heard
3 before, there's only one reason for
4 (indiscernible) the channel, dredging it to 80
5 feet, and that is to service a VLCC terminal for
6 (Audio cuts out - indiscernible) Christi
7 Authority. Originally it was only going to go to
8 Harbor Island. That was a problem for them.
9 (Indiscernible) extended over to the Martin
10 Midstream property so then it couldn't be a
11 single-purpose project.

12 (Audio cuts out - indiscernible) shell
13 game with no transparency whatsoever, any notices
14 that are required for this project
15 (indiscernible) in (indiscernible) Aransas or the
16 city where it's going to be. They're posted in
17 obscure locations in (indiscernible) town, out of
18 area. They barely meet the criteria of posting
19 requirements. But it is a constant battle to
20 find out any information about what the Port's
21 trying to do.

22 So let's be clear. It's just to service
23 their oil shipping terminal that they're trying
24 to do. And what it amounts to is them trying to
25 monetize a piece of junk land that they bought

1 that is heavily polluted with hydrocarbons, and
2 which presents its own problem.

3 When they begin disturbing that oil
4 there are deed restrictions against them doing
5 that (indiscernible) of the State of Texas. When
6 they begin disturbing that, there's going to be a
7 bunch of oil (indiscernible) up in the bays and
8 estuaries from that very issue.

9 So this really is nothing (Audio cuts
10 out - indiscernible) monetize the piece of
11 (indiscernible) dirt that (indiscernible) there.
12 If it weren't about just trying to transport oil
13 and ship it out of the area, they'd be
14 (indiscernible) shore. But there's no way for
15 them to monetize that. They can't charge tolling
16 fees for the property that they own if it's
17 offshore.

18 My understanding is that the Army Corps
19 is responsible to look for the best alternative
20 (indiscernible) least environmental impact, and
21 clearly the best alternative, the one with the
22 least environmental impact, is taking it
23 offshore.

24 When you do that, you reduce all the
25 risks that people are talking about

1 (indiscernible) first of all placing an ongoing
2 financial burden on the taxpayers, having a high
3 risk of doing damage during a storm surge event
4 with another hurricane, high risk of damage to
5 the bay and marine ecosystem, posing a threat to
6 the numerous endangered species in the areas
7 (Audio cuts out - indiscernible) sea turtle,
8 piping (indiscernible) crane poses a threat to
9 humans with the noxious odors, harmful gases and
10 odors. And last, it has a serious threat to all
11 from the inevitable oil spill that will happen.
12 It's just a matter of time.

13 Just like Deer Park over in Houston,
14 it's just a matter of time before it happens.
15 (Audio cuts out - indiscernible) should be taken
16 offshore. This whole thing should be off the
17 table and we're looking to the Army Corps of
18 Engineers to determine that.

19 Thank you.

20 MR. STOKES: Thank you for your
21 comments. Your microphone has now been placed
22 back on mute.

23 Our next five speakers are John Donovan,
24 Paul Wilhite, Barney Farley, Teresa Carrillo, and
25 Margaret Sheldon.

1 We will start with John Donovan. John,
2 your microphone is unmuted and you can begin
3 providing comments at this time.

4 MR. DONOVAN: Can you hear me now?

5 MR. STOKES: Yes, we can.

6 MR. DONOVAN: Okay. My name is John
7 Donovan. I'm a director of the Port Aransas
8 Conservancy.

9 Since this is a public scoping session,
10 let's talk about scope. On February 14, 2019,
11 Robert Heinly, Chief of the Policy Analysis
12 branch of USACE Galveston, wrote to Sarah Garza
13 of the Port of Corpus Christi Authority pointing
14 out the interdependent nature of the Port's
15 application to dredge the Corpus Christi Ship
16 Channel, CCSC, to 75 to 80 feet; their
17 application to build a Harbor Island terminal
18 facility; and Access Midstream's application to
19 supply pipelines, a tank farm and adjacent
20 terminal facility.

21 Heinly concluded that, "it is clear that
22 the deepening of the CCSC and the construction of
23 the Harbor Island terminal facility are
24 interdependent and should be considered a single
25 and complete project."

1 "In addition to the Harbor Island
2 terminal facility, the Corps has received a
3 permit application from Access Midstream Holdings
4 to construct a series of pipelines and facilities
5 to transport crude oil for loading onto marine
6 transport vessels at the proposed Harbor Island
7 terminal facility.

8 "Considering that Access' proposed
9 project is designed to service single customer,
10 the Harbor Island terminal facility, the Corps
11 concluded that the proposed pipelines and
12 facilities are also interdependent with the
13 Harbor Island terminal facility and the deepened
14 channel.

15 "Considering the interdependent nature
16 of these activities in the context of the Corps'
17 federal control and responsibility, and the fact
18 that the location and configuration of all three
19 of these projects require a Department of the
20 Army permit, the Corps concluded that the permit
21 application does not represent a single and
22 complete project.

23 "The single and complete project shall
24 include the deepening of the channel;
25 construction of the Harbor Island terminal

1 facility; and the pipelines and facilities for
2 Midway tank farm facility in Taft, Texas, to the
3 Harbor Island terminal facility."

4 I urge USACE to require that the scope
5 of the environmental impact study for the Port of
6 Corpus Christi's permit application for deep
7 channel dredging be expanded to include the
8 impacts of all the proposed interconnected
9 projects for Harbor Island, including the Harbor
10 Island terminal facility and the Access Midstream
11 terminal pipelines and tank farm.

12 USACE earlier determined that this would
13 be the proper course of action. However, the
14 Port pushed back strongly and the Corps now seems
15 to have been backed -- to have backed off. I
16 don't wish to cast aspersions, but there is an
17 impression abroad that the Corps is bending over
18 backward to accommodate the Port, who we believe
19 have given the Corps \$200,000 to prepare an EIS
20 -- to help prepare.

21 We would like to see that impression put
22 to rest as the Corps' EIS is our best hope for
23 analyzing and addressing the issues that the
24 local community has raised regarding the numerous
25 planned Harbor Island projects.

1 Thank you.

2 MR. STOKES: Thank you for your
3 comments. Our next speaker, Paul Wilhite, is
4 also not in attendance with us today, so we will
5 move along to Barney Farley.

6 Barney, your microphone is now unmuted
7 and you can begin providing comments.

8 MR. FARLEY: Thank you. I'm Barney
9 Farley. I've been a resident of Port Aransas
10 since 1960. I'll repeat what some other people
11 have said, that this thing about having all these
12 three projects under one umbrella of an EIS is
13 very important. So I see it's on the table, and
14 I'll be curious to see how it shakes out.

15 Dredge material placement is somehow --
16 I have no idea what's going to happen with the
17 contaminated soil from Harbor Island. Perhaps
18 it's in writing somewhere, but that's really
19 important as to what they're going to do with
20 that contaminated soil. Now, the dredging -- we
21 talked to -- now the presentation talked about
22 hydrology and its effect. But I kind of doubt
23 that that's a set-in-stone, those findings for
24 that. We know the hydrology will be affected by
25 a deeper channel, but I don't -- I'm not sure

1 anybody knows exactly how. So I believe that
2 those effects are going to be detrimental.

3 We don't know what's going to happen in
4 a hurricane with the deeper thing. A previous
5 speaker addressed that so I don't think it's --
6 it's an exact science how that's going to affect
7 Port Aransas during a hurricane.

8 Okay. This dredging at Harbor Island
9 for the berth at Harbor Island and for the 80-
10 foot, I figure that's going to last at least a
11 solid year. And in that time, there's going to
12 be four seasons, and one entire cycle of the
13 marine life cycle take place in the middle of all
14 that dredging and everything else that's going on
15 there. Also the construction of the terminal.
16 That's a disruption to marine life. I don't care
17 what anybody says, it's a fact.

18 We know these things, you know. Okay.
19 We've seen them before and yeah, they're
20 definitely having an effect on marine life.

21 Okay. There's a desal plant proposed.
22 If that goes through I think the Corps of
23 Engineers should consider that. It's not their -
24 - their bailiwick but they should add that in as
25 a further impact later on down the line. We know

1 that those discharges are going to have an
2 effect, plus all the other desals that are
3 proposed for this area.

4 Okay. This project contributes nothing
5 to Port Aransas. There's not one thing in the
6 project that enhances our ability to have a
7 quality of life here. It doesn't enhance the
8 fishing or the birding, or the hunting or
9 anything else. It's all contra -- it's all
10 antagonistic to what we have, and we want to
11 preserve.

12 So we're asking for some help from the
13 Corps of Engineers today to do the right thing on
14 this EIS project. Thank you.

15 MR. STOKES: Thank you for your
16 comments. Your microphone is now placed back on
17 mute.

18 Our next speaker, Teresa Carrillo, is
19 not in attendance with us today so we will move
20 along to Margaret Sheldon.

21 Margaret, your microphone is now
22 unmuted. You may begin providing comments at
23 this time.

24 MS. SHELDON: Hi. My name is Maggie
25 Sheldon, and I'm a full-time resident of Port

1 Aransas.

2 I am preparing my written comments for
3 this scoping process, and among other things,
4 those comments will address concerns for the
5 health and safety of the people of Port Aransas
6 and our visitors, from environmental pollution,
7 accidents and/or attacks, and tidal flows from
8 hurricanes in the event that this channel is
9 dredged much deeper.

10 Additionally, my comments will address
11 my concerns for the economic, social, aesthetic,
12 and environmental impacts on marine life that the
13 Port's heavy industrialization plan will have on
14 my small barrier island.

15 According to this application, the
16 proposed channel deepening is needed to
17 accommodate transit of fully-laden, very large
18 crude carriers that draft approximately 70 feet.
19 There is presently no associated infrastructure
20 for a VLCC to dock and/or fully load at Harbor
21 Island.

22 As we all know, there are two pending
23 applications with the Corps to build two marine
24 terminals on either side of the ferry. The one
25 for Access Midstream has plans to accommodate

1 (indiscernible) maxes, and the other one from the
2 Port has plans to berth two VLCCs. However, both
3 of those plans including the one 245, 2019-245
4 which was recently resubmitted, only planned to
5 dredge the ship berths to 54 feet.

6 So my question is, where, exactly are
7 these VLCCs with the 70-foot draft going to
8 anchor to become fully laden? Can a 54-foot
9 berth accommodate a VLCC?

10 The applicant goes to great length to
11 talk about the benefits of fully-laden VLCCs in
12 this presentation, but never once do they state
13 where these vessels will dock and get fully
14 loaded. Why won't the applicant show us the
15 grand plan?

16 The deepening is either connected to
17 something that can accept and fully load
18 (indiscernible) VLCC or it is not. If it is
19 connected to something, like two marine terminals
20 and a desal plant, then the Port's grand plan
21 with all the components should be studied for
22 cumulative impact. If it is not connected to
23 anything, then the channel deepening project will
24 be unnecessary because it will not accomplish its
25 intended use, which is to accommodate VLCCs and

1 have them fully loaded.

2 In addition, from listening to these
3 presentation, I have two other questions. One, I
4 want to know will the ODMS site for this plan
5 also be evaluated to see if it can accommodate
6 the dredge from the other plan placement from
7 2019-245? And this presentation that the Port
8 did, said that they did a salinity study and I
9 want to know if the salinity study that they
10 mentioned included the anticipated 96 million
11 gallons of brine that they anticipate to pump
12 into the channel on a daily basis.

13 And that's all I have. Thank you very
14 much.

15 MR. STOKES: Thank you for your
16 comments. Your microphone is now placed back on
17 mute.

18 Our next five speakers are Benjamin
19 Rhem, Kim Belato (phonetic), Kathryn Masten,
20 Crystal White, and Jane Gimler.

21 We will start with Benjamin Rhem.
22 Benjamin, your microphone is now unmuted and you
23 can begin providing comments.

24 MR. RHEM: Great. Can you hear me?

25 MR. STOKES: Yes, we can.

1 MR. RHEM: Great. Good afternoon. My
2 name is Ben Rhem. That's R-h-e-m. I'm an
3 attorney with the law firm of Jackson Walker,
4 representing the Port Aransas Conservancy. We
5 will also provide detailed written comments, but
6 I want to address some concerns now.

7 First, the channel deepening project
8 along with the Port's Harbor Island terminal
9 project and the Access Midstream pipeline and
10 terminal project must be considered a single and
11 complete project, and reviewed under a single
12 EIS.

13 The Corps is already well-aware that the
14 applicant's overall purpose is to achieve the
15 ability to load VLCCs at Harbor Island. Loading
16 VLCCs at Harbor Island can only be accomplished
17 if all three projects are approved. In fact, as
18 previously noted, the Corps has already
19 determined that these three projects are a single
20 and complete project as explained in Robert
21 Heinly's February 14, 2019 letter.

22 This determination was supported by the
23 NEPA implementation guidelines, internal policy
24 memos, and U.S. Supreme Court precedent. If the
25 Corps reverses course and allows these projects

1 to be treated as independent projects, it would
2 be an improper segmentation to divulge regulatory
3 scrutiny.

4 Federal courts have already determined
5 that manipulation -- and I quote -- "manipulation
6 of a project design to conform to a concept of
7 independent utility undermines the underlying
8 purpose of NEPA."

9 The law here is clear. Even if the
10 Corps determines that the project is not a single
11 and complete project, which they are, the Corps
12 still is required under its own NEPA procedures
13 to analyze the direct, indirect, and cumulative
14 impacts of all federal interests within the
15 purview of the NEPA statute.

16 The U.S. Supreme Court has held that
17 environmental consequences of all related pending
18 proposals must be considered together.

19 Secondly, the goal of loading VLCCs can
20 be achieved through an alternative. Instead of
21 causing significant environmental and economic
22 damage to Port Aransas, Corpus Christi, Redfish
23 Bay which is a state-designated scientific area,
24 and the surrounding region, the EIS must also
25 evaluate the merits of offshore options, the buoy

1 system, and the platform terminal system.

2 The analysis provided in the application
3 is cursory at best, and that information does not
4 allow the Corps to meet its requirements to take
5 a hard look at the impacts of the proposed
6 project and reasonable alternatives.

7 Thirdly, I want to discuss the disposal
8 of dredge materials. The proposed channel
9 deepening project will require the dredging of 46
10 million cubic yards of sand and clay which must
11 be disposed of in accordance with EPA and Corps
12 guidelines. However, the EPA has already stated
13 in its comments that the information provided by
14 the applicant does not -- and I quote -- "does
15 not sufficiently enable the Corps to make a
16 legally defensible permit decision in regard to
17 compliance with the 404(b)(1) guidelines for the
18 specification of disposal sites for dredged or
19 fill materials."

20 The permit application for all three
21 projects had to be withdrawn because applicant
22 refused to provide information requested by the
23 Corps. The applicant then attempted to segment
24 these projects to avoid the EIS, and rushed to
25 get its permits. And now the EPA notes that the

1 application is not sufficient to obtain a
2 legally-defensible permit.

3 I'm going to be done in one more
4 sentence.

5 All three applications need to go back
6 to the drawing board, provide all of the required
7 information, and be considered a single and
8 complete project so that the public has a chance
9 to meaningfully participate in the permitting
10 process.

11 Thank you.

12 MR. STOKES: Thank you for your
13 comments. Your microphone has now been placed
14 back on mute.

15 Our next speaker is Kim Belato. Kim,
16 your microphone is now unmuted and you can begin
17 providing comments.

18 MS. BELATO: Can you hear me okay?

19 MR. STOKES: You're -- you're a little
20 faint.

21 MS. BELATO: Okay. Well first, I
22 wanted to say that I do live on Copano Bay in
23 Taft, Texas. And I -- I'm going to refrain from
24 commenting on the last caller because I'm not
25 sure where they all come together or not.

1 But I do want to talk about the Port's
2 record on air quality and working with TCEQ, and
3 also the amount of vessels that will come into
4 the area. There'll be much more traffic with the
5 vessels that are going to come into the area --
6 already have it. And with the project being
7 approved, it would actually lessen the amount of
8 ships that are going to be in the area which will
9 probably reduce the ability to have potential
10 accidents and traffic as well.

11 But also, most importantly, move
12 (indiscernible) emissions as well being released
13 by having multiple ships in the area.

14 I also want to talk about, as a resident
15 there, how for me it's important to look at --
16 you know, we talk about the sea turtles and
17 protecting the wildlife and fishing. But when we
18 talk about going to an offshore terminal, that's
19 fine if you want to get into that discussion.
20 However, why are sea turtles in Port A more
21 important than sea turtles out offshore?

22 And so my point is, is that I think that
23 all sea turtles are important, and I think we
24 need to look at the partner that we are trying to
25 work with more than the project.

1 When we look at the Port, who is also a
2 government agency, we would believe looking at
3 their past record that they are going to work
4 with other agencies to the letter of what they
5 need to be in compliance with.

6 If the Port should sell, for some
7 reason, that property because they just deem that
8 it's too much work, they don't want us to move in
9 (indiscernible) Port A, what happens if they sell
10 that property to maybe another company that
11 doesn't have the track record that the Port of
12 Corpus Christi does. What happens to it then,
13 when you have a company that purchases and
14 they're outside of the United States, and they
15 really don't care about what's happening in Port
16 (indiscernible).

17 My point is, is that maybe there's some
18 common ground to try to figure out how do we
19 accept the Port going here, and looking at them
20 being a good partner and trying to roll up our
21 sleeves and working together. Because with
22 what's happening in the area, oil and gas is
23 going to continue and the Port of Corpus Christi
24 and the whole entire region needs this oil and
25 gas. I've heard many residents say they're not

1 against oil and gas, and I'm so happy to hear
2 that, because we need it in the region and it's
3 going to happen.

4 But now, it's more of, you're not going
5 to stop the progress. It's now, who do we want
6 to partner with? And I'm sorry but the Port of
7 Corpus Christi to me is the best partner we could
8 be looking for. And they do bring -- a caller
9 said there is nothing for them in Port A to get
10 out of it. That is not true at all. There will
11 be a lot of economic impact to Port A and the
12 region, and we need to stop thinking about, it's
13 just Port A. It's actually the coastal bend
14 region.

15 That's my comments. Thank you.

16 MR. STOKES: Thank you for your
17 comments. Your microphone has now been placed
18 back on mute.

19 Our next speaker is Kathryn Masten.
20 Kathryn, your microphone is now unmuted and you
21 can begin providing comments.

22 MS. MASTEN: Can you hear me okay?

23 MR. STOKES: Yes, ma'am.

24 MS. MASTEN: My name is Kathryn Masten
25 and I live in Ingleside on the Bay.

1 This EIS needs to take into account the
2 following known impacts from deepening ship
3 channels around the world over the last 150
4 years: higher tides and increased tidal range;
5 increased height of storm surge; increased
6 frequency of nuisance flooding; increased inland
7 flooding, which was a surprise to me; salinity
8 intrusion into bays, inland waterways, and
9 groundwater sources; increased sediment
10 concentration due to dredging.

11 Using historical data from the National
12 Archives, Dr. Stephen Tawk (phonetic) of Portland
13 State University has modeled why ecological
14 disasters have occurred in the areas like
15 Wilmington, North Carolina, which was mentioned
16 earlier, and the Ems River estuary bordering the
17 Netherlands and Germany, he concluded that
18 deepening ship channels over time causes dramatic
19 changes in estuary hydrodynamics.

20 Here are just two quotes from the
21 Smithsonian Magazine in 2018.

22 "As container ships have grown ever
23 larger, ports worldwide have dredged channels
24 ever deeper, to 50 feet or more for the ports of
25 New York, Baltimore, Norfolk, Charleston and

1 Miami. Feasibility studies for those projects,
2 including analyses by the Army Corps of
3 Engineers, examine the economic prospects and
4 some of the environmental impacts, but have
5 dismissed the effect of channel deepening on the
6 tide changes, flooding, and storm surge. Over
7 more than -- more than a century time frame we
8 have greatly altered the underwater topography of
9 our harbors and estuaries.

10 "We have literally moved mountains of
11 dirt, exploded sea mounts, straightened valleys
12 and created superhighways for superlatively large
13 ships. These alterations to our harbors are
14 ubiquitous worldwide with effects that we haven't
15 fully considered or even mapped out, in many
16 cases."

17 Some of us are preparing grant proposals
18 for flood mitigation funding through the General
19 Land Office, FEMA, and others, to protect the
20 coastal bend from flooding and storm surge.
21 These effects will likely be futile against an
22 80-foot deep cannon blasting the saltwater ocean
23 into our bays in the next hurricane. Redfish
24 Bay, Corpus Christi Bay, all are part of an
25 estuary system that doesn't just protect the

1 wildlife. It protects the human inhabitants and
2 industries both alongside and inland from the
3 coast.

4 The Corps needs to bring in the right
5 scientists, such as Dr. Tawk, to do the right
6 studies.

7 Also, the deadline for comments should
8 be extended to accommodate face-to-face meetings
9 in the coastal communities of the coastal bend
10 including Port Aransas and Ingleside on the Bay,
11 and there should be opportunities for Q&A and to
12 review some of the studies ahead of time,
13 particularly on the subjects that I mentioned,
14 but on many more. So if you could make those
15 available, that would be great.

16 Thank you.

17 MR. STOKES: Thank you for your
18 comments. Your microphone has now been placed
19 back on mute. Our next speaker, Crystal White,
20 is not in attendance with us today so we will
21 move along to Jane Gimler.

22 Your microphone is now unmuted and you
23 can begin providing comments.

24 MS. GIMLER: Actually, Crystal White is
25 with me, so can I have her speak first?

1 MR. STOKES: Absolutely.

2 MS. WHITE: Hi. My name is Crystal
3 White. I am a longtime resident of San Pat
4 County and have been involved in our local
5 community and I come from the energy industry as
6 well, born and raised here. And I have seen and
7 experienced the Port's history with keeping their
8 community at their best interest with
9 environmental efforts, with getting their local
10 industries involved, especially when it comes to
11 their environmental -- environmental initiatives,
12 and -- which I know this community truly
13 appreciates.

14 And also, I just want to talk about the
15 job creation. Just being a young citizen, how
16 important that is to keep our local graduates
17 here. Because if we do not have this essential
18 infrastructure set up, which is definitely needed
19 by the supply and demand, they will be going to
20 other, larger cities and moving away. And this
21 is a great opportunity because I'm going to
22 expand on Kim's earlier statements that the
23 partnership with the Port is exactly what this
24 project needs because of the value that they put
25 on the environment through these large projects.

1 And then also, I am a citizen in Sinton,
2 and we have a very similar project going on with
3 the country's third-largest steel mill. And we
4 chose them to come to our community because of
5 their longstanding efforts to adhere to the
6 environmental regulations and that is a very big
7 mission of theirs through all of their assets
8 throughout the country. And so the job creation
9 that they are providing for our local economy and
10 the surrounding areas is -- is very important for
11 the growth, for our local community and our
12 future generations.

13 And so I just come on behalf of a
14 citizen and the growth of this project and its
15 true benefits and what it's going to do for many
16 future generations, and definitely keeping the
17 wildlife as a very high priority. If anyone will
18 do that, the Port's commitment is top compared to
19 other potential investors that do not have our
20 best interests at heart.

21 Thank you very much for your time. I
22 appreciate it.

23 MR. STOKES: Thank you for your
24 comments.

25 Ms. Gimler, you can begin providing

1 comments when you're ready.

2 MS. GIMLER: Thank you. My name is
3 Jane Gimler, president and CEO of the Associated
4 Builders and Contractors, the Texas Coastal Bend
5 chapter. I also am a resident here in Nueces
6 County. I came from San Patricio recently.

7 Just want to express today that our
8 association supports this project, and we support
9 several of our members that will be and have been
10 working on this process with the Port of Corpus
11 Christi.

12 This project is so important to the
13 entire coastal bend, with creations of jobs and
14 in return create a big economic impact for our
15 area. We look forward to the growth, not only
16 for the coastal bend, but for our members as
17 well.

18 We also believe in the Port of Corpus
19 Christi's track record on the environmental
20 safety. They have been leaders in complying with
21 the environmental rules and regulations, and that
22 we appreciate and we support.

23 And that's -- thank you for your time
24 today and thank you for allowing me to make my
25 comments. Thank you.

1 MR. STOKES: Thank you for your
2 comments. Your microphone has now been placed
3 back on mute.

4 Our next three speakers, at this time we
5 have only three speakers left, are Kimberly
6 Smith, Britney Hardy, and we'll circle back to
7 Kenneth Teague.

8 Looks like Kimberly Smith is no longer
9 in attendance today so we'll move along to
10 Britney Hardy. Britney, your microphone is
11 unmuted and you can begin providing comments.

12 MS. HARDY: Hi. Can you hear me?

13 MR. STOKES: Yes. We can hear you.

14 MS. HARDY: Thanks. I wanted to
15 comment on the purpose for this project. In
16 scoping, the Corps said that -- quoted the
17 purpose of this project as being the need to
18 export increasing amounts of oil. And I wanted
19 to ensure that the Corps takes into account the
20 current projections of oil production and
21 development, which are much different than what
22 the agency is -- has shown in its presentation.

23 In May, the Energy Information Agency
24 projected that production is going to sharply
25 fall to only 11.7 million barrels a day in 2020.

1 And in 2021 it would fall further, to 10.9
2 million barrels a day.

3 The S&P Global Platts show that U.S.
4 exports could drop from around 4 million barrels
5 a day that were taking place in February 2020, to
6 as low as 2.7 million barrels a day in December
7 2021 due to the current COVID situation and
8 changes in the oil markets.

9 It's important that the Corps takes into
10 account these critical differences, because there
11 may be no reason at all to dredge the port if
12 there is going to be no need for additional
13 exports. And if there's no reason to dredge,
14 there's no reason to put these critical
15 ecosystems, species, and humans at risk for a
16 project that is going to serve no purpose.

17 Thank you so much for your time.

18 MR. STOKES: Thank you for your
19 comments. Your microphone is now back on mute.

20 Our next speaker is Kenneth Teague.
21 Kenneth, your microphone is now unmuted and you
22 can begin providing comments.

23 MR. TEAGUE: Can you hear me?

24 MR. STOKES: Yes. We can hear you.

25 MR. TEAGUE: Okay. I want to supplement

1 my previous verbal and written commitment --
2 comments -- with some additional comments.

3 First and foremost, I want to bring up
4 the issue of cost/benefit analysis, which is
5 important in NEPA. And I want to emphasize the
6 importance of properly taking into account the
7 infinite loss of future ecosystem services that
8 probably will occur with this project. And
9 that's important, and it's subtle, because
10 traditionally, traditional economic and
11 cost/benefit analysis doesn't do that. But
12 there's been a lot of work in the last 20 years
13 on this, and I know the Corps knows all about it.

14 So just make sure you properly account
15 for the loss of natural capital, the loss of
16 ecosystem services, because once those are gone a
17 lot of times they're gone forever. And they're
18 not gone for 20 years like a typical project
19 lifespan. They are gone forever. And that's a
20 very, very important concept.

21 Secondly, let's see. The issues -- in
22 the case of -- if you properly deal with the
23 single and complete project issue, there are two
24 other projects then that have to be considered in
25 the EIS. And just a couple of the really

1 critical issues in those other two projects that
2 aren't currently reflected in this scoping
3 process. One is this proposal to dispose of
4 dredge material from Harbor Island in the ODMDS
5 without having properly sampled it. It's
6 outrageous. We need to look at it very
7 carefully. It's probably illegal, and anyway, it
8 needs to be in the EIS. And the data, the proper
9 data, the correctly-sampled data, need to be
10 there for people to review and comment on.

11 The second thing is, on the Access
12 Midstream, the pipeline alignment alternatives
13 should be considered that would not have the
14 pipelines running through the seagrass beds.
15 There are other ways you could run those
16 pipelines, and those alternatives absolutely must
17 be considered.

18 Three, cumulative impacts. Other people
19 have touched on that. I had previously touched
20 on it. It's extremely important to this EIS.
21 There are so many things going on in this
22 ecosystem. They all need to be captured under
23 the cumulative impacts assessment for this EIS.
24 And cumulative impact assessment is almost never
25 done correctly. Please get it right.

1 Thank you.

2 MR. STOKES: Thank you for your
3 comments. Your microphone has now been placed
4 back on mute.

5 Jayson, at this time, that concludes our
6 list of registered speakers, and I see no
7 additional hands raised.

8 MR. HUDSON: Thank you, Connor. Now
9 that we've gone through all the commenters who
10 signed up, the formal comment period for tonight
11 is closed. Thank you for your participation.

12 All statements placed in the record
13 will be given consideration. It should be noted
14 that comments on the proposed project can be
15 submitted at any time during the NEPA process,
16 but only those submitted during this and the
17 previous formal scoping periods will be included
18 in the summary reports and will be guaranteed to
19 be addressed in the final environmental impact
20 statement.

21 Thank you again for your participation
22 today and your interest that you have shown in
23 the proposed project. You may submit additional
24 comments through July 3rd by mail, online through
25 the project website, and by texting or calling

1 the project phone number at (855) 680-0455.

2 Again, that phone number is (855) 680-0455.

3 With that, the public scoping meeting is
4 adjourned at 5:23. Thank you.

5 (END OF VIDEO FILE)

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1 CERTIFICATE OF TRANSCRIPTIONIST

2 I certify that the foregoing is a true
3 and accurate transcript of the digital recording
4 provided to me in this matter.

5 I do further certify that I am neither a
6 relative, nor employee, nor attorney of any of
7 the parties to this action, and that I am not
8 financially interested in the action.

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Julie Thompson, CET-1036

Appendix B5

Agency Scoping Meeting, May 2020

Interagency Scoping Meeting Report

Port of Corpus Christi Authority Channel Deepening Project
Environmental Impact Statement
(SWG-2019-00067)



Hosted Virtually via Cisco WebEx

Thursday, May 14, 2020



**US Army Corps
of Engineers** ®



PORT CORPUS CHRISTI ®

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Acronyms and Abbreviations

EA	Environmental Assessment
EIS	Environmental Impact Statement
NEPA	National Environmental Policy Act
USACE	U.S. Army Corps of Engineers
VLCC	very large crude carriers

INTRODUCTION

The National Environmental Policy Act of 1969 (NEPA) requires an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is referred to as scoping and is one of several public involvement aspects of the NEPA Environmental Impact Statement (EIS) process. NEPA is a statutory requirement triggered by major federal actions that could significantly affect the quality of the human environment. NEPA requires the identification and analysis of potential environmental effects before those actions take place and serves as a "full disclosure" law with provisions for public access to and public participation in the federal decision-making process.

Scoping is an opportunity for the U.S. Army Corps of Engineers (USACE) to introduce and explain the interdisciplinary approach to our environmental analysis as well as solicit public and agency comments regarding environmental resources, potential impacts, and alternatives that should be included. The Council on Environmental Quality's implementing regulations for scoping (40 C.F.R. § 1501.7(a)) require the USACE to:

- Identify people or organizations who are interested in the proposed action;
- Determine the roles and responsibilities of lead and cooperating agencies by identifying other environmental review and consultation requirements so they can be integrated with the EIS;
- Identify the significant issues to be analyzed in the EIS;
- Identify and eliminate from detailed review those issues that will not be significant or those that have been adequately covered in prior environmental review;
- Identify gaps in data and informational needs; and
- Identify any related Environmental Assessments or EIS's.

The Council on Environmental Quality's implementing regulations for scoping (40 C.F.R. § 1501.7(b)) also recommend, but do not require, the USACE to:

- Set page limits on environmental documents;
- Set time limits;
- Hold an early scoping meeting or meetings.

This Interagency Scoping Meeting Report has been developed for the USACE to share the types of issues that the cooperating and participating agencies expressed during the interagency scoping meeting.

PROJECT BACKGROUND

The USACE received a permit application for a Department of the Army Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine

Protection, Research and Sanctuaries Act from the Port of Corpus Christi Authority (PCCA) for the deepening of the Corpus Christi Ship Channel.

The purpose of the proposed Project is needed to accommodate transit of fully laden very large crude carriers (VLCCs) that draft approximately 70 feet. The deepening activities would be completed within the footprint of the authorized PCCA channel width.

The proposed Project is located within the existing channel bottom of the Corpus Christi Ship Channel starting near the southeast side of Harbor Island, traversing east through the Aransas Pass, and extending into the Gulf of Mexico for an approximate distance of 13.8 miles. To address changing market needs, the proposed Project would deepen this portion of the Corpus Christi Ship Channel beyond the current authorized channel depths of –54 feet and –56 feet mean lower low water to maximum depths of –79 feet and –81 feet mean lower low water to accommodate transit of fully loaded VLCCs with vertical distances between the waterline and the bottom of the hull, or drafts, of approximately 70 feet. An estimated 42 million cubic yards of new work dredged material would be generated as a result of the channel deepening.

Additionally, the proposed Project includes:

- Extending the existing terminus of the authorized channel an additional 29,000 feet into the Gulf of Mexico to reach -80 mean lower low water;
- Expanding the existing Inner Basin at Harbor Island as necessary to accommodate VLCC turning, including construction of a flare transition from the Corpus Christi Ship Channel with Aransas to meet the turning basin expansion;
- Potential placement of the new work dredged material into Waters of the United States for beneficial use sites located in and around Corpus Christi and Redfish Bays;
- Potential placement of dredged material on San Jose Island for dune restoration;
- Potential placement of dredged material feeder berms for beach to provide restoration along San Jose and Mustang Islands; and
- Transport of new work dredged material to the New Work Ocean Dredged Material Disposal Site.

The proposed Project does not include widening the channel; however, some minor incidental widening of the channel is expected to meet side slope requirements and to maintain the stability of the channel.

The draft EIS is estimated to be available for public review and comment no sooner than the spring of 2021. At that time, a 45-day public review period will be provided for individuals and agencies to review and comment on the draft EIS.

VIRTUAL INTERAGENCY SCOPING MEETING SUMMARY

The Interagency Scoping Meeting was hosted virtually by the USACE via Cisco WebEx on May 14, 2020, 9:00 – 11:30 AM. The meeting agenda is included as Attachment 1.

The interagency meeting began with a roll call. The list of participants is included as Attachment 2. A total of 16 state and agency personnel participated in the meeting from the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Coast Guard, the Texas General Land Office, The Texas Parks and Wildlife Department, and the Texas Commission on Environmental Quality.

Roll call was followed by an introduction from Colonel Timothy Vail, Commander, Commander of the USACE, Galveston District. Colonel Vail's speech is included as Attachment 3. Then Sean Strawbridge, PCCA Chief Executive Officer gave an opening statement and Sarah Garza, PCCA's Director of Environmental Planning and Compliance provided an overview of the project, studies completed, and ongoing efforts. Jayson Hudson, USACE Regulatory Project Manager provided a presentation that covered the NEPA process, introduced the project and project team, identification of the Purpose and Need and potential alternatives, and a review of the EIS content and known environmental concerns. These presentations are provided in Attachment 4.

Solicitation of comments and questions from the state and Federal agencies followed. Below provides a summary of the discussion:

U.S. Environmental Protection Agency:

Karen McCormick (Marine Coastal Non-Point Source Section Chief):

- Made previous comments about the capacity of the Ocean Dredged Material Disposal Site – not enough capacity for material
- Have rectified this issue for the PCCA – conducted an ocean survey in February on the site – using information from the survey and working with the USACE to expand the sites
- Doing an Environmental Assessment (EA) and updating the Site Management and Monitoring Plan
- Do not want to hold up the EIS process – doing an EA so you can refer to the EA in the EIS
- EA and Site Management and Monitoring Plan will be finished in fiscal year 2021
- Ensure all are looking at the site to make sure there are no issues
- PCCA sends information to get acceptance, it goes through Regulatory – Regulatory sends the information to EPA for concurrence
- U.S. Environmental Protection Agency is doing all we can to make sure the PCCA can use the Ocean Dredged Material Disposal Site and that the site is available to accept material if it meets the criteria

-
- If you have any questions reach out to me – want to ensure all is done in a timely manner

Paul Kaspar:

- With the level of work done so far am confident will have a comprehensive document and adequate information to address the 404(b)(1)
- Main point of interest is the beneficial use feeder berms and beach restoration and that those are accurately quantified, and the benefits documented

U.S. Fish and Wildlife Service:

Mary Kay Skoruppa:

- Submitted a letter with comments
- Our main concerns were mentioned in the presentation so comfortable those will be addressed in the EIS
- Endangered species are an important concern
- Good alternatives covered – interested in safer options, especially the deepwater port
- Important to protect ensure habitats that are very vulnerable

National Marine Fisheries Service:

Dennis Klemm (Southeast Regional Coordinator for Sea Turtles):

- Inshore habitat has high value/use for sea turtles – important to ensure you have all the information
- Passes and jetties are high use areas as well – give all these areas a lot of consideration
- For the Biological Opinion will need detailed information on dredging methods/timing, safeguards, dredge type, and where impacts
- From the information provided today it looks like you are on a good path

Rusty Swafford (Gulf of Mexico Branch Chief Habitat Conservation Division):

- Have already identified an Essential Fish Habitat consultation – that is required
- Timeline is lines up – you know you have to consult on this, do not see any issues

Texas Commission on Environmental Quality:

Jenna Lueg:

- Will need to know how many impacts to submerged aquatic vegetation – will need to see the wetland restoration plan

Texas Parks and Wildlife Department:

Paul Silva:

- Lightering – currently there are no crude oil factories to dispense the product so those have to be put in – these are interdependent projects
- There are other permits for Harbor Island that include a pipeline running through the Redfish Bay Scientific Area

-
- Want all aspects of these facilities to be incorporated into the cumulative impacts – including staging routes, access lines, etc.
 - See the impacts of these interdependent projects affecting the natural resources in the area
 - Will need to see mitigation plan for compensation for impacts from the interdependent projects
 - Lightering – additional crude oil factories developed along the ship channel should be considered in the cumulative impacts for the project

Clark Robertson (PCCA): When is the appropriate time to respond to comments made by an agency?

Jayson Hudson (USACE) – This is the scoping for the EIS, in process of developing responses

Texas General Land Office:

Amy Nunez:

- Port project is outside the navigation district required lease from the GLO, involves a different process because of the applicant – Chapter 61 of the Water Code
- Different timeline than other projects
- Working with the applicant on this – big component of this is availability of the Draft EIS before we can move through the Chapter 61 process
- Plays a big role in the leasing process
- Working with the applicant on the requirements and timeline as needed

U.S. Coast Guard:

Margaret Brown:

- No comments

The interagency scoping meeting was adjourned by Colonel Timothy Vail at 10:16 AM.

Interagency letters received during the scoping period are included in Attachment 5.

Attachment 1

Interagency Scoping Meeting Agenda

PCCA Agency Scoping Meeting May 14

RSVP Attendees

USACE: Col. Timothy Vail; Jayson Hudson, Joe McMahan; Bob Heinly, Clark Bartee.

Freese and Nichols (EIS Contractor) Lisa Vitale, Tom Dixon, Tony Risko, Dave Buzan, Carl Sepulveda

PCCA: Sean Strawbridge, Clark Robertson, Omar Garcia, Sarah Garza, Beatriz Rivera, Yvonne Dives-Gomez, Dan Koesema, Javier Davila, Nelda Olivo,

AECOM (PCCA Consultant) Ashley Judith, Naser Khan, Rod McCrary, Taylor Nordstrom, Nathan Mezzano. Brandon Hill, Joseph Jandle

USEPA: Paul Kasper, Karen McCormick, Michael Jansky

USFWS: Mary Kay Skruppa, Dawn Gardiner

NMFS: Rusty Swafford, Charrish Stevens, Brian Rosegger, Dennis Klemm

TCEQ: Jenna Lueg

TPWD: Leslie Koza, Jackie Robinson, Paul Silva

TxGLO: Jesse Solis, Amy Nunez, Jason Zeplin

Agenda

1. Roll Call
2. Introduction by COL Vail.
3. PCCA presentation about project
4. Corps presentation about process
5. Solicitation of Comments/Question from state and federal agencies.

Attachment 2

Interagency Scoping Meeting Participants

U.S. Army Corps of Engineers
Port of Corpus Christi Authority

Environmental Impact Statement Corpus Christi Ship Channel Deepening Project

Agency Scoping Meeting Participants

Date: May 14, 2020

Participants:

Col. Timothy Vail	USACE	Paul Kaspar	EPA
Jayson Hudson	USACE	Jessica Aukamp	EPA
Aron Edwards	USACE	Karen McCormick	EPA
Andrew Smith	USACE	Mary Kay Skoruppa	USFWS
Belinda Kinman	USACE	Rusty Swafford	NMFS
Bob Heinly	USACE	Charrish Stevens	NMFS
Clark Bartee	USACE	Dennis Klemm	NMFS
Joe McMahan	USACE	Jenna Lueg	TCEQ
Sean Strawbridge	PCCA	Paul Silva	TPWD
Sarah Garza	PCCA	Leslie Koza	TPWD
Clark Robertson	PCCA	Jackie Robinson	TPWD
Omar Garcia	PCCA	Amy Nunez	GLO
Beatriz Rivera	PCCA	Jesse Solis	GLO
Dan Koesema	PCCA	Jason Zeplin	GLO
Lisa Vitale	FNI	Alec Robbins	GLO
Tom Dixon	FNI	Margaret Brown	USCG
Dave Buzan	FNI		
Tony Risko	FNI		
Carl Sepulveda	FNI		
Connor Stokes	Hollaway		
Ashley Judith	AECOM		
Rod McCrary	AECOM		
Brandon Hill	AECOM		
Nathan Mezzano	AECOM		
Naser Khan	AECOM		
Taylor Nordstrom	AECOM		
Chris Martin	AECOM		
Joseph Jandle	AECOM		

Attachment 3

Colonel Timothy Vail Speech

Virtual Agency Scoping
Meeting
Department of the Army Permit SWG-2019-00067 Port of Corpus
Christi Authority's Corpus Christi Ship Channel Deepening Project

INTRODUCTION:

Good Morning all, I am Colonel Timothy Vail, Commander, Commander of the U.S. Army Corps of Engineers, Galveston District. Welcome to today's virtual agency scoping meeting. For the record, let me state that this scoping meeting is being convened at 0911 hrs on May 14, 2020. At this time, I would like to remind everybody to mute your phone lines.

I certainly appreciate the agencies role in the permitting process project and value your attendance here today to consider this application for the Port of Corpus Christi Authority's Corpus Christi Ship Channel Deepening Project. The port is proposing a 14-mile Channel Deepening Project located within the existing Corpus Christi Ship Channel, starting near the southeast side of Harbor Island and extending beyond the currently authorized terminus in deep water in the Gulf of Mexico to accommodate fully laden very large crude carriers (VLCCs) that draft approximately 70 feet generating over 40 million cubic yards of dredged material. The Port of Corpus Christi Authority has proposing to use suitable dredged material to create near-shore feeder berms that will nourish eroded beach areas and to reestablish sand dunes on San Jose Island that were breached by Hurricane Harvey. The project will also restore placement-area erosion, place material in areas breached by Hurricane Harvey, and strengthen a perimeter berm along Harbor Island to absorb waves and ship wakes in order to protect marsh and submerged aquatic vegetation behind the berm. Material judged unsuitable for beneficial use, approximately 13.7 million cubic yards, will be deposited in authorized offshore placement areas.

A Department of the Army permit for this work is being considered under Section 103 Marine Protection, Research, and Sanctuaries Act of the Sections 10 & 14 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

The National Environmental Policy Act, or NEPA, requires the Corps to conduct a public interest review to determine the potential impacts on the public welfare. In addition, NEPA requires all Federal agencies undertaking an action that could significantly impact the quality of the human environment to evaluate the potential impacts of the proposed project and document these potential impacts in an Environmental Impact Statement, or EIS. While the EIS discloses the best available information and is a process separate from the Corps of Engineers public interest review process, they are both necessary in making my decision whether to issue or deny the permit.

As both a Texas and Commander of a District with District partnerships across the region with nonfederal sponsors, it is important to note the Corps is neither a proponent nor opponent of this project. Ultimately we are the decision maker who has to decide if the proposed project is not contrary to the public's best interest. As such, we are trying to gather as much information as possible in a timely manner, to allow us to make an informed decision.

Introduction of staff:

I would like to introduce my staff that is here with me today. Mr. Joe McMahan Chief, Regulatory Division, and Clark Bartee, an attorney advisor from our Office of Counsel, Mr. Bob Heinly, Deputy Chief of the Regulatory Division, and Mr. Jayson Hudson, Regulatory Project Manager of the Port of Corpus Christi Channel Deepening permit application.

I trust that all of you have read the Notice of Intent and the Special Public Notice. Copies were

distributed on April 7th and April 9th, respectively, to individuals, agencies and organizations believed to have an interest in these proceedings. The announcements, mailing list, and a list of those present will be made a part of the record of this scoping meeting.

The deadline for comments will be July 3, 2020. We are currently scheduling the virtual public scoping meetings to accomplish the broader public engagement required under law and will announce them in the coming weeks.

In so far as the Purpose of the Scoping Meeting

Let me clarify: today's meeting is to provide the agencies with the opportunity to present your comments and what type of information should be evaluated concerning the scope of the preliminary EIS. I would like to emphasize that the scoping meeting is not a primary, not a caucus, not a set of votes to simply determine the number of people for or against the project.

The decision whether to issue or deny a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the human environment. Consideration will be given to the protection as well as the utilization of important resources. The benefits which reasonably may be expected to accrue if the project is authorized will be balanced against the foreseeable detriments which may result from the work.

All factors which may be relevant will be considered. These include: the needs and welfare of the people; fish and wildlife values, including migratory bird species; threatened and endangered species; historic properties; economics; and fisheries.

The information and issues identified at this scoping meeting along with information and issues provided in letters sent in response to the public notice and all other pertinent data will be considered in the determination of the scope of the EIS and subsequent evaluation of the permit application.

Background:

A public notice regarding the proposed project was issued on April 7, 2019 to solicit public comments for the proposed project. At that time, based on information provided by the Applicant, a preliminary review indicated that an EIS was required. Based on continuing permit assessment and information brought forth during the initial coordination process, areas of potentially significant impact on the quality of the human environment were further identified. Therefore, the EIS process is being initiated to gather necessary information to be fully evaluated so a permit decision can be made. All comments received to date, including those provided for review during the initial public notice process, will be considered by the Galveston District during EIS preparation.

Format of Scoping Meeting:

Next, let me discuss briefly the format of the scoping meeting. Today's meeting will give all agencies an opportunity to comment on the scope of the EIS for the proposed project.

Following a brief description of the proposed project by the Port of Corpus Christi Authority, a brief description of the Department of the Army Permit and NEPA process will be presented by the Regulatory Project Manager. After those are completed, I will begin calling on the agencies to make comments.

Each speaker will be given 15 minutes. Please keep your time to 15 minutes or less. If you do not need the full 15 minutes, help us to move the process along by only using the time you need. We are documenting today's proceeding to ensure that everything presented is included in the official record.

If you have additional comments that you'd like to submit beyond what you're able to address during your time allotted, please submit them in writing. You should understand that written comments are just as valid and count the same as verbal comments presented today.

PCCA Presentation

I now invite Shawn Strawbridge and Sarah Garza, from Port of Corpus Christi Authority, to present an overview of their proposed project.

Regulatory Presentation

I now invite Jayson Hudson, the Regulatory Project Manager to present on the EIS process.

Solicitation of Comments

I will now invite the agencies individually to comment. I ask that you state your name and title for the record when providing your comments.

I now call on the Environmental Protection Agency...

I now call on the Fish and Wildlife Service...

I now call on the National Marine Fisheries Service...

I now call on the Texas Parks and Wildlife Department...

I now call on the Texas Commission on Environmental Quality...

I now call on the Texas General Land Office...

CONCLUSION

Thank you for your interest in this project and attendance here today to consider this application for Port of Corpus Christi Authority's Corpus Christi Ship Channel Deepening Project. In conclusion, the deadline for comments will be July 3, 2020. We are currently scheduling the virtual public scoping meetings and will announce them in the coming weeks. All statements placed in the record will be given consideration. I thank you for your attendance and the interest that you have shown.

THIS SCOPING MEETING IS ADJOURNED AT 1016 HRS MAY 14, 2020.

Attachment 4

Port of Corpus Christi Authority and U.S. Army Corps of Engineers Presentations

Port of Corpus Christi Authority's Corpus Christi Ship Channel Deepening Project (SWG-2019-00067)

Interagency Scoping Meeting

Agenda

1. Roll Call
2. Introduction by COL Vail.
3. PCCA project presentation
4. Corps process presentation
5. Solicitation of comments from state and federal agencies.

Port of Corpus Christi Channel Deepening Project

Sarah L. Garza | Director of Environmental Planning and Compliance

Presented by



PORTCORPUSCHRISTI®

The Energy Port of the Americas

- Independent political subdivision of the State of Texas, governed by 7 commissioners
- Large industrial energy hub and gateway to global markets
- A landowner, a land developer, and a landlord
- Economic development agency specializing in P3s



About Us | Port of Corpus Christi

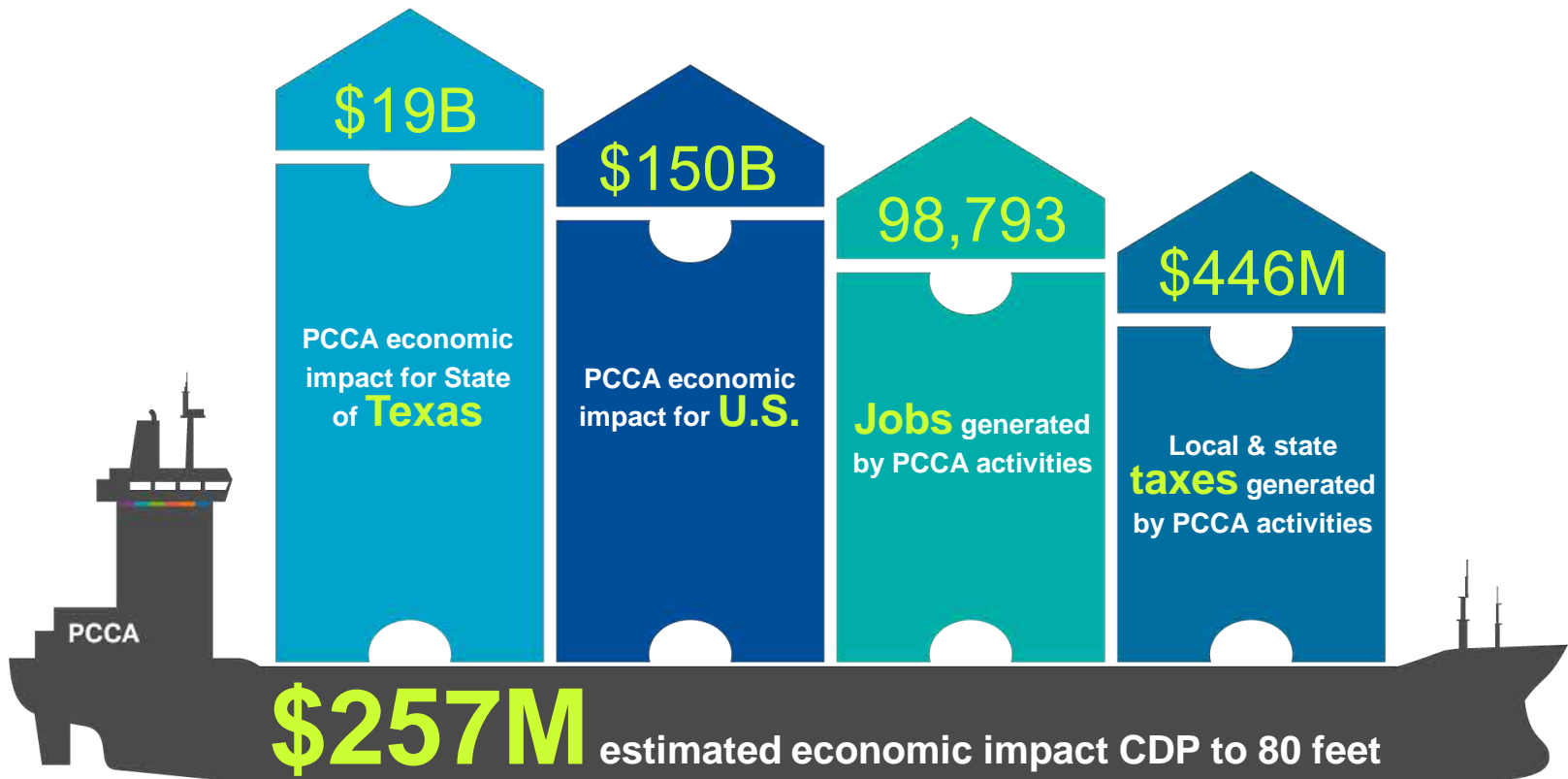


STATE	PROJECTS	TOTAL CAPEX (millions)
1. Louisiana	1649	\$257,805
2. Texas	6073	\$230,223
3. Pennsylvania	2982	\$83,287
4. Ohio	4943	\$78,696
5. Alaska	28	\$68,791
6. Michigan	2370	\$67,918
7. Georgia	2670	\$52,201
8. Tennessee	1845	\$51,074
9. New York	1679	\$47,439
10. North Carolina	2803	\$47,072

Project Overview | Channel Deepening Project (CDP)



Economic Impact | Port of Corpus Christi Area (PCCA)



Environmental Policy | Port of Corpus Christi



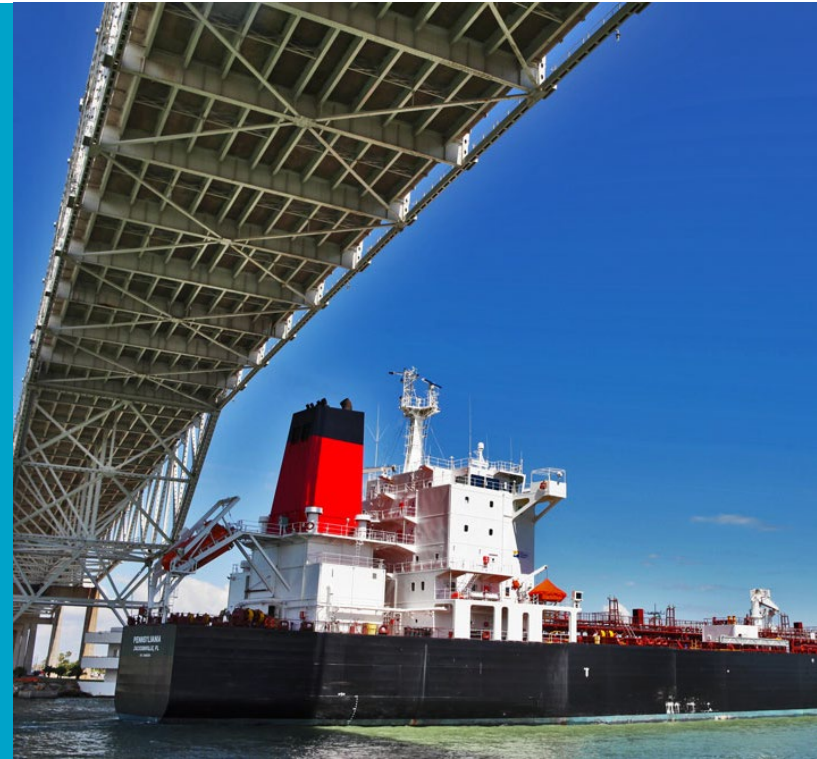
Five Key Precepts

1. **Air Quality** in attainment of national air quality standards
2. **Water Quality** that maintains or improves the health of Coastal Bend ecosystems
3. **Soils and Sediment** protective of human health and the environment
4. **Wildlife Habitat** development, improvements, and replacement when modification to existing habitat is necessary
5. **Environmental Sustainability** in the development of port facilities and in ongoing port operations

Project Overview | Channel Deepening Project

CDP information

- Deepen the Corpus Christi Ship Channel (CCSC) from Gulf of Mexico to Harbor Island
- Deepen the CCSC to allow safe navigation of fully loaded VLCCs
- Beneficial use and shoreline restoration with use of dredged material
- Eliminate reverse lightering



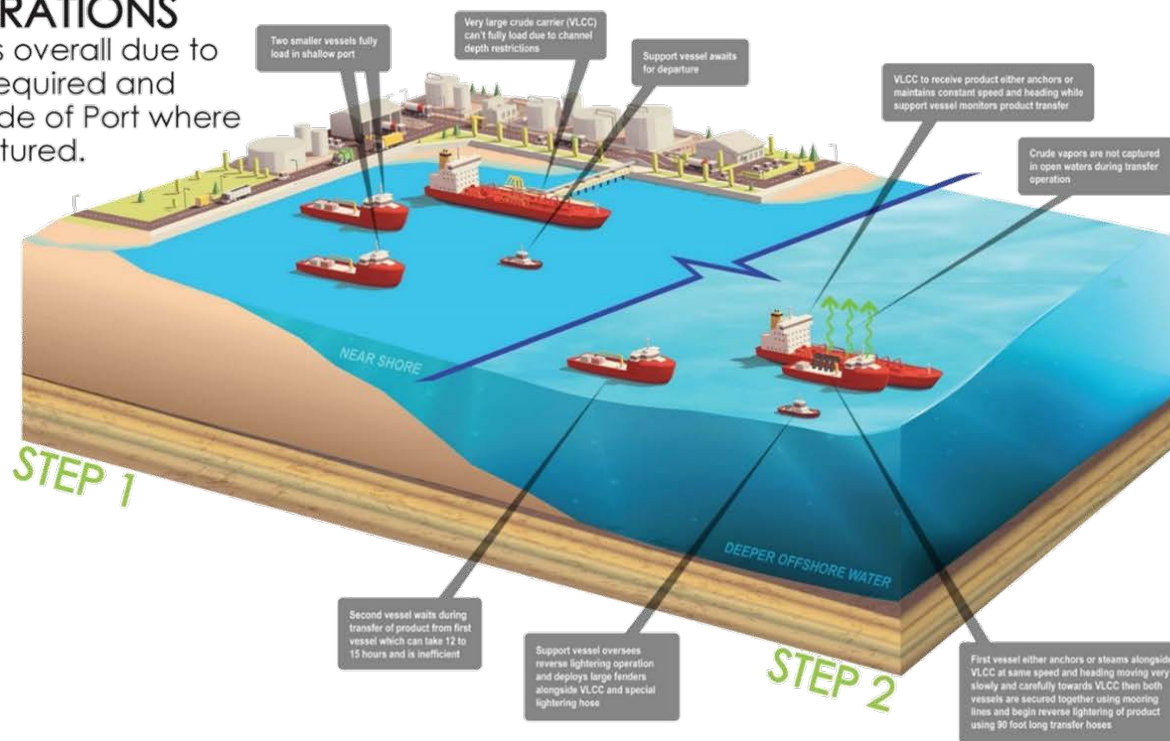
Reverse Lightering | Channel Deepening Project

REVERSE LIGHTERING

EXISTING OPERATIONS

Increased emissions overall due to number of vessels required and crude transfer outside of Port where vapors are not captured.

ENVIRONMENTAL STEWARDSHIP

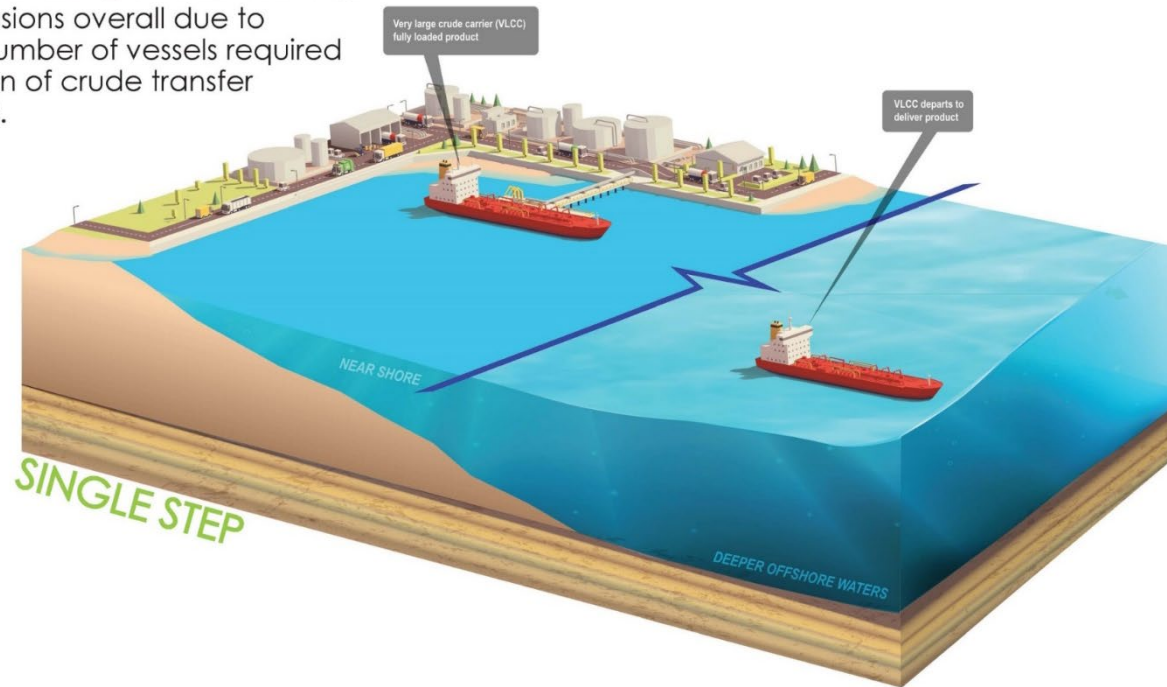


Reverse Lightering | Channel Deepening Project

ELIMINATION OF REVERSE LIGHTERING

Reduced emissions overall due to reduction in number of vessels required and elimination of crude transfer outside of Port.

ENVIRONMENTAL STEWARDSHIP



Engineering | Channel Deepening Project




Design vessel

- Selected design vessel represents 99% of active world VLCC fleet:
 - Length 1,116 feet
 - Beam: 197 feet
 - Calculated draft: 70.2 feet
- Maximum drafts assume cargo of low density West Texas intermediate crude oil
- Used to determine minimum channel dimensions

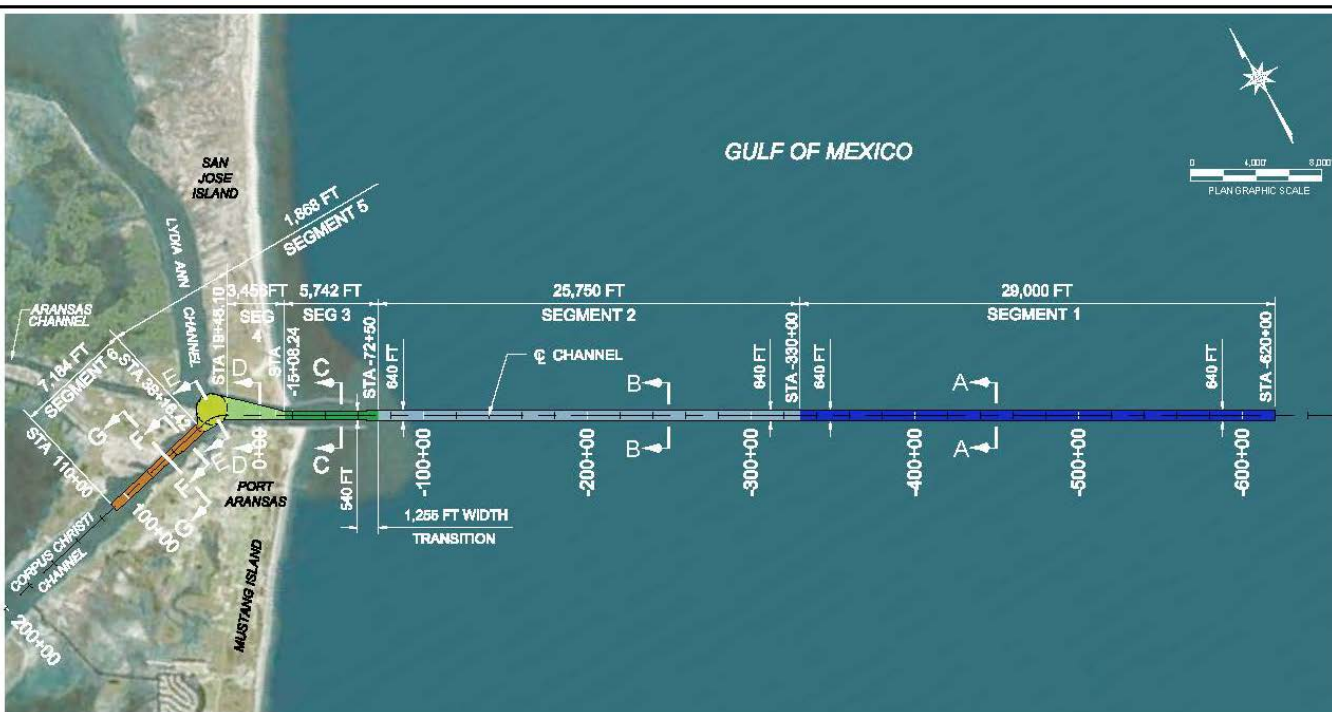
Engineering | Channel Deepening Project

Corpus Christi CDP 54 ft vs. CDP channel dimensions



DESCRIPTION	CHANNEL SEGMENTS			
	SEGMENT 1 OUTER APPROACH	SEGMENT 2 INNER APPROACH	SEGMENT 3 BETWEEN JETTIES	THROUGH HARBOR ISLAND
Authorized 54 ft. depth / CDP channel depth (ft. MLLW)	56 / 77	56 / 77	54 / 75	54 / 75
Authorized 54 ft. width / CDP channel width (ft.)	700 / 640	700 / 640	600 / 540	Varies / Varies

Engineering | Channel Segments



DREDGING PLAN

SCALE: 1" = 8000'

SEGMENT	STATIONING (@ CHANNEL CL)		*DEPTH (FT BELOW MLLW)	DESCRIPTION	PLAN VIEW LEGEND
	FROM	TO			
1	STA -620+00	STA -330+00	-77.0	Outer Channel	
2	STA -330+00	STA -72+50	-77.0	Approach Channel	
3	STA -72+50	STA -15+08.24	-75.0	Jetties to Harbor Island Transition Flare	
4	STA -15+08.24	STA 19+48.10	-75.0	Harbor Island Transition Flare	
5	STA 19+48.10	STA 38+16.42	-75.0	Harbor Island Junction	
6	STA 38+16.42	STA 110+00	-75.0	Corpus Christi Channel	

* DESIGN DEPTH SHOWN. DOES NOT INCLUDE 2.0 FT ADVANCED MAINTENANCE DREDGING OR 2.0 FT ALLOWABLE OVER DREDGE.

Corpus Christi Ship Channel Deepening Project
Individual Permit Application SWG-2019-00067

Preferred Channel Alternative

County: Aransas and Nueces
Application By: Port of Corpus Christi Authority

State: Texas
Date: April 2020

Engineering | Preferred Channel Dimensions



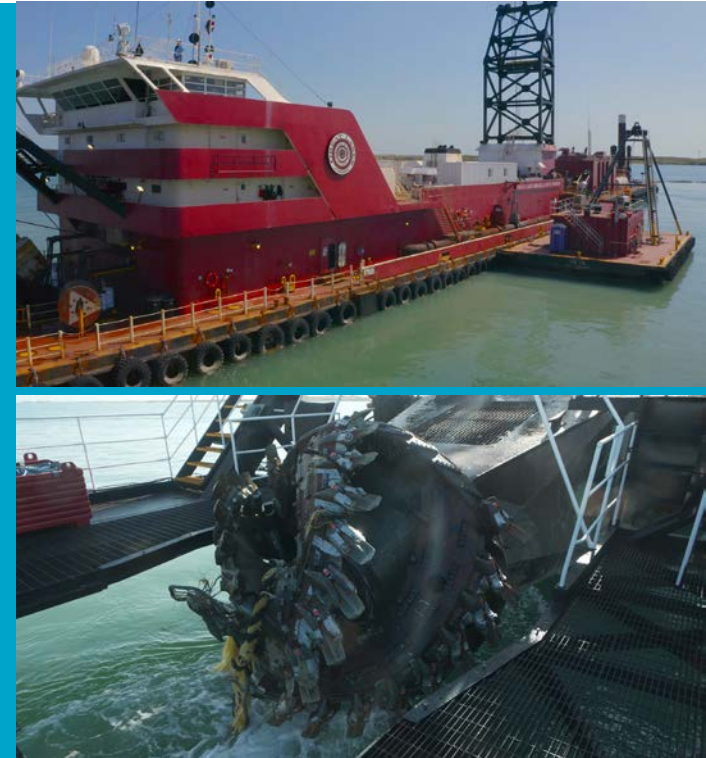
SEGMENT	STATIONING		DESIGN DEPTH* (FT. MLLW)	WIDTH (FT.)	SIDE SLOPES H:V	DESCRIPTION	DREDGE VOLUME (CY)
	STATION BEGIN	STATION END					
1	-620+00	-330+00	-77	640	10:1	Outer Channel	9,617,390
2	-330+00	-72+50	-77	640	10:1	Approach Channel	20,308,762
3	-72+50	- 15+08.24	-75	540	3:1	Jetties to Harbor Island Transition Flare	2,105,041
4	-15+08.24	19+48.10	-75	540	3:1	Harbor Island Transition Flare	2,851,897
5	19+48.10	38+16.42	-75	540	3:1	Harbor Island Maneuvering Basin	2,951,614
6	38+16.42	110+00	-75	540	3:1	Corpus Christi Channel	4,020,764

Total Dredge Volume: 41,855,468

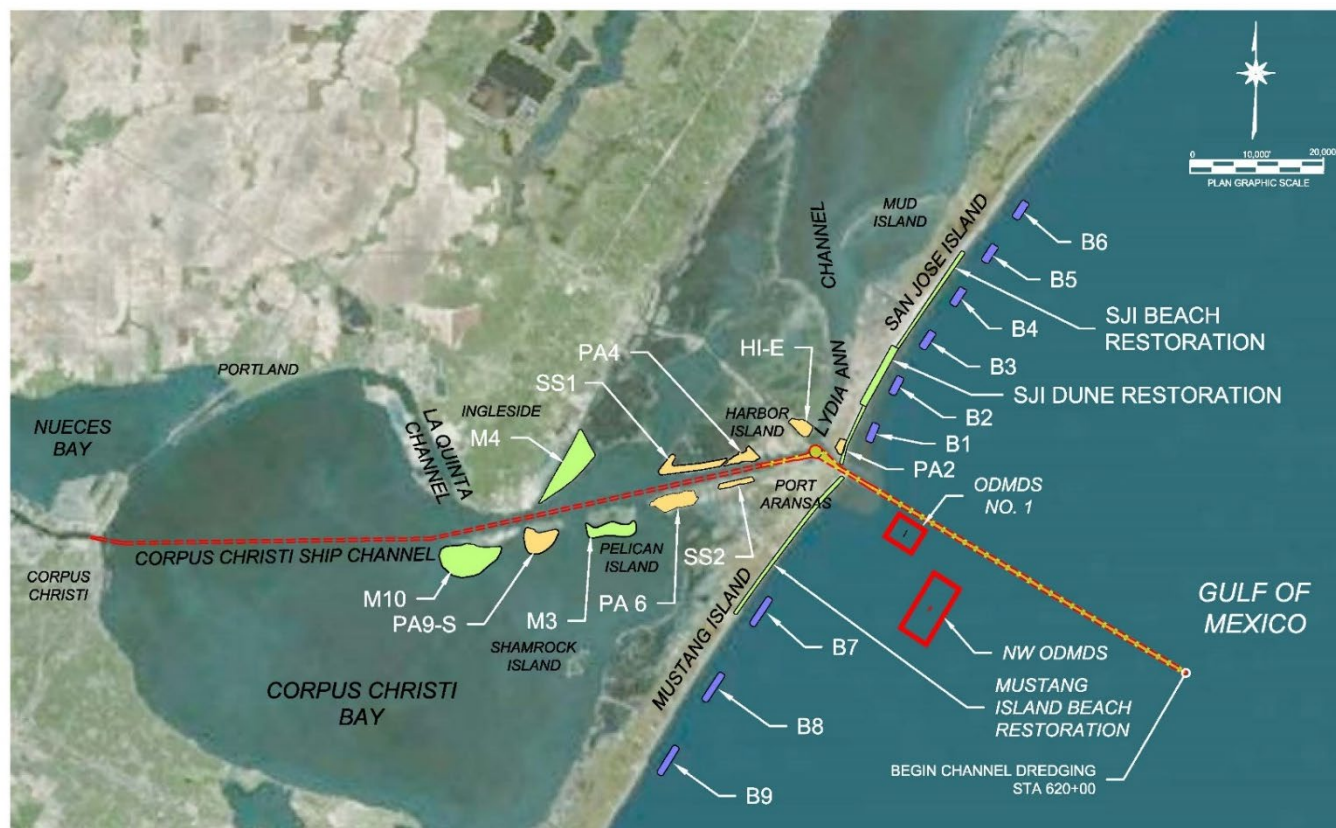
Dredged Material | Channel Deepening Project

Dredged Material Placement Plan

- With Coordination from the USACE, State and Federal Resource Agencies, the following inputs were used to develop the DMMP:
 - Use of existing PAs, existing BU sites, and existing ODMDS
 - Incorporating BU placement were feasible
 - Avoiding oyster reef, seagrass, wetlands, etc. as much as possible
 - Ecosystem or habitat-oriented where feasible



Dredged Material | Channel Deepening Project



LEGEND

- DEEPENING IMPROVEMENTS (-75' / -77' MLLW)
- DREDGE MATERIAL PLACEMENT AREA
- EXIST OFFSHORE PLACEMENT AREA

GENERAL NOTES

1. BASE MAPPING SHOWN IS ESRI WORLD IMAGERY, RETRIEVED FROM ARCGIS TO AUTOCAD IN JULY 2019 - LAST UPDATED IN SEPTEMBER 2018.
2. HORIZONTAL COORDINATE SYSTEM IS NAD83 TEXAS STATE PLANE, SOUTH ZONE, US FOOT.
3. VERTICAL DATUM IS REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

Corpus Christi Ship Channel Deepening Project
Individual Permit Application SWG-2019-00067

OVERALL DREDGE MATERIAL PLACEMENT PLAN

County: Aransas and Nueces
Application By: Port of Corpus Christi Authority

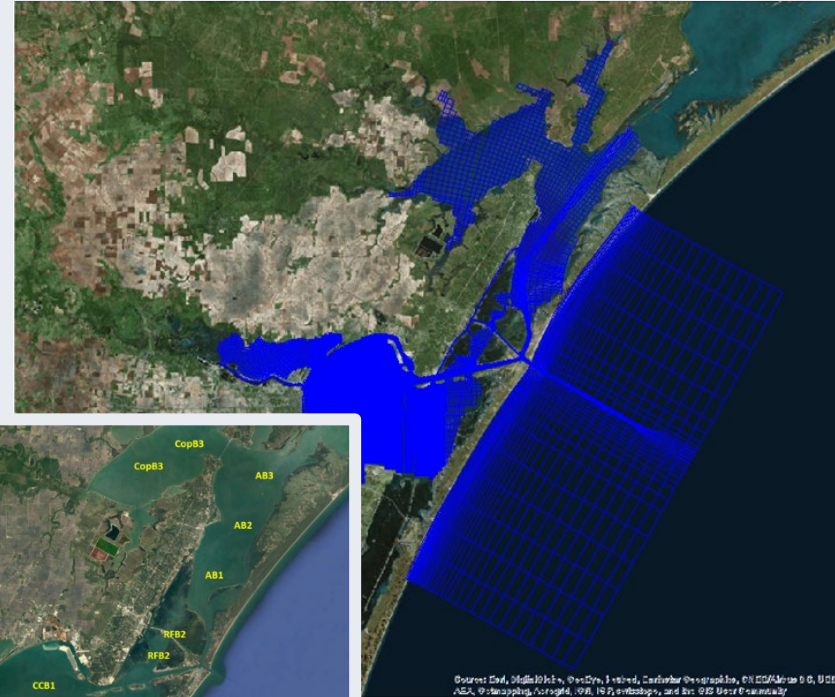
State: Texas
Date: July 2019

Studies Completed

Channel Deepening Project

Extensive studies to date:

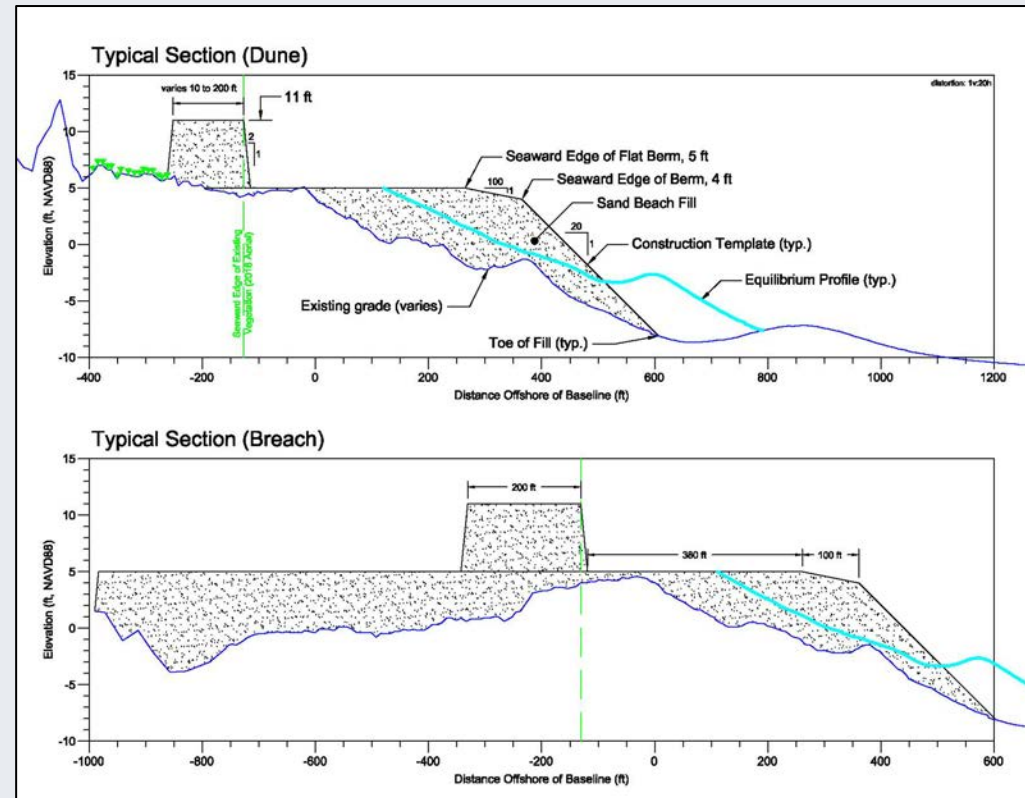
- Ship Simulations: Phase 1
- Tide and Velocity
- Particle Tracking for Larval Migration
- Shoaling/Maintenance Estimate
- Salinity
- Vessel Wake
- ODMDs Capacity
- Adjacent Structures Assessment
- Wetland Delineation
- Seagrass Surveys
- Cultural Resources Phase 1A



Ongoing Efforts | Channel Deepening Project

Studies in progress:

- Ship Simulations: Phase 2
- Passing Vessel Analysis
- ODMDS Sampling
- Beach Template Design
- Evaluation of Channel Material with Native Beach Material
- Feeder Berm Sizing and Location
- T&E Surveys



Thank You



CORPUS CHRISTI SHIP CHANNEL DEEPENING PROJECT ENVIRONMENTAL IMPACT STATEMENT (SWG-2019-00067)

INTERAGENCY SCOPING MEETING

May 14, 2020

Jayson Hudson – USACE Regulatory Project Manager



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OBJECTIVES

- Overview of relevant laws, rules, regulations and executive orders
- Introduce the project and project team
- Identify Purpose and Need and Potential Alternatives
- Review the EIS content and known environmental concerns



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APPLICABLE LAWS, RULES, REGULATIONS, AND EXECUTIVE ORDERS

US Army Corps Of Engineers

- Section 10 of the Rivers and Harbors Act of 1899
- Section 14 of the Rivers and Harbors Act of 1899 (408 Permission)
- Section 404 of the Clean Water Act
- Section 103 of Marine Protection, Research and Sanctuaries Act
- Title 41 of the Fixing America's Surface Transportation (FAST) Act
- Executive Order 13807 Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure

Cooperating/Participating

- Section 401 of the Clean Water Act
- The Coastal Zone Management Act
- Endangered Species Act
- Magnuson–Stevens Fishery Conservation and Management Act
- National Historic Preservation Act



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FAST41 & E.O. 13807

FAST41 - establishes new procedures that standardize interagency consultation and coordination practices. FAST-41 codifies into law the use of the Permitting Dashboard to track project timelines, including qualifying actions that must be taken by lead and other federal agencies.

E.O. 13807 - requires Federal agencies to process environmental reviews and authorization decisions for "major infrastructure projects" as One Federal Decision (OFD). That means that all Federal agencies with environmental review, authorization, or consultation responsibilities for major infrastructure projects to develop a single Environmental Impact Statement (EIS) for such projects, sign a single Record of Decision (ROD) and issue all necessary authorizations within 90 days of the ROD.



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DESCRIPTION OF PERMIT TIMELINE

- Initial Application Received:
 - January 7, 2019
- Significance Determination (EIS)
 - March 6, 2019
- Revised Application Received:
 - June 5, 2019
- FPISC FAST 41 Designation:
 - June 18, 2019
- Initial Public Notice
 - August 1, 2019
- Notice of Intent
 - April 7, 2020
- Purpose and Need Concurrence
 - March 4, 2020
- **Agency Scoping Meeting**
 - **May 14, 2020**
- Notice of Availability of Draft EIS
 - March 15, 2021
- Public Hearing & Comment Period
 - March/April 2021
- Notice of Availability of the Final EIS
 - January 14, 2022
- Notice of Record of Decision
 - April 7, 2022



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EIS TEAM AND ROLES

Lead Federal Agency for NEPA and FAST-41
U.S. Army Corps of Engineers, Galveston District

Cooperating Agencies
Environmental Protection Agency
US Fish and Wildlife Service
National Marine Fisheries Service
US Coast Guard

Participating Agencies
Texas Commission On Environmental Quality
Texas Parks and Wildlife Department

Applicant
Port of Corpus Christi Authority

Environmental Impact Statement Contractor
Freese and Nichols, Inc.

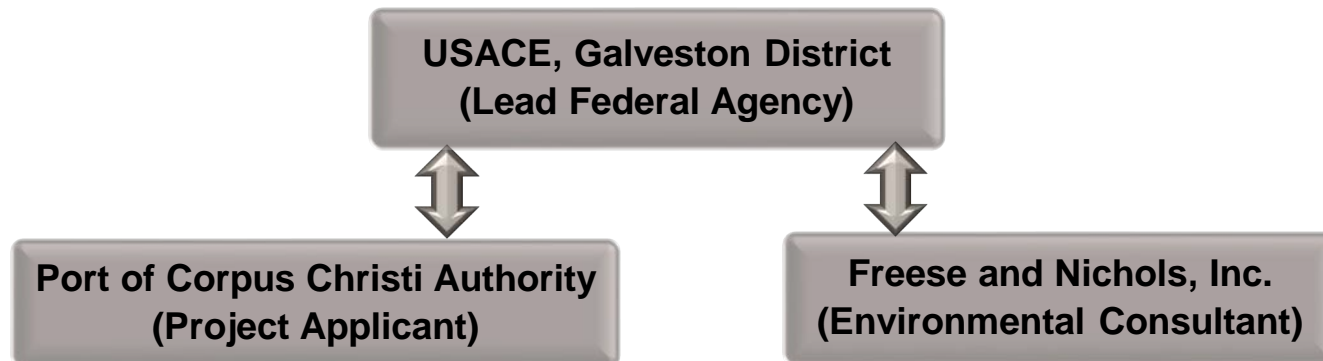


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NEPA THIRD-PARTY CONTRACTING

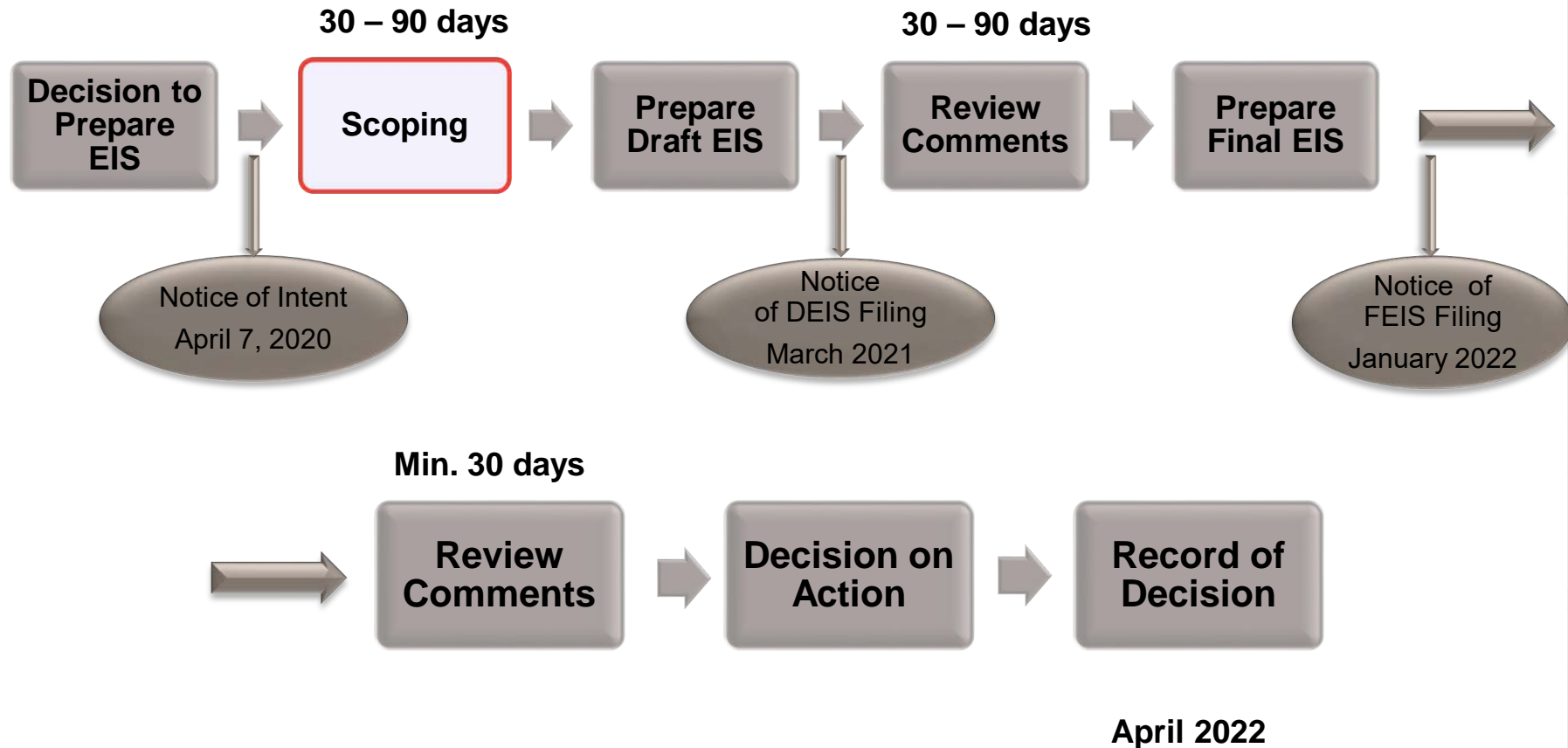
- Lead Federal agency, project applicant, and environmental consultant enter into an agreement for preparation of NEPA compliance documentation (EIS)
- Project applicant pays environmental consultant for services related to preparation of documentation
- Environmental consultant prepares documentation under direction of the US Army Corps of Engineers
- Lead Federal agency is responsible for:
 - Guiding and participating in NEPA process and EIS preparation
 - Independent evaluation of the EIS prior to approval
 - Takes responsibility for the scope and contents of the EIS



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ENVIRONMENTAL IMPACT STATEMENT PROCESS



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SCOPING PROCESS

The overall goal is to define the scope of issues to be addressed in depth in the analyses that will be included in the EIS. Specifically, the scoping process will:

- Identify people or organizations who are interested in the proposed action;
- Identify the significant issues to be analyzed in the EIS;
- Identify and eliminate from detailed review those issues that will not be significant or those that have been adequately covered in prior environmental review;
- Determine the roles and responsibilities of lead and cooperating agencies;
- Identify any related Environmental Assessments or EISs;
- Identify gaps in data and informational needs;
- Set time limits for the process and page limits for the EIS;
- Identify other environmental review and consultation requirements so they can be integrated with the EIS;
- Indicate the relationship between the development of the environmental analysis and the agency's tentative decision making schedule.



EIS CONTENT

- Introduction, Purpose and Need
- Description and Evaluation of Alternatives
- Affected Environment/
Environmental
Consequences
 - General Setting, Physiography, and Topography
 - Geology
 - Physical Oceanography
 - Coastal Processes
 - Water and Sediment Quality
 - Freshwater Inflow
 - Hydrology
 - Soils
 - Energy and Mineral Resources/
Hazardous, Toxic, and Radioactive
Waste
 - Air Quality
 - Noise
 - Wetlands & Sea grasses
 - Aquatic Resources
 - Wildlife Resources
 - Threatened and Endangered
Species
 - Cultural Resources
 - Socioeconomic Resources
 - Navigation



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SUPPORTING STUDIES

– EIS Appendices

- Ocean Dredged Material Disposal Site Analysis and Site Management and Monitoring Plan
- Air Emissions Analysis
- Clean Water Act 404(b)(1) Evaluation
- Hazardous, Toxic and Radioactive Waste Assessment
- Endangered Species Biological Assessment
- Essential Fish Habitat Assessment
- Texas Coastal Zone Consistency Determination
- Programmatic Agreement



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PURPOSE AND NEED STATEMENT

Basic project purpose, as determined by the Corps: To safely, efficiently, and economically export current and forecasted crude oil inventories from the facilities at the Port of Corpus Christi.

Determination: The proposed project does not require access or proximity to, or siting within, a special aquatic site in order to fulfill its basic purpose. Alternatives that do not involve impacts to special aquatic sites are presumed to be available.

Overall project purpose, as determined by the Corps: To safely, efficiently, and economically export current and forecasted crude oil inventories via Very Large Crude Carriers (VLCC), a common vessel in the world fleet. Crude oil is delivered via pipeline from the Eagle Ford and Permian Basins to multiple locations at the Port of Corpus Christi. Crude oil inventories exported at the Port of Corpus Christi have increased from 280,000 barrels per day in 2017 to 1,650,000 barrels in January 2020 with forecasts increasing to 4,500,000 barrels per day by 2030. Current facilities require vessel lightering to fully load a VLCC which increases cost and affects safety.



ALTERNATIVES FROM EARLY SCOPING

- No Action
 - Permit Denial
- Applicant's Preferred Alternative
 - VLCC Capable Channel to Harbor Island
- Channel Alternatives
 - Deep Water Port Facility
- Dredge Material Placement Alternatives
 - Offshore Disposal
 - Beneficial Use
 - Beach/Dune Nourishment
 - Feeder Berms
 - Bird Islands
 - Upland Confined Placement Area



ENVIRONMENTAL CONCERNS FROM EARLY SCOPING

- Wetlands And Submerged Aquatic Vegetation
- Threatened And Endangered Species
- Essential Fish Habitat
- Archaeological And Cultural Resources
- Water Quality – Hypoxia
- Sediment Transport
- Erosion
- Navigation - Ship Traffic & Ferry Operations
- Recreation And Recreational Resources
- Hazardous Waste And Materials
- Socioeconomics
- Public Benefit And Needs Of The People
- Cumulative Impacts



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EIS CONTENT *(structured from early scoping)*

- **Physical Environment** *(Soils, Geology, Physical Oceanography)*
 - hydrosalinity, RSLC, WQ, hypoxia, sediment transport, erosion
- **Ecological and Biological Resources** *(Vegetation and Habitats, Terrestrial and Aquatic Wildlife)*
 - wetlands, SAV, coastal resources, Essential Fish Habitat, T&E
- **Human Environment** *(SocioEc, EJ, Recreation, Navigation, Cultural Resources, HTRW, Noise, Air)*
 - ferry, beach impacts, nautical archeology
- **Cumulative Impacts**



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HYDROLOGY AND RELATED MODELING

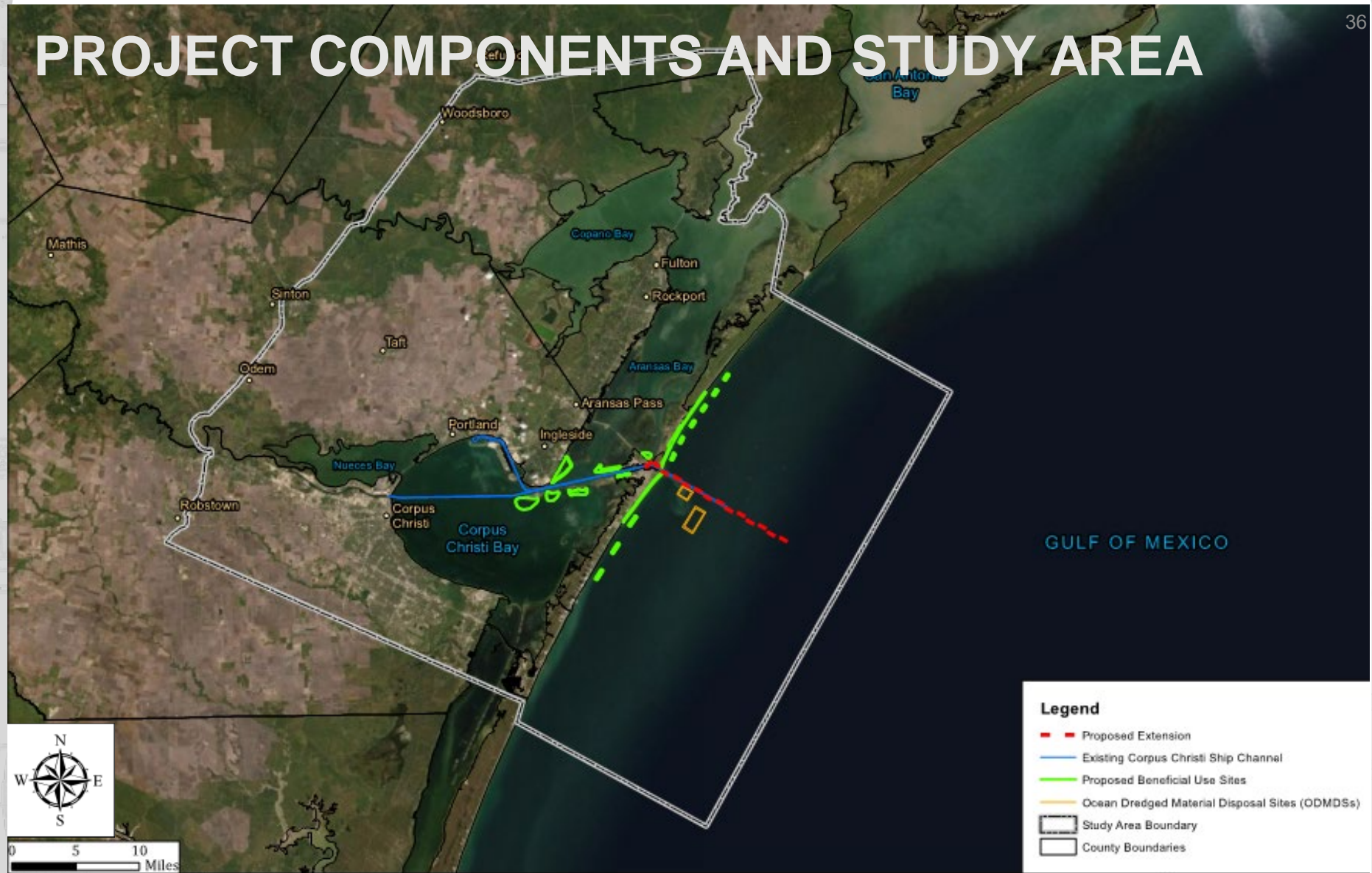
- Ship and Tow Analysis
- Tidal Flow
- Salinity
- Vessel Wake
- Channel Maintenance
- Feeder Berms/Shoreline Nourishment
- ODMDS



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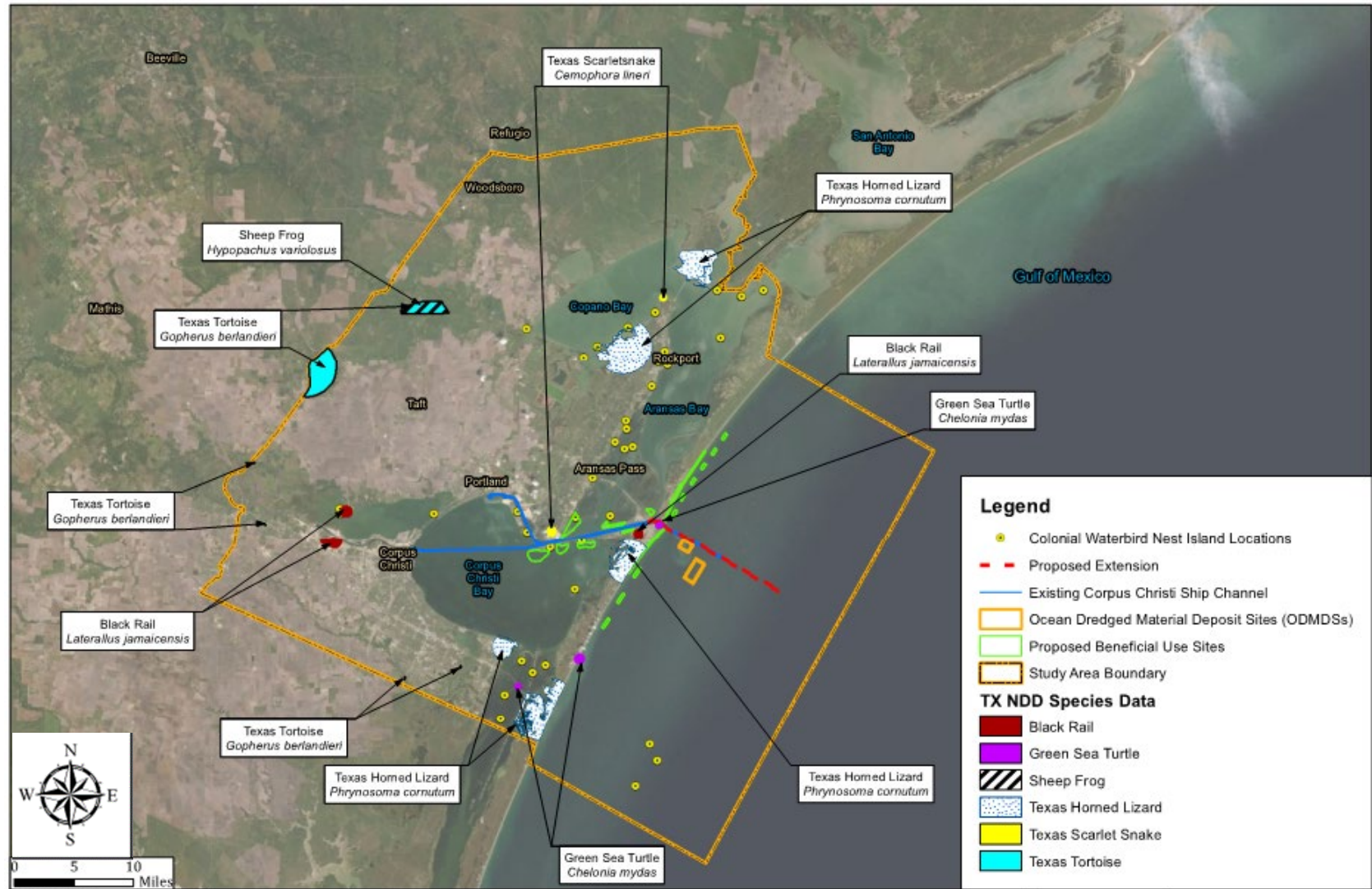
PROJECT COMPONENTS AND STUDY AREA



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T&E AND COLONIAL NESTING SITES



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WOTUS/SAV DELINEATION

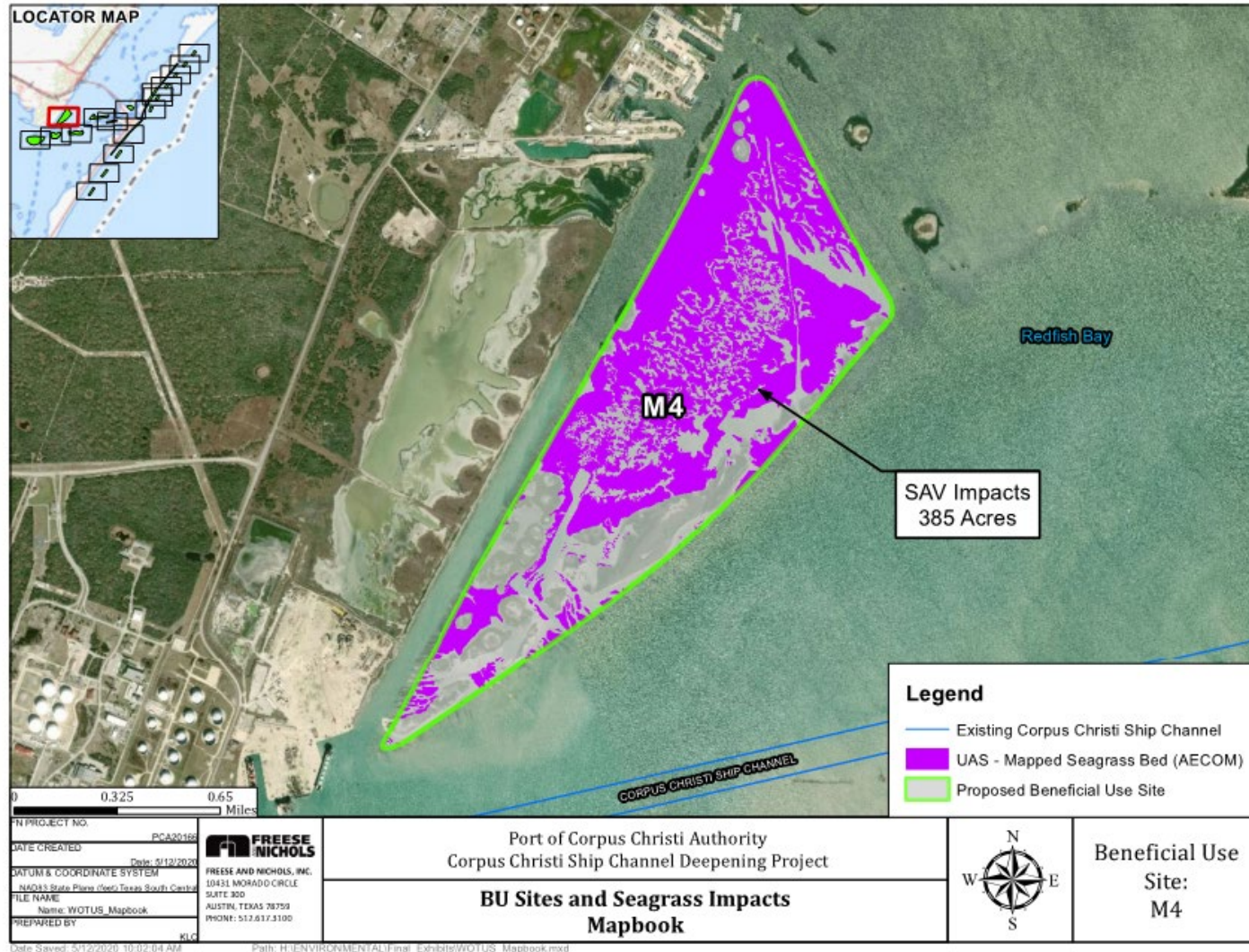
- Desktop Sources (USFWS NWI, TPWD Seagrass)
- Drone Survey
- Side Scan Sonar
- Ground-Truthed Wading Survey



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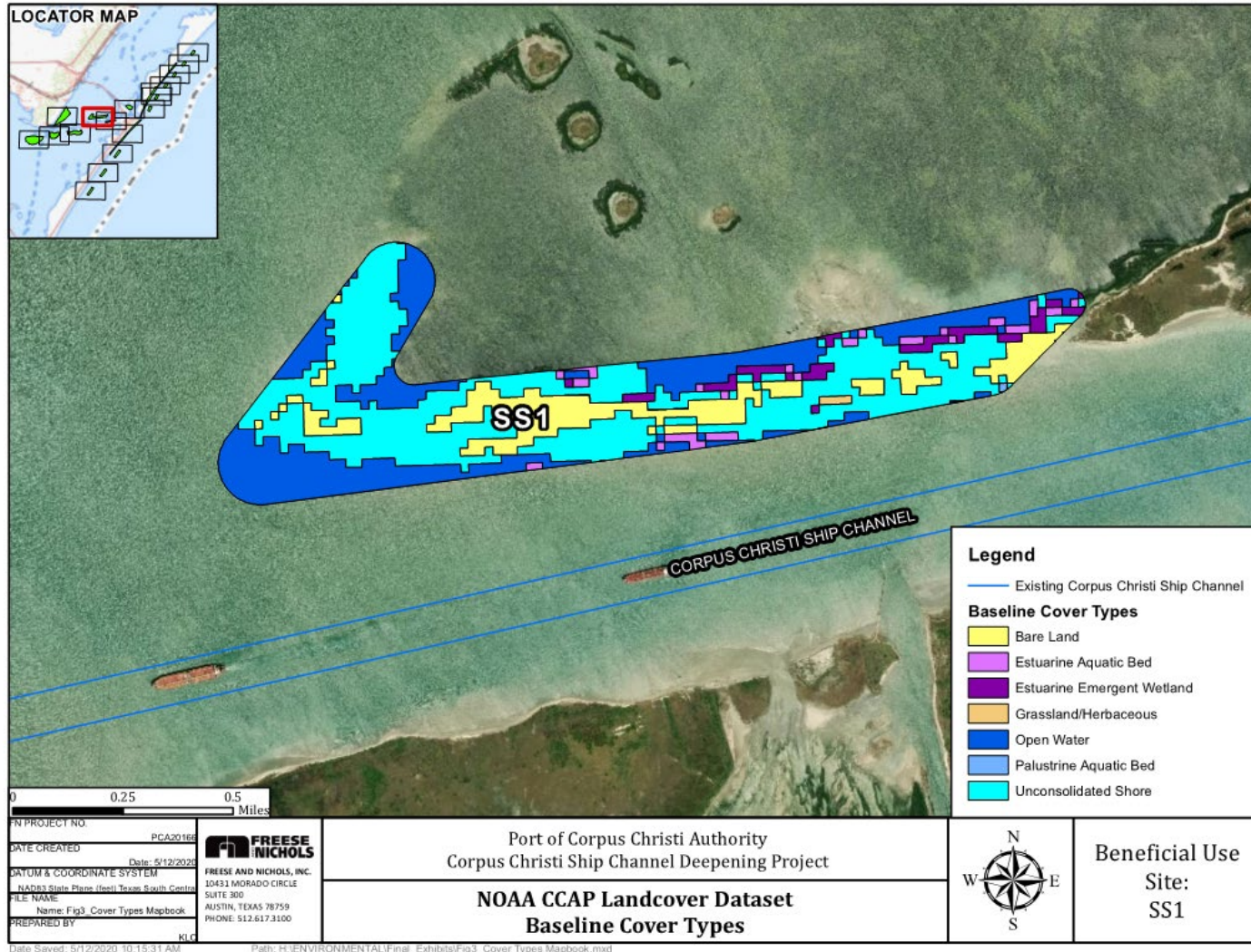
SAV DELINEATION – drone survey/ground-truthed



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NOAA COVER TYPES AND BU SITES



NOAA COVER TYPES AND BU SITES

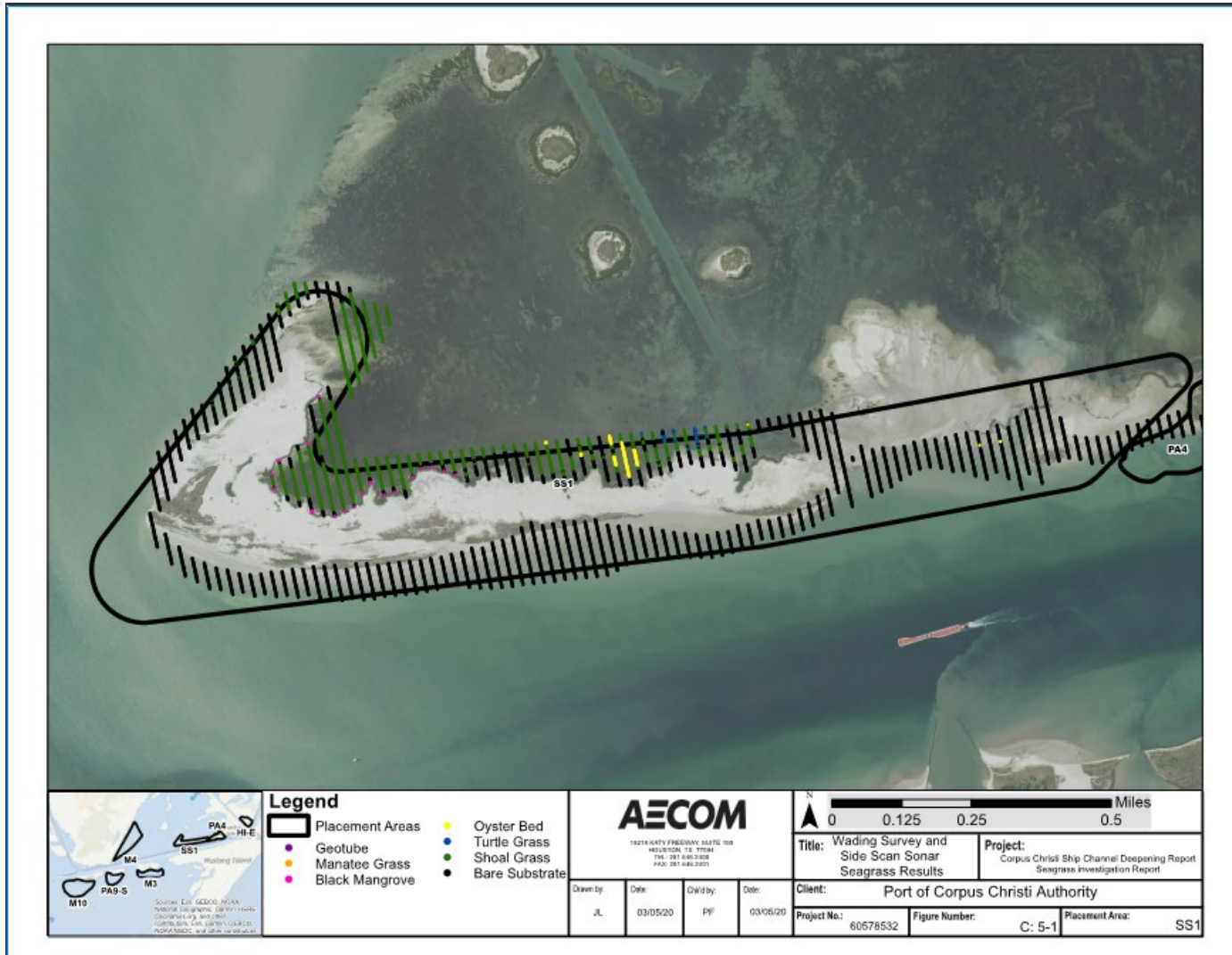
COVER TYPE	ACRES
Bare Land	440.1
Deciduous Forest	0.9
Developed Low Intensity	0.4
Estuarine Aquatic Bed	44.3
Estuarine Emergent Wetland	125.9
Grassland/Herbaceous	150.5
Open Water	3,181.8
Palustrine Aquatic Bed	2.7
Palustrine Emergent Wetland	30.2
Palustrine Shrub Scrub Wetland	25.8
Unconsolidated Shore	537.1



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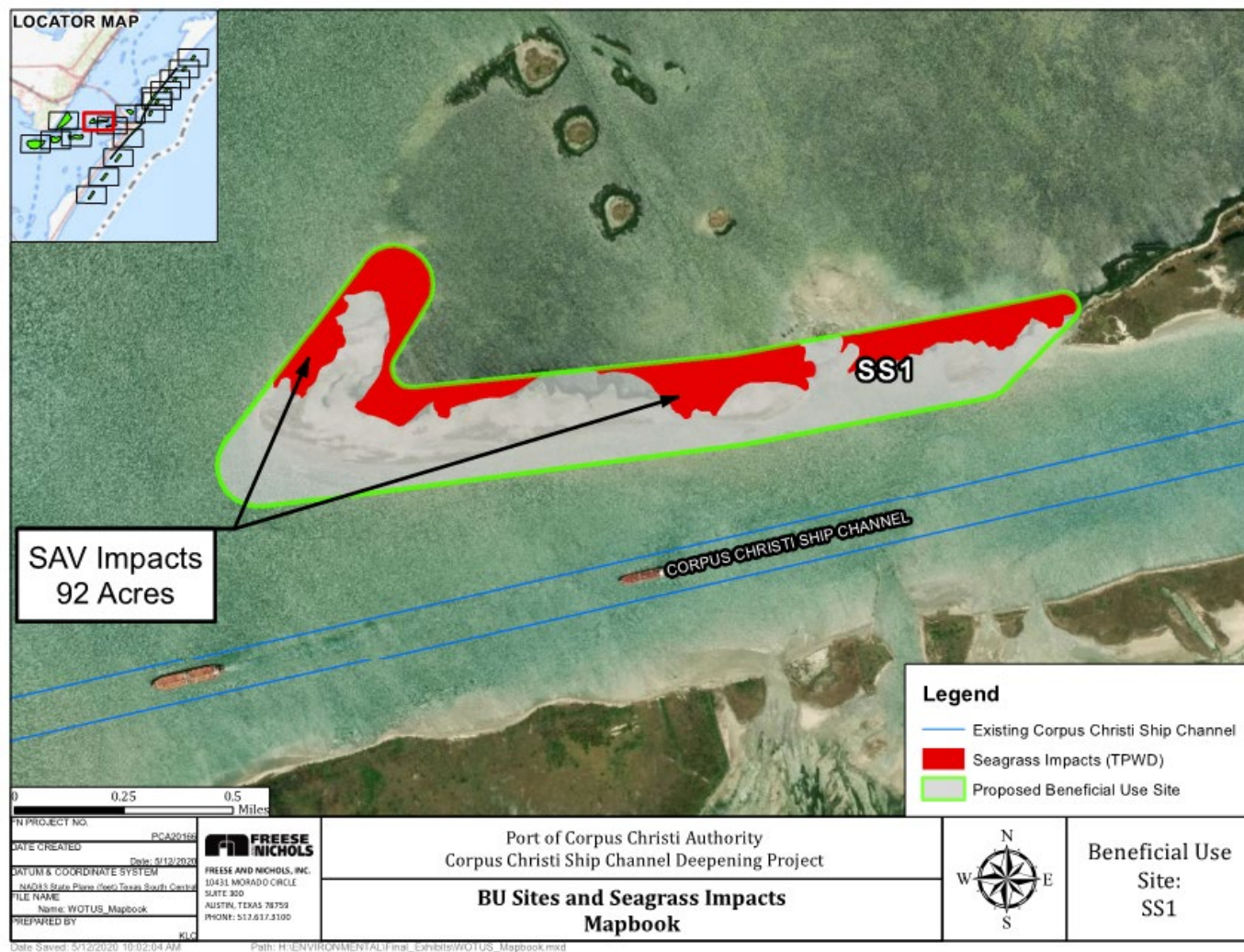
SAV DELINEATION – TPWD data/field verified



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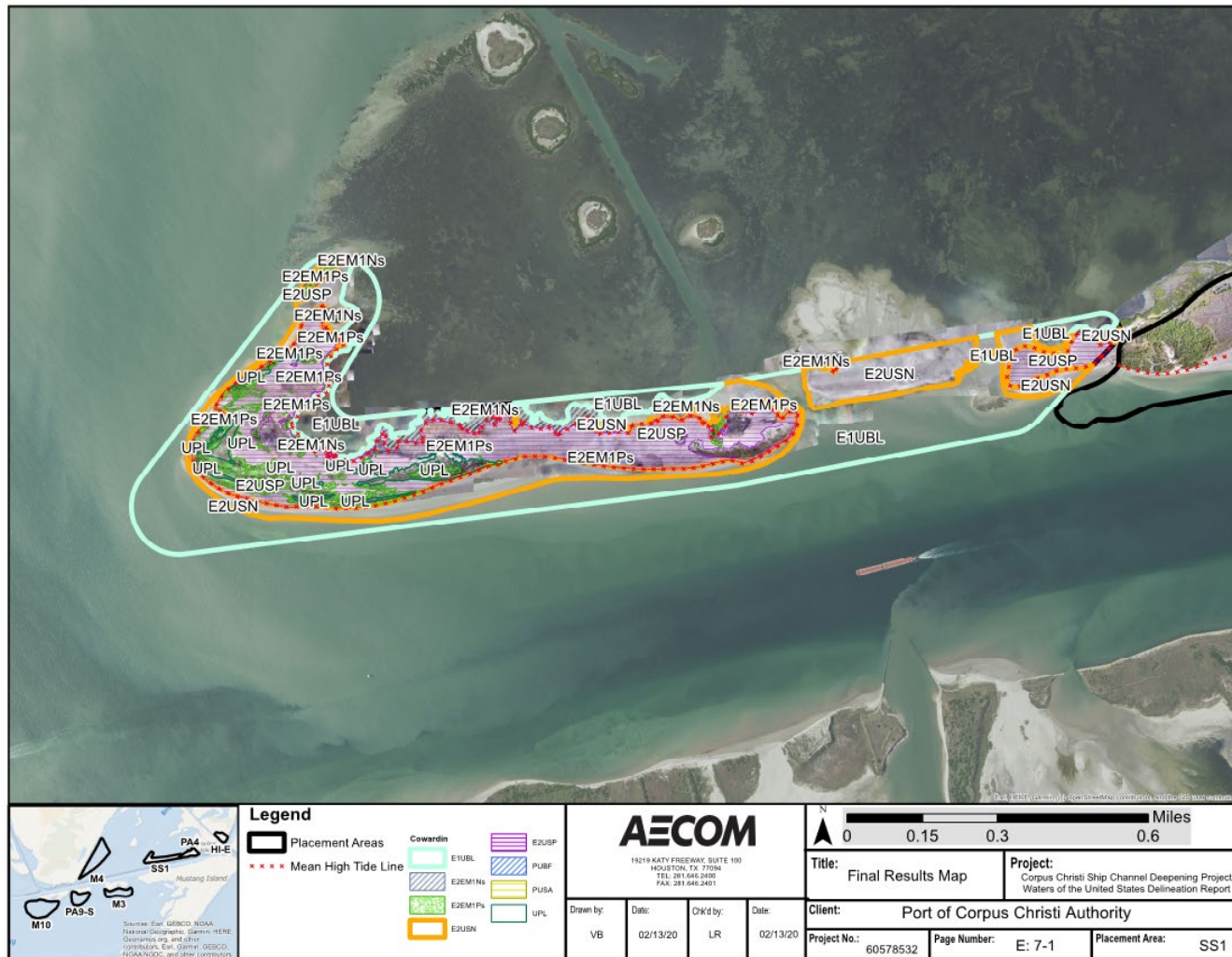
SAV DELINEATION – TPWD data/field verified



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WOTUS DELINEATION



HOW TO SUBMIT WRITTEN COMMENTS

Written comments regarding the proposed EIS scope should be addressed to:

Mr. Jayson Hudson
USACE, Galveston District
Regulatory Branch
P.O. Box 1229
Galveston, Texas 77553-1229.

Or

SWG201900067@usace.army.mil

Emailed comments, including attachments, should be provided in .doc, .docx, .pdf or .txt formats.



Attachment 5

Agency Letters Received During Scoping

From: [Skoruppa, Mary Kay](#)
To: [SWG201900067](#)
Cc: [Montano, Delfinia](#); [Gardiner, Dawn](#)
Subject: [Non-DoD Source] USFWS scoping comments for EIS - Port of Corpus Christi
Date: Monday, April 27, 2020 3:31:56 PM
Attachments: [USFWS comments SWG-2019-00067.pdf](#)
[2020 Nueces County Species List.docx](#)

Mr. Hudson,

Please see the attached documents with USFWS comments for an EIS to be prepared for the Port of Corpus Christi's Channel Deepening Project (SWG-2019-00067).

Thank you,
Mary Kay Skoruppa

Mary Kay Skoruppa

U.S. Fish and Wildlife Service
Texas Coastal Ecological Services
4444 Corona Dr., Suite 215
Corpus Christi, TX 78411
Direct 361-225-7314; Mobile 346-815-0009; Main Office 361-994-9005
mary_kay_skoruppa@fws.gov <mailto:mary_kay_skoruppa@fws.gov>

Note: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Texas Coastal Ecological Services Field Office
4444 Corona Drive Suite 215,
Corpus Christi, Texas 78411
Main: (361) 994-9005 Fax: (361) 994-8262



In Reply Refer To:
02ETTX00-2019-I-2117
02ETTX00-2019-CPA-0035

April 27, 2020

Jayson Hudson, Regulatory Project Manager
USACE, Galveston District, Regulatory Division
P.O. Box 1229
Galveston, TX 77553-1229

Dear Mr. Hudson:

The U.S. Fish and Wildlife Service (Service) is a Cooperating Agency under the National Environmental Policy Act in the FAST-41 planning process for the Corpus Christi Ship Channel (CCSC) Deepening Project (the project), Nueces County, Texas. The project proposes to deepen a portion of the CCSC and extend the terminus of the CCSC an additional 5.5 miles into the Gulf of Mexico. The Port of Corpus Christi Authority (PCCA), the project sponsor/applicant, is requesting authorization from the U.S. Army Corps of Engineers (USACE) to discharge dredged material into waters of the U.S. for this project (SWG-2019-00067). We received and reviewed the PCCA's Stated Purpose and Need, the Coordinated Project Plan (CPP) dated March 24, 2020, and a Notice of Intent to Prepare an Environmental Impact Statement (EIS) dated April 9, 2020. The Service provides the following comments and recommendations in accordance with the Fish and Wildlife Coordination Act ((16 U.S.C. 661-667(e)); the Endangered Species Act (Act) (16 U.S.C. 1531 et seq.); the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.); and the National Environmental Policy Act (42 U.S.C. 4321-4347).

The CPP states that the proposed project will deepen the CCSC to approximately -77 feet mean lower low water (MLLW) from near the southeast side of Harbor Island through the Aransas Pass to the current terminus in the CCSC. The project also proposes to dredge an extension of the current terminus an additional 29,000 feet out into the Gulf of Mexico, also at a depth of approximately -77 feet MLLW. In total, the proposed project will deepen or extend 13.8 miles of CCSC. The project will create approximately 46 million cubic yards of new work dredged material composed of clay and sand, to be placed in offshore disposal sites along Mustang and San Jose islands and in multiple proposed inshore sites in Corpus Christi and Redfish bays. The proposed adverse impacts to submerged aquatic vegetation total 58.5 acres.

The Service requests that the USACE fully evaluate all potential direct, indirect, and cumulative environmental impacts in the EIS, including federally listed threatened and endangered species, critical habitat, state listed threatened and endangered species, state Species of Greatest Conservation Need, migratory birds, colonial waterbird rookery islands, special aquatic sites, Redfish Bay State Scientific Area, and wetlands. Enclosed is a list of federally protected species for Nueces County for your reference. The Service requests evaluation of additional impacts to the inshore portions of the proposed project areas, including increased erosion and loss of shoreline stabilization from wakes created by fully laden Very Large Crude Carriers increased vulnerability to oil spills from ship traffic and tropical storms, and a potential loss of uniqueness and aesthetics in the community of Port Aransas and surrounding recreational and fishing areas (i.e., Lighthouse Lakes Paddling Trail, Port Aransas Nature Preserve, Port Aransas Jetties). Finally, the Service requests an examination of the effects of channel deepening on water salinities in the project area. Changes to salinities in Redfish and Corpus Christi bays could affect sea grass distribution and diversity, as well as movements of marine organisms between the Gulf and the bay. Marine organisms such as crabs, shrimp, and fish utilize different salinity regimes and habitat types for different life stages and are important prey for many protected species. For example, blue crabs are a major component of the diets of two critically endangered species, the whooping crane (*Grus americana*) and Kemp's ridley sea turtle (*Lepidochelys kempii*). Therefore, alteration of salinities could affect endangered species.

Please also include potential long-term direct, indirect, and cumulative environmental impacts associated with future maintenance dredging, dredged material disposal, and jetty maintenance/construction. The Service is concerned that if an extension of the Aransas Pass jetty is required, there may be a reduction of longshore transport of sediment to the surrounding beaches. Therefore, future impacts to sediment transport on Mustang and San Jose islands should be included in this evaluation to determine the extent of beach accretion/erosion.

The Service appreciates the opportunity to provide scoping comments for the planned EIS for the Channel Deepening Project. If you have questions regarding these comments, please contact Mary Kay Skoruppa at 361-225-7314, or by email at mary_kay_skoruppa@fws.gov.

Sincerely,



Charles Ardizzone
Field Supervisor

Enclosure

cc: Delfinia Montano, Region 2, USFWS, Albuquerque, NM

Federally Listed as Threatened and Endangered Species of Texas

April 27, 2020

County-by-County lists containing species information is available at the U.S. Fish and Wildlife Information, Planning, and Conservation (IPaC) system.
<http://ecos.fws.gov/ipac/>.

This list represents species that may be found in counties throughout the state. It is recommended that the field station responsible for a project area be contacted if additional information is needed.

DISCLAIMER

This County by County list is based on information available to the U.S. Fish and Wildlife Service at the time of preparation. This list is subject to change, without notice, as new biological information is gathered and should not be used as the sole source for identifying species that may be impacted by a project.

Nueces County

Green sea turtle	(T)	<i>Chelonia mydas</i>
Gulf Coast jaguarundi	(E)	<i>Herpailurus yagouaroundi cacomitli</i>
Hawksbill sea turtle	(E w/CH I)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Least tern	(E)	<i>Sterna antillarum</i>
Leatherback sea turtle	(E w/CH I)	<i>Dermochelys coriacea</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Ocelot	(E)	<i>Leopardus pardalis</i>
Piping plover	(T w/CH)	<i>Charadrius melodus</i>
Red knot	(T)	<i>Calidris canutus ssp. rufa</i>
Slender rush-pea	(E)	<i>Hoffmannseggia tenella</i>
South Texas ambrosia	(E)	<i>Ambrosia cheiranthifolia</i>
West Indian manatee	(T)	<i>Trichechus manatus</i>
Whooping crane	(E w/CH)	<i>Grus americana</i>

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Statewide or areawide migrants are not included by county, except where they breed or occur in concentrations. The whooping crane is an exception; an attempt is made to include all confirmed sightings on this list.

- E = Species in danger of extinction throughout all or a significant portion of its range.
- T = Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
- C = Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered.
- CH = Critical Habitat (in Texas unless annotated I)
- P/ = Proposed ...
- P/E = Species proposed to be listed as endangered.
- P/T = Species proposed to be listed as threatened.
- I = CH designated (or proposed) outside Texas
- ~ = protection restricted to populations found in the Ainterior@ of the United States. In Texas, the least tern receives full protection, except within 50 miles (80 km) of the Gulf Coast.



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Carter P. Smith
Executive Director

July 2, 2020

Mr. Jayson Hudson
U.S. Army Corps of Engineers
Galveston District, Regulatory Branch
P.O. Box 1229
Galveston, TX 77553-1229

Re: Permit Application Number SWG-2019-00067
Port of Corpus Christi Authority
Special Public Notice

Dear Mr. Hudson:

Texas Parks and Wildlife Department (TPWD) has reviewed the Notice of Intent (NOI) dated April 9, 2020 to prepare an Environmental Impact Statement (EIS) for a major federal action and to solicit comments regarding the proposed EIS scope for permit application number SWG-2019-00067. The proposed project would deepen and extend a portion of the Corpus Christi Ship Channel (CCSC) to accommodate transit of fully laden very large crude carriers (VLCCs) that draft approximately 70 feet. The proposed project would not include the widening of the channel; however, some minor incidental widening of the channel is expected to meet side slope requirements and maintain stability of the channel. The project would be located in the existing channel bottom of the CCSC, from a point southeast of Harbor Island in Port Aransas, Nueces County, Texas and traversing easterly through the Aransas Pass inlet, and then terminating at a point in the Gulf of Mexico approximately 29,000 feet beyond the currently authorized terminus of the CCSC.

The proposed project would span approximately 13.8 miles and would cover approximately 1,778 acres, creating approximately 46 million cubic yards (MCY) of new work dredged material (17.1 MCY of clay and 29.2 MCY of sand). The proposed project consists of the following elements:

- Deepening a portion of the existing CCSC from the currently authorized depths of -54 to -56 feet mean lower low water (MLLW) to final constructed depths of -79 to -81 feet MLLW.
- Extending the existing terminus of the authorized channel an additional 29,000 feet into the Gulf of Mexico to reach the -80-foot MLLW bathymetric contour.
- Expanding the existing Inner Basin at Harbor Island as necessary to accommodate VLCC turning, which includes construction of a flare transition from the CCSC within Aransas to meet the turning basin expansion.
- Potential placement of new work dredged material into waters of the U.S. for beneficial use sites located in and around Corpus Christi and Redfish Bays.

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www.tpwd.texas.gov

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

- Potential placement of dredged material on San Jose Island for dune restoration; potential placement of dredged material feeder berms for beach restoration along San Jose and Mustang Islands.
- Transport of new work dredged material to the CCSC Improvement Project New Work Ocean Dredged Material Disposal Site (ODMDS).

According to the NOI, the project is needed to safely, efficiently, and economically export current and forecasted crude oil inventories via VLCC. For justification, the NOI states that crude oil inventories exported at the Port of Corpus Christi have increased from 280,000 barrels per day in 2017 to 1,650,000 barrels in January 2020 with forecasts increasing to 4,500,000 barrels per day by 2030. In addition, the NOI states that current facilities require vessel lightering to fully load a VLCC which increases cost and affects safety.

Recommendation: Because the proposed project would not accommodate transit of fully laden VLCCs from any existing crude oil export facilities at the Port of Corpus Christi, any cost- or safety-benefit analysis should be limited to proposed and foreseeable future projects that would accommodate fully laden VLCCs.

Currently, TPWD is aware of two proposed crude oil export facilities with marine terminals located at Harbor Island that would have access to the proposed channel deepening project. This includes one project proposed by Axis Midstream Holdings, LLC (SWG-2018-00789 attached), which does not propose depths to accommodate fully laden VLCCs, and another proposed by the Port of Corpus Christi Authority (SWG-2019-00245 attached) in partnership with Lone Star Ports, LLC, which would accommodate fully laden VLCCs.

By letter dated September 20, 2019 (SWG-2019-00245 attached), TPWD expressed concern that the Lone Star Ports, LLC project was an interdependent part of the Harbor Island Terminal Facility as well as part of a larger action (the proposed channel deepening project). Although Axis Midstream Holdings, LLC, has included a berthing terminal to their project plans to achieve independent utility, TPWD continues to recommend that due to the timing, location, and similarity of these proposed actions, the scope should be expanded to evaluate the environmental consequences of all three projects together (i.e., SWG-2019-00067, SWG-2018-00789, and SWG-2019-00245) in order to adequately assess the combined impacts and reasonable alternatives.

Recommendation: The proposed crude oil export projects at Harbor Island should be included in the scope of the Draft EIS to be consistent with the purpose and need of the channel deepening project. In addition, the USACE stated in a letter to the POCCA on February 14, 2019 that all three projects are interdependent and should be evaluated as such in the DEIS. The purpose and need statement for the EIS should be consistent with the USACE determination, “to construct a crude export facility on Harbor Island, including supply pipelines and tank farms, and deepen the existing CCSC to accommodate transit of fully laden VLCC’s from the Harbor Island Terminal Facility into the Gulf of Mexico to more efficiently move current

and forecasted crude.” The purpose and need has been modified; “to safely, efficiently and economically export current and forecasted crude oil inventories via VLCC, a common vessel in the world fleet. Crude oil is delivered via pipeline from the Eagle Ford and Permian Basins to multiple locations at the Port of Corpus Christi. Crude Oil inventories exported at the Port of Corpus Christi have increased from 280,000 barrels per day in 2017 to 1,650,000 barrels in January 2020 with forecasts increasing to 4,500,000 barrels per day by 2030. Current facilities require vessel lightering to fully load a VLCC which increases cost and affects safety.” Presently there are no existing export facilities located within phase I of the deepening project so all components necessary to transport the crude oil to VLCC’s for export through the CCSC should be considered when evaluating cumulative impacts.

On April 8, 2020, the Galveston District USACE awarded a second contract (phase II) for the Corpus Christi Ship Channel Improvement Project (CCSCIP). The contract will improve approximately 11.9 miles of the CCSC by widening the channel from Harbor Island to approximately 2.7 miles west of La Quinta Channel, to 530 feet wide and deepening it from 47 feet to 54 feet. TPWD is aware of two projects along the CCSC at Ingleside, Texas; Moda Ingleside Oil Terminal, LLC (SWG-1995-02221 attached) and South Texas Gateway Terminal, LLC (SWG-2006-02562 attached) that are constructing ship berths to accommodate large ships up to a VLCC size vessel for crude oil export.

Recommendation: The proposed crude oil export projects in all phases of the CCSCIP should be included in the scope of the Draft EIS to be consistent with the purpose and need of the channel deepening project.

The proposed deepwater port known as Bluewater, Texas, LLC (MARAD-2019-0094 attached) also proposes to construct pipelines, storage tanks, booster pumps and other associated facilities at Harbor Island to fully load VLCCs from two single point mooring buoys in the Gulf of Mexico. The deepwater port project would also accommodate fully laden VLCCs without channel deepening.

Recommendation: Fully loading VLCCs from a deepwater port in the Gulf of Mexico should be included in the range of alternatives for the proposed project.

Within the context of the geographic area, the EIS should address numerous important resources that may be affected by the proposed project. The largest neighboring resource, located 20 miles south of the project site, is the Padre Island National Seashore, the largest stretch of undeveloped barrier island in the world and home to the National Park Service’s Division of Sea Turtle Science and Recovery. Immediately to the north of the project site is San Jose Island, a privately-owned undeveloped barrier island known to be occupied by numerous federally-listed threatened and endangered sea turtle and bird species, including the Kemp’s Ridley Sea Turtle (*Lepidochelys kempii*), Whooping Crane (*Grus americana*), Piping Plover (*Charadrius melodus*), and Red Knot (*Calidris canutus*). In addition, the area includes the Mission-Aransas National Estuarine Research

Reserve (MANERR), a state and federal partnership that conducts research, education, and stewardship programs funded by the National Oceanic and Atmospheric Administration (NOAA). The MANERR is the third largest National Estuarine Research Reserve (NERR) in the United States and the only NERR in Texas. TPWD has identified additional important resources within this geographic extent that include Padre Balli Park and Bob Hall Pier, Packery Flats, Packery Channel, Mustang Island State Park, Francine Cohn Preserve, Shamrock Island, the Aransas Pass (Lydia Ann) Lighthouse, Lighthouse Lakes Paddling Trail, Lighthouse Lakes Park, I.B. Magee Beach Park and Horace Caldwell Pier, Port Aransas Jetties and the Port Aransas Nature Preserve.

A significant concern to TPWD is the 32,000-acre Redfish Bay State Scientific Area (RBSSA) located between San Jose Island and Live Oak Peninsula. Following a multi-agency effort and the resulting publication of the "Seagrass Conservation Plan for Texas" in 1999, the Texas Parks and Wildlife Commission established the RBSSA for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value. Because of this designation, the RBSSA has special status, and the importance of seagrass habitat has since been specifically recognized by state law, not just within the RBSSA, but state-wide.

Redfish Bay provides a mosaic of tidal flats, tidal marsh, mangroves, unvegetated shallows, and 14,000-acres of seagrass beds that provide nursery, forage, and cover habitats for many species of fish and wildlife. Outside the Laguna Madre, Redfish Bay represents the most extensive area of pristine seagrass beds and is also the northern range limit for large beds of turtle grass and manatee grass (Pulich and Calnan, 1999). The importance of the shallow water resources of RBSSA to recreational fisheries in Redfish Bay is detailed in recent angler survey data collected from 2013 to 2017. Southern Redfish Bay represents only about 7% of the areal extent of the Corpus Christi Bay Ecosystem, yet survey data indicate that this small area accounted for 18% of the angling trips taken by boat and 21% of the angler hours (time anglers spent fishing) throughout the Corpus Christi Bay Ecosystem. These survey data also indicate that southern Redfish Bay accounted for 37% of spotted seatrout, 31% of red drum, 23% of southern flounder, and 12% of black drum landed throughout the Corpus Christi Bay Ecosystem.

Recommendation: Aransas and Corpus Christi Bays provide unique recreational opportunities such as boating, fishing, sailing, kayaking and birdwatching in addition to pristine environmental aesthetics from the existing natural habitats. The EIS should evaluate socioeconomic impacts not only to the recreational users but the surrounding communities that support the activities.

To fully evaluate the environmental impacts from the proposed project, the draft EIS should include information about the following:

- An evaluation of direct, indirect, temporary, and cumulative impacts to sensitive coastal resources that would result from the proposed project. Detailed maps, of all interdependent projects, should include overlays

illustrating the location, extent, and type of coastal resources that occur within the vicinity of the projects. This includes all aspects of the projects whether onshore, inshore or offshore.

- Identify and describe measures that would be taken to avoid and minimize direct, indirect, temporary, and cumulative adverse effects to fish and wildlife and their habitats, including permanent and temporary impacts.
- Potential impacts to all federal- and state-listed rare, threatened, and endangered species and their habitats with a five-mile vicinity of the project.
- Potential impacts to Gulf beaches which provide critical wildlife habitat, such as sea turtle nesting areas and avifauna foraging and roosting areas.
- Potential impacts to commercial and recreational fisheries and associated fishing activities, including both terrestrial and aquatic access routes.
- Potential magnitude of individual and cumulative impacts to plankton and zooplankton associated with all phases of the project
- Potential magnitude of individual and cumulative impacts to egg, larval, and adult stages of fish, shellfish, and other aquatic organisms associated with all phases of the project.
- Potential for bird and bat collisions into project infrastructure.
- Potential impacts (physical removal of nesting habitat and disturbance from human foot traffic and machinery use) to bird nesting areas during construction and operation of the proposed project.
- Potential impacts to native coastal prairie vegetation, including barrier island, coastal dunes, depressions, and swales.
- Potential impacts from invasive species and an Invasive Plant Species Control Plan that includes rapid colonizers of disturbed sites, such as Brazilian peppertree (*Schinus terebinthifolia*).
- Potential impacts to public lands and public land uses (e.g., recreation, education, wildlife habitat, conservation, etc.).
- Potential impacts to public access to local parks, state scientific areas, paddling trails, recreational fishing, bird watching, and other outdoor nature-based activities and the development of a Public Access Plan.
- A specific schedule for construction that also identifies when specific construction activities would be initiated and when associated restoration activities would be completed.
- Use of disturbed areas or those identified for future construction as staging, parking and equipment storage sites. All access routes of ingress and egress to the project area should be delineated and no travel outside of those boundaries should be authorized.
- An evaluation of additional impacts to the inshore portions of the proposed project areas, including increased erosion and loss of shoreline stabilization from pipeline installation, increased vulnerability to oil spills from crude oil pipelines and booster stations.
- An evaluation of impacts associated with the removal of all onshore and inshore components of the proposed project resulting from decommissioning activities. The environmental impact statement should

not assume that onshore and inshore components will be abandoned in place.

- An evaluation of the individual and cumulative effects of temporary and permanent impacts to recreational and commercial fishing activities including traditional access points such as public parks, kayak launch sites and recreational boat ramps, waterbodies and shorelines.
- An evaluation of direct, indirect, temporary, and cumulative impacts to navigation of commercial, recreational and public vessels (boats and vehicles) that would result from the proposed project.
- An evaluation of individual and cumulative impacts to native woody vegetation from terrestrial land clearing activities that will not be replanted or allowed to re-establish as well as the cumulative effects of unrestored temporary and permanent impacts to terrestrial and aquatic habitats.
- A comprehensive Habitat Restoration Plan that details pre-construction and post-construction surveys, reference sites, methods, timing, material sourcing, duration and extent of monitoring activities, success criteria and adaptive management that will be used to fully restore each terrestrial and aquatic habitat type that may be temporarily affected by the project.
- A comprehensive Compensatory Mitigation Plan that details how unavoidable permanent impacts to aquatic resource functions will be offset in a manner consistent with the Final Mitigation Rule.
- In addition to abandonment in place, potential impacts and cost estimates associated with decommissioning activities that involve the removal and disposal of onshore and inshore components of the project including pipelines, booster station and other project-related infrastructure.
- A Dredged Material Management Plan for all phases/portions of the project, including decommissioning activities, that includes the size and draft of all equipment that would be used to handle excavated sediments and the minimum water depths located within the work corridors, access routes, and staging areas.
- The potential to re-suspend and redistribute contaminants (including sediments) during all phases of the project that includes facility removal during decommissioning activities; an evaluation of impacts associated with those re-suspended particles; and a plan that details the timing and specific measures that would be taken to avoid and minimize those impacts. Use of silt or turbidity barriers that will not entangle wildlife including sea turtles and manatees.
- The potential for facility expansion, such as dredge and fill activities, additional right-of-way, deepening and widening of channels, additional storage tanks or other infrastructure and additional impacts to fish and wildlife habitat.
- Potential direct, indirect, temporary, and cumulative impacts to sensitive coastal resources associated with future maintenance and repairs of pipelines.
- On-site stormwater management plan for Harbor Island facilities.

- Potential environmental impacts resulting from damages to the proposed project facilities by a major hurricane and a Hurricane Response Plan.
- An Operational Spill Response Plan for the release of hazardous material should be included in the EIS.
- The original DEIS did not address the discharge of ballast water due to the intention of importing crude oil, this EIS should include protocols for ballast discharge, tank washing and the prevention of aquatic invasive species for export activities.
- An environmental monitoring program should be evaluated to monitor ecological conditions at various locations within the project limits during both the constructional and operational phases of the deepening of the CCSC to 70 feet. The purpose of the construction phase of the monitoring program would be to measure conditions prevailing immediately prior to, and during construction to permit minimization of harmful environmental changes, as compared to preconstruction conditions. The monitoring program carried on during early operation would be undertaken to evaluate the ecological changes in the project area attributed to development of the crude oil export using fully laden VLCC's.

Project Recommendations

TPWD offers the following recommendations and information for the purpose of avoiding and minimizing impacts to fish and wildlife resources, coastal zone uses, and recreational activities within the vicinity of the proposed project. Due to the interdependence of the crude oil exportation facilities proposed for Harbor Island with the deepening of the CCSC, TPWD will provide recommendations for all aspects of the infrastructure development of these facilities including onshore, inshore and offshore concerns.

General Recommendations

Upland Construction

Recommendation: TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife from areas to be disturbed. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to construction areas.

- The exclusion fence should be buried at least six inches and be at least 24 inches high.
- The exclusion fence should be maintained for the life of the project and only be removed after the project activities are completed and the disturbed sites have been revegetated or otherwise stabilized.
- Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.

- Regarding pipeline installation and HDD entry pits, any open trenches or deep excavation areas should be covered overnight and/or inspected every morning to ensure no wildlife species have been trapped.
- For open trenches and excavated areas, escape ramps should be installed at an angle of less than 45 degrees (1:1) in excavated areas that will allow trapped wildlife to climb out on their own.
- If any state-listed species are trapped in trenches or excavated areas, they should be removed by personnel permitted by TPWD to handle state-listed species.

Recommendation: For soil stabilization and/or revegetation of disturbed areas within the proposed project area's onshore and upland inshore sections, TPWD recommends utilizing erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydro-mulching and/or hydroseeding due to a reduced risk to wildlife. If erosion control blankets or mats would be used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided.

Impacts to Terrestrial Vegetation and Wildlife Habitat

The onshore and inshore components of the proposed project consist of a mixture of habitat types and vegetation communities mapped as agricultural land (row crops), coastal prairie, salty prairie, deep sand grassland, huisache woodland or shrubland, deep sand live oak shrubland, and deep sand live oak forest and woodland. In general, current and past vegetation clearing can be a significant threat to native plant communities in an area because disturbed areas are often revegetated with invasive, introduced species.

Recommendation: To the greatest extent practicable, TPWD recommends avoiding and/or minimizing clearing native woody vegetation and native herbaceous communities (e.g., native grasslands) to construct new access roads or to accommodate heavy equipment access to project sites. Wherever possible, TPWD recommends locating new access roads in previously disturbed areas, including previously cleared right-of-way's (ROWS), utility corridors, etc., or improving existing roads (e.g., private farm and ranch roads). Material and equipment staging areas should be located in previously disturbed upland areas that do not require vegetation clearing.

Colonization by invasive species, particularly invasive grasses and weeds, should be actively prevented. Vegetation management should include removing invasive species early while allowing the existing native plants to revegetate disturbed areas.

Recommendation: TPWD recommends referring to the Lady Bird Johnson Wildflower Center Native Plant Database (available online) for regionally adapted native species that would be appropriate for post-construction landscaping of disturbed areas. For herbaceous revegetation efforts, TPWD recommends the exclusive use of a mixture of native grasses and forbs. While some introduced grasses that may be presently growing in or adjacent to the project areas can provide suitable forage for livestock and some species of wildlife with proper management, introduced species typically develop into monotypic stands of vegetation that do not provide high quality grassland habitat able to support a diversity of wildlife species. TPWD recommends that native grasses having the same desirable characteristics as introduced grasses commonly use in revegetation plans be incorporated into project planning and implemented following construction.

Impacts to Aquatic Habitats

Horizontal directional drilling (HDD) methods, such as those proposed by the applicant, are frequently used to avoid and minimize impacts to aquatic resources. Project plans suggest that HDD methods will primarily be used to avoid impacts associated with waterbody crossings

Recommendation: The Inadvertent Returns Contingency Plan should include site specific plans for addressing returns in shallow water habitats that are in and adjacent to submerged or emergent aquatic vegetation and tidal flats. Site specific plans should include preferred access routes and specific protocols and/or guidelines for developing containment and recovery strategies that aim to avoid and minimize secondary impacts from machinery, equipment, foot traffic, and drilling fluid. The plan should also provide protocols and contact information for reporting inadvertent returns to the appropriate state and federal resource agencies. In the event an inadvertent return occurs, an assessment of the impacts and required mitigation should be conducted in consultation with TPWD.

The applicant has not provided sufficient information concerning post-construction restoration of aquatic resources to demonstrate that the impacts will be less than permanent and that there will be no secondary effects from the project. TPWD has concern for the level of restoration success that can be achieved on recent and relict barrier island habitats, especially coastal dune swale complexes, mangrove marshes, and tidal flats.

Recommendation: Because tidal flats and coastal dune swales are difficult to replace, these habitats should be avoided to maximum extent practicable.

Lighting

Lighting would be required throughout the onshore, inshore, and offshore components of the project during construction, operation, and decommissioning of the deepwater port facility. In addition to navigational beacons, lighting would be used for safety and security around facilities. As proposed, the project would

minimize terminal lighting to safety and navigation requirements and lights would be down shielded and/or directed at the water.

Recommendation: Particularly for inshore and onshore facilities, TPWD recommends considering appropriate lighting technologies and best management practices (BMPs) described at the International Dark-Sky Association website. Specifically, security lighting within any fenced compounds should be fully down shielded and directed away from vegetation outside of fenced areas. Security lighting around on-ground facilities should also be motion- or heat-sensitive to eliminate constant nighttime illumination. For offshore lighting, lights should be shielded to eliminate both skyward and sea surface illumination (which can attract fishes and invertebrates).

Recommendations under TPWD Code

Nongame Birds

State law prohibits any take or possession of nongame birds, including their eggs and nests. Laws and regulations pertaining to state-protection of nongame birds are contained in Chapter 64 of the Texas Parks and Wildlife (TPW) Code. This protection applies to most native bird species, including ground nesting species. Although not documented in the Texas Natural Diversity Database (TXNDD), many bird species which are not listed as *threatened* or *endangered* are protected by Chapter 64 of the TPW Code and are known to be year-round or seasonal residents or seasonal migrants through the proposed project area.

During the winter, south Texas is the southernmost limit for many migratory birds and it is the northernmost extreme in the breeding season (spring-summer) for other species. Additionally, the proposed project area is in the middle of the Central Migratory Flyway through which millions of birds pass during spring and fall migration. Available food, cover, and water sources provide important stopover habitats for Neo-tropical migrants.

Biologically, this area of south Texas is highly productive and provides a range of habitats including large tracts of undeveloped land, grasslands, prairies, woodlands, marsh, and aquatic habitats. The diversity of habitats is suitable to support a diversity of wildlife species. In particular, the range of habitats provides cover, feeding, nesting and loafing areas for many species of birds; grassland birds, Neo-tropical migrants, shorebirds, wading birds, and raptors.

Recommendation: The proposed project is located in a region with very diverse habitats that are within the range and suitable habitat for many rare species and migratory birds. TPWD recommends the Draft EIS thoroughly evaluate the proposed project's potential impacts to nongame birds.

Any vegetation clearing (or ground disturbance that would impact ground nesting birds) that would be required to construct the onshore, inshore or offshore infrastructure (terminal, pipelines, booster station, HDD entry/exit pits), improve existing access roads, or create new access roads should be scheduled

to occur outside of the March 15 - September 15 migratory bird nesting season. Contractors should be made aware of the potential of encountering non-game migratory birds (either nesting or wintering) in the proposed project site and be instructed to avoid negatively impacting them.

If vegetation clearing or ground disturbance must be scheduled to occur during the nesting season, TPWD recommends the areas to be impacted should be surveyed for active nests by a qualified biologist. Nest surveys should be conducted no more than five days prior to the scheduled clearing to ensure recently constructed nests are identified. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation/undisturbed area remain around the nest until the young have fledged or the nest is abandoned.

State-listed Species

State law prohibits the capture, trap, take or kill (incidental or otherwise) of state-listed species. Laws and regulations pertaining to state-listed endangered or threatened animals are contained in Chapters 67 and 68 of the TPW Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code. There are penalties, which may include fines and/or jail time in addition to payment of restitution values, associated with take of state-listed species. A copy of *TPWD Guidelines for Protection of State-Listed Species*, which includes a list of penalties for take of species, can be found on the TPWD website.

For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons permitted through the TPWD Wildlife Permits Program. For more information regarding Wildlife Permits, please contact the Wildlife Permits Office at (512) 389-4647. For the above-listed activities that involve aquatic species please contact the Region 4 Regional Response Coordinator at (361) 825-3246 for the appropriate authorization.

The potential occurrence of state-listed species in the project area is primarily dependent upon the availability of suitable habitat. Direct impacts to high quality or suitable habitat therefore are directly proportional to the magnitude and potential to directly impact state-listed species. State-listed reptiles that are typically slow moving or unable to move due to cool temperatures are especially susceptible to being directly impacted during vegetation clearing for roads, staging areas, easements, or machinery access corridors.

Please be aware that determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence.

The application documents prepared for proposed project specifically assessed

potential state-listed species impacts for the inshore component of the project and generally assessed them for the onshore component of the project.

Recommendation: TPWD recommends reviewing the most current TPWD annotated county lists of rare species for Nueces, San Patricio and Aransas counties, as rare species could be present depending upon habitat availability. These lists are available online at the TPWD Wildlife Diversity website. Please note that the TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in an area does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and cannot be used as presence/absence data. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD data is updated continuously based on new, updated and undigitized records; therefore, TPWD recommends requesting the most recent TXNDD data on a regular basis.

TPWD recommends the Draft EIS thoroughly evaluate the proposed project's potential impacts to state-listed species in all three project areas; onshore, inshore and offshore. Information provided in future environmental documents should be verified for accuracy and consistency with the most current list. Specific evaluations should be designed to predict project impacts upon natural resources.

Aquatic Resources

In addition to spills, releases, and inadvertent returns of products associated with the construction, operation, or decommissioning of the proposed project, other construction related activities, such as dewatering and maintenance, occurring in or near aquatic habitats (including the GOM and Redfish Bay) may negatively impact fish, shellfish, and other aquatic resources. As the state agency with the primary responsibility for protecting the state's fish and wildlife resources, Chapter 12 Subchapter D of the TPW Code and Chapter 7 Subchapter D of the Water Code authorizes TPWD to investigate fish kills and any type of pollution that may cause loss of fish or wildlife resources, estimate the monetary value of lost resources, and seek restitution or restoration from the party responsible for the fish kill or pollution. Chapter 69 of the Texas Administrative Code (TAC) requires TPWD to actively seek full restitution for and/or restoration of fish, wildlife, and habitat loss occurring as a result of human activities. The restitution value of lost resources can be significant (e.g., at least \$500 for each individual of a threatened species and \$1,000 for each individual

of an endangered species). In addition, the TPW Code makes it a criminal offense to kill any fish or wildlife resources classified as threatened or endangered.

Recommendation: Because the project would require work in and in proximity to aquatic habitats, the project should be coordinated with TPWD's Regional Response Coordinator for appropriate authorization(s) and technical guidance to ensure protection of aquatic wildlife.

Public Lands

The inshore pipeline route would utilize a 100-foot-wide construction corridor that runs parallel to and north of Highway 361, bisects Redfish Bay and the Redfish Bay State Scientific Area (RBSSA), and runs through the length of Lighthouse Lakes Park. Additional temporary work corridors would provide access to the pipeline corridor and to entry and exit points of horizontally directionally drilled (HDD) segments of the pipeline.

Lighthouse Lakes Park provides public access to the state designated Lighthouse Lakes Paddling Trail that was established by TPWD in 1999. The RBSSA was established by the Texas Parks and Wildlife Commission in 1999 for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value. Because of this designation, the RBSSA has special status and the importance of seagrass habitat has since been specifically recognized by state law, not just within the RBSSA, but state-wide. As part of this special status, the policies of the Coastal Management Program as specified in Title 31, Texas Administrative Code section 501.29 require compliance with Chapter 26 of the TPW Code when development projects require the use or taking of any public land within a state park, wildlife management area or preserve, such as RBSSA.

Chapter 26 of the TPW Code provides that a department, agency, political subdivision, county, or municipality of this state may not approve any project that requires the use or taking of public land (designated and used. prior to the project as a park, public recreation area, scientific area, wildlife refuge, or historic site) unless it holds a public hearing and determines that there is "no feasible and prudent alternative to the use or taking of such land", and the project "includes all reasonable planning to minimize harm to the land ...resulting from the use or taking."

Due to the substantial amounts of proposed adverse impacts to many significant resource areas of the Coastal Bend, TPWD recommends that the applicant provide an EIS that fully assesses all direct, indirect, and cumulative impacts of the proposed project and any connected actions. TPWD appreciates the opportunity to provide comments for this project. Questions can be directed to Paul Silva (361-825-3204) or Leslie Koza (361-825-2329) in Corpus Christi.

Mr. Jones, 401 Coordinator
SWG-2020-00228
Page 14 of 14
July 2, 2020

Sincerely,



Dakus Geeslin
Branch Chief, Science and Policy
Coastal Fisheries Division

DG:LK:PS

Attachments:

SWG-2018-00789
SWG-2019-00245
SWG-2019-00067 letter dated August 28, 2019
SWG-1995-02221
SWG-2006-02562
MARAD-2019-0094

Literature Cited:

Pulich, W.M, Jr. and T. Calnan (eds.). 1999. Seagrass Conservation Plan for Texas. Resource Protection Division. Austin, Texas: Texas Parks and Wildlife Department. 79 pp.



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September 13, 2019

Mr. Dwayne Johnson
U.S. Army Corps of Engineers
Galveston District, Regulatory Branch
5151 Flynn Parkway, Suite 306
Corpus Christi, TX 78411-4318

Ms. Leslie Savage
Texas Railroad Commission
P.O. Box 12967
Austin, TX 78711-2967

Re: Permit Application Number SWG-2018-00789
Axis Midstream Holdings, LLC

Dear Mr. Johnson and Ms. Savage:

Texas Parks and Wildlife Department (TPWD) has reviewed the Public Notice (PN) dated August 8, 2019 for permit application number SWG-2018-00789. The applicant requests authorization to construct a series of facilities and pipelines to store, transport and load crude oil into marine transport vessels. The proposed project is located in several towns, waterways, and counties including Taft, Gregory, Ingleside, and Aransas Pass, in San Patricio County, Texas; Aransas Pass and Port Aransas in Nueces County, Texas; and the Gulf Intracoastal waterway (GIWW); Redfish Bay; Corpus Christi Ship Channel (CCSC); and Harbor Island in Nueces County, Texas. Based on the scale of adverse impacts to the important natural resources of the Redfish Bay State Scientific Area, TPWD recommends a more rigorous environmental review and consideration of alternatives in an Environmental Impact Statement.

According to the PN, the proposed project consists of the following components:

- the Midway Tank Farm (Midway Facility) located south of the City of Taft, Texas;
- a 60-acre Aransas Pass Staging Facility (Aransas Facility) located west of the City of Aransas Pass, Texas;
- a pipeline bundle connecting the Midway and Aransas Facilities consisting of one 2-inch fiber optic cable, one 6-inch gas supply (last mile), and two 36-inch crude oil pipelines;
- the Harbor Island Loading Terminal (Harbor Island Terminal) located on the west side of the CCSC on Harbor Island in Port Aransas, Texas; and
- a pipeline bundle connecting the Aransas and Harbor Island Facilities that consists of one 2-inch fiber optic cable, one 6-inch gas supply line, one 16-inch intermix return pipeline; and two 42-inch crude oil pipelines.

Current Site Conditions

The PN does not adequately describe the current site conditions of the proposed project. Please refer to the current site conditions described in the PN issued on August 20, 2019 for permit application SWG-2019-00067 for a more robust description of the significant resources that occur within the geographic area of the

proposed project. Of particular concern to TPWD is the approximately 14,000-acre Redfish Bay State Scientific Area (RBSSA) located between San Jose Island and Live Oak Peninsula. As described in TPWD's comment letter of December 6, 2018 (Attachment A), the fisheries, seagrasses, and other natural resources of Redfish Bay have ecological significance as well as scientific and educational value, reflected by the state's designation as a State Scientific Area.

The RBSSA has special status because of this designation, and the importance of seagrass habitat has since been specifically recognized by a state criminal prohibition on uprooting seagrass by propeller. As part of this special status, the policies of the Coastal Management Program, as specified in Title 31, Texas Administrative Code section 501.29, require compliance with Chapter 26 of the Texas Parks and Wildlife Code when development projects require the use or taking of any public land within a state park, wildlife management area or preserve, such as RBSSA.

Chapter 26 provides that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public lands unless it holds a public hearing and determines that there is "no feasible and prudent alternative to the use or taking of such land," and the project "includes all reasonable planning to minimize harm to the land...resulting from the use or taking." Entities responsible for holding such hearings and making such determinations for the proposed project may include the Texas General Land Office, the Texas Railroad Commission, and/or local navigation districts, such as the POCCA or Aransas County Navigation District (see Attachment A and Attachment B for additional information).

As promulgated in Title 31 Texas Administrative Code Section 57.921, the RBSSA is established "for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value". Based on this language, TPWD believes that the RBSSA is equivalent to a research site as defined in 40 CFR 230.54(a) and may be equivalent to a sanctuary and refuge as defined in 40 CFR 230.40(a).

Recommendation: As referenced above, USACE should evaluate the effects of the proposed project on the RBSSA in a manner consistent with all applicable definitions of state designated areas. Furthermore, if USACE issues a permit on this application, USACE should include a special condition requiring compliance with Chapter 26 of the Texas Parks and Wildlife Code.

Impacts

The PN describes the following effects of the proposed project:

- 13.94 acres of temporary impacts to waters of the U.S. to construct and install an approximately 19.5-mile-long pipeline bundle connecting the Midway and Aransas Facilities.
- 16.8 acres of permanent impacts to waters of the U.S. to construct the Aransas Facility. The PN specifically describes estuarine wetlands dominated by *Distichlis spicata* (saltgrass) and fringed with *Borrchia frutescens* (sea oxeye daisy).
- 18.58 acres of temporary trench and fill impacts to waters of the U.S. to construct and install the pipeline bundle connecting the Aransas and Harbor Island Facilities. The PN specifically identifies:
 - 7.81 acres of submerged aquatic vegetation (SAV) mainly comprised of *Halodule wrightii* (shoal grass),
 - 0.002 acres to small stands of *Spartina alterniflora* (smooth cordgrass),
 - 10.65 acres of unvegetated tidal sand flats,
 - 0.42 acre *Avicennia germinans* (black mangrove), and
 - 0.11 acre of estuarine wetlands dominated by salt grass and oxeye daisy.
- Impacts to the western littoral shoreline of Redfish Bay and the GIWW will be avoided by horizontal directionally drilling under these features.
- No impacts to waters of the U.S. are proposed to construct the Midway Facility or the upland portion of the Harbor Island Facility.
- The Harbor Island Facility would result in the dredging of 70 acres of new work material to construct vessel berths. Dredged material would be placed onsite for shoreline restoration, beneficial use (BU), and/or in a dredged material placement area.

Recommendation: TPWD requests the opportunity to review and provide comments for any habitat surveys, including survey methods, summaries, and reports, used to describe the quantitative, qualitative, and spatial attributes of the aquatic resources within the project area.

The applicant has not provided any details about the best management practices (BMPs) or restoration methods that would be used to restore the pipeline route between the Midway and Aransas Facilities.

Recommendation: In addition to the General Construction Guidelines provided in Attachment B, the applicant should implement the most recent version of the Upland Erosion Control, Revegetation, and Maintenance Plan and the Wetland and Waterbody Construction and Mitigation Procedures (i.e., Plans and Procedures) issued by the Federal Energy Regulatory Commission (FERC). Even though the proposed pipelines are not under FERC's jurisdiction, these Plans and Procedures provide a common framework of BMPs and restoration procedures that, when properly

implemented, provide assurance that the proposed temporary impacts will be temporary.

The impacts proposed within the RBSSA are described as temporary and TPWD strongly disagrees with this assessment. Open cut trenching techniques through SAV, emergent marshes, and tidal flats do not result in temporary impacts. Not only would the proposed trenching activities result in direct impacts but the proposed side-casting of dredged material would burry adjacent aquatic habitats during construction activities, especially in areas where the existing oil and gas channel is less than 150-feet-wide. Merely restoring elevations to pre-construction contours and replanting areas that were previously vegetated does not account for temporal lag or alleviate the risk and uncertainty of project success.

Previous coordination

By letter dated December 6, 2018 (Attachment A), TPWD provided the applicant's agent comments and concerns for the proposed project and information describing the importance of the aquatic habitats within the RBSSA. During this pre-application phase of the project, the applicant's agent would not disclose the specific location or layout of the Harbor Island Terminal Facility but described the proposed project as part of the "Harbor Island Project" being planned by the Port of Corpus Christi Authority (POCCA). TPWD recommended that the alternatives considered for the proposed project include those which do not require the siting of an export terminal on Harbor Island as well as those which reduce the sizes and/or numbers of pipelines routed through RBSSA. From the information provided in the PN, it is not clear if an alternatives analysis has been prepared for the proposed project.

Recommendation: If the applicant has not already done so, an alternatives analysis should be developed that includes both onsite and offsite alternatives, including but not limited to those described above. TPWD requests the opportunity to review and provide comments for the alternatives analysis.

At a subsequent Joint Evaluation Meeting (JEM), the applicant's agent stated that the route within the POCCA right-of-way (ROW) located just north of the State Highway (SH) 361 Causeway was deemed impracticable due to "constructability issues". The deepwater port project proposed by Bluewater Texas Terminal, LLC (Docket MARAD-2019-0094), which would also originate from the same Midway Facility proposed here, has since identified the POCCA's ROW as their proposed pipeline route for two 30-inch crude oil pipelines serving two single point mooring buoys located in Federal waters of the Gulf of Mexico for the purpose of fully loading very large crude carriers (VLCCs). As a result, TPWD views the POCCA ROW as a viable alternative for consideration in an alternatives analysis.

Since the pre-application phase, the following elements of the proposed project, as described in the PN, have changed within the Redfish Bay pipeline route: a 2-inch fiber optic cable has been added to the pipeline bundle, the diameter of the intermix return pipeline has increased from 12 inches to 16 inches, and the width of the work corridor across Redfish Bay has increased from 88 feet to 150 feet. These new increases in the size of the project have not been evaluated and will necessarily increase potential adverse impacts to natural resources, which should be analyzed in a more robust environmental review.

TPWD appreciates the inclusion of turbidity curtains in the PN, as recommended by TPWD.

Avoidance and Minimization:

The PN states that impacts have been avoided and minimized in part because the Harbor Island Terminal is located entirely within uplands. The cross-hatched area depicted on Sheet 33 of 39 of the project plans, however, indicates that the shoreline area along the north and northwestern edges of the proposed berthing area will not be avoided, but rather excavated. The PN does not describe these impacts.

Recommendation: Aquatic resources located within the proposed berthing area should be described, excavation impacts should be avoided and minimized to the extent practicable, and compensatory mitigation should be provided for any unavoidable impacts.

The PN states that impacts have also been avoided and minimized because the Aransas Facility is located primarily on a previously permitted industrial site. Although this site has been previously impacted by dredge and fill activities, aerial imagery available on Google Earth shows that a number of the tidal flat mosaic features that were present in the 1950's are still intact. Akin to similarly situated habitats along the Live Oak Ridge shoreline, these aquatic features likely support large numbers of waterfowl when inundated and shorebirds during periods of exposure. Because East Beasley Road already provides a direct route to the proposed facility, it is not clear why the project requires access from Farm to Market Road (FM) 140. The proposed emergency access road would partially fill the channel that provides a hydrological connection to the tidal flat mosaic described above and the tidal wetland mitigation project described below. At the roadway channel crossing, the earthen channel would be replaced by three 48-inch box culverts. There is concern that the culverts would alter site hydrology, if not at the time of installation, then later as a consequence of sedimentation and/or biofouling.

Recommendation: Onsite and offsite alternatives should be evaluated to further avoid and minimize impacts to functioning aquatic habitats. Unavoidable impacts should be compensated.

Mitigation

The PN states that pipeline installation along the southwestern shoreline of Harbor Island would require this section of the shoreline to be stabilized. Therefore, in order to compensate for unavoidable impacts to waters of the U.S., the applicant is proposing to conduct shoreline stabilization along this section of the shoreline. According to Sheet 37 of 39 of the project plans, the project would consist of 14,500 linear feet of earthen levee extending 30 feet above sea level protected by a rock breakwater extending 5 feet above sea level. The PN states that the area leeward of the shoreline project is expected to recover post-construction to form a combination of seagrass, mangrove emergent marsh habitat, but the amount of time required for recovery does not appear to be considered.

The 76-acre project is expected to protect and enhance approximately 36 acres of seagrass habitat. The PN does not quantify the net permanent impacts to special aquatic sites, including tidal flats, and waters of the U.S. that would result from the proposed shoreline stabilization project. The PN does not demonstrate that the material to be dredged from the Harbor Island Facility has been tested for contaminants or is otherwise compatible with the proposed use. Due to a lack of supply in the sediment budgets of many coastal ecosystems, TPWD generally encourages the beneficial use of dredged materials for projects which restore, enhance, or create aquatic habitats. Based on the information provided, the proposed shoreline stabilization project does not demonstrate a net gain in aquatic resource area or function and therefore does not provide adequate compensation for the proposed impacts.

In addition to the shoreline stabilization project, the applicant proposes to restore two acres of tidal wetlands by removing a levee that was constructed for a dredged material placement area (DMPA) authorized by permit number SWG-1996-02083. By depositing levee material into the onsite borrow area from which it came, site elevations would be restored to approximate pre-construction conditions. Levee removal would potentially restore tidal hydrology to an additional 8 acres of land. The PN does not indicate if the DMPA has been tested for contaminants.

Tidal Flats

The information in the PN does not accurately capture the permanent impacts the proposed project would have on tidal flats. The pipeline installation impacts to tidal flats are not only mischaracterized as temporary, but the proposed shoreline stabilization project directly and permanently impacts an even larger area of tidal flats without providing any compensation for those impacts.

Tidal flats are irregularly inundated shallow water habitats that, with the exception of algal mats, are generally unvegetated and colonized by annelid worms, dipteran larvae, small crustaceans and mollusks, and other macrobenthic infauna. When inundated, tidal flats provide escape and forage habitat to small fish as well as loafing and forage habitat to wading birds and long-legged shorebirds. When

exposed, tidal flats provide unique feeding opportunities to shorebirds in general but play a more critical role for smaller shorebirds, such as the state- and federally-listed threatened piping plover (*Charadrius melodus*) and red knot (*Calidris canutus*).

Local status and trend studies estimate that Redfish Bay has lost more than 86% of the estuarine habitats classified as tidal flat since the 1950's (Tremblay et al. 2008, White and Tremblay 1998). Much of that loss has occurred on the islands separating Redfish Bay from Aransas and Corpus Christi Bays and along navigation channels between Harbor Island and the GIWW. While many of these losses are attributed to habitat conversions caused by sea level rise, losses along the east margin of Live Oak Ridge have also been attributed to industrial development along the GIWW. Upland development accounted for as much as 43% of the long-term tidal flat loss. Channelization of the GIWW contributed to another 31% loss of tidal flats to open water, which in turn allowed emergent vegetation to establish in remaining flats accounting for 23% of the long-term gross loss.

Recommendation: Because TPWD is not aware of any successful tidal flat restoration techniques or successful tidal flat restoration projects, tidal flat habitats are considered difficult to replace. Therefore, impacts to tidal flats should be avoided and minimized to the extent possible.

Overall, TPWD has concern for the significant individual effects of the proposed project, as well as the cumulative effects of past and reasonably foreseeable future projects, may have on:

- the physical, chemical, and biological characteristics of the aquatic ecosystem (including suspended particulates and turbidity, water quality, normal water fluctuations, threatened and endangered species and their habitats, aquatic organisms in the food web, and other wildlife associated with aquatic ecosystems),
- the significant permanent and unmitigated impacts to special aquatic sites that would result from the project as proposed, and
- the adverse effects on the human use characteristics of these special aquatic sites (including recreational and commercial fisheries, water-related recreation, aesthetics, and preserves such as research sites that are managed for their aesthetic, educational, historical, recreational, or scientific value).

As shown in public notices and news reports, TPWD is aware of several other development projects proposed in this area that should be considered as part of an analysis of cumulative effects.

Recommendation: Prior to the issuance of a permit, the applicant should incorporate the above requested modifications and then submit revised project plans for resource agency review. In addition, an Environmental Impact Statement should be undertaken to fully evaluate:

- the alternatives that were considered when selecting the preferred alternative,
- the direct, indirect and cumulative impacts of the proposed project on the environment including the significant aquatic resources of Redfish Bay and the RBSSA, and
- a compensatory mitigation plan that fully offsets all unavoidable impacts.

TPWD appreciates the opportunity to provide comments and recommendations for this project. Questions can be directed to Ms. Jackie Robinson (361-825-3241) or Ms. Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Robin Riechers
Director
Coastal Fisheries Division

RR:JR:LK:dh

Attachments

cc: Ms. Jackie Robinson
Ms. Leslie Koza

Literature Cited:

- Tremblay, T.A., J.S. Vincent, and T.R. Cabian. 2008. Status and trends of inland wetland and aquatic habitats in the Corpus Christi area. Coastal Bend Bays and Estuary Program, CBBEP - 55, 89 pp.
- White, W.A. and T.A. Tremblay. 1998. Current status and historical trends of selected estuarine and coastal habitats in the Corpus Christi Bay National Estuary Program study area. Corpus Christi Bay National Estuary Program. CCBNEP-29, 161 pp.



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December 6, 2018

Mr. Richard G Leonhard
Project Consulting Services, Inc.
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Metairie, LA 70002

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Executive Director

RE: Axis Midstream
Redfish to Harbor Island Pipelines

Dear Mr. Leonhard:

As indicated at the Joint Evaluation Meeting (JEM) on October 2, 2018, hosted by the U.S. Army Corps of Engineers (USACE) Corpus Christi Regulatory Field Office, the Texas Parks and Wildlife Department (TPWD) is providing written comments and concerns for the proposed project. TPWD greatly appreciates this timely coordination effort so that information about potential impacts to fish and wildlife resources, as well as recommendations to avoid and minimize those impacts, can be provided and taken into consideration during the early stages of project development.

As proposed at the JEM, the project would consist of two 42-inch pipelines for exporting crude oil, one 12-inch backflow pipeline for maintenance, and one 6-inch gas pipeline for power. As explored for 14 alternative routes, the pipeline route would begin at an existing crude gathering facility in Aransas Pass in San Patricio County, Texas and terminate at an unidentified export terminal on Harbor Island. The majority of these routes would pass through Redfish Bay and the designated Redfish Bay State Scientific Area (RBSSA). Of the alternatives presented, three routes remain under consideration, including a route through the Port of Corpus Christi Authority's (PCCA) right-of-way (ROW) that runs along the northern shoreline of State Highway (SH) 361 and two routes that cross through southern Redfish Bay between SH 361 and the Corpus Christi Ship Channel (CCSC).

Axis Midstream's presented preferred route, which crosses southern Redfish Bay just south of Ransom Island, would avoid and minimize the first 4,500 feet of impacts by horizontally directionally drilling (HDD) under the Aransas Pass shoreline, the Gulf Intracoastal Waterway (GIWW), and adjacent seagrass beds and shallow water habitats. The remainder of the route would employ conventional trenching techniques through approximately 6,000 feet of existing oil and gas channels, approximately 6,500 feet of open waters in Redfish Bay, and upon approaching Harbor Island, up to 7,600 feet of seagrass and other shallow water habitats. Trenching techniques would require an approximately 44-foot-wide trench, with an adjacent corridor measuring approximately 44-feet-wide for the placement of side casted dredged material. According to the impact calculations provided, the project would directly affect approximately 13.1 acres of existing oil and gas channels, approximately 14.2 acres of open water, and approximately 16.6 acres of shallow water resources, including seagrasses. Estimates of indirect impacts, such as those resulting from turbidity, have not been provided.

Seagrasses play critical roles in the coastal environment by providing nursery habitat for estuarine fisheries, serving as a major source of organic biomass for coastal food webs, contributing to the stabilization of shorelines and sediments to reduce coastal erosion and improve water clarity, as well as contributing to nutrient cycling and water quality processes. Redfish Bay represents the most extensive area of pristine seagrass beds outside the Laguna Madre and is also the northern range limit for large beds of turtlegrass and manatee grass (Pulich and Calnan, 1999)¹.

The importance of these shallow water resources to recreational fisheries in Redfish Bay is evidenced by recent angler survey data collected from 2013 to 2017. Southern Redfish Bay (as defined above) represents only about 7% of the areal extent of the Corpus Christi Bay Ecosystem, yet survey data indicate that this small area accounted for 18% of the angling trips taken by boat and 21% of the angler hours (time anglers spent fishing) throughout the Corpus Christi Bay Ecosystem. These survey data also indicate that southern Redfish Bay accounted for 37% of spotted seatrout, 31% of red drum, 23% of southern flounder, and 12% of black drum landed throughout the Corpus Christi Bay Ecosystem.

Following a multi-agency effort and the resulting publication of the "Seagrass Conservation Plan for Texas" in 1999, the Texas Parks and Wildlife Commission established the RBSSA for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value (i.e., seagrass meadow communities). Because of this designation, the RBSSA has special status, and the importance of seagrass habitat has since been specifically recognized by state law, not just within the RBSSA, but state-wide. As part of this special status, the policies of the Coastal Management Program as specified in Title 31, Texas Administrative Code, section 501.29 require compliance with Chapter 26 of the Texas Parks and Wildlife Code when development projects require the use or taking of any public land within a state park, wildlife management area or preserve, such as RBSSA.

Chapter 26 provides that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public lands unless it holds a public hearing and determines that there is "no feasible and prudent alternative to the use or taking of such land," and the project "includes all reasonable planning to minimize harm to the land resulting from the use or taking." Entities responsible for holding such hearings and making such determinations for the proposed project may include the Texas General Land Office, the Texas Railroad Commission, and/or local navigation districts, such as the PCCA or Aransas County Navigation District.

TPWD understands that habitat surveys have not been performed and that the calculated impacts are currently based on desktop estimates. TPWD recommends that habitat surveys be conducted, preferably during the growing period (March – October), so that the entire suite of project impacts can be adequately quantified.

Storage tanks and an export terminal were identified among the infrastructure that would be required to fulfill the basic purpose and need of the proposed project. However, details related to these components have not been provided. To fully evaluate potential impacts

Mr. Richard G. Leonhard
Axis Midstream; Redfish to Harbor Island Pipelines
Page 3 of 3
December 6, 2018

to fish and wildlife resources, all components of the proposed project should be included in the proposed project plans, and all direct and indirect impacts to each aquatic resource type should be quantified.

To ensure that impacts to aquatic resources are avoided and minimized to the extent practicable, an alternatives analysis should include project alternatives that do not require the siting of an export terminal on Harbor Island. Alternatives that reduce the sizes and/or numbers of pipelines routed through RBSSA should also be considered, as well as including additional HDD segments to reduce both direct and indirect impacts.

With respect to the use of turbidity curtains, TPWD continues to recommend their use as a best management practice (BMP) to minimize turbidity, which is known to cause secondary impacts to seagrass beds. This BMP is widely used throughout the state, and TPWD is not aware of any data that supports the assertion made at the JEM that this BMP does not work when properly installed and maintained.

Based on the information provided, TPWD believes that the PCCA ROW route may result in fewer impacts to fish and wildlife resources than the preferred route but may not represent the least damaging practical alternative. Such a determination would need to be made by divisions of the state that would authorize such a project through the RBSSA, but only after the consideration of public comments.

Again, TPWD appreciates the opportunity to provide information about fish and wildlife resources and recommendations that avoid and minimize impacts to those resources. We look forward to continuing this coordination effort, and please feel free to contact Ms. Jackie Robinson (361-825-3241) or Ms. Leslie Koza (361-825-2329) in Corpus Christi for any questions you may have as this process moves forward.

Sincerely,


Rebecca Hensley
Regional Director, Ecosystem Resources Program
Coastal Fisheries Division

RH:LK:JR:lam

cc: Ms. Emily Edwards, U.S. Army Corps of Engineers, Corpus Christi, Texas

¹ Pulich, W.M., Jr. and T. Calnan (eds.). 1999. Seagrass Conservation Plan for Texas. Resource Protection Division. Austin, Texas: Texas Parks and Wildlife Department. 79 pp.

Supplemental Recommendations and Information for
Permit Application SWG-2018-00789
September 13, 2019

General Construction Recommendations

Recommendation: In general, for construction activities in uplands, TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife from areas to be disturbed. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to construction areas. The exclusion fence should be buried at least six inches and be at least 24 inches high. The exclusion fence should be maintained for the life of the project and only be removed after the project activities are completed and the disturbed sites have been revegetated or otherwise stabilized. Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities. Regarding pipeline installation and HDD entry pits, TPWD recommends that any open trenches or deep excavation areas be covered overnight and/or inspected every morning to ensure no wildlife species have been trapped. For open trenches and excavated areas, escape ramps should be installed at an angle of less than 45 degrees (1:1) in excavated areas that will allow trapped wildlife to climb out on their own. If any state-listed species are trapped in trenches or excavated areas, they should be removed by personnel permitted by TPWD to handle state-listed species.

Recommendation: For soil stabilization and/or revegetation of disturbed areas within the proposed project area's upland sections, TPWD recommends utilizing erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching and/or hydroseeding due to a reduced risk to wildlife. If erosion control blankets or mats would be used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided.

Impacts to Terrestrial Vegetation and Wildlife Habitat

The upland component of the proposed project consists of a mixture of habitat types and vegetation communities mapped as agricultural land (row crops), coastal prairie, salty prairie, deep sand grassland, mesquite mixed shrubland, huisache woodland or shrubland, deep sand live oak shrubland, and deep sand live oak forest and woodland. In general, current and past vegetation clearing can be a significant threat to native plant communities in an area because disturbed areas are often revegetated with invasive, introduced species.

Recommendation: To the greatest extent practicable, TPWD recommends avoiding and/or minimizing clearing native woody vegetation and native herbaceous communities (e.g., native grasslands) to construct new access roads or to accommodate heavy

equipment access to project sites. Wherever possible, TPWD recommends locating new access roads in previously disturbed areas, including previously cleared right-of-ways (ROWs), utility corridors, etc., or improving existing roads (e.g., private farm and ranch roads). Material and equipment staging areas should be located within previously disturbed areas that do not require vegetation clearing.

A portion of the upland pipeline crosses live oak shrubland and live oak forest-woodland habitat (e.g. between MP 16 and 19). Impacts to native uplands would be expected to be long-term (> 6 months to recover).

Recommendation: TPWD recommends that established pipeline and utility corridors and previously disturbed areas be used wherever possible. However, in order to preserve a special vegetation community unique to the Live Oak Peninsula, when installing the pipeline through live oak forest, woodland or shrubland habitat on the Live Oak Peninsula, TPWD recommends narrowing the construction ROW to a width of 100 feet. Impacts to the live oaks in this area, many of which are hundreds of years old, will not recover within several growing seasons thus resulting in permanent impacts. Narrowing the construction corridor would assist in minimizing permanent impacts to this unique habitat.

Colonization by invasive species, particularly invasive grasses and weeds, should be actively prevented. Vegetation management should include removing invasive species early on while allowing the existing native plants to revegetate disturbed areas.

Recommendation: TPWD recommends referring to the Lady Bird Johnson Wildflower Center Native Plant Database (available online) for regionally adapted native species that would be appropriate for post-construction landscaping of disturbed areas. For herbaceous revegetation efforts, TPWD recommends the exclusive use of a mixture of native grasses and forbs. While some introduced grasses that may be presently growing in or adjacent to the project areas can provide suitable forage for livestock and some species of wildlife with proper management, introduced species typically develop into monotypic stands of vegetation that do not provide high quality grassland habitat able to support a diversity of wildlife species. TPWD recommends that native grasses having the same desirable characteristics as introduced grasses commonly used in revegetation plans be incorporated into project planning and implemented following construction.

State Regulations

Parks and Wildlife Code

Nongame Birds

State law prohibits any take or possession of nongame birds, including their eggs and nests. Laws and regulations pertaining to state-protection of nongame birds are contained in Chapter 64 of the Texas Parks and Wildlife (TPW) Code. This protection applies to most native bird species, including ground nesting species. Although not documented in the Texas Natural Diversity

Database (TXNDD), many bird species which are not listed as threatened or endangered are protected by Chapter 64 of the TPW Code and are known to be year-round or seasonal residents or seasonal migrants through the proposed project area.

During the winter, south Texas is the southernmost limit for many migratory birds and it is the northernmost extreme in the breeding season (spring-summer) for other species. Additionally, the proposed project area is in the middle of the Central Migratory Flyway through which millions of birds pass during spring and fall migration. Available food, cover, and water sources provide important stopover habitats for Neo-tropical migrants.

Biologically, this area of south Texas is highly productive and provides a range of habitats including large tracts of undeveloped land, grasslands, prairies, woodlands, marsh, and aquatic habitats. The diversity of habitats is suitable to support a diversity of wildlife species. In particular, the range of habitats provides cover, feeding, nesting and loafing areas for many species of birds; grassland birds, Neo-tropical migrants, shorebirds, wading birds, and raptors.

Recommendation: The proposed project is located in a region with very diverse habitats that are within the range and suitable habitat for many rare species and migratory birds. Any vegetation clearing (or ground disturbance that would impact ground nesting birds) that would be required to construct the uplands, inshore or offshore infrastructure (tank farm, pipelines, terminal, horizontal directional drilling (HDD) entry/exit pits), improve existing access roads, or create new access roads should be scheduled to occur outside of the March 15-September 15 migratory bird nesting season. Contractors should be made aware of the potential of encountering non-game migratory birds (either nesting or wintering) in the proposed project site and be instructed to avoid negatively impacting the birds.

If vegetation clearing or ground disturbance must be scheduled to occur during the nesting season, TPWD recommends the areas to be impacted should be surveyed for active nests by a qualified biologist. Nest surveys should be conducted no more than five days prior to the scheduled clearing to ensure recently constructed nests are identified. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation/undisturbed area remain around the nest until the young have fledged or the nest is abandoned.

State-listed Species

State law prohibits the capture, trap, take or kill (incidental or otherwise) of state-listed species. Laws and regulations pertaining to state-listed endangered or threatened animals are contained in Chapters 67 and 68 of the TPW Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code. There are penalties, which may include fines and/or jail time in addition to payment of restitution values, associated with take of state-listed species. A copy of TPWD Guidelines for Protection of State-Listed Species, which includes a list of penalties for take of species, can be found on the TPWD website.

For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons permitted through the TPWD Wildlife Permits Program. For more information regarding Wildlife Permits, please contact the Wildlife Permits Office at (512) 389-4647. For the above-listed activities that involve aquatic species please contact the TPWD Kills and Spills Team (KAST) for the appropriate authorization.

The potential occurrence of state-listed species in the project area is primarily dependent upon the availability of suitable habitat. Direct impacts to high quality or suitable habitat therefore are directly proportional to the magnitude and potential to directly impact state-listed species. State-listed reptiles that are typically slow moving or unable to move due to cool temperatures are especially susceptible to being directly impacted during vegetation clearing for roads, staging areas, easements, or machinery access corridors.

Please be aware that determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence.

Recommendation: TPWD recommends reviewing the most current TPWD annotated county lists of rare species for Nueces and San Patricio counties, as rare species could be present depending upon habitat availability. These lists are available online at the TPWD Wildlife Diversity website. Major revisions were made to these lists in April 2019.

The Texas Natural Diversity Database (TXNDD) contains records of rare species occurrences throughout the proposed project area.

Recommendation: Please note that the TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in an area does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and cannot be used as presence/absence data. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD data is updated continuously based on new, updated and undigitized records; therefore, TPWD recommends requesting the most recent TXNDD data on a regular basis.

Aquatic Resources

Dewatering, maintenance, and construction related activities in aquatic habitats including streams, channels, bays and estuaries may negatively impact fish, shellfish, and other aquatic

resources. As the state agency with the primary responsibility for protecting the state's fish and wildlife resources, the TPW Code authorizes the Department to investigate fish kills and any type of pollution that may cause loss of fish or wildlife resources, estimate the monetary value of lost resources, and seek restitution or restoration from the party responsible for the fish kill or pollution through suit in county or district court. The TAC requires the department to actively seek full restitution for and/or restoration of fish, wildlife, and habitat loss occurring as a result of human activities. The restitution value of lost resources can be significant, in particular for species classified as threatened or endangered. Restitution for each individual of a threatened species is at least \$500 and for each individual of an endangered species is at least \$1,000. In addition, the TPW Code makes it a criminal offense to kill any fish or wildlife resources classified as threatened or endangered.

Recommendation: Because the project would require work within aquatic habitats, the project may need to be coordinated with the TPWD KAST for appropriate authorization and to ensure protection of aquatic wildlife.

Lighting

Lighting may be required during construction and operation of the proposed facilities. Presumably, lighting would be installed at the Midway, Aransas and Harbor Island Facilities and would be used for safety and security.

Recommendation: Particularly for onshore facilities, TPWD recommends considering appropriate lighting technologies and best management practices described at the International Dark-Sky Association website. Specifically, security lighting within any fenced compounds should be fully down-shielded and directed away from vegetation outside of fenced areas. Security lighting around on-ground facilities should also be motion- or heat-sensitive to eliminate constant nighttime illumination. For lighting over the water, lights should be shielded to eliminate both skyward and water surface illumination (which can attract fishes and invertebrates).



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Carter P. Smith
Executive Director

September 20, 2019

Mr. Robert Jones
U.S. Army Corps of Engineers
Galveston District, Regulatory Branch
5151 Flynn Parkway, Suite 306
Corpus Christi, TX 78411-4318

Ms. Leslie Savage
Environmental Services Section
Texas Railroad Commission
P.O. Box 12967
Austin, TX 78711-2967401

RE: Permit Application Number SWG-2019-00245
Port of Corpus Christi Authority (PCCA)

Dear Mr. Jones and Ms. Savage:

Texas Parks and Wildlife Department (TPWD) has reviewed the Public Notice (PN) dated August 21, 2019 for permit application number SWG-2019-00245. The applicant requests authorization to construct a 64.8-acre crude oil export terminal with vessel berths on Harbor Island that would accommodate up to two very large crude carrier (VLCC) size deep-draft water borne vessels. The project site is located at the confluence of the Aransas Pass, Aransas Channel, Lydia Ann Channel, and the Corpus Christi Ship Channel (CCSC) just north of State Highway (SH) 361 and abutting the Texas Department of Transportation (TxDOT) Ferry Landing at Harbor Island in Port Aransas, Nueces County, Texas.

According to the PN, the applicant proposes to dredge two deep draft vessel berths at a slope of 3:1 to the authorized depth of the CCSC at -54 feet mean lower low water (MLLW), plus 4 feet advanced maintenance dredging, plus 2 feet of allowable over depth, totaling -60 feet MLLW. The project would also include the construction of 725 linear feet of bulkhead, 1,275 feet of cellular wall, breasting structures, jetty platforms, access structures, and associated terrestrial structures. Approximately 6.5 million cubic yards (MCY) of dredged material would be dredged and placed in a dredged material placement area (DMPA).

The proposed project is located at Harbor Island which is the historic flood tidal shoal, or delta, of the Aransas Pass inlet complex that was formed and maintained by natural coastal processes. These coastal processes also play a role in maintaining the shallow water habitats of Redfish Bay, including seagrass beds, emergent marshes, mangroves, oysters, and tidal flats. Redfish Bay supports the most extensive area of pristine seagrass beds outside the Laguna Madre and represents the northern range limit for large beds of turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*; Pulich and Calnan, 1999). In 2000, the Texas Parks and Wildlife Commission established the Redfish Bay State Scientific Area (RBSSA) for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value.

The importance of the shallow water resources of this tidal inlet complex to recreational fisheries in Redfish Bay is evidenced by angler survey data collected from 2013 to 2017 in southern Redfish Bay, which lies between SH 361 and the CCSC. Southern Redfish Bay represents only 7% of the areal extent of the Corpus Christi Bay Ecosystem, yet survey data indicates that this small area accounted for 18% of the angling trips taken by boat and 32% of the angler hours (time anglers spent fishing) throughout the Corpus Christi Bay Ecosystem. This survey data also indicates that southern Redfish Bay accounted for 37% of spotted seatrout, 31% of red drum, 23% of southern flounder, and 12% of black drum landed throughout the Corpus Christi Bay Ecosystem.

The tidal inlet complex also supports tidal flats which are irregularly inundated shallow water habitats that, with the exception of algal mats, are generally unvegetated and colonized by annelid worms, dipteran larvae, small crustaceans and mollusks, and other macrobenthic infauna. When inundated, tidal flats provide escape and forage habitat to small fish as well as loafing and forage habitat to wading birds and longer-legged shorebirds. When exposed, tidal flats provide unique feeding opportunities to shorebirds in general but play a more critical role for smaller shorebirds, such as the state- and federally-listed threatened piping plover (*Charadrius melodus*) and red knot (*Calidris canutus*).

Since the formation of the Aransas Pass tidal inlet complex, improved navigation channels in the area have since been serially deepened and widened and the tidal inlet has been stabilized by a pair of rock jetties. Dredged material associated with construction and maintenance of the improved inlet and navigation channels has been deposited on parts of Harbor Island, including the proposed project site and other adjacent placement areas (PAs). The site of the proposed terminal historically housed an Exxon and Fina bulk fluids export facilities. Although these facilities have since been removed, there is still concern for contaminants in the soils at the project site. There is also concern for the cumulative effects of this and other projects on the sediment budget of the tidal inlet complex which supports the shallow water habitats of Redfish Bay.

Recommendations: Soils should be tested for contaminants to determine appropriate disposal methods and locations. The direct, indirect and cumulative effects of this action, as well as similar and connected actions described below, on the sediment budget and sedimentary processes which sustain this productive ecosystem should be fully evaluated. The beneficial use of appropriate dredged materials should be evaluated using a watershed or landscape level approach that considers the status and trends of local aquatic resources and the predicted effects of relative sea level rise.

Based on the information provided in PNs issued by the U.S. Army Corps of Engineers (USACE) and the information released to the public by the applicant and

its project partners, TPWD is concerned that the proposed project is but one component of a larger action (i.e., SWG-2019-00067), is an interdependent part of a foreseeable future action (as described by Lone Star Ports, LLC), and is a similar action with similar timing and geography to another recently proposed action (i.e., SWG-2018-00789).

Recommendation: For the reasons described, the USACE should fully evaluate all of these actions in one or more Environmental Impact Statements (EISs) in accordance with 40 CFR 1508.25.

The PN for this permit application (SWG-2019-00245) describes the purpose of the project as a crude oil export terminal. The PN describes approximately 0.33 acre of permanent fill impacts to palustrine emergent wetlands as a result of the project. No compensatory mitigation has been proposed to offset permanent impacts and multiple best management practices have been identified to minimize secondary impacts. Sheet 15 of 16 of the project plans identifies one 36-inch incoming pipeline, two storage tanks surrounded by a containment berm, a pump facility, access roads, vapor combustion units, pipe racks, firewater pumps, and an operations building/warehouse. A note on Sheet 15 of 16 states "Typical upland facility to be designed and built by others, is included for informational purposes only." Consequently, the impacts associated with those aspects of the project were not described by the applicant.

Recommendation: The direct, secondary and cumulative effects of the proposed action, along with those of connected and similar actions, should be fully described and evaluated. Adverse impacts should be avoided and minimized to the extent practicable and unavoidable impacts should be fully compensated.

Information released by the applicant on March 28, 2019 (Attachment A) further describes this facility as a joint venture between the Carlyle Group and the Berry Group for a 200-acre state-of-the-art petroleum export terminal on Harbor Island known as Lone Star Ports, LLC. Because the stated purpose of the project cannot be achieved without a source of crude oil or all the associated infrastructure required to transport, store and pump that crude oil, these components of the crude oil terminal should be considered an interdependent action of the proposed project.

Recommendation: The scope of the proposed action should be expanded to include these interdependent or connected actions.

As shown in Attachment B, the Lone Star Ports, LLC website states (boldface type is added for emphasis):

*...Through a partnership with the Port of Corpus Christi, Lone Star Ports will lead the development and operations of the first U.S. onshore export terminal servicing **fully-laden** Very Large Crude Carriers (VLCC) with the ability to export 2 million barrels of crude oil per vessel.... Martin Midstream is also working with Lone Star Ports to establish an exclusive VLCC solution on Harbor Island....*

Based on this description, the proposed action is not only an interdependent part of other foreseeable actions described above, but also part of a larger action recently proposed by the applicant (SWG-2019-00067) that would further deepen and lengthen the authorized CCSC to accommodate fully-laden VLCCs at multiple points on Harbor Island.

As recently described in the PN for application number SWG-2018-00789, Axis Midstream Holdings, LLC. similarly proposes to construct a series of facilities and pipelines to store, transport, and load crude oil at a deep-water terminal at Harbor Island. Considering the timing, location, and similarity of these proposed actions, the scope of the proposed actions should be expanded to evaluate their environmental consequences together in order to adequately assess the combined impacts and reasonable alternatives.

Overall, TPWD has concern for the significant individual effects of the proposed project, as well as the cumulative effects of past and reasonably foreseeable future projects, may have on:

- the physical, chemical, and biological characteristics of the aquatic ecosystem (including suspended particulates and turbidity, water quality, normal water fluctuations, threatened and endangered species and their habitats, aquatic organisms in the food web, and other wildlife associated with aquatic ecosystems),
- the significant permanent and unmitigated impacts to special aquatic sites that would result from the project as proposed, and
- the adverse effects on the human use characteristics of these special aquatic sites (including recreational and commercial fisheries, water-related recreation, aesthetics, and preserves such as research sites that are managed for their aesthetic, educational, historical, recreational, or scientific value).

As shown in public notices and news reports, TPWD is aware of several other development projects proposed in this area that should be considered as part of an analysis of cumulative effects.

Recommendation: Prior to the issuance of permits, the applicant should incorporate the above requested modifications and then submit revised project plans for resource agency review. In addition, an Environmental Impact Statement should be undertaken to fully evaluate:

Mr. Jones and Ms. Savage
SWG-2019-00245
September 20, 2019
Page 5 of 5

- the alternatives that were considered when selecting the preferred alternative,
- the direct, indirect and cumulative impacts of the proposed project on the environment including the significant aquatic resources of Redfish Bay and RBSSA, and
- a compensatory mitigation plan that fully offsets all unavoidable impacts.

TPWD appreciates the opportunity to provide comments and recommendations for this project. Questions can be directed to Ms. Jackie Robinson (361-825-3241) or Ms. Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Robin Riechers
Director of Coastal Fisheries

RR:LK:JR:lam

Attachments – 2

Literature Cited:

Pulich, W.M, Jr. and T. Calnan (eds.). 1999. Seagrass Conservation Plan for Texas. Resource Protection Division. Austin, Texas: Texas Parks and Wildlife Department. 79 pp.

Port of Corpus Christi Commission Approves 50-Year Lease Agreement with Carlyle Group Joint Venture

Harbor Island Terminal Complex Will Have Deepest Channel Depth of Any Onshore Crude Oil Export Facility in the United States

Corpus Christi, TX, USA – The Port of Corpus Christi Commission approved today a long-term (50-year) lease agreement with Lone Star Ports, LLC (“Lone Star Ports”), a joint venture between the Carlyle Group and the Berry Group, for approximately 200 acres on Harbor Island to develop a state-of-the-art petroleum export terminal. Featuring the latest in safety, security and environmental technologies, the facility will connect U.S. crude producers with all major international markets.

The lease agreement between the Port of Corpus Christi Authority and Lone Star Ports will provide significant accretive value in the Port’s annual operating revenues, and the project is expected to create more high-wage jobs and more economic prosperity for Port Aransas, Nueces County, and throughout Texas.

Lone Star Ports’ facility on Harbor Island is designed to be the deepest-draft safe harbor crude export facility in the nation when commissioned. Immediately upon completion, the facility’s two docks will have access to the improved 56’ ship channel depth, making it the United States’ first and only onshore terminal capable of fully loading Suezmax vessels and nearly full loading Very Large Crude Carriers (VLCCs).

Last month, the U.S. Army Corps of Engineers (USACE) awarded the first dredging contract for the Corpus Christi Ship Channel Improvement Project to the largest U.S. dredging company, Great Lakes Dredge and Dock Company (GLDD), to deepen the channel to a depth of 56’ from the Channel entrance to Harbor Island, and a planned depth of 54’ throughout the rest of the harbor.

“This long-term commitment is testament to the significance of the Corpus Christi gateway for American energy exports, which are expected to triple in the next decade,” said **Sean Strawbridge, Chief Executive Officer for the Port of Corpus Christi**. “A 50-year lease agreement with the Carlyle Group and the Berry Group joint-venture company, Lone Star Ports, is not only complementary to our existing marine terminal infrastructure but also positions the Port of Corpus Christi to be the preferred outlet for US-produced crude exports serving all major global demand centers for generations to come.”

“The Carlyle Group is enthusiastic about our shared vision with the Port of Corpus Christi Commission to develop an environmentally safe, world-class facility that will position Corpus Christi as a vital economic engine in Texas and around the globe,” said **Ferris Hussein, Managing Director of The Carlyle Group**. “The Harbor Island project would not be possible without the leadership shown by the Port’s commission and staff in their ongoing commitment to communities throughout the Coastal Bend region. This partnership is a great vote of confidence in Carlyle and our abilities to deliver generation changing infrastructure projects, and we take that responsibility seriously.”

Civil works for this facility repurposing project have been underway for the past year ahead of finalizing a definitive lease agreement, including the demolition of existing dock structures from a previous decades old Exxon crude import terminal on Harbor Island. The execution of this new lease enables the parties to commence major equipment and materials procurements and other construction efforts.

“This project on Harbor Island is the next pivotal step in directing the growing crude oil production in the United States to global markets via our Port of Corpus Christi,” said **Charles W. Zahn, Jr., Port of Corpus Christi Commission Chairman**.

“The Berry Group looks forward to working with the Port of Corpus Christi and our partners at The Carlyle Group to continue to bring jobs and prosperity to Corpus Christi and the Gulf Coast community as we have for the last 65 years,” said **Marty Berry, of The Berry Group**.

About Port Corpus Christi

As a leader in U.S. Crude Oil export ports and a major economic engine of Texas and the nation, Port Corpus Christi is the 4th largest port in the United States in total tonnage. Strategically located on the western Gulf of Mexico with a 36-mile, 47 foot (MLLW) deep channel, Port Corpus Christi is a major gateway to international and domestic maritime commerce. The Port has excellent railroad and highway network connectivity via three North American Class-1 railroads and two major interstate highways. With an outstanding staff overseen by its seven-member commission, Port Corpus Christi is “Moving America’s Energy.” <http://www.portcorpuschristi.com/>

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About The Carlyle Group

The Carlyle Group (NASDAQ: CG) is a global alternative asset manager with \$210 billion of assets under management across 335 investment vehicles as of June 30, 2018. Carlyle’s purpose is to invest wisely and create value on behalf of its investors, many of whom are public pensions. Carlyle invests across four segments – Corporate Private Equity, Real Assets, Global Credit and Investment Solutions – in Africa, Asia, Australia, Europe, the Middle East, North America and South America. Carlyle has expertise in various industries, including: aerospace, defense & government services, consumer & retail, energy, financial services, healthcare, industrial, real estate, technology & business services, telecommunications & media and transportation. The Carlyle Group employs more than 1,625 people in 31 offices across six continents. www.carlyle.com

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Environmental Responsibility

Community

Economic Benefits

Why Harbor Island

News

Contact

Project Overview

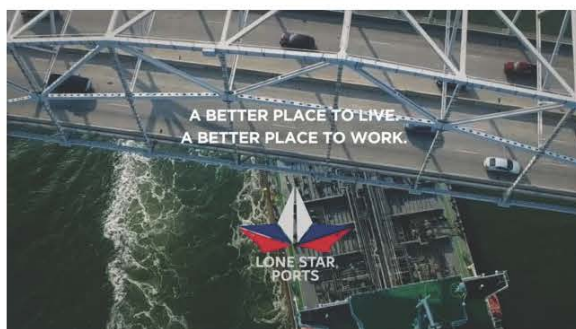
Headquartered in Corpus Christi, TX, Lone Star Ports, LLC (a Carlyle company) is developing a first-of-its-kind crude oil export terminal on Harbor Island. Through a partnership with the Port of Corpus Christi, Lone Star Ports will lead the development and operations of the first U.S. onshore export terminal servicing fully-laden Very Large Crude Carriers (VLCC) with the ability to export 2 million barrels of crude oil per vessel. Based on current market conditions, net U.S. exports associated with the project could exceed \$30 billion per year, connecting American produced energy to the world reducing the U.S. trade deficit and furthering Corpus Christi's position as a global energy leader.

The project is a joint venture between The Carlyle Group and The Berry Group, the largest private employer in the Corpus Christi area.

Martin Midstream is also working with Lone Star Ports to establish an exclusive VLCC solution on Harbor Island.

Lone Star Ports is led by an experienced management team, including Jerry Ashcroft, former CEO of EQT Midstream – Ashcroft has held leadership positions at two of the largest marine terminals in the world.

Community



Environmental Responsibility





Environment

Lone Star Ports is committed to the safe and responsible development of the Harbor Island Export Terminal. We are committed to developing a best-in-class facility that will have a limited footprint, reducing or avoiding environmental impacts throughout all stages of development and



Community

"After Harvey, the port and a lot of other bigger entities came together for everybody in the community and they really came together and helped everybody out who needed it. It's kind of surreal how much everybody pitched in to help...It wasn't about business anymore; it was about just



Economic Benefits

Lone Star Ports is a Texas-Sized project that will help build a better economy and a brighter future for the Coastal Bend region of Texas through tax revenue, creation of high-paying jobs and other economic factors.

According to an economic impact



Harbor Island

Harbor Island will be the first U.S. onshore export terminal servicing full-laden Very Large Crude Carriers (VLCC) with the ability to export 2 million barrels of crude oil per vessel.

Lone Star Ports has signed indicative agreements with Harvest Midstream and EPIC crude

operation. Harbor Island Terminal will beneficially re-use a former industrial site (avoiding impacts to undeveloped land)

and due to its location, it can significantly reduce ship traffic associated with oil exports from other locations within the port region. The Harbor Island location also protects the facility from extreme weather conditions and ocean currents will not create dangerous situations during loading.

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helping the residents here.”

– Amanda Davis,
Resident of Corpus Christi

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study conducted by the Perryman Group, the construction and operation of the Harbor Island Export Terminal will lead to more than 300 permanent jobs in the Corpus Christi region and thousands of indirect jobs across Texas and around the world.

MORE »

pipeline. Once online, these two pipelines will provide connectivity to more than one million barrels per day (mmbbls/d) of crude oil from the Permian and Eagle Ford basins. Additionally, Lone Star Ports is excited about an indicative agreement with Martin Midstream Partners L.P. to provide a single, integrated VLCC solution on Harbor Island.

MORE »

What They're Saying



THIS HAS BEEN A REALLY INCREDIBLE PROJECT TO WORK ON BECAUSE THERE'S SO MANY ENVIRONMENTALISTS AT HEART WORKING ON THE PROJECT WHETHER IT'S THE BERRY FAMILY AND THEIR LOVE FOR THE OUTDOORS – OR THE CARLYLE GROUP'S FOCUS ON SUSTAINABILITY.

-JEREMIAH ASHCROFT,
CHIEF EXECUTIVE OFFICER, LONE STAR PORTS



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August 28, 2019

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Ms. Ashley Chang
USEPA, Region 6
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Re: Permit Application Number SWG-2019-00067
Port of Corpus Christi Authority (PCCA)

Dear Mr. Johnson, 401 Coordinator and Ms. Chang:

Texas Parks and Wildlife Department (TPWD) has reviewed the Public Notice dated August 28, 2019 for permit application number SWG-2019-00067. The applicant proposes to deepen and expand the Corpus Christi Ship Channel (CCSC) near Port Aransas, Nueces County, Texas in order to construct a channel that can accommodate transit of fully laden Very Large Crude Carriers (VLCCs) from multiple locations on Harbor Island into the Gulf of Mexico. The Channel Deepening Project (CDP) would span approximately 13.8 miles from a location near the southeast side of Harbor Island to the -80-foot mean lower low water (MLLW) bathymetric contour in the Gulf of Mexico (GOM). The proposed CDP will cover approximately 1,778 acres, creating approximately 46 million cubic yards (MCY) of new work dredged material (17.1 MCY of clay and 29.2 MCY of sand). Although the proposed project does not explicitly include widening of the channel, minor incidental widening of the channel slope will result to meet the slope requirements and to maintain stability of the channel. Specifically, the applicant requests authorization to:

- deepen a portion of the CCSC from the currently authorized depth of -54 to -56 feet MLLW to final constructed depths ranging from -79 to -81 feet MLLW,
- extend the existing terminus of the authorized channel an additional 29,000 feet into the Gulf of Mexico to reach the -80-foot MLLW bathymetric contour,
- expand the existing Inner Basin at Harbor Island as necessary to accommodate VLCC turning, which includes the construction of a flare transition from the CCSC within Aransas Pass to meet the turning basin expansion,

- potential placement of new work dredged material into waters of the U.S. for beneficial use (BU) sites located in and around Corpus Christi and Redfish Bays,
- potential placement of dredged material on San Jose Island for dune restoration,
- potential placement of dredged material in feeder berms for beach restoration along San Jose and Mustang Islands, and
- transport of new work dredged material to the CCSC Improvement Project (CCSCIP) New Work (NW) Ocean Dredged Material Disposal Site (ODMDS).

Within the context of the geographic area, the PN describes numerous important resources that may be affected by the proposed project. The largest neighboring resource, located 20 miles south of the project site, is the Padre Island National Seashore, the largest stretch of undeveloped barrier island in the world and home to the National Park Service's Division of Sea Turtle Science and Recovery. Immediately to the north of the project site is San Jose Island, a privately-owned undeveloped barrier island known to be occupied by numerous federally-listed threatened and endangered sea turtle and bird species, including the Whooping Crane (*Grus americana*), Piping Plover (*Charadrius melodus*), and Red Knot (*Calidris canutus*). In addition, the area includes the Mission-Aransas National Estuarine Research Reserve (MANERR), a state and federal partnership that conducts research, education, and stewardship programs funded by the National Oceanic and Atmospheric Administration (NOAA). The MANERR is the third largest National Estuarine Research Reserve (NERR) in the United States and the only NERR in Texas. TPWD has identified additional important resources within this geographic extent that include Padre Balli Park and Bob Hall Pier, Packery Flats, Mustang Island State Park, Francine Cohn Preserve, Shamrock Island, the Aransas Pass (Lydia Ann) Lighthouse, Lighthouse Lakes Paddling Trail, Lighthouse Lakes Park, I.B. Magee Beach Park and Horace Caldwell Pier, and the Port Aransas Nature Preserve.

Of particular concern to TPWD, is the 14,000-acre Redfish Bay State Scientific Area (RBSSA) located between San Jose Island and Live Oak Peninsula. Following a multi-agency effort and the resulting publication of the "Seagrass Conservation Plan for Texas" in 1999, the Texas Parks and Wildlife Commission established the RBSSA for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value. Because of this designation, the RBSSA has special status, and the importance of seagrass habitat has since been specifically recognized by state law, not just within the RBSSA, but state-wide.

Redfish Bay provides a mosaic of tidal flats, tidal marsh, mangroves, unvegetated shallows, and extensive seagrass beds that provide nursery, forage, and cover habitats for many species of fish and wildlife. Outside the Laguna Madre, Redfish

Bay represents the most extensive area of pristine seagrass beds and is also the northern range limit for large beds of turtle grass and manatee grass (Pulich and Calnan, 1999). The importance of the shallow water resources of RBSSA to recreational fisheries in Redfish Bay is detailed in recent angler survey data collected from 2013 to 2017. Southern Redfish Bay represents only about 7% of the areal extent of the Corpus Christi Bay Ecosystem, yet survey data indicate that this small area accounted for 18% of the angling trips taken by boat and 21% of the angler hours (time anglers spent fishing) throughout the Corpus Christi Bay Ecosystem. These survey data also indicate that southern Redfish Bay accounted for 37% of spotted seatrout, 31% of red drum, 23% of southern flounder, and 12% of black drum landed throughout the Corpus Christi Bay Ecosystem.

Chapter 26 of Parks and Wildlife Code states that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public land designated as a park, recreation area, scientific area, wildlife refuge, or historic site, unless it holds a public hearing and determines that there is “no feasible and prudent alternative to the use or taking of such land,” and the project “includes all reasonable planning to minimize harm to the land resulting from the use or taking.” TPWD considers the RBSSA to be public land designated as a scientific area that is subject to the procedural requirements of Chapter 26. This statute may also apply to other designated public lands that would be impacted by the proposed project.

The PN states that dredging activities will impact 0.11 acre of seagrass and that the placement of dredged material associated with the project will result in 185.9 acres of adverse impacts to special aquatic sites including wetlands and 58.5 acres of submerged aquatic vegetation (SAV). Based on the information provided, these impact estimates are based on desktop estimates which have not been validated by comprehensive habitat surveys. While TPWD appreciates the applicant’s desire to beneficially use the dredged material, the project information presented in the PN does not adequately demonstrate how the proposed impact sites will benefit from the proposed fill or how the impacts will be otherwise mitigated.

Recommendations: TPWD requests that the applicant:

- Identify and quantify the specific habitat that will be restored or created in order to accurately assess the impacts and the benefits of the project. This should be depicted on the dredge placement area and beneficial use site maps.
- Develop a more detailed mitigation plan that demonstrates functional lift for the types and quantities of the aquatic resources that will be impacted and if the proposed BU placement sites would be able to achieve or exceed the functions currently provided by established aquatic resources. The plan should include BU design details, mitigation success criteria, monitoring requirements and

adaptive management options that include temporal loss of aquatic resource functions.

The proposed placement area M4 is located within the RBSSA and contains vast acres of pristine seagrass beds of all five species of seagrass found in Texas. The applicant proposes to construct a levee Northward along the eastern side of Dagger Island that turns Northwest to follow the channel perpendicular to the shoreline of Ingleside. The applicant proposes to hydraulically place BU material to an elevation of 4 feet to restore marsh habitat within the 702-acre placement area.

Recommendation: TPWD would like clarification on use of fill behind the levee. Beneficial use of dredge material to cover existing functional seagrass beds at such a large scale is not recommended, especially within the RBSSA. The goal of the RBSSA is to protect and preserve the seagrass and serve as an educational source to promote the many ecological benefits of seagrass. With larger vessels (VLCC and Suezmax) using the CCSC the proposed geotextile would offer little protection from ship wakes and natural wave impact. The applicant should consider hard structure protection (rock, rip-rap, articulated mat) for the east side of the levee.

The applicant would like to place BU on the southern side of Pelican Island at site M3 to create marsh with the possibility of establishing elevations suitable for seagrass.

Recommendations: The TPWD seagrass viewer indicates that there is currently seagrass located in the middle of the proposed BU placement. The applicant should establish elevations suitable for seagrass adjacent to the existing seagrass to create a contiguous bed and create marsh on the eastern and western ends of the placement. This island is a bird rookery and BU placements should not be performed during nesting season if possible.

The CCSCIP currently is authorized to extend from Stations -210+00 to -330+00 out into the Gulf of Mexico. This stretch of the proposed project as well as the portion that extends into the Aransas Pass inside the jetties is classified as deep-water marine habitat. The Entrance Channel segment of the CCSC is currently maintained to a depth of -49 feet MLLW and the Lower Bay segment to a depth of -47 feet MLLW. The CCSC has been federally authorized to a depth of -56 feet MLLW from the Gulf of Mexico to the end of the jetties in the Entrance Channel segment, and to -54.0 feet MLLW in the Lower Bay segment. Dredging work to reach the authorized depths is currently starting out in the Gulf on the entrance channel.

The applicant proposes to create a flare transition at the confluence of the CCSC and the Aransas Channel to accommodate VLCC turning but the size of the turning basin diameter had not been determined. At the inner CCSC terminus of the

proposed dredging project, the dredge depth at station 110+00 would be to -75 feet MLLW and would immediately transition to a depth of -47 feet MLLW. The applicant provides no details of the transition design or what precautions will be taken to prevent the channel from sloughing off into the deeper channel.

Recommendation: The applicant should provide any new ship simulation modeling that provides information of the requirements for the turning basin diameter. The applicant should provide a description of the transition and design of the channel at station 110+00. This should detail how the channel will be stabilized to prevent sloughing. In addition, the applicant should provide any hydrological modeling conducted that the 28-foot transitional change in depth will have no physical, biological, chemical or ecological impacts to the surrounding area. This would include impacts to fish and invertebrate larvae transportation, salinity regimes, tidal velocities, nutrient and sediment exchange and potential stratification.

TPWD supports and encourages beneficial use of dredge material to restore and/or enhance functional ecosystems or create new rookery islands. The applicant has proposed six offshore feeder berms, one beach and one dune restoration site on San Jose Island as well as three offshore feeder berms and one beach restoration site on Mustang Island. In addition, the applicant proposes to use two offshore dredge material disposal sites to lengthen the jetty approach channel.

Recommendations: The applicant should coordinate with U.S. Fish and Wildlife Service to avoid impacts to endangered and threatened birds and conduct beach and dune work outside of bird nesting season. The applicant should also consult with the National Park Service in reference to sea turtles and avoidance during nesting season. The applicant should investigate the opportunity use BU to build a new rookery island in the vicinity.

The applicant proposes to beneficially use dredge material to perform shoreline stabilization activities on both the north and south side of the CCSC. Placement option SS1 is on the north side of the CCSC and has been slowly eroding mainly due to impacts from shipping. The north side has breached several times throughout history due to both shipping and environmental processes, but the breach is now affecting seagrass behind the channel shoreline. Placement option SS2 is on the south side of CCSC along the Port Aransas Nature Preserve/Charlies Pasture boundaries. Hurricane Harvey caused the breach of the CCSC shoreline and subsequent flooding of the critical salt flat habitat utilized by the endangered Piping Plover.

Recommendation: The applicant should consider the increase in frequency and size of the future shipping industry, weather impacts and sea level rise when designing and constructing the new shoreline protection features.

The applicant states that the 2003 CCSCIP feasibility report tested the material that is within the footprint of the proposed CDP and found the material was suitable for offshore disposal as well as BU. The proposed CDP dredge materials are not expected to be different than the sediment material currently authorized to be dredged.

Recommendations: The applicant should conduct a new dredge material feasibility test to confirm the material is still suitable for offshore disposal, beach and dune restoration and BU activities due to the 16-year lapse from the previous test. The applicant should provide the most recent toxicity and bioaccumulation assessment of the dredge material for the resource agencies to review. In addition, the grain size and composition of the BU material should be evaluated for each proposed placement site to ensure characteristics are similar.

Sea turtles and manatees are known to occur within the CCSC and in the surrounding area of the proposed project. The following guidance, which has been coordinated with U.S. Fish and Wildlife Service and the Texas Sea Turtle Stranding and Salvage Network:

Recommendations:

- If a sea turtle or manatee is observed within the project area during construction activities, the construction activities should be halted, and the animal be allowed to leave on its own volition before resuming construction activities.
- Both project construction and operations employees should:
 - 1) Be advised that sea turtles and/or manatees may approach the proposed project area,
 - 2) Be provided materials, such as a poster, to assist in identifying these animals,
 - 3) Be instructed not to feed or water the animal,
 - 4) Report *all* manatee sightings to U.S. Fish and Wildlife Service (USFWS) and the Texas Marine Mammal Stranding Network (TMMSN),
 - a) USFWS
 - i. Middle and lower Texas coast: 361-533-6047,
 - ii. Upper Texas coast: 713-542-1861,
 - b) TMMSN hotline: 800-962-6625, and
 - 5) Report only *injured, cold stunned, or dead* sea turtles to the Texas Sea Turtle Stranding and Salvage Network (STSS)
 - a) Padre Island National Seashore: 361-949-8173 ext. 226, or
 - b) STSSN hotline: 866-887-8535 (866-TURTLE5).

TPWD is concerned that the CDP as described in Permit Application SWG-2019-00067 is not a whole and complete project. The proposed channel without the associated docking facilities and supply pipeline infrastructure to support those facilities does not justify the deepening of the channel. When comparing all of these projects there are some similarities but also some inconsistencies. TPWD is currently reviewing two public notices, Permit Application SWG-2018-00789 Axis Midstream Holdings, LLC and SWG-2019-00245 Port of Corpus Christi Authority for docking facilities on Harbor Island. Axis Midstream has proposed to utilize the same DMPA's as the CDP and their pipelines will be trenched in the bottom of Redfish Bay State Scientific Area, which contains 5 species of seagrass beds that the CDP PN states would be protected with dredge material placement. The PN for the POCCA does not provide information on the supply pipelines for this facility and thus the environmental impacts for the pipelines are unknown. The cumulative effects of the approval and construction of these projects, as well as other proposed projects such as the Bluewater Texas Deepwater Terminal Project, should be assessed.

The PN states that a previous review of the application concluded that an Environmental Impact Statement (EIS) is required for the proposed project. Due to the substantial amounts of proposed adverse impacts to many significant resource areas of the Coastal Bend, TPWD agrees that an EIS should be undertaken to fully assess all direct, indirect, and cumulative impacts of the proposed project and any connected actions. Questions can be directed to Paul Silva (361-825-3204) or Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Dakus Geeslin
Chief, Science and Policy Resources Branch
Coastal Fisheries Division

DG:LK:PS

References

Pulich, W. M., Jr. and T. Calnan (eds.). 1999. Seagrass Conservation Plan for Texas. Resource Protection Division. Austin, Texas: Texas Parks and Wildlife Department. 79 pp.



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March 9, 2020

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Re: Permit Application Number SWG-1995-02221
Moda Ingleside Oil Terminal, LLC

Dear Mr. Pattillo and 401 Coordinator:

Texas Parks and Wildlife Department (TPWD) has reviewed the Public Notice (PN) dated February 6, 2020 for permit application number SWG-1995-02221. According to the PN, the applicant proposes to expand an existing marine basin by approximately 32.8 acres for a total of 43 acres including side slopes, construct new berthing structures, and improve existing berthing structures. The project would result in approximately 8.86 acres of impacts to seagrass and 0.95 acre of emergent wetlands in Corpus Christi Bay, north of the Corpus Christi Ship Channel (CCSC) at 262 Coral Sea Road (Formerly Naval Station Ingleside), in Ingleside, San Patricio County, Texas.

Project site description

The project site is located at the former Naval Station Ingleside site that was developed by the U.S. Navy. At present, an approximately 75-foot-wide pier extends approximately 1,500 feet from the shoreline bulkhead separating the larger East Ship Basin from the smaller West Ship Basin. Both ship basins were permitted to a depth of -54.0 feet at mean lower low water (MLLW) plus -2.0 feet of allowable over-dredge and -2.0 feet of advanced maintenance.

Based on aerial imagery and project documents, the project site is bounded on its eastern edge by an existing docking facility with industrialized uplands and on its western edge by the incorporated community of Ingleside on the Bay. Within the project boundary a 500 to 600-foot band of shallow seagrass habitat skirts the natural shoreline of an approximately 500-acre undeveloped tract, 268 acres of which has historically served as a buffer between industrial activities at the project site and the residents of Ingleside on the Bay. Landward of the bulkhead, uplands previously disturbed by naval activities have been reclaimed for industrial use. The undeveloped uplands consist of a rare mosaic of Texas Coastal Bend Live Oak – Redbay Woodlands and Interdune Swale pothole wetlands, the ecological value of which have been described by Collins (1987) and Carr (1992).

Previous amendment

The existing site plan for the East Basin (Sheet 3 of 23) identifies a single berth (Berth 2A) that parallels more than 1,000 linear feet of shoreline bulkhead and appears to overlap the area labeled “Existing West Basin”. The existing site plan for the West Basin (Sheet 2 of 23) identifies an existing pier extending from an existing bulkhead. Nearshore, the westward expansion of the basin terminates at the western terminus of the existing bulkhead. Single berths are located on either side of the pier (Berths 4 and 5) and a 1,170-foot-diameter turning basin is located west of the pier and adjacent to the CCSC. These site plans appear to include modifications proposed in a PN dated February 5, 2019 that recently expanded the West Basin by 18.2 acres to accommodate Suezmax vessels.

By letter dated March 8, 2019 TPWD expressed concerns regarding indirect and cumulative adverse effects to the large area of seagrass located westward of the previously proposed 18.2-acre West Basin expansion (See attached SWG-1995-02221 TPWD letter 2019). Through additional agency coordination, the applicant offered to install articulated matting along the top slope of the basin expansion to minimize indirect seagrass impacts. The applicant also offered to monitor the area for a period of five years to document the effectiveness of the articulated matting.

Purpose and need

According to the PN, the purpose and need of the currently proposed amendment is to provide the maritime infrastructure necessary to accommodate the increasing business and larger ships using the Moda Ingleside Oil Terminal. From the information provided, it is not clear if the increase in business and larger ships will also require any new onshore components, such as pipelines, tanks, and other related infrastructure.

Recommendation: If new onshore facilities are associated with this project, USACE should determine if the project scope should be expanded to include these connected actions.

Proposed amendment

For the East Basin, the proposed project description and site plan (Sheet 5 of 23) identifies modifications to Berth 2A that include moving the existing fender line approximately 38 feet waterward of its current location, the construction of a 35-foot by 70-foot platform extending from the bulkhead to the proposed fender line, and the installation of four breasting dolphins and four protection dolphins.

For the West Basin, the proposed project description and site plan (Sheet 4 of 23) identifies no changes to the existing Berths 4 and 5 located on either side of the existing pier. Proposed modifications would extend the existing bulkhead westward by constructing approximately 491 linear feet of new bulkhead, install

38 barge dolphins to establish a single barge berth paralleling the existing bulkhead shoreward of Berth 5 (Berth 7A) and construct two barge berths located perpendicular to the proposed bulkhead extension (Berths 7B and 7C). At the western terminus of the bulkhead extension, Berths 8 and 9 would consist of a sheetpile causeway, pile-supported approach, an 80- by 120-foot pile-supported loading platform, 12 breasting dolphins and nine mooring dolphins. Within the vicinity of the Berths 7A, 7B, and 7C, existing bay bottom would be dredged to a depth of -15 feet mean lower low water (MLLW) with a 2-foot allowable over-dredge. The remainder of the 32.8-acre West Basin expansion would be dredged to a depth of -54 feet MLLW and an additional 2-foot allowable over-dredged and 2-foot advanced maintenance. To stabilize the dredge side slope, the project would install approximately 1,350 linear feet of 44-foot-wide articulated block mattress along the top edge of the slope. Based on the information provided it is not clear if the proposed articulated block mattress would fill additional seagrass habitat. It is also unclear if the applicant has considered other options to protect avoided shallow water resources abutting the western boundary of the project.

Recommendation: The applicant should identify the various stabilization options considered to avoid and minimize impacts to neighboring aquatic resources.

Proposed impacts

According to information provided in the PN, the proposed project expansion will impact approximately 8.86 acres of seagrass and 0.95 acre of estuarine emergent wetlands. Based on the information provided, TPWD is unable to fully evaluate the potential impacts that the proposed project would have on fish and wildlife resources. The project plans provided in the PN do not identify the locations or extents of any aquatic habitats within the vicinity of the project area and do not describe those habitats in terms of composition or cover. It is TPWD's understanding that a portion of the emergent wetlands along this shoreline were planted to mitigate impacts resulting from the Naval Station Ingleside project.

Recommendation: The project plans should be revised to include the location, extent, composition, and relative cover of each aquatic resource within the vicinity of the proposed project, including areas of shallow open water (i.e., less than 6 feet deep) and deep open water (i.e., 6 feet deep or greater). Areas that have been established, re-established, or enhanced for mitigation purposes should also be identified. Revised project plans should be submitted for resource agency review and public comment.

Seagrass beds and estuarine emergent marshes are comprised of rooted vascular aquatic plants that reduce erosion by dampening wave action and stabilizing sediments in shallow tidal waters. These plant communities are also major

contributors of organic matter to the food web, playing a vital role in nutrient cycling within the bay system. Seagrass and estuarine emergent marsh also provide essential nursery habitat and forage habitat for commercially, recreationally, and ecologically important finfish and shellfish. Seeds, leaves, and rhizomes from these plants provide direct food sources for fish, sea turtles, and birds. Emergent estuarine marshes also provide excellent water quality services to the adjacent bay by filtering contaminants, such as nutrients, bacteria, and sediments from runoff.

The applicant has stated that impacts have been avoided and minimized by project alterations, design changes, the addition of stabilization features (i.e., articulated block mattress) to protect nearby resources, and the implementation of best management practices into the project construction requirements. The project documents do not identify the location, dimensions, or status of Berths 1, 3, or 6 and it is not clear if these areas were evaluated in the on-site alternatives analysis to avoid and minimize impacts to special aquatic sites, including mitigation areas.

Recommendation: Complete project plans that identify the location and dimensions of Berths 1, 3, and 6, as well as any foreseeable improvements or changes to these berths, should be submitted for resource agency review and public comment. Berths 1, 3, and 6 should be included in the evaluation of on-site alternatives to avoid and minimize impacts to special aquatic sites and TPWD requests the opportunity to review and provide comments on the Alternatives Analysis.

Compensatory mitigation

To compensate for 8.86 acres of direct impacts to submerged aquatic vegetation (SAV) and 0.95 acre of wetlands impacts (consisting of 0.80 acre of direct impacts and 0.15 acre indirect impacts), the applicant proposes out-of-kind preservation of a 50-acre area of woodlands within the undeveloped upland tract described above and in-kind establishment of not less than 9.3 acres of SAV by planting seagrass within a 13.3-acre site with 70% seagrass cover.

Out-of-kind preservation

The conceptual mitigation plan identifies the out-of-kind preservation of a 50-acre area of uplands within the woodland/pothole wetland mosaic described above. The preserved area would form an approximately 400-foot-wide corridor along the length of the western property boundary abutting the residents of Ingleside on the Bay. This corridor is within the 268-acre buffer that the previous property owner avoided for the benefit of the neighboring incorporated city. The conceptual plan does not identify the location or extent of any jurisdictional aquatic resources within this corridor and based on TPWD's working knowledge of the site, the density of potholes decreases across the property from east to west.

The conceptual mitigation plan suggests that TPWD has previously provided comments in support of preserving this habitat at this location. For context, TPWD's comments were made in response to impacts proposed to pothole wetlands and not for impacts to tidally influenced habitats. Specifically, TPWD letter dated September 8, 2014 for permit application SWG-2014-00381 (See attached) stated that TPWD recommends in-kind establishment to compensate for unavoidable impacts to pothole wetlands but may consider a preservation alternative because Live Oak – Redbay Forest and Interdune Swale communities may be difficult to replace.

TPWD prefers in-kind over out-of-kind compensation strategies to adequately replace the lost functions and services of the resources that would be impacted. While the woodland/pothole mosaic provides rare habitat with significant conservation value, it does not offset the functional losses that would result from the proposed project amendment.

In-kind establishment

The applicant is working with the Port of Corpus Christi Authority (POCCA) to identify a mitigation site on submerged lands within POCCA's jurisdiction. POCCA has approved approximately 1,600 acres along the shoreline of Indian Point in Corpus Christi Bay for habitat creation and enhancement projects. The project would consist of a breakwater constructed at the -4.0 - to -4.5-foot NAVD 88 contour and 9.3 acres of seagrass would be planted within a 13.3-acre area shoreward of the breakwater on three-foot centers.

The mudflats along this shoreline have historically supported piping plover and other shorebirds. Because the proposed project would alter the hydrological dynamics shoreward of the breakwater, there is potential for impacts to mudflats through habitat conversion.

Recommendation: The applicant should coordinate with U.S. Fish and Wildlife Service to identify a site that avoids and minimizes impacts to piping plover and their designated critical habitat to the extent practicable.

Overall, the conceptual mitigation plan does not provide adequate compensation to offset the proposed impacts.

Recommendation: A permittee-responsible compensatory mitigation project, or projects, should be developed to fully offset the suite of lost functions and services provided by the aquatic resources to be impacted. This can be achieved by developing an in-kind project that restores or enhances degraded habitat or establishes new habitat at a ratio that accounts for temporal losses of functions and reduces the uncertainty of project success. TPWD typically recommends that aquatic resource

impacts be compensated through in-kind replacement at a minimum ratio of 3:1 and 2:1 for seagrass and estuarine marsh, respectively. Out-of-kind strategies and enhancement should be provided at higher ratios. The mitigation ratio for preservation, because it will not result in a net gain of aquatic resource functions, should be even higher to compensate for the net loss and should be done in conjunction with restoration, establishment, or enhancement projects.

Sea turtles and manatees

Sea turtles and stray manatees are attracted to the deep waters and adjacent vegetated shallows of the CCSC for thermal refuge and forage habitats. Therefore, TPWD continues to recommend that the applicant implement the following guidance which has been coordinated with U.S. Fish and Wildlife Service (USFWS) and the Texas Sea Turtle Stranding and Salvage Network (STSSN).

Recommendation:

Both project construction and operations employees should:

1. be advised that sea turtles and/or manatees may approach the proposed project area,
2. be provided materials, such as a poster, to assist in identifying these animals,
3. be instructed not to feed or water the animal,
4. report manatee sightings to U.S. Fish and Wildlife Service (USFWS) and the Texas Marine Mammal Stranding Network (TMMSN),
 - a. USFWS
 - i. middle and lower Texas coast: 361-533-6047,
 - ii. upper Texas coast: 713-542-1861,
 - b. TMMSN hotline: 800-962-6625, and
5. report dead, injured or cold stunned sea turtles to the Texas Sea Turtle Stranding and Salvage Network (STSSN) at
 - a. Padre Island National Seashore: 361-949-8173 ext. 226, or
 - b. STSSN hotline: 866-887-8535 (866-TURTLE5).

Beneficial use of dredged material

The PN states that potential dredged material placement areas (DMPAs) for future dredging, including maintenance, would include all Federally authorized and constructed, upland confined, DMPAs, Good Hope, Dagger Island, and Beneficial Use Sites as available. All 3.9 million cubic yards of new work material resulting from the proposed project will be placed at Berry Island.

In addition to restoring or creating coastal resources that have been lost due to historic and ongoing impacts associated with relative sea level rise, erosion,

hydrological alterations, and sediment budgets, the beneficial use of dredged material can also conserve the disposal capacity within existing DMPAs. If suitable, these valuable sediments should be retained and used to address the habitat needs of fish and wildlife resources within the system.

Recommendation: The applicant is encouraged to explore beneficial uses of suitable dredged materials that will benefit fish and wildlife resources within the vicinity of the project.

TPWD appreciates the opportunity to provide comments and recommendations for this project. Questions can be directed to Ms. Jackie Robinson (361-825-3241) or Ms. Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Dakus Geeslin
Chief, Science and Policy Resources Branch
Coastal Fisheries Division

DG:LK:JR

References:

- Carr, B. 1992. Naval Station Ingleside Summary of a brief botanical survey: Texas Parks and Wildlife Department, Texas Natural Heritage Program, Austin, Texas, 7p.
- Collins, K.D. 1987. The distribution, status, and ecological value of inland pothole wetlands associated with live oak brush community in South Texas: U.S. Fish and Wildlife Service, Ecological Services, Corpus Christi, Texas, 23p.



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Lee M. Bass
Chairman-Emeritus
Fort Worth

T. Dan Friedkin
Chairman-Emeritus
Houston

Carter P. Smith
Executive Director

July 8, 2019

Mr. Dwayne Johnson
U.S. Army Corps of Engineers
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, TX 78411-4318

401 Coordinator
TCEQ, Mail Code 150
P.O. Box 13087
Austin, Texas 78711-3087

Re: Permit Application Number SWG-2006-02562
South Texas Gateway Terminal, LLC

Dear Mr. Johnson:

Texas Parks and Wildlife Department (TPWD) has reviewed the Public Notice for permit application number SWG-2006-02562, dated June 6, 2019. The applicant requests authorization to:

- 1) Hydraulically and/or mechanically dredge approximately 4.2 million cubic yards of material within a 71.92-acre area for the construction of a vessel berthing basin, installation of pile-supported structures (including loading platforms, walkways, breasting dolphins, and mooring dolphins) totaling approximately 1.98 acres, and discharge of riprap totaling approximately 16.98 acres into non-vegetated navigable waters of the US. The basin will berth two vessels at a time, up to a Very Large Crude Carrier (VLCC) size vessel;
- 2) Install a dredge flair at the intersection of the Gulf Intracoastal Waterway (GIWW) and the Corpus Christi Ship Channel (CCSC) that would be required to safely moor vessels; and
- 3) Upland site development that includes construction of facilities, storage tanks, and a new upland confined dredged material placement area (DMPA).

The project site is located in the CCSC and adjacent to the GIWW at the confluence of Redfish Bay and Corpus Christi Bay at the southeastern tip of Live Oak Peninsula in Ingleside, San Patricio County, Texas.

Project site

The PN states that the applicant has avoided and minimized impacts to the extent practicable by selecting a site that previously supported an industrial port facility and by evaluating on-site alternatives. Dredging activities would result in approximately 0.44 acres of unavoidable direct impacts to submerged aquatic vegetation (SAV). The PN states that the applicant is evaluating a plan to provide compensatory mitigation for these unavoidable impacts. The PN does not indicate how indirect impacts to adjacent seagrass beds will be avoided and minimized.

Recommendations: The applicant should:

- Follow best management practices while dredging to avoid turbidity impacts, such as using silt curtains and scheduling dredging operations to a period outside the growing season when seagrasses are dormant, and
- Identify measures that will be implemented to avoid and minimize indirect impacts caused by the repeated ingress and egress of ships utilizing the new berth.

Sea turtles and manatees are known to occur within the Corpus Christi Ship Channel within the vicinity of the proposed project. The following guidance has been coordinated with U.S. Fish and Wildlife Service and the Texas Sea Turtle Stranding and Salvage Network:

Recommendations:

- If a sea turtle or manatee is observed within the project area during construction activities, the construction activities should be halted, and the animal be allowed to leave the area on its own volition before resuming construction activities.
- Both project construction and operations employees should:
 - 1) Be advised that sea turtles and/or manatees may approach the proposed project area,
 - 2) Be provided materials, such as a poster, to assist in identifying these animals,
 - 3) Be instructed not to feed or water the animal,
 - 4) Report all manatee sightings to U.S. Fish and Wildlife Service (USFWS) and Texas Marine Mammal Stranding Network (TMMSN),
 - a) USFWS
 - i) middle and lower Texas coast: 361-533-6047,
 - ii) upper Texas coast: 713-542-1861,
 - b) TMMSN hotline: 800-962-6625, and
 - 5) Report only *injured, cold stunned, or dead* sea turtles to the Texas Sea Turtle Stranding and Salvage Network (STSSN) at
 - a) Padre Island National Seashore: 361-949-8173 ext. 226, or
 - b) STSSN hotline: 866-887-8535 (866-TURTLE5).

Mitigation site

Pending agreements and land purchases, the applicant proposes to offset impacts by improving tidal exchange in a 60-acre tidal system that includes tidal channels, tidal wetlands, mangroves, SAV, and algal flats. According to the PN, proposed hydrological improvements would occur across a 230-acre estuarine complex that would increase estuarine vegetation by at least 1.5 acres and improve or increase SAV within the 230-acre complex.

TPWD is familiar with the proposed mitigation site and has previously expressed concern for hydrological changes associated with a previously proposed project (SWG-2006-01397 letter attached) that would have converted algal flats and seasonal widgeon grass (*Ruppia maritima*) beds within the 230-acre mosaic to emergent vegetation and seagrass. The state and federally threatened piping plover (*Charadrius melodus*) has been documented in these algal flats and the lagoon feature supports migrating waterfowl, such as Northern pintails. TPWD stands by our previous comments concerning hydrological changes at this site.

Recommendation: The applicant should identify a compensatory mitigation project that does not involve the creation of aquatic habitats at the expense of existing functioning habitats.

Upland placement areas

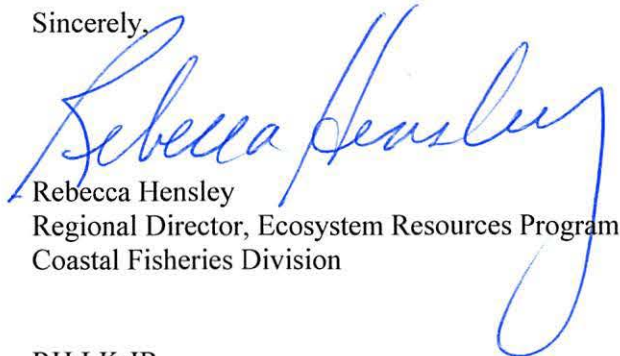
The proposed project plans identify multiple dredged material placement areas (PAs). In addition to existing sites (Good Hope PA, U.S. Army Corps of Engineers PAs 10 and 13, Berry Island PA, and one on-site PA), the project proposes to use TPWD's beneficial use site which aims to stabilize and restore a portion of the Dagger Island chain that protects the shallow aquatic habitats of Redfish Bay. The applicant also proposes to construct three new PAs in the undeveloped uplands abutting the proposed compensatory mitigation site. TPWD has previously expressed concern for potential impacts to the high quality Live Oak – Redbay Woodlands and associated grasslands located at this site (SWG-2006-01397).

TPWD appreciates the applicant's effort to use dredged material beneficially. If beneficial use sites are unable to receive all of the dredged material produced by the project, TPWD prefers that any new PAs required for the project are sited in previously disturbed areas and designed in such a way that benefits fish and wildlife resources.

Recommendation: The applicant should investigate additional opportunities to beneficially use dredged material within the vicinity of the project. New placement areas, if required, should be sited in previously disturbed areas to avoid and minimize impacts to high quality habitats.

TPWD appreciates the opportunity to provide comments and recommendations for this project. The above-referenced comment letter for permit application SWG-2006-01397 dated October 12, 2018 is enclosed. Questions can be directed to Jackie Robinson (361-825-3241) or Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Rebecca Hensley
Regional Director, Ecosystem Resources Program
Coastal Fisheries Division

RH:LK:JR



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Carter P. Smith
Executive Director

August 2, 2019

U.S. Department of Transportation
Docket Management Facility
West Building, Ground Floor, Room W12-140
1200 New Jersey Avenue SE
Washington, DC 20590-0001

Mr. Roddy C. Bachman
Commandant (CG-OES-2)
Attn: Vessel and Facility Operating Standards Division
US Coast Guard STOP 7509
2703 Martin Luther King Jr. Avenue SE
Washington, DC 20593-7509

Re: Deepwater Port License Application: Bluewater Texas Terminal, LLC
Notice of intent; notice of public meeting; request for comments.
Docket No. MARAD-2019-0094

Dear Mr. Bachman:

Texas Parks and Wildlife Department (TPWD) has received a notice of intent (NOI) to prepare an environmental impact statement (EIS) for the proposed ownership, construction, operation, and eventual decommissioning of an offshore deepwater port that would be located in Federal waters approximately 15 nautical miles (17.26 statute miles) off the coast of "San Patricio [*sic*] County", Texas in the Gulf of Mexico (GOM) to export domestically produced crude oil. The proposed project involves the design, engineering, and construction of a deepwater port that includes approximately 56.48 miles of pipeline infrastructure and a booster station. The deepwater port would allow for up to two very large crude carriers (VLCCs), or other crude oil carriers, to simultaneously load crude oil at a rate of 40,000 barrels per hour (bph). Single vessel loading operations would be capable of loading up to approximately 80,000 bph. The facility is expected to service 16 VLCCs per month. The project would consist of offshore, inshore, and onshore components.

Offshore Components

Offshore components would include approximately 27.13 miles of two new 30-inch-diameter crude oil pipelines, two SMP buoy systems, two pipeline end manifold (PLEM) systems, and two catenary anchor leg mooring (CALM) systems. Each pipeline would extend from the Mean High Tide (MHT) line of the GOM on San Jose Island and terminate at a pipeline end manifold (PLEM) system connected to an SPM buoy system located approximately 15 nautical miles off the coast of San Jose and Matagorda Islands (Aransas County, Texas) in approximately

89 feet of water in Bureau of Ocean and Energy Management Outer Continental Shelf Matagorda Island Area TX4 lease blocks 698 and 699 of the GOM. Each SPM buoy system and associated PLEM system would be attached to the seafloor by a CALM system comprised of a symmetrically arranged six-leg anchor dual chain configuration extending to twelve 72-inch-diameter pile anchors installed on the seafloor. A vessel would connect to a SPM buoy system via mooring hawsers attached to a rotating table affixed to the SPM buoy system. A moored vessel would transfer crude oil from the SPM buoy system using a floating hose equipped with a marine break-away coupling and strobe lights at 15-foot intervals for detection at night and low-light conditions.

Inshore Components

Inshore components would extend from the MHT line of the GOM on San Jose Island to the MHT line of the western shoreline of Redfish Bay via the Port of Corpus Christi Authority right-of-way that parallels the north side of Highway 361. Inshore components would cross San Jose Island, Lydia Ann Channel, Aransas Channel, Harbor Island, Lighthouse Lakes Park, Stedman Island, Redfish Bay, and the Gulf Intracoastal Waterway. Infrastructure would include approximately 7.15 miles of two new 30-inch-diameter crude oil pipelines connecting to the onshore facility, an approximately 19-acre booster station on Harbor Island and a connection to the offshore pipeline at the interface of San Jose Island and the Gulf of Mexico.

Onshore Components

Onshore infrastructure that would connect the inshore components of the project to a planned multi-use terminal located south of the City of Taft in San Patricio County, Texas consists of approximately 22.20 miles of two new 30-inch-diameter crude oil pipelines. The planned multi-use terminal will consist of multiple inbound and outbound crude oil pipelines, including the two outbound pipelines that would make up the onshore components of this project.

Scope of Environmental Impact Analysis

Based on the information provided, TPWD has concern for potential direct, indirect, and cumulative impacts to emergent wetlands, tidal flats, submerged aquatic vegetation, unvegetated shallow water habitats, marine soft bottoms, native coastal prairies, woodlands, colonial waterbird nesting areas, Gulf beaches, coastal dunes, barrier islands, a public park, a state scientific area, commercial and recreational fishing, wildlife viewing, as well as federal- and state-listed threatened and endangered species and their habitats. To address these concerns, TPWD recommends the Draft EIS include detailed descriptions and evaluations for all phases (construction, operation, and decommissioning) of the project relative to the following:

- An evaluation of direct, indirect, temporary, and cumulative impacts to sensitive coastal resources that would result from the proposed project. Detail Project Maps, as provided in Volume I Appendix A, should include overlays illustrating the location, extent, and type of coastal resources that occur within the vicinity of the project.
- Identify and describe measures that would be taken to avoid and minimize direct, indirect, temporary, and cumulative adverse effects to fish and wildlife and their habitats, including permanent and temporary impacts.
- Potential impacts to all federal- and state-listed rare, threatened, and endangered species and their habitats within a five-mile vicinity of the project.
- Potential impacts to Gulf beaches which provide critical wildlife habitat, such as sea turtle nesting areas and avifauna foraging and roosting areas.
- Potential impacts to commercial and recreational fisheries and associated fishing activities, including both terrestrial and aquatic access routes.
- Potential magnitude of individual and cumulative impacts to egg, larval, and adult states of fish, shellfish, and other aquatic organisms associated with all phases of the project.
- Potential for bird and bat collisions into project infrastructure.
- Potential impacts (physical removal of nesting habitat and disturbance from human foot traffic and machinery use) to bird nesting areas during construction and operation of the proposed project.
- Potential impacts to native coastal prairie vegetation, including barrier island, coastal dunes, depressions, and swales.
- Potential impacts from invasive species and an Invasive Plant Species Control Plan that includes rapid colonizers of disturbed sites, such as Brazilian peppertree (*Schinus terebinthifolia*).
- Potential impacts to public lands and public land uses (e.g., recreation, education, wildlife habitat, conservation, etc.).
- Potential impacts to public access to local parks, state scientific areas, paddling trails, recreational fishing, bird watching, and other outdoor nature-based activities and the development of a Public Access Plan.
- A specific schedule for construction that also identifies when specific construction activities would be initiated and when associated restoration activities would be completed.
- An evaluation of impacts associated with the removal of all offshore, onshore and inshore components of the proposed project resulting from decommissioning activities. The environmental impact statement should not assume that onshore and inshore components will be abandoned in place.
- An evaluation of the individual and cumulative effects of temporary and permanent impacts to recreational and commercial fishing activities including traditional access points such as public parks, kayak launch sites and recreational boat ramps, waterbodies and shorelines.

- An evaluation of individual and cumulative impacts to native woody vegetation from terrestrial land clearing activities that will not be replanted or allowed to re-establish as well as the cumulative effects of unrestored temporary and permanent impacts to terrestrial and aquatic habitats.
- A comprehensive Habitat Restoration Plan that details pre-construction post-construction surveys, reference sites, methods, timing, material sourcing, duration and extent of monitoring activities, success criteria, and adaptive management that will be used to fully restore each terrestrial and aquatic habitat type that may be temporarily affected by the project.
- A comprehensive Compensatory Mitigation Plan that details how unavoidable permanent impacts to aquatic resource functions will be offset in a manner consistent with the Final Mitigation Rule.
- In addition to abandonment in place, potential impacts and cost estimates associated with decommissioning activities that involve the removal and disposal of onshore and inshore components of the project including pipelines, booster station, and other project-related infrastructure.
- A Dredged Material Management Plan for all phases/portions of the project, including decommissioning activities, that includes the size and draft of all equipment that would be used to handle excavated sediments and the minimum water depths located within the work corridors, access routes, and staging areas.
- The potential to re-suspend and redistribute contaminants (including sediments) during all phases of the project that includes facility removal during decommissioning activities; an evaluation of impacts associated with those re-suspended particles; and a plan that details the timing and specific measures that would be taken to avoid and minimize those impacts.
- The potential for facility expansion, such as dredge and fill activities, additional right-of-way, deepening and widening of channels, additional storage tanks or other infrastructure and additional impacts to fish and wildlife habitat.
- On-site stormwater management plan.
- Potential environmental impacts resulting from damages to the proposed project facilities by a major hurricane and A Hurricane Response Plan.

Recommendations

TPWD offers the following recommendations and information for the purpose of avoiding and minimizing impacts to fish and wildlife resources, coastal zone uses, and recreational activities within the vicinity of the proposed project.

General Recommendations

Upland Construction

Recommendation: TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife from areas to be disturbed. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to construction areas.

- The exclusion fence should be buried at least six inches and be at least 24 inches high.
- The exclusion fence should be maintained for the life of the project and only be removed after the project activities are completed and the disturbed sites have been revegetated or otherwise stabilized.
- Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
- Regarding pipeline installation and HDD entry pits, any open trenches or deep excavation areas should be covered overnight and/or inspected every morning to ensure no wildlife species have been trapped.
- For open trenches and excavated areas, escape ramps should be installed at an angle of less than 45 degrees (1:1) in excavated areas that will allow trapped wildlife to climb out on their own.
- If any state-listed species are trapped in trenches or excavated areas, they should be removed by personnel permitted by TPWD to handle state-listed species.

Recommendation: For soil stabilization and/or revegetation of disturbed areas within the proposed project area's onshore and upland inshore sections, TPWD recommends utilizing erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching and/or hydroseeding due to a reduced risk to wildlife. If erosion control blankets or mats would be used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided.

Impacts to Terrestrial Vegetation and Wildlife Habitat

The onshore and inshore components of the proposed project consists of a mixture of habitat types and vegetation communities mapped as agricultural land (row crops), coastal prairie, salty prairie, deep sand grassland, huisache woodland or shrubland, deep sand live oak shrubland, and deep sand live oak forest and woodland. In general, current and past vegetation clearing can be a significant threat to native plant communities in an area because disturbed areas are often revegetated with invasive, introduced species.

Recommendation: To the greatest extent practicable, TPWD recommends avoiding and/or minimizing clearing native woody vegetation and native herbaceous communities (e.g., native grasslands) to construct new access roads or to accommodate heavy equipment access to project sites. Wherever possible, TPWD recommends locating new access roads in previously disturbed areas, including previously cleared right-of-ways (ROWs), utility corridors, etc., or improving existing roads (e.g., private farm and ranch roads). Material and equipment staging areas should be located in previously disturbed upland areas that do not require vegetation clearing.

Volume II, Section 8.2.6.1.3 indicates that construction impacts to native uplands would be long-term (> 6 months to recover) but would be expected to return to pre-construction conditions within three growing seasons. A portion of the onshore pipeline crosses live oak shrubland, live oak forest-woodland habitat (e.g. between MP 19.6 and 20.8). The material provided in Volume I indicates that the proposed onshore and inshore pipeline infrastructure would use established pipeline and utility corridors and previously disturbed areas to the greatest extent practicable.

Recommendation: TPWD appreciates that established pipeline and utility corridors and previously disturbed areas would be used wherever possible. However, in order to preserve a special vegetation community unique to the Live Oak Peninsula, when installing the pipeline through live oak forest, woodland or shrubland habitat on the Live Oak Peninsula, TPWD recommends narrowing the construction corridor to a width of 100 feet. Impacts to the live oaks in this area, many of which are hundreds of years old, will not recover within three growing seasons, thus resulting in permanent impacts. Narrowing the construction corridor would assist in minimizing permanent impacts to this unique habitat.

Colonization by invasive species, particularly invasive grasses and weeds, should be actively prevented. Vegetation management should include removing invasive species early on while allowing the existing native plants to revegetate disturbed areas.

Recommendation: TPWD recommends referring to the Lady Bird Johnson Wildflower Center Native Plant Database (available online) for regionally adapted native species that would be appropriate for post-construction landscaping of disturbed areas. For herbaceous revegetation efforts, TPWD recommends the exclusive use of a mixture of native grasses and forbs. While some introduced grasses that may be presently growing in or adjacent to the project areas can provide suitable forage for livestock and some species of wildlife with proper management, introduced species typically develop into monotypic stands of vegetation that do not provide high quality grassland habitat able to support a diversity of wildlife species. TPWD recommends that

native grasses having the same desirable characteristics as introduced grasses commonly use in revegetation plans be incorporated into project planning and implemented following construction.

Impacts to Aquatic Habitats

Horizontal directional drilling (HDD) methods, such as those proposed by the applicant, are frequently used to avoid and minimize impacts to aquatic resources. Project plans suggest that HDD methods will primarily be used to avoid impacts associated with waterbody crossings

Recommendation: The Inadvertent Returns Contingency Plan should include site specific plans for addressing returns in shallow water habitats that are in and adjacent to submerged or emergent aquatic vegetation and tidal flats. Site specific plans should include preferred access routes and specific protocols and/or guidelines for developing containment and recovery strategies that aim to avoid and minimize secondary impacts from machinery, equipment, foot traffic, and drilling fluid. The plan should also provide protocols and contact information for reporting inadvertent returns to the appropriate state and federal resource agencies. In the event an inadvertent return occurs, an assessment of the impacts and required mitigation should be conducted in consultation with TPWD.

The applicant has not provided sufficient information concerning post-construction restoration of aquatic resources to demonstrate that the impacts will be less than permanent and that there will be no secondary effects from the project. TPWD has concern for the level of restoration success that can be achieved on recent and relict barrier island habitats, especially coastal dune swale complexes, mangrove marshes, and tidal flats.

Recommendation: Because tidal flats and coastal dune swales are difficult to replace, these habitats should be avoided to maximum extent practicable.

Lighting

Lighting would be required throughout the onshore, inshore, and offshore components of the project during construction, operation, and decommissioning of the deepwater port facility. In addition to navigational beacons, lighting would be used for safety and security around facilities. As proposed, the project would minimize terminal lighting to that required for safety and navigation and lights would be down-shielded and/or directed at the water.

Recommendation: Particularly for inshore and onshore facilities, TPWD recommends considering appropriate lighting technologies and best management practices (BMPs) described at the International Dark-Sky Association website.

Specifically, security lighting within any fenced compounds should be fully down-shielded and directed away from vegetation outside of fenced areas. Security lighting around on-ground facilities should also be motion- or heat-sensitive to eliminate constant nighttime illumination. For offshore lighting, lights should be shielded to eliminate both skyward and sea surface illumination (which can attract fishes and invertebrates).

State Regulations

Parks and Wildlife Code

Nongame Birds

State law prohibits any take or possession of nongame birds, including their eggs and nests. Laws and regulations pertaining to state-protection of nongame birds are contained in Chapter 64 of the Texas Parks and Wildlife (TPW) Code. This protection applies to most native bird species, including ground nesting species. Although not documented in the Texas Natural Diversity Database (TXNDD), many bird species which are not listed as *threatened* or *endangered* are protected by Chapter 64 of the TPW Code and are known to be year-round or seasonal residents or seasonal migrants through the proposed project area.

During the winter, south Texas is the southernmost limit for many migratory birds and it is the northernmost extreme in the breeding season (spring-summer) for other species. Additionally, the proposed project area is in the middle of the Central Migratory Flyway through which millions of birds pass during spring and fall migration. Available food, cover, and water sources provide important stopover habitats for Neo-tropical migrants.

Biologically, this area of south Texas is highly productive and provides a range of habitats including large tracts of undeveloped land, grasslands, prairies, woodlands, marsh, and aquatic habitats. The diversity of habitats is suitable to support a diversity of wildlife species. In particular, the range of habitats provides cover, feeding, nesting and loafing areas for many species of birds; grassland birds, Neo-tropical migrants, shorebirds, wading birds, and raptors.

Recommendation: The proposed project is located in a region with very diverse habitats that are within the range and suitable habitat for many rare species and migratory birds. TPWD recommends the Draft EIS thoroughly evaluate the proposed project's potential impacts to nongame birds.

Any vegetation clearing (or ground disturbance that would impact ground nesting birds) that would be required to construct the onshore, inshore or offshore infrastructure (terminal, pipelines, booster station, HDD entry/exit pits), improve existing access roads, or create new access roads should be

scheduled to occur outside of the March 15-September 15 migratory bird nesting season. Contractors should be made aware of the potential of encountering non-game migratory birds (either nesting or wintering) in the proposed project site and be instructed to avoid negatively impacting them.

If vegetation clearing or ground disturbance must be scheduled to occur during the nesting season, TPWD recommends the areas to be impacted should be surveyed for active nests by a qualified biologist. Nest surveys should be conducted no more than five days prior to the scheduled clearing to ensure recently constructed nests are identified. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation/undisturbed area remain around the nest until the young have fledged or the nest is abandoned.

State-listed Species

State law prohibits the capture, trap, take or kill (incidental or otherwise) of state-listed species. Laws and regulations pertaining to state-listed endangered or threatened animals are contained in Chapters 67 and 68 of the TPW Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code. There are penalties, which may include fines and/or jail time in addition to payment of restitution values, associated with take of state-listed species. A copy of *TPWD Guidelines for Protection of State-Listed Species*, which includes a list of penalties for take of species, can be found on the TPWD website.

For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons permitted through the TPWD Wildlife Permits Program. For more information regarding Wildlife Permits, please contact the Wildlife Permits Office at (512) 389-4647. For the above-listed activities that involve aquatic species please contact the Region 4 Regional Response Coordinator at (361) 825-3246 for the appropriate authorization.

The potential occurrence of state-listed species in the project area is primarily dependent upon the availability of suitable habitat. Direct impacts to high quality or suitable habitat therefore are directly proportional to the magnitude and potential to directly impact state-listed species. State-listed reptiles that are typically slow moving or unable to move due to cool temperatures are especially susceptible to being directly impacted during vegetation clearing for roads, staging areas, easements, or machinery access corridors.

Please be aware that determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence.

The application documents prepared for proposed project specifically assessed potential state-listed species impacts for the inshore component of the project and generally assessed them for the onshore component of the project.

Recommendation: TPWD recommends reviewing the most current TPWD annotated county lists of rare species for Nueces, San Patricio and Aransas counties, as rare species could be present depending upon habitat availability. These lists are available online at the TPWD Wildlife Diversity website. Major revisions were made to these lists in April 2019.

Throughout Volume II, Section 8, data from the TXNDD was cited as the source for determining the potential for rare species to occur in in the project area. Volume II, Section 15.3.8.1 cites the lack of TXNDD occurrence data to support the conclusion of the project having no effect on 18 state-listed species. This is an incorrect application of TXNDD data.

Recommendation: Please note that the TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in an area does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD data is updated continuously based on new, updated and undigitized records; therefore, TPWD recommends requesting the most recent TXNDD data on a regular basis.

Volume II, Section 8.2.2.8 states that review of the TXNDD resulted in occurrences of federally listed species but no state listed species were listed within two miles of the project area. However, Appendix O reports the TXNDD record of a state-listed Texas horned lizard along State Highway 361 on Harbor Island adjacent to the project area.

Recommendation: TPWD recommends the Draft EIS thoroughly evaluate the proposed project's potential impacts to state-listed species in all three project areas; onshore, inshore and offshore. Information provided in future environmental documents should be verified for accuracy and consistency with the most current list. Specific evaluations should be designed to predict project impacts upon natural resources.

Aquatic Resources

In addition to spills, releases, and inadvertent returns of products associated with the construction, operation, or decommissioning of the proposed project, other construction related activities, such as dewatering and maintenance, occurring in or near aquatic habitats (including the GOM and Redfish Bay) may negatively impact fish, shellfish, and other aquatic resources. As the state agency with the primary responsibility for protecting the state's fish and wildlife resources, Chapter 12 Subchapter D of the TPW Code and Chapter 7 Subchapter D of the Water Code authorizes TPWD to investigate fish kills and any type of pollution that may cause loss of fish or wildlife resources, estimate the monetary value of lost resources, and seek restitution or restoration from the party responsible for the fish kill or pollution. Chapter 69 of the Texas Administrative Code (TAC) requires TPWD to actively seek full restitution for and/or restoration of fish, wildlife, and habitat loss occurring as a result of human activities. The restitution value of lost resources can be significant (e.g., at least \$500 for each individual of a threatened species and \$1,000 for each individual of an endangered species). In addition, the TPW Code makes it a criminal offense to kill any fish or wildlife resources classified as threatened or endangered.

Recommendation: Because the project would require work in and in proximity to aquatic habitats, the project should be coordinated with TPWD's Region 4 Regional Response Coordinator (361-825-3246) for appropriate authorization(s) and technical guidance to ensure protection of aquatic wildlife.

Public Lands

The inshore pipeline route would utilize a 100-foot-wide construction corridor that runs parallel to and north of Highway 361, bisects Redfish Bay and the Redfish Bay State Scientific Area (RBSSA), and runs through the length of Lighthouse Lakes Park. Additional temporary work corridors would provide access to the pipeline corridor and to entry and exit points of horizontally directionally drilled (HDD) segments of the pipeline.

Lighthouse Lakes Park provides public access to the state designated Lighthouse Lakes Paddling Trail that was established by TPWD in 1999. The RBSSA was established by the Texas Parks and Wildlife Commission in 1999 for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value. Because of this designation, the RBSSA has special status and the importance of seagrass habitat has since been specifically recognized by state law, not just within the RBSSA, but state-wide. As part of this special status, the policies of the Coastal Management Program as specified in Title 31, Texas Administrative Code section 501.29 require compliance with Chapter 26 of the TPW Code when development projects require the use or taking of any public land within a state park, wildlife management area or preserve, such as RBSSA.

Chapter 26 of the TPW Code provides that a department, agency, political subdivision, county, or municipality of this state may not approve any project that requires the use or taking of public land (designated and used prior to the project as a park, public recreation area, scientific area, wildlife refuge, or historic site) unless it holds a public hearing and determines that there is "no feasible and prudent alternative to the use or taking of such land", and the project "includes all reasonable planning to minimize harm to the land...resulting from the use or taking."

TPWD appreciates the opportunity to comment and provide recommendations concerning the scope of the Draft EIS and for the avoidance and minimization of impacts to state fish and wildlife resources. Questions can be directed to Ms. Jackie Robinson (361-825-3241) or Ms. Leslie Koza (361-825-2329) in Corpus Christi.

Sincerely,



Rebecca Hensley
Regional Director, Ecosystem Resources Program
Coastal Fisheries Division

RH:LK:JR

From: noreply@thc.state.tx.us
To: [SWG201900067: reviews@thc.state.tx.us](mailto:SWG201900067_reviews@thc.state.tx.us)
Subject: [Non-DoD Source] Section 106 Submission
Date: Friday, July 3, 2020 11:06:43 AM

<Blocked<https://xapps.thc.state.tx.us/106Review/Images/THCtrans.png>>

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
 THC Tracking #202014182
 Port of Corpus Christi Channel - SWG-2019-00067

,TX

Dear Jayson Hudson:

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 and the Antiquities Code of Texas.

The review staff, led by Jeff Durst, Amy Borgens and Hansel Hernandez, has completed its review and has made the following determinations based on the information submitted for review:

Archeology Comments

- An archeological remote-sensing survey of the underwater project area is required. You may obtain lists of archeologists in Texas through the Council of Texas Archeologists <Blocked<https://counciloftexasarcheologists.org/Contractors-List>> and the Register of Professional Archaeologists <Blocked[https://rpa.memberclicks.net/index.php?option=com_mcdirectorysearch&view=search&id=2000292#/>](https://rpa.memberclicks.net/index.php?option=com_mcdirectorysearch&view=search&id=2000292#/)> . Please note that other qualified archeologists not included on these lists may be used. If this work will occur on waters owned and controlled by a state agency or political subdivision of the state, a Texas Antiquities Permit must be obtained from this office prior to initiation of fieldwork. All fieldwork should meet the minimum survey standards for underwater archeology presented in the Texas Administrative Code <Blocked[https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=13&pt=2&ch=28&rl=6](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=13&pt=2&ch=28&rl=6)> . A report of investigations is required and should be produced in conformance with the Secretary of the Interior's Guidelines for Archaeology and Historic Preservation <Blockedhttps://www.nps.gov/history/local-law/arch_stnds_7.htm> and submitted to this office for review. Reports for a Texas Antiquities Permit should also meet the Council of Texas Archeologists Guidelines for Cultural Resources Management Reports <Blocked<https://www.thc.texas.gov/public/upload/CTAguidelines.pdf>> and the Texas Administrative Code, Chapters 26 <Blocked<https://www.sos.state.tx.us/tac/index.shtml>> and 28 <Blocked[https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=13&pt=2&ch=28&rl=9](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=13&pt=2&ch=28&rl=9)> . To facilitate review and make project information available through the Texas Archeological Sites Atlas, we appreciate emailing survey area shapefiles to archeological_projects@thc.texas.gov <mailto:archeological_projects@thc.texas.gov> concurrently with submission of the draft report.

- An archeological survey is required. You may obtain lists of archeologists in Texas through the Council of Texas Archeologists <Blocked<https://counciloftexasarcheologists.org/Contractors-List>> and the Register of Professional Archaeologists. <Blockedhttps://rpa.memberclicks.net/index.php?option=com_mcdirectorysearch&view=search&id=2000292#/> Please note that other qualified archeologists not included on these lists may be used. If this work will occur on land owned or controlled by a state agency or political subdivision of the state, a Texas Antiquities Permit must be obtained from this office prior to initiation of fieldwork. All fieldwork should meet the Archeological Survey Standards for Texas. <Blocked<https://www.thc.texas.gov/public/upload/publications/CTA-Intensive-Survey-Standards-2020.pdf>> A report of investigations is required and should be produced in conformance with the Secretary of the Interior's Guidelines for Archaeology and Historic Preservation <Blockedhttps://www.nps.gov/history/local-law/arch_stnds_7.htm> and submitted to this office for review. Reports for a Texas Antiquities Permit should also meet the Council of Texas Archeologists Guidelines for Cultural Resources Management Reports <Blocked<https://www.thc.texas.gov/public/upload/CTAguidelines.pdf>> and the Texas Administrative Code <Blocked<https://www.sos.state.tx.us/tac/index.shtml>> . In addition, any buildings 45 years old or older that are located on or adjacent to the tract should be documented with photographs and included in the report. To facilitate review and make project information available through the Texas Archeological Sites Atlas, we appreciate emailing survey area shapefiles to archeological_projects@thc.texas.gov <mailto:archeological_projects@thc.texas.gov> concurrently with submission of the draft report. Please note that this is required for projects conducted under a Texas Antiquities Permit.

We have the following comments: The Corpus Christi Channel Deepening Project will require both terrestrial and underwater archeological surveys. The THC is currently involved in ongoing coordination with the USACE regarding forthcoming archeological investigations.

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 the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: Jeff.Durst@thc.texas.gov, amy.borgens@thc.texas.gov, hansel.hernandez@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 [Blockedhttp://thc.texas.gov/etrac-system](http://thc.texas.gov/etrac-system).

Sincerely,

<Blocked<http://www.thc.texas.gov/public/upload/images/reviewerSignatures/68.png>>

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

Please do not respond to this email.

Appendix B6

Agency Correspondence

From: [Hudson, Jayson M CIV USARMY CESWG \(USA\)](#)
To: [Lisa Vitale](#); [Tom Dixon](#); [Anthony Risko](#)
Subject: FW: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.
Date: Monday, May 23, 2022 1:40:56 PM
Attachments: [PCCA DEIS - EPA R6 - Reviewer Comment-Response Matrix.xlsx](#)

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Comments from EPA 103 program

Jayson M Hudson
Regulatory Project Manager
409.766.3108

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<https://regulatory.ops.usace.army.mil/customer-service-survey/>

From: Jacques, Wendy <Jacques.Wendy@epa.gov>
Sent: Monday, May 23, 2022 1:20 PM
To: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>
Cc: Rickards, Lisa <Rickards.Lisa@epa.gov>; McCormick, Karen <mccormick.karen@epa.gov>; Hosch, Claudia <hosch.claudia@epa.gov>; Maguire, Charles <maguire.charles@epa.gov>; Jansky, Michael <Jansky.Michael@epa.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.

Hello Jayson,

Thank you for the opportunity to review the Administrative DEIS for the Port of Corpus Christi Authority's Channel Deepening Project. Attached please find comments from the Ocean Dumping Program.

Regards,

Wendy Jacques
Ocean Dumping Program
Marine, Coastal and Nonpoint Source
US EPA Region 6 WD-AM
1201 Elm St., Suite 500
Dallas, TX 75270-2102
214.665.7395

From: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>

Sent: Monday, April 25, 2022 9:42 AM

Subject: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review -
Suspense: May 25, 2022.

The Administrative DEIS and Appendices for the Port of Corpus Christi Authority's Channel Deepening Project, Department of the Army permit application SWG-2019-00067, are ready for Cooperating Agency review.

The DEIS is attached. A link to the full Admin DEIS, including Appendices, will be provided to you by the Corps DoD SAFE in a following email.

The Notice of Availability (NOA) for the DEIS is scheduled on the Permit Dashboard for June 10, 2022. To incorporate your comments by the scheduled NOA date, we are requesting comments in the attached Reviewer Comment Response Matrix by May 25, 2022.

Let me know if you have any problems accessing the files or any other general questions. We can schedule a call to assist you in your review.

Jayson M Hudson
Regulatory Project Manager
Policy Analysis Branch
Galveston District
409.766.3108

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Port of Corpus Christi Authority
Corpus Christi Channel Deepening Project
Preliminary Draft EIS Comment/Response Matrix
February 2022

Category:

Significant	Deficiency or incomplete
Incorrect	Incorrect and/or errors noted during review.
Insignificant	Comment is minor or otherwise editorial in nature.

Response Code:

Incorporate	Comment will be incorporated into document. Provide explanation of how.
Investigate	Additional investigation is required. Define actions to be taken.
Not Recommended	Comment is not recommended for inclusion. Explain justification for not doing so.
Other	Other - Explain

REVIEWER

Date	Document (EIS, BA, EFH, etc.)	Section/Figure	Page Number	Discipline	Reviewer Name	Category	Reviewer Comment
5/23/22	DEIS		General Comment		EPA R6 - Ocean Dumping	Incorrect	Maps show pre-expansion sites, should include proposed expansion boundaries
5/23/22	DEIS		pg. vii		EPA R6 - Ocean Dumping	Incorrect	References "existing maintenance ODMDS". In the expansion EAs we reference the "existing" sites as what is out there currently (pre-expansion). Suggest changing language in document to reference that the newly expanded ODMDS will be utilized.
5/23/22	DEIS		pg. 1-5 - Last Bullet		EPA R6 - Ocean Dumping	Incorrect	"Corpus Christi Expanded New Work ODMDS"- site should be referenced as such throughout the document
5/23/22	DEIS		pg. 4-18 - Paragraph 3		EPA R6 - Ocean Dumping	Incorrect	Edits in Blue: "Site management plans must be developed for the Corpus Christi Expanded Maintenance and New Work ODMDSs designated pursuant to Section 102(c) of the MPRSA of 1972. An existing ODMDS Management Plan exists for the CCSC (EPA and USACE, 2018). A new Site Management Plan will be developed for the expansion of the CCSC routine maintenance ODMDS ODMDSs."
5/23/22	DEIS		pg. 11-4		EPA R6 - Ocean Dumping	Incorrect	"A Sampling and Analysis Plan for MPRSA" - References "July 2021 Sampling and Analysis Plan", do we need to reference the Errata/Addendum?

From: [Hudson, Jayson M CIV USARMY CESWG \(USA\)](#)
To: [Lisa Vitale](#); [Tom Dixon](#); [Anthony Risko](#)
Subject: FW: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.
Date: Monday, May 23, 2022 2:54:07 PM

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Comments from EPA's NEPA group.

Jayson M Hudson
Regulatory Project Manager
409.766.3108

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<https://regulatory.ops.usace.army.mil/customer-service-survey/>

From: Jansky, Michael <Jansky.Michael@epa.gov>
Sent: Monday, May 23, 2022 2:39 PM
To: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>
Cc: Jansky, Michael <Jansky.Michael@epa.gov>; Jimenez, Jonathan <Jimenez.Jonathan@epa.gov>; Jacques, Wendy <Jacques.Wendy@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Hayden, Keith <Hayden.Keith@epa.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] FW: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.

Hello Jayson:

Thank you for the opportunity to review and comment on the Administrative DEIS and Appendices for the Port of Corpus Christi Authority's Channel Deepening Project, Department of the Army permit application SWG-2019-00067. The Notice of Availability (NOA) for the DEIS is scheduled on the Permit Dashboard for June 10, 2022. To incorporate comments by the scheduled NOA date, the Corps is requesting comments May 25, 2022.

In response to your request, the following comments are now provided below. Commenters had problems with the Comment Spread Sheet and were not able to format as you suggested. I will defer to you expertise and request the Corps incorporate in to the desired format if necessary. The Ocean Dumping Program submitted comments to you directly on May 23, 2022. If you haven't received them please let me know.

Our narrative comments are provided as follows:

BACKGROUND

The Port of Corpus Christi Authority (PCCA or Applicant) applied to the U.S. Army Corps of

Engineers (USACE), Galveston District (SWG), for a Department of Army (DA) permit. The DA permit application is for deepening of the Corpus Christi Ship Channel (CCSC) at Port Aransas, Nueces County, Texas. The application was originally submitted on January 3, 2019. Based on comments provided by the USACE on May 23, 2019, the application was revised June 4, 2019. The DA determined the permitting constitutes a major Federal Action. The DA permit action is governed under the statutes of the Sections 10 and 14 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection, Research, and Sanctuaries Act. Activities subject to the jurisdiction of the USACE would include dredging of navigable waters to extend the terminus of the authorized channel into the Gulf of Mexico (Gulf); deepening, expanding, and improving the existing CCSC; and beneficial use (BU) and placement of dredged material. The USACE published a Notice of Intent to prepare a Draft Environmental Impact Statement (EIS), which was published in the *Federal Register* on April 7, 2020. This project was determined to be a covered project under Title 41 of the Fixing America's Surface Transportation Act (FAST-41). As a result, the PCCA CDP was added to the Permitting Dashboard for Federal Infrastructure Projects which tracks covered projects publicly. FAST-41 is intended to improve the timeliness, predictability, and transparency of the Federal environmental review and authorization process

EPA Comments & Recommendation

Commentor: Jonathan Jimenez (EPA Region 6 WD)

1. Although the risk of oil spills may be low or reduced under certain alternatives, we ask that the Port of Corpus Christi (PCCA) describe the environmental remediation measures to be implemented ensuring minimal threat to water quality and native species in the event of a related emergency (Draft EIS, p. vii).
2. EPA requests that PCCA ensure that all oil transportation vessels have an approved Shipboard Oil Pollution Emergency Plan (SOPEP) (33 CFR 151.26) before entering the channel." (<https://www.law.cornell.edu/cfr/text/33/151.26>)
3. Disturbances of Hazardous, Toxic, and Radioactive Waste (HTRWs) from current or past facilities may be exacerbated by weather conditions that influence tide, flow, or circulation of the water column (e.g., after hurricanes or similar wind and precipitation events). EPA asks PCCA address what actions will be taken to mitigate the re-introduction of both new and old HTRWs into the water column (Draft EIS, p. vii; p. 3-35).
4. Although the proposed actions may only cause localized and temporary impacts to water quality and available habitat, they may prove disastrous for endangered species that are endemic to the region. EPA encourages PCCA to coordinate working with local conservation or sustainability groups to mitigate the effects of proposed action dredging and management activities on threatened or endangered marine mammals, fishes, or sea turtles. PCCA should explain efforts to protect the health of these species in the event of a maintenance emergency.
5. Please explain in the EIS how the dredging activities associated with the proposed action will result in lessened marine traffic in the shipping channel (Draft EIS, p. ix).
6. The EPA requests that PCCA follow Best Management Practices outlined in this dredging guidance document developed by the USACE and the EPA: <https://semspub.epa.gov/work/HQ/175413.pdf>

Thank you for allowing us the opportunity to comment. If you have questions, please let me know.

Respectfully,

Michael Jansky
Environmental Engineer/NEPA Specialist
Mail Code: ORACN
USEPA - Region 6
1201 Elm Street, Suite 500
Dallas, TX 75270
e: jansky.michael@epa.gov

From: [Hudson, Jayson M CIV USARMY CESWG \(USA\)](#)
To: [Lisa Vitale](#); [Tom Dixon](#); [Anthony Risko](#)
Subject: FW: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.
Date: Tuesday, May 24, 2022 9:13:11 AM
Attachments: [1 POCC CDP - ADEIS Reviewer Comment-Response Matrix \(EPA R6 Wetlands 5-17-22\).xlsx](#)

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Comments for EPA wetlands

Jayson M Hudson
Regulatory Project Manager
409.766.3108

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From: Kaspar, Paul <kaspar.paul@epa.gov>
Sent: Tuesday, May 24, 2022 8:50 AM
To: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>
Cc: Hayes, Mark <hayes.mark@epa.gov>; Jansky, Michael <Jansky.Michael@epa.gov>
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review - Suspense: May 25, 2022.

Jayson,

Please find attached EPA R6 Wetlands Program comments on the ADEIS.

I hope all is well and feel free to reach out with any questions,

Paul Kaspar
Environmental Engineer
US. EPA - Region 6 (Houston Lab)
Water Division, NPDES/Wetlands Review Section (WDPN)
10625 Fallstone Road
Houston, TX 77099
Office: 214.665.7459
Fax: 281.983.2124
Email: kaspar.paul@epa.gov

From: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>

Sent: Monday, April 25, 2022 9:42 AM

To: Brian Rosegger <brian.rosegger@noaa.gov>; Ardizzone, Charles <chuck_ardizzone@fws.gov>; Brown Margaret <margaret.a.brown@uscg.mil>; charrish stevens - NOAA Federal <charrish.stevens@noaa.gov>; frankie_green@fws.gov; Gardiner, Dawn <dawn_gardiner@fws.gov>; Hayes, Mark <hayes.mark@epa.gov>; Houston, Robert <Houston.Robert@epa.gov>; Klemm, Dennis <dennis.klemm@noaa.gov>; Ledwin, Jane <jane_ledwin@fws.gov>; marty_tuegel@fws.gov; McCormick, Karen <McCormick.Karen@epa.gov>; noah.silverman <noah.silverman@noaa.gov>; Stacey Horstman - NOAA <stacey.horstman@noaa.gov>; Swafford, Rusty <rusty.swafford@noaa.gov>

Cc: Michael Barnette - NOAA Federal <Michael.Barnette@noaa.gov>; Kaspar, Paul <kaspar.paul@epa.gov>; HEINLY, Robert W CIV USARMY CESWG (USA) <Robert.W.Heinly@usace.army.mil>; Jacques, Wendy <Jacques.Wendy@epa.gov>; Rickards, Lisa <Rickards.Lisa@epa.gov>; Edwards, Aron S CIV USARMY CESWG (USA) <Aron.S.Edwards@usace.army.mil>; Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>

Subject: PCCA Channel Deepening Project - Administrative DEIS Cooperating Agency Review -
Suspense: May 25, 2022.

The Administrative DEIS and Appendices for the Port of Corpus Christi Authority's Channel Deepening Project, Department of the Army permit application SWG-2019-00067, are ready for Cooperating Agency review.

The DEIS is attached. A link to the full Admin DEIS, including Appendices, will be provided to you by the Corps DoD SAFE in a following email.

The Notice of Availability (NOA) for the DEIS is scheduled on the Permit Dashboard for June 10, 2022. To incorporate your comments by the scheduled NOA date, we are requesting comments in the attached Reviewer Comment Response Matrix by May 25, 2022.

Let me know if you have any problems accessing the files or any other general questions. We can schedule a call to assist you in your review.

Jayson M Hudson
Regulatory Project Manager
Policy Analysis Branch
Galveston District
409.766.3108

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Port of Corpus Christi Authority
Corpus Christi Channel Deepening Project
Preliminary Draft EIS Comment/Response Matrix
February 2022

Category:	
Significant	Deficiency or incomplete
Incorrect	Incorrect and/or errors noted during review.
Insignificant	Comment is minor or otherwise editorial in nature.
Response Code:	
Incorporate	Comment will be incorporated into document. Provide explanation of how.
Investigate	Additional investigation is required. Define actions to be taken.
Not Recommended	Comment is not recommended for inclusion. Explain justification for not doing so.
Other	Other - Explain

REVIEWER							
Date	Document (EIS, BA, EFH, etc.)	Section/Figure	Page Number	Discipline	Reviewer Name	Category	Reviewer Comment
		ADEIS	Throughout	Wetlands	Paul Kaspar		For consistency throughout the document and to simplify comparing impacts to aquatic resources within the various ADEIS sections, it is recommended a common metric be utilized to consistently identify resources by type and impact. Various sections reference impacts as 150 acres of SAV, 205 acres of estuarine/tidal wetlands, 413 acres palustrine/non-tidal wetlands, while the mitigation section offers different impact quantities. Consider including a concise table that clearly articulates impacts by aquatic resource type (e.g., PEM, EEM, SAV, Seagrasses), by impact type (e.g., direct, indirect, permanent, temporary) for each placement site (e.g., SS1, SS2) contemplated in the preferred alternative. Additionally, include the associated project benefits anticipated from the beneficial use component for the identified placement sites.
		ADEIS	Throughout	Wetlands	Paul Kaspar		At this time, it is unclear whether complete compensatory mitigation will be provided to offset aquatic impacts as described. No compensatory mitigation is proposed as the applicant estimates beneficial use activities will create more wetland habitat and provide greater indirect benefit than aquatic resources impacted. Rationale to support and quantify the value of beneficial use for the various placement areas is frequently limited to general qualitative statements such as: "beneficial use is expected to have a long-term positive benefit"; "BU actions may help protect SAV that could be exposed"; "may protect larger areas of SAV once constructed"; and "may increase contribution to the long-term productivity." As existing aquatic resources will be directly impacted by the proposed beneficial use placement sites, there are concerns with this no mitigation approach without further evaluation to quantify the benefits from the proposed beneficial use activities. To support the proposed approach, it is recommended the applicant attempt to quantify future without project versus future with project estimates of aquatic resource functions using available habitat evaluation procedures or other applicable analysis. Additionally, it is recommended the proposed beneficial use areas be monitored for ecological success to ensure anticipated benefits are achieved.

Port of Corpus Christi Authority
Corpus Christi Channel Deepening Project
Preliminary Draft EIS Comment/Response Matrix
February 2022

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Not Recommended	Comment is not recommended for inclusion. Explain justification for not doing so.
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REVIEWER							
Date	Document (EIS, BA, EFH, etc.)	Section/Figure	Page Number	Discipline	Reviewer Name	Category	Reviewer Comment
		ADEIS	2.2.4, pg 2-10	Wetlands	Paul Kaspar		This section references maintenance material may possibly be used on nearshore berms B1 through B9 if applicable for use. Applicability should be determined based upon monitoring of ecological success of the placement sites as beneficial use.
		ADEIS	4.0, pg 4-1	Wetlands	Paul Kaspar		In addition to the emphasis on contributions to channel sedimentation as part of the nearshore berm sediment transport modeling, it is recommended the modeling project sediment utilization by the ecosystem to further support the merits of beneficial use as it is stated the nearshore berm has little influence on beach stability. The magnitude of salinity and tidal amplitude changes are modeled; however, no conclusions are drawn as to the impacts of these changes upon aquatic resources.
		ADEIS	4.2, pg 4-46	Wetlands	Paul Kaspar		It is unclear as to how the quantity of delineated aquatic resources within the project area relate to the quantity of impacted aquatic resources. Additionally, for the description of the benefits associated with the placement areas, further analysis is recommended to quantify potential benefits given the direct impacts to aquatic resources as a result of placement area construction.
		ADEIS	4.6, Table 4-20	Wetlands	Paul Kaspar		As alternatives are identified that result in fewer direct impacts to aquatic resources, it is unclear how the applicant's preferred alternative will be reconciled with the requirement to identify a least environmentally damaging practical alternative as part of the CWA 404 permitting process which is referenced in the ADEIS and in Appendix N - 404(b)(1) Guidelines Evaluation.

Port of Corpus Christi Authority
Corpus Christi Channel Deepening Project
Preliminary Draft EIS Comment/Response Matrix
February 2022

Category:	
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Other	Other - Explain

REVIEWER							
Date	Document (EIS, BA, EFH, etc.)	Section/Figure	Page Number	Discipline	Reviewer Name	Category	Reviewer Comment
		ADEIS	5.4, pg 5-23; 7.0, pg 7-1; 8.0, pg 8-1; 9.0, pg 9-1; 10.0, pg 10-1	Wetlands	Paul Kaspar		To support the statements regarding the cumulative effects of potential beneficial use activities, further analysis is recommended to quantify potential benefits given the direct impacts to aquatic resources as a result of placement area construction.
		ADEIS	6.0, pg 6-1	Wetlands	Paul Kaspar		As presented, there is concern that insufficient evidence has been provided to support the lack of compensatory mitigation for impacts associated with the proposed dredged material placement sites proposed in the applicant's preferred alternatives. The action of creating suitable elevations for marsh coastal prairie habitat, or the restoration of eroded shoreline landmasses with the intent of protecting SAV and seagrasses, does not necessarily equate to full compensatory mitigation to offset project impacts. The design of the placement sites appears to be driven by the purpose of disposal capacity with beneficial use as an ancillary product. The quantification of benefits derived from the proposed beneficial use placement sites should be demonstrated along with requirements to ensure the likelihood of success and long-term sustainability. As proposed, it would be anticipated that temporal losses of aquatic resource function would occur. Finally, the position that other project alternatives utilizing newly created dredged material placement areas would result in significantly more impacts is noted. However, it is also noted that other alternatives exist that would impact significantly fewer aquatic resources and limit the need for mitigation and/or beneficial use to offset those impacts.

From: [Hudson, Jayson M CIV USARMY CESWG \(USA\)](#)
To: [Lisa Vitale](#); [Tom Dixon](#); [Anthony Risko](#)
Subject: FW: [URL Verdict: Neutral][Non-DoD Source] Port of Corpus Christi Channel Deepening Project - Administrative DEIS Review
Date: Wednesday, May 25, 2022 7:47:33 AM
Attachments: [Reviewer Comment-Response Matrix \(NOAA-NMFS\).xlsx](#)

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Jayson M Hudson
Regulatory Project Manager
409.766.3108

Please tell me how I am doing by completing the survey found at:

<https://regulatory.ops.usace.army.mil/customer-service-survey/>

From: Brian Rosegger - NOAA Affiliate <brian.rosegger@noaa.gov>
Sent: Wednesday, May 25, 2022 7:41 AM
To: Hudson, Jayson M CIV USARMY CESWG (USA) <Jayson.M.Hudson@usace.army.mil>
Cc: charrish stevens - NOAA Federal <charrish.stevens@noaa.gov>; Michael Barnette - NOAA Federal <michael.barnette@noaa.gov>; Klemm, Dennis <dennis.klemm@noaa.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] Port of Corpus Christi Channel Deepening Project - Administrative DEIS Review

Mr. Hudson,

The completed comment matrix for the Administrative DEIS for the Port of Corpus Christi Channel Deepening Project is attached. If you have any questions please feel free to contact me. I can convene a meeting with our staff to provide further discussion if necessary. Thank you!

Brian Rosegger

Environmental Compliance Marine Habitat Resource Specialist
Contractor with ERT in support of
NOAA Fisheries Directorate Office | U.S. Department of Commerce
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4/26/22	EIS	Executive Summary	v	NEPA	Brian Rosegger		"dredged material would be placed in existing upland placement areas or used beneficially to offset shoreline and habitat loss along beach and bay shorelines." There needs to be a discussion of how beneficial placement is to offset impacts associated with habitat loss along beach and bay shorelines (quantities).
4/26/22	EIS	Executive Summary	viii	NEPA	Brian Rosegger		"Beneficial use of dredged material would result in direct impacts to wetlands and SAV; 106.3 acres of SAV within SS1, 18.7 acres within HI-E, and 25.3 acres within PA4." This sentence is unclear. The first part of the sentence indicates direct impacts to wetlands and SAV but the totals reported here (106.3 + 18.7 + 25.3 = 105.3 acres) are only given for SAV. What are the total direct impacts to wetlands?
4/27/22	EIS	Executive Summary	viii	NEPA	Brian Rosegger		"there would be no major impacts to existing wetlands or SAV." This confuses the reader, as it implies that the project would have no major impacts. Though not derived from dredging, impacts to existing wetlands and SAV during dredge material placement would result in impacts.
4/27/22	EIS	Executive Summary	viii	NEPA	Brian Rosegger		"However, those impacts are expected to be temporary with the long-term objective of protecting and expanding these habitats." NMFS disagrees. Placement of dredged material in SAV or wetlands is a permanent impact.

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4/27/22	EIS	Executive Summary	ix	NEPA	Brian Rosegger		"1182 acres dredged = 175 acres inshore placement, 1,841 acres Gulf side placement and 1,182 acres fr the New Work ODMS" It seems odd that the 1,182 acres dredged equal the 1,182 acres for the New Work ODMS. Is this a coincidence or an error?
4/27/22	EIS	Executive Summary	ix	NEPA	Brian Rosegger		"Beneficial use of dredged material is expected to have long-term positive benefit by improving and protecting habitat and building resistance to rising sea levels." How? USACE needs to identify all habitat present within each BU PAs, enumerate proposed impacts to each of those identified habitats, discuss how those habitats will be restored or created to offset direct/indirect impacts to each EFH.
4/27/22	EIS	Executive Summary	xii-xiii	NEPA	Brian Rosegger		"Impacts would occur to approximately 198 acres of wetlands. However, beneficial use placement would create approximately 287 acres of marsh and protect other wetland and marsh habitat from erosion. Beneficial use placement would also impact 6.2 acres of seagrass." This contradicts what was stated on pg viii in which it is stated that beneficial use of dredged material will directly impact 150.3 acres of seagrass/SAV.
4/27/22	EIS	4.2.1.2	4-42	NEPA	Brian Rosegger		"therefore impacts to wetlands would be avoided during construction of Alternative 1. No other special aquatic sites (e.g., SAV, coral reef, oysters, mud flats) would be impacted by the channel deepening." This is a misleading statement as it makes it seem like there will be no impacts associated with the project. Although impacts are expected to occur during the placement of the materials, not the dredging, this sentence makes it seem like the project will not have impacts to SAV, oysters, mud flats, etc. If it is the writer's intent to state impacts are not expected during "construction" care should be made to differentiate "construction" from "material placement."

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5/4/22	Biological Assessment (Appendix D)	Appendix D - 2.1	2-18	NEPA	Brian Rosegger		Beginning at "Guadalupe Orb" the numbering conventions for the sections are off. Continues for 2.2 Monarch Butterfly, 2.3 Slender Rush-Pea, etc.
4/11/22	EFH Assessment	3.3	3-7	Habitat Conservation Division	Charrish Stevens		150.36 acres of SAV contradicts acreage of impacts in section 4.2.1
4/11/22	EFH Assessment	4.2.1	4-3	Habitat Conservation Division	Charrish Stevens		105.4 acres of total SAV impacts stated, contradictory with what is stated in section 3.3 where acres are 150.36 acres. This looks like it may have been a typo
4/11/22	EFH Assessment	4.2.1	4-3	Habitat Conservation Division	Charrish Stevens		The applicant needs to enumerate estimated acreage of created seagrass habitat to express how the conversion of deep open water habitat will offset the 150.36 acres (3:1 mitigation ration required).
4/11/22	EFH Assessment	4.2.1	4-3	Habitat Conservation Division	Charrish Stevens		Considering USACE is acknowledging impacts by way of sedimentation/turbidity, how are these impacts going to be offset? Enumerating these impacts and iterating how those impacts will be off-set will help NMFS understand how impacts to EFH will be offset by BU PAs. If this project moves forward with Alternative 1, then the applicant needs to take into consideration the secondary and cumulative impacts it will be having on EFH and associated fisheries, thus mitigating for those secondary losses.
4/11/22	EFH Assessment	4.2.1	4-4	Habitat Conservation Division	Charrish Stevens		NMFS recommends USACE enumerate the acreage of EFH being converted and acreage being restored to show there will be an overall net benefit to EFH. In addition, it needs to be the same kind of EFH being restored. Simply stating deep open water habitat will be converted to shallow water habitat is not enough. Also, monitoring of restoration activities should be no less than five years to ensure those restored resources have met the percent cover for mitigation requirements.

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4/11/22	EFH Assessment	4.2.1	4-4	Habitat Conservation Division	Charrish Stevens		"Alternative 1 may positively impact tidal wetlands and SAV." NMFS would like to see the amount of acreage created to ensure the appropriate ratio of mitigation for seagrasses (3:1) and wetlands are accounted for, and that there will be indeed a net benefit.
4/11/22	EFH Assessment	4.2.2	4-6	Habitat Conservation Division	Charrish Stevens		"unlikely event a petroleum spill should occur..." However, EFH affected by these incidences would be impacted.
4/11/22	EFH Assessment	4.2.2	4-6	Habitat Conservation Division	Charrish Stevens		"long-term impacts would not be expected" Would like to see more recent scientific data that includes long-term monitoring. How long would it be expected to recover? Years most likely?
4/11/22	EFH Assessment	4.2.2	4-6	Habitat Conservation Division	Charrish Stevens		(Appendix C - Dredged Material Management Plan) Again, would like to see this DMMP now so, I can reference this document while reading the EFH assessment. Also, enumerating the amount of acreage per habitat that is being restored is necessary to show that direct impacts associated with BU placement are being replaced with like habitat and there is a net benefit. Additionally, these sites would need to have some kind of monitoring plan to ensure habitat that is being created is successful and continues to be a net benefit.
4/11/22	EFH Assessment	4.2.3	4-6	Habitat Conservation Division	Charrish Stevens		"First paragraph" How are these impacts being offset? There are almost 7,000 acres of open bay/benthic habitat being impacted and nowhere in this section does it say how these impacts are being offset.
4/11/22	EFH Assessment	4.2.3	4-7	Habitat Conservation Division	Charrish Stevens		"dredged material placement from alternative 1 may result in a shift in community structure rather than a decrease in production" How will this shift in community structure impact overall productivity of the organisms that depend on the food availability that once occurred prior to dredging/placement and now no longer occurs or may not for many months to many years?

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4/11/22	EFH Assessment	4.2.4	4-7	Habitat Conservation Division	Charrish Stevens		"2.45 acres of live oyster reef to be directly impacted, 32 acres indirectly impacted" How will this be mitigated for? At what ratios and total proposed acreage to be restored?
4/11/22	EFH Assessment	4.2.4	4-7	Habitat Conservation Division	Charrish Stevens		"Turbidity increases from construction of Alternative 1 would be temporary and local." This statement is contradictory to what has been stated previously and what is stated below. Increase salinity will have long term effects on oysters as in makes the oyster more susceptible to disease and predation. In addition to turbidity having indirect impacts to 32 acres. How will these impacts or potential impacts be mitigated for or monitored to ensure the proposed impacts are only temporary and no additional mitigation is necessary for loss of oyster reefs?

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4/6/22	EFH Assessment	4.2.4	4-7	Habitat Conservation Division	Charrish Stevens		<i>"slight increase in salinity that is expected resulting from Alternative 1 is not anticipated to cause any long-term impacts to oyster reefs in the project area."</i> Don't agree with this statement. What is the current salinity value these oyster reefs are already subjected to? Will this additional salinity increase push the reefs past their threshold of being resilient to diseases and keeping away predators that thrive in more saline environments? Increased salinity to a species that regularly requires fresher water influxes to stay healthy, will have long term impacts on the resiliency of the oyster community. Not only will increased salinity be an additional stressor to oysters, excess nutrients inducing algal blooms will also impact oyster health further reducing the fit level of oyster populations surrounding the project area therefore impacting the overall resiliency of oyster populations in the Corpus Christi Bay. How does USACE propose to offset those cumulative impacts to the oyster population that resides near the project and placement areas? Other populations in the Gulf on on a steep decline or have already collapsed due to various issues. It is imperative the oyster populations along the west Gulf coast maintain resiliency in order to withstand ongoing threats from various man-made and natural events.

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4/6/22	EFH Assessment	4.3.1	4-8	Habitat Conservation Division	Charrish Stevens		"Estuarine wetland SAV habitat occur within the proposed project area of the Applicant's Proposed Action Alternative would be directly impacted by the proposed project" At the beginning of this assessment USACE stated that there will be no direct estuarine wetland or SAV impacts by the proposed project; however, this sentence says the opposite. Does this mean to say from BU PAs? How much is being impacted? What habitat types and how much is being restored and/or created to offset those exact impacts? This is the section where you would want to enumerate you total impacts per habitat type and discuss how those impacts will be offset and at what acreage, because the Table below that shows impacts from BU placement completely confuses the reader.
4/6/22	EFH Assessment	4.3.1	4-8	Habitat Conservation Division	Charrish Stevens		"Placement actions targeting BU in Corpus Christi and Redfish bays would create estuarine/aquatic habitat that may potentially be more productive than the open-water habitat that would be lost because of the Applicant's Proposed Action Alternative." NMFS needs to see enumerated created/restored acres of in-kind mitigations for same habitat being displaced.
4/6/22	EFH Assessment	4.3.1	4-8	Habitat Conservation Division	Charrish Stevens		"This would create a positive benefit to the bay system throughout the life of the project when compared to the No-Action Alternative" USACE would need to ensure that the amount and kinds of habitat impacts are adequately mitigated for to offset those impacts thus having a net benefit (i.e., higher than a 1:1 mitigation ration (SAV 3:1; Oyster Reef 1:1; and wetland 1.5:1)
4/11/22	EFH Assessment	4.4	4-10	Habitat Conservation Division	Charrish Stevens		"The CDP would directly affect the estuarine habitats and fauna in the study area by the loss of bay bottom habitat due to dredging and placement activities." How does USACE propose to offset these impacts per habitat type and at what acreage per habitat type?

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4/11/22	EFH Assessment	4.4	4-10	Habitat Conservation Division	Charrish Stevens		"Various infrastructure can convert potential EFH, and any EFH conversions associated with placement actions may contribute to cumulative impacts of habitat loss." While NMFS does not disagree with this statement, USACE still needs to enumerate all EFH impacts associated with CDP and PAs and iterate how those impacts will be offset and at what acreage.
4/6/22	EFH Assessment	4.4	4-11	Habitat Conservation Division	Charrish Stevens		"beneficial cumulative impacts may be expected when considering the Applicant's Proposed Action Alternative PAs in combination with restoration actions that are planned within the study area." Yes, but it cannot be at the expense of other EFH, the beneficial cumulative impacts must be enumerated and of the same EFH being displaced. Depending on type of EFH the greater the mitigation ratio.
4/11/22	EFH Assessment	5.0	5-1	Habitat Conservation Division	Charrish Stevens		"wind tidal flats" There was no discussion about proposed impacts to tidal flats that NMFS could see until now. This EFH needs to be considered in the assessment.
4/6/22	EFH Assessment	5.0	5-1	Habitat Conservation Division	Charrish Stevens		"the Applicant does not propose direct mitigation for the project" The applicant will need to demonstrate how the impacts from the PAs will be offset adequately. The acreage needs to be enumerated.
4/11/22	EFH Assessment	5.0 - Table 4	5-1	Habitat Conservation Division	Charrish Stevens		"Table 4" This is not the same proposed impacts as stated earlier. Section 3.3 states there will be a total of 150.36 acres of SAV impacts. The same goes for oyster reefs, wetland, open bay bottom, and tidal flats impacts; there needs to be consistency in representation of impacts to all EFH, and it needs to be clearly stated. This table makes it look like there is little impact compared to what was stated earlier in body of the assessment.

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4/12/22	EFH Assessment	5.1	5-2	Habitat Conservation Division	Charrish Stevens		"Since the project would create more wetland habitat that it would impact, the Applicant does not propose to mitigate for wetland impacts." NMFS agrees that there will be an overall net benefit to the natural resources as a whole in the area; however, the placement of BU cannot be at the expense of other EFH. USACE needs to identify all habitat present within each BU PAs, enumerate proposed impacts to each of those identified habitats, discuss how those habitats will be restored or created to offset direct/indirect impacts to each EFH. Right now this section does not do that. It just states in general terms and looks like some EFH being impacted will be displaced and not restored or created.
4/12/22	EFH Assessment	5.2	5-2	Habitat Conservation Division	Charrish Stevens		"BU placement across the six sites, the Applicant estimates the project would impact 6.22 acres of seagrass." In section 3.3 it states there will be 150.4 acres of seagrass impacts associated with BU placement. Why is it now only 6.22 acres? What happened? There needs to be some kind of discussion and/or justification in this section and others that iterate the actual SAV impacts and how those are being off-set by the creation/restoration of xxxx amount of acres.
4/12/22	EFH Assessment	5.2	5-2	Habitat Conservation Division	Charrish Stevens		"since the Applicant designed SS1 and PA4 to protect the Redfish Bay, approximately 2,000 acres of seagrass, the project benefits to regional seagrass, outweigh the impacts." While preservation is nice, USACE will still need to discuss how this preservation of 2,000 acres of seagrass will benefit from this BU placement. Ex, if the percent coverage of SAV is low and by creating/restoring DMPA SS1 and PA4, the meadow would then be allowed to recruit additional SAV and grow denser thus making the habitat more resilient and healthy, then USACE needs to iterate and discuss that.

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4/6/22	EFH Assessment	6.0	6-1	Habitat Conservation Division	Charrish Stevens		"Applicant's Proposed Action Alternative would have negative impacts, both directly and indirectly, to EFH in the project area. However, BU of dredged material also has the potential to enhance EFH." Still need USACE to enumerate total impacts and how those impacts will be offset by BU by way of actual acreage of restoration of inkind
4/6/22	EFH Assessment	6.0	6-1	Habitat Conservation Division	Charrish Stevens		"Because the Applicant's Proposed Action Alternative would create more wetland and seagrass habitat than it would impact, the Applicant does not propose any mitigation for wetlands or seagrass impacts. Any indirect benefits of the BU placements are greater than the estimated impacts." This may be the case; however, USACE needs to elaborate more throughout the direct/indirect/cumulative impact sections, which enumerate the actual proposed impacts to each identified EFH, then needs to state how those impacts will be offset per impacted EFH. It is not discussed very well and leaves the reader confused throughout the entire document as to what the actual impacts are because the estimated impacts are inconsistent in each section. The information is most likely available; it is just not discussed clearly or concise enough to have a clean and clear argument that indicates the chosen alternative will result in a net benefit to EFH.

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5/4/22	EIS Vol I	Executive Summary	v	Habitat Conservation Division	Charrish Stevens		"Placement and beneficial use of dredge material would continue as planned." This statement contradicts what has been stated in the sections that discuss alternatives analysis. It states no placement of BU would take place in Alternatives 2, 3, or No Action. However, according to this statement there will be BU placement associated with channel maintenance in all of the alternatives, just not as much up front when compared to the preferred alternative 1. However, there will be significantly less impacts to EFH resources with Alternative 2 and 3. NMFS would like clarification on this statement because is there is BU taking place no matter the alternative due to scheduled maintenance dredging, then the applicant needs to state so

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5/4/22	EIS Vol I	Executive Summary	viii	Habitat Conservation Division	Charrish Stevens		"Beneficial use of dredged material would result in direct impacts to wetlands and SAV; 106.3 acres SAV within SS1, 18.7 acres within HI-E, and 25.3 acres within PA4. However, those impacts are expected to be temporary with the long-term objective of protecting and expanding these habitats." How much of each habitat is being impacted? Is it a total of 106.3 acres of impacts to SAV or is this some kind of combination of SAV and Wetland impacts? This needs to be portioned out per habitat type. If there will be specific types of wetland habitat impacts, then those need to be identified and enumerated. This confuses the reader and leads them to believe that there are more impacts to a particular habitat than maybe there really is.
5/4/22	EIS Vol I	Executive Summary	x	Habitat Conservation Division	Charrish Stevens		"The Applicant's Proposed Action Alternative would result in permanent loss of 175 acres of bay bottom habitat to construct inshore placement and permanent loss of 2.5 acres of oyster reef habitat for inshore placement." This does not capture all EFH impacts. Throughout the document it iterates different total numbers of impacts in delineated/identified EFH; however, it is not clear how these impacts are being offset through placement of BU and how much per EFH being impacted is being offset. This needs to be worked out in the EFH and then summarized in the EIS.

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5/4/22	EIS Vol I	Executive Summary	xiii	Habitat Conservation Division	Charrish Stevens		"However, beneficial use placement would create approximately 287 acres of marsh and protect other wetland and marsh habitat from erosion. Beneficial use placement would also impact approximately 6.2 acres of seagrass. However, these placement areas were designed to protect approximately 2,000 acres of seagrass in Redfish Bay. Provided the benefits of dredged material placement, mitigation is not proposed by the Applicant." These are different numbers being presented. In other sections it states 106.3 to 150 plus acres of impacts to SAV. There needs to be more explanation as to what the different numbers mean and how applicant went from 150 to 106 to 6.2 acres of SAV impacts. With that said, preservation of SAV does not constitute as mitigation for direct impacts to SAV. The applicant needs to enumerate the actual proposed impacts to EFH per habitat type then state how much habitat is going to be created/restored through placement of BU and how these efforts will end up with a net benefits. This needs to be done per habitat type to show how BU will result in a no net loss but a net benefit for those resources being impacted.
5/4/22	EIS Vol I	1.3	1-5	Habitat Conservation Division	Charrish Stevens		The applicant mentions in executive summary that BU placement would include creation of shallow water habitat in efforts to restore SAV habitat and to offset impacts associated with BU PAs; however, this section makes no mention of those restoration/creation efforts.

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5/4/22	EIS Vol I	2.2.2	2-6	Habitat Conservation Division	Charrish Stevens		"Placement of new work dredged material at the following BU and PA sites (Table 2-3, and see Figure 2-1)" This section does not talk about any type of creation/restoration of shallow water habitat for SAV; however, there will be direct loss of SAV due to placement of BU. Why is there no mention of creation/restoration of shallow water habitat when it is mentioned throughout the EIS?
5/4/22	EIS Vol I	2.2.2, Table 2-3	2-8	Habitat Conservation Division	Charrish Stevens		This table does not talk about any type of creation/restoration of shallow water habitat for SAV; however, there will be direct loss of SAV due to placement of BU. Why is there no mention of creation/restoration of shallow water habitat when it is mentioned throughout the EIS?
5/4/22	EIS Vol I	2.2.3	2-9 to 2-10	Habitat Conservation Division	Charrish Stevens		"SS1 Extension would repair an eroded shoreline....South Texas seasonal rainfall." How does any of this offset direct and secondary impacts associated with BU DM placement? Preservation alone is not enough. The applicant has to enhance/restore same habitat being impacted.
5/4/22	EIS Vol I	4.2.1.2	4-45	Habitat Conservation Division	Charrish Stevens		"The proposed placement sites for BU include areas where SAV has been mapped...BU sites HI-E, SS1, and PA4 contained SAV, with SS1 having the highest total acreage and species diversity....150.4 acres of mapped SAV, 106.3 acres occur within the SS1 footprint plus the buffer." What are the estimated impacts to SAV per placement area? It is not stated or clearly so in the document.

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5/4/22	EIS Vol I	4.2.1.2	4-46	Habitat Conservation Division	Charrish Stevens		"Wetland and SAV impacts would occur at proposed placement sites. However, it should be noted that dredged material would be used at all PAs to either: 1) convert deep open water areas to shallow bathymetry to support either establishment of tidal wetlands or SAV, or 2) restore eroding shorelines that would protect larger extents of SAV." Wetlands were not discussed in Table 4-18 it only discusses SAV acreage. This section still does not tell the reader how many impacts are proposed from BU Placement per habitat type in each placement area.

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5/4/22	EIS Vol I	4.2.1.2	4-46	Habitat Conservation Division	Charrish Stevens		"This action may help protect SAV that could be exposed if the shoreline is breached with the continued erosion expected under the No-Action Alternative." Yes it would most likely protect; however, mitigation for EFH impacts does not allow for just preservation, the applicant must also consider restoration and/or creation of same EFH (i.e., SAV, high/low marsh, tidal flats, algal mats, and mangroves) that was directly impacted. Making an area of the bay shallow water habitat does not constitute as mitigation for direct loss of EFH. It has to be in-kind mitigation through BU placement followed by planting to restore/create lost habitat.
5/4/22	EIS Vol I	4.2.1.2	4-46	Habitat Conservation Division	Charrish Stevens		"Considering the beneficial use nature and objective of these PAs to protect or provide more area conducive to tidal wetlands or SAV establishment, Alternative 1 may positively impact tidal wetlands and SAV. During construction and operations there is some chance of spills which may also impact wetlands or SAV." There needs to be more information provided here. Simply stating that converting deep open water to shallow bathymetry to support one or the other habitat will not suffice. The applicant needs to demonstrate by enumerating the amount of acreage per habitat will be offset by enumerated habitat created by BU placement per placement area.

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5/4/22	EIS Vol I	4.2.1.3	4-47	Habitat Conservation Division	Charrish Stevens		States no BU projects to repair vital beach and island habitats would not take place; however, in the Executive summary, it states in the No Action alternative that BU would continue with the maintenance dredge material from the maintenance dredging that continues to take place to maintain current depths. Based on what has been said, this alternative would be the best option as it both serves the project purpose and avoids/minimizes the most EFH impacts. So NMFS is confused as to why Alternative 2 is not being considered.

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5/5/22	EIS Vol I	4.2.2.2.2	4-50	Habitat Conservation Division	Charrish Stevens		FIRST PARAGRAPH: This whole paragraph is confusing to the reader. It seems like the numbers of acres are not correct. The applicant needs to double check these numbers to ensure they are reporting the exact number of impacts and iterate this clearly and concisely to the reader as possible. In addition, preservation is not considered mitigation; the applicant has to restore/create habitat along with preservation of in-kind mitigation to have a no net loss of EFH resources.
5/5/22	EIS Vol I	4.2.2.2.2	4-53	Habitat Conservation Division	Charrish Stevens		"Thirty-two acres of mapped oyster reef habitat occur in the remainder of the project area and could be indirectly impacted by increased turbidity during construction of placement site SS1." Will these impacts be monitored to ensure adequate mitigation for these resources takes place?
5/5/22	EIS Vol I	4.2.2.2.2	4-53	Habitat Conservation Division	Charrish Stevens		"slight increase in salinity that is expected resulting from Alternative 1 is not anticipated to cause any long-term impacts to oyster reefs in the project area. Increased nutrients from dredging activities could cause algal blooms that could impact oysters." These cumulative impacts associated with the project will have long lasting impacts to oyster fitness level and will impact the younger cohorts of oysters thus impacting new and future successful recruiting to sustain the current population. The applicant needs to take into consideration that oysters of the west coast of the GoM are one of the last self-sustaining population that is quickly disappearing due to on-going cumulative impacts from various projects and environmental factors.

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5/5/22	EIS Vol I	4.2.2.2.3	4-54	Habitat Conservation Division	Charrish Stevens		"Alternative 2" The applicant has not enumerated impacts associated with Alternative 2 or 3 as of yet. So saying this alternative would result in similar impacts to estuarine and fauna is not accurate. There would be deep water impacts away from more sensitive resources. In addition, the applicant has not considered utilizing or teaming up with other existing DWP .

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5/5/22	EIS Vol I	4.2.5.3.2	4-63	Habitat Conservation Division	Charrish Stevens		It does not state anywhere in this section the kinds and amount of impacts that will take place in all aspects of the project (dredging and placement). It discusses permanent loss of bay bottom habitat and oysters but does not discuss other habitats that will be impacted by placement of BU such as tidal marsh, tidal flats, algal mats, SAV, and mangroves nor does it discuss at what acreage per habitat type will be impacted and how those impacts per habitat will be offset by BU. This all needs to be discussed in detail within the EFH section.
5/5/22	EIS Vol I	4.2.5.3.3	4-64	Habitat Conservation Division	Charrish Stevens		The last period discusses how Alt 2 has less impacts to EFH than Alt 1 due to lack of dredging and placement of BU. However, if no deepening takes place then no BU will take place, thus continued loss of EFH. NMFS agrees Alternative 2 is less impactful to EFH, but NMFS does not agree that there will be no dredge material placement for future BU placement. The document stated that maintenance dredge will continue in the ship channel no matter what to maintain current depths, so why would there not be any BU placement of that material to protect vulnerable areas? The document seems to contradict itself alot and there needs to be clarity.
5/5/22	EIS Vol I	4.6, Table 4-20	4-94	Habitat Conservation Division	Charrish Stevens		"Ecological and Biological Resources, Wetlands and SAV, Alternative 1:" The impacts to these resources have not been offset. The way the EIS written, the applicant is not mitigating for any of the impacts because the placement of dredge material for BU will convert openwater habitat to shallow water habitat, thus make a more productive habitat. This paragraph does not describe how placement of BU will create the habitat that is being displaced. It only states it will preserve SAV which is not enough alone. The applicant has to demonstrate they have offset those impacts with creation/restoration of like habitats.

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5/5/22	EIS Vol I	4.6, Table 4-20	4-95	Habitat Conservation Division	Charrish Stevens		"Ecological and Biological Resources, Estuarine Habitats and Fauna, Alternative 1:" How are these being mitigated for and at what ratios?

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5/5/22	EIS Vol I	4.6, Table 4-20	4-96	Habitat Conservation Division	Charrish Stevens		"Ecological and Biological Resources, EFH, Alternative 1:" Same as last comment regarding direct impacts and applicant stating BU placement creates net benefit without even stating how they come up with that determination or providing total acreage being restored/created by way of BU placement.
5/5/22	EIS Vol I	6.1	6-2	Habitat Conservation Division	Charrish Stevens		"Since these wetlands are in the confines of a former DMPA, they are considered of lower value than naturally occurring wetlands." Yes, but they are still wetlands and serve as a natural resource area for wildlife and aquatics.
5/5/22	EIS Vol I	6.0, Table 6-1	6-1	Habitat Conservation Division	Charrish Stevens		This table does not reflect the acreage of impacts discussed in previous sections of the EIS. For example, SAV impacts from SS1 was estimated to be 106.3 acres alone; a total of 2.45 acres of oyster reef will be impacted with and additional 35 plus acres of potential impact. This chart needs more explanation as to why the proposed impacts expressed throughout this document is not reflected in the same manner of the Table. This completely confuses the reader and would indicate the impacts are being minimized.
5/5/22	EIS Vol I	6.1	6-2	Habitat Conservation Division	Charrish Stevens		Last paragraph: The applicant needs to break down the kinds of wetland creation/restoration by habitat and enumerate those benefits and compare them with delineated habitat impacts to show the full picture in this concluding paragraph of how the impacts are being offset and there will be a net benefits to those impacted habitats. . There needs to be more than just a generic wetland verbage and then a number thrown beside it.

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5/5/22	EIS Vol I	6.2	6-2	Habitat Conservation Division	Charrish Stevens		"Through the BU placement across the six sites, the Applicant estimates the project would impact 6.22 acres of seagrass." This is not the same as what was stated in the EFH Assessment or in the body of EIS where it talks about impacts. It was iterated there would be 106.3 acres of SAV impact within SS1, 18.7 acres of SAV impact within HI-E, and 25.3 acres of SAV impact within PA-4 discussed under the Wetlands and Submerged Aquatic Vegetation Section. If this is not accurate or is a combination of impacts, then the applicant needs to provide more clarification and be concise with how they present their impacts.
5/5/22	EIS Vol I	7.0	7-1	Habitat Conservation Division	Charrish Stevens		"Approximately 2.45 acres of oyster reef habitat, 205.64 acres tidal wetlands, 413.12 acres non-tidal wetlands, and 150.40 acres of SAV would be lost as a direct result of placement of dredged material at the proposed placement sites" So, now this section is talking about impacts to EFH, which iterates total impacts minus open water and bay bottom, but in section 6.0 it does not acknowledge the total of impacts to SAV as mentioned here. The applicant needs to ensure the text is clear and concise. The impacts are not being fully discussed as to how they will be offset by BU placement.

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5/5/22	EIS Vol I	8.0	8-1	Habitat Conservation Division	Charrish Stevens		"The loss of approximately 205.64 acres tidal wetlands, 413.12 acres non-tidal wetlands, 150.40 acres of SAV, and 2.45 acres of oyster reef during construction is irreversible;" This section is acknowledging the permanent loss of EFH; however, in the document does not go into any detail as to how these impacts will be offset by way of BU placement. More details are needed which enumerate the total acreage of habitat being created/restored per habitat type. This would show the reader the amount of proposed impacts per habitat type as well as the amount of restored/created habitat by BU placement area per habitat type, which then presents a better picture of net benefits.

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5/5/22	EIS Vol I	9.0	9-1	Habitat Conservation Division	Charrish Stevens		"Construction would result in the loss of approximately 205.64 acres tidal wetlands, 413.12 acres non-tidal wetlands, 150.40 acres of SAV, and 2.45 acres of oyster reef; however, proposed PAs that would support the establishment of tidal wetlands or SAV and restore eroding shorelines (and may protect larger areas of SAV once constructed). These actions may increase contribution to the long-term productivity of the Corpus Christi Bay system by providing nursery and juvenile habitat for finfish and shellfish species." This needs to be discussed in more detail in the EFH Assessment as well as the body of this document. How will BU PAs benefit EFH and fisheries? How much EFH is being created/restored per habitat type? Preservation does not constitute mitigation for impacts to EFH alone. All of these questions needs to be addressed in EFH Assessment and the body of the EIS.
5/5/22	EIS Vol II	3.1, Table 3.2	A-11	Habitat Conservation Division	Charrish Stevens		The table is supposed to be a summary of potential impacts of the placement plan to WOUS including wetlands and other special aquatic sites. However, the reader is left confused as it appears the acreage totals per site don't add up to mapped habitat or Open water. It is unclear how much and what is being created/restored etc. The needs to be a column in this table that shows impacts per habitat at each site and then another that shows how much is being created/restored per habitat per site, which then equates to the total acreage per site to better show the reader what exactly is happening at each site. It looks like the Sum of Estimate section of table attempted this but it would be better placed alongside each site as an additional column.

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5/5/22	EIS Vol II	4.4, Table 4.1	A-27	Habitat Conservation Division	Charrish Stevens		Alternative C and D: This statement is not accurate; there will be continued maintenance dredging to maintain existing channel depth, thus the opportunity for BU placement from the dredged material is still available just not at the levels that would be present initially if project were to deepen channel.

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5/5/22	EIS Vol II	5.1.2.1	A-30	Habitat Conservation Division	Charrish Stevens		"M3 would convert featureless bay bottom to approximately 330 acres of estuarine/aquatic habitat behind Pelican Island. M9 and M10 would convert featureless bay bottom to approximately 329 and 770 acres of estuarine/aquatic habitat behind PA9 and PA10, respectively." What is the acreage of habitat creation/restoration per habitat type (i.e., SAV, tidal marsh)?
5/5/22	EIS Vol II	6.0	A-37	Habitat Conservation Division	Charrish Stevens		This section discusses how impacted EFH (seagrasses, marsh/wetlands, tidal flats, etc) involves mostly preservation. However, the remaining impacts would be offset by reconfiguring sites to host impacted habitat. What does this mean? Raise elevations only? Will there also be planting of seagrasses and marsh? Non of this is mentioned in enough detail to answer the readers questions. The applicant needs to make sure the restration/creation of EFH is done at appropriate mitigation rations for those resources being lost.

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5/5/22	EIS Vol II	6.0, Table 6.1	A-44	Habitat Conservation Division	Charrish Stevens		First, Table should be moved into appropriate section. Right now it is falling after Section 7.0 which is not the right section. Secondly, the proposed restoration of seagrass or marsh needs to be separated out into two habitat categories which shows amount of habitat created/restored per PA. Just a reminder it needs to be discussed in detail how impacts associated with placement are mitigated for adequately per habitat that is being displaced. Placement of BU should not be at the expense of other EFH. Also, preservation results in a net loss of EFH function. Therefore, it can not serve as mitigation alone. There needs to be restoration and/or creation of in kind habitat that is being displaced from placement of BU. Finally, these proposed impacts to SAV are not consistently mentioned throughout the EIS. There needs to be consistency to keep from confusing the reader to make sure it is clear how much is EFH per habitat type is being impacted and how much is being restored/created per habitat type in order to show there will be a net benefit to EFH resources.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Texas Coastal Ecological Services Field Office
4444 Corona Drive, Suite 215
Corpus Christi, Texas 78411
361/994-9004 / (FAX) 361/994-8262



In Reply Refer To:
02ETTX00-2022-0045444

May 27, 2022

Jayson M. Hudson, Regulatory Project Manager
Regulatory Division, CESWG-RDP
U.S. Army Corps of Engineers Galveston District
2000 Fort Point Road
Galveston, Texas 77550

Dear Mr. Hudson:

The U.S. Fish and Wildlife Service (Service) is a Cooperating Agency under the National Environmental Policy Act in the FAST-41 planning process for the Port of Corpus Christi's Ship Channel Deepening Project (CDP). The Service received and reviewed an administrative draft Environmental Impact Statement (DEIS) dated April 2022, for the U.S. Army Corps of Engineers (Corps) permit number SWG-2019-00067. The Applicant, Port of Corpus Christi Authority (PCCA), proposes to deepen 13.8 miles of the Corpus Christi Ship Channel (CCSC) from the currently authorized depth of -54 feet to -77 feet. The dredging portion of the CDP would extend from Harbor Island in Port Aransas, Texas, to 10 miles beyond the current entrance of the CCSC in the Gulf of Mexico. Approximately 46.3 million cubic yards of material would be dredged, with inshore and offshore beneficial use placement. The proposed project is located at Port Aransas, Nueces County, Texas, with a DEIS study area to include portions of Nueces, San Patricio, Aransas, and Refugio counties.

The revised Department of the Interior Manual Instructions (503 DM 1), dated August 3, 1973, assigned responsibility for Department of the Interior coordination and review of Corps permit applications to the Service. Our comments are provided in accordance with these instructions, the Fish and Wildlife Coordination Act (16 U.S.C. 661-667(e)), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) and the National Environmental Policy Act (42 U.S.C. 4321-4347) (NEPA).

The Service provided preliminary review comments to a draft Endangered Species Act Biological Assessment, via an April 26, 2022, email. Therefore, no additional comments related to the Biological Assessment in Appendix D of the DEIS are included at this time. In addition to the general comments below, the enclosed Reviewer Comment Response Matrix contains comments related to specific sections of the DEIS.

General Comments

- The DEIS needs to adequately demonstrate that the Applicant's preferred alternative (CDP) is the least environmentally damaging alternative to meet the stated purpose and need. The CDP is expected to result in increases in large vessel traffic, tidal amplitude, storm surge, salinity, turbidity, shoreline propeller scour, maintenance dredging, and inshore oil spill risk. These could negatively impact threatened and endangered species, migratory birds, wetlands, and seagrass. The Service agrees that the use of suitable dredged material to renourish beaches and restore eroded habitats is beneficial; however, these benefits may not outweigh irreversible damage that the CDP could potentially cause.
- The DEIS states that the presence of offshore ports in Alternatives 2 and 3 would reduce or eliminate the need for Very Large Crude Carriers (VLCC) to enter the CCSC and reverse-lighter offshore. However, crude oil exports are forecasted to more than double by 2030 with the PCCA becoming the leading crude oil exporter in the U.S. Construction of the new Harbor Bridge is scheduled to be completed in 2024, allowing VLCCs to enter the Inner Harbor. Given the increased market demand and accessibility to the Inner Harbor, large vessels could potentially still opt to enter the CCSC for partial loading. In addition, a VLCC can take 48 to 60 hours to fully load from a deepwater port. If there were long wait times for a single point mooring buoy offshore, some vessel operators might opt for partial loading from the CCSC and reverse lightering offshore. Would large vessels be restricted from entering the CCSC if multiple deepwater ports were in place? Please provide more details in the DEIS to provide realistic future scenarios about vessel traffic throughout the CCSC under each alternative.
- The DEIS includes model predictions for a cumulative salinity change range of +/- 4 Practical Salinity Units (PSU) with an error of +/- 5 PSU. The Service understands that salt storage in Nueces Delta is an uncertainty, and that salinity can fluctuate greatly depending on rainfall; however, freshwater inflow is limited in this semi-arid region, especially in the Nueces and Nueces-Rio Grande river basins. The Service is concerned that cumulative effects of increased salinity from the CDP, periods of drought, climate change, and effluent from multiple proposed desalination plants, could result in a significant change in the distribution and species composition of seagrass and lower trophic level organisms in Redfish, Corpus Christi, Aransas, and Nueces bays. This

Mr. Hudson

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change would impact threatened and endangered species and migratory birds that feed, breed, nest, and roost in these estuaries. The cumulative impacts analysis of the DEIS should be expanded to better examine potential increases in salinity.

The Service appreciates the opportunity to review the administrative DEIS for CDP. If you have questions regarding these comments, please contact Mary Kay Skoruppa at 361-225-7314 or mary_kay_skoruppa@fws.gov.

Sincerely,

A handwritten signature in blue ink that reads "E. Dawn Gardiner".

Dawn Gardiner for
Charles Ardizzone
Field Supervisor

cc:

Environmental Protection Agency, Region 6, Dallas, TX
National Marine Fisheries Service, Galveston, TX

Enclosure:

Reviewer Comment Response Matrix - USFWS

Port of Corpus Christi Authority
Corpus Christi Channel Deepening Project
Preliminary Draft EIS Comment/Response Matrix
February 2022

Category:	
Significant	Deficiency or incomplete
Incorrect	Incorrect and/or errors noted during review.
Insignificant	Comment is minor or otherwise editorial in nature.
Response Code:	
Incorporate	Comment will be incorporated into document. Provide explanation of how.
Investigate	Additional investigation is required. Define actions to be taken.
Not Recommended	Comment is not recommended for inclusion. Explain justification for not doing so.
Other	Other - Explain

REVIEWER							
Date	Document (EIS, BA, EFH, etc.)	Section/Figure	Page Number	Discipline	Reviewer Name	Category	Reviewer Comment
5/26/22	DEIS	2.0 Proposed Action and Alternatives	2-1 and 2-2		Mary Kay Skoruppa, USFWS	Insignificant	The Alternatives are listed as Alternatives #1-4, including the No Action Alternative, to be carried forward. However, the DEIS subsequently rennumbers the alternatives without the No Action Alternative as #1-3, which is confusing to the reader when referring back to the original list of alternatives that have different numbers. For example, the CDP changes from Alternative #2 to Alternative #1.
		3.5 Socioeconomic Conditions				Significant	This section states that the Region of Influence (ROI) for socioeconomic analysis includes the three counties of Nueces, Aransas, and San Patricio. However, Section 3.5.4, Environmental Justice, considers only block census tracts within a project area much smaller than the ROI or the DEIS' study area. The Service understands that the project area represents an area of resources more directly impacted; however, the Service recommends also analyzing indirect and cumulative impacts throughout the study area. For example, if seagrass and low trophic level organisms are affected from turbidity, salinity changes, tidal amplitude, or other CDP effects, then fishing and viewshed resources would likely be affected beyond just the project area.
		5.4.2 Physical Oceanography	Table 5-4,			Insignificant	Table has missing rows at the page break.
		5.4.10 Threatened and Endangered Species	5-41			Significant	This section only mentions impacts to sea turtles and shorebirds; however, there are several other listed species that should be considered.

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Other - Explain

[illegible]

Appendix B7

General Correspondence

Appendix C

Dredged Material Management Plan

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in Federal documents be accessible to individuals with disabilities. The USACE has made every effort to ensure that the information in this appendix is accessible.

However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Mr. Jayson Hudson at the USACE at (409) 766-3108 or at SWG201900067@usace.army.mil if they would like access to the information.

Appendix C1

Dredged Material Management Plan, January 11, 2022

PCCA Dredged Material Management Plan, January 11, 2022

5.2 Placement Alternatives Evaluated Further

The initial alternatives that were advanced or reconceived were refined. Given the large amount of materials that could be beneficially used, especially the large volume of sand in one the of the channel segments, and proximity of some of the desirable BU options, it became clear, a mix of existing offshore, expansion of existing BU sites and the Gulf side BU initiatives would be a viable, cost effective approach. Of 13 initiatives further refined, 11 were BU features that aimed to achieve a variety of shoreline restoration, land loss restoration, marsh cell expansion, and Gulf-side shoreline initiatives. The following alternatives were developed.

- ~~M3—Creation of an estuarine/aquatic habitat extension at Pelican Island. This would bring the elevation of an extension at this BU site to an elevation suitable to restore either marsh or seagrass.~~
- ~~M4—Restoring historic land and marsh loss at Dagger Island. This is an ecosystem restoration measure included in USACE's Coastal Texas study and the TGLO Coastal Resiliency Master Plan. Design of project elements will be coordinated to support TPWD's existing permit for this project.~~
- ~~PA9 S—This option will extend the upland placement of dredged material behind PA9. This area was originally identified as Site R in the CCSCIP for the creation of shallow water habitat, but current projections from the PCCA are that there will not be enough material from that project to create that site.~~
- ~~M10—Creation of an estuarine/aquatic extension behind PA10. This would bring the elevation of an extension at this BU site to an elevation suitable to restore either marsh or seagrass.~~
- PA6 – Raising levees on PA6, after the CCSC CIP one-time use, by 5 feet and filling it with 4 feet of new work material at the existing PA6 location.
- SS1 – Restoring eroded shoreline to a higher elevation than what was previous to prevent future land breaches as a result of storm events, the restored feature will be armored to protect the very large seagrass area behind Harbor Island.
- SS2 – Restoring shoreline washouts along the Port Aransas Nature Preserve/Charlie's Pasture as a result of Hurricane Harvey. Piping plover sand flat critical habitat located behind this breach would be protected again. Design of project elements will be coordinated with TGLO's restoration efforts for this area.
- PA4 – Reestablish eroded shoreline and land loss in front of PA4 (identified as SS1 extension). The shoreline has undergone major erosion over the last few decades, and if it continues, would eventually expose the Harbor Island seagrass area to

erosion and loss. Additionally, raising levees on PA4 for placement of new work material that is unsuitable for BU.

- SJI – Dune & shore restoration at San Jose Island using new work sands to repair severe damage caused by Hurricane Harvey.
- ~~NW-ODMDS – Placement in New Work ODMDS (Homeport).~~
- B1-B9 – Feeder berms offshore of SJI and Mustang Island that would be located within the active transport zone in front of the depth of closure, and indirectly nourish these barrier islands.
- HI-E – Restore eroded bluff at the junction of the CCSC, Aransas Channel and Lydia Ann Channel and will be armored to prevent future erosion. The bluff will be restored to its historic shape and new work material will be placed behind the bluff with a levee raise around the site. According to USGS historical topographic maps for Port Aransas, Texas, SE/4 Aransas Pass 15' Quadrangle, this site appears to have been created from Aransas Channel spoils around 1967-1968.
- MI – Mustang Island beach nourishment, this feature is intended to directly place new work sands to enhance the shoreline from the south CCSC jetty five (5) miles along the Gulf side of Mustang Island.

5.3 Applicant's Proposed Placement Plan

All the proposed options would be viable due to proximity, material volume capacity, and need for material to achieve ecological restoration. The large volume of sands indicates that material placement would be better used for BU restoration of important coastal resources that were damaged by Hurricane Harvey and experience continuing erosion. The availability of other new work material such as clays could opportunistically be used to stem land losses that would expose sensitive habitats to continual erosion. These materials would be better used in these initiatives than in upland placement that avoids the marine environment and provides no benefit. All options were selected, with M9 and M10 providing extra capacities as a contingency for unavailability of SJI. Therefore, more capacity was identified to provide flexibility in the plan. Table 5.1 lists the selected placement plan elements.

Table 5.2: Selected New Work Placement Plan (See Sheet 9 of 23)

Placement Option	Description	Placement Capacity (CY)	Proximity to New Work Dredging Operations	Environmental Benefit
M3	Estuarine/aquatic habitat creation adjacent to Pelican Island	3,798,000	Located approximately 6 miles from Harbor Island	This option will convert featureless bay bottom to approximately 300 acres of estuarine/aquatic habitat.
M4	Restoring historic land and marsh loss at Dagger Island	867,000	Located approximately 7 miles from Harbor Island	This option will restore eroding marsh habitat for native shorebirds and coastal wildlife. Design of project elements will be coordinated to support TPWD's existing permitted project.
PA9-S	Upland Placement Site Expansion behind PA9	9,000,000	Located approximately 8 miles from Harbor Island	This option does not restore aquatic habitat, it will convert featureless bay bottom to upland.
M10	Estuarine/aquatic habitat creation adjacent to PA10	10,933,600	Located approximately 10 miles from Harbor Island	This option will convert featureless bay bottom to approximately 770 acres of estuarine/aquatic habitat.
PA6	5 foot levee raise and fill	1,796,400	Located approximately 4 miles from Harbor Island	This option does not create any environmental benefit.
SS1	Restoring eroded and washed out shoreline	4,800,000 2,793,000 (based on SS1-100% design drawings)	Located approximately 3 miles from Harbor Island	This option restores an eroded shoreline landmass and provides protection to Harbor Island Seagrass area.
SS2	Restore shoreline washouts along Port Aransas Nature Preserve as a result of Hurricane Harvey	669,700 250,000	Located approximately 2 miles from Harbor Island	Shoreline restoration that fills in the washouts caused by Hurricane Harvey that protects Piping Plover critical sand flat habitat.
PA4	Reestablish eroded shoreline and land loss in front of PA4	3,020,000 1,676,000 (based on SS1 ext represented in SS1 100% design drawings)	Located approximately 2 miles from Harbor Island	This option provides protection to Harbor Island seagrass area.
	Upland placement	2,861,400	Located approximately 2 miles from Harbor Island	This option does not create any environmental benefit.
HI-E	Bluff and Shoreline	1,825,000	Located less than 1 mile from Harbor Island	This option restores an eroding bluff and shoreline to its historic profile.

Placement Option	Description	Placement Capacity (CY)	Proximity to New Work Dredging Operations	Environmental Benefit
	restoration with site fill			
SJI	Dune and beach restoration San Jose Island	4,000,000	Located directly next to Channel Dredging Operations	This option restores several miles of beach profile that was washed away as a result of Hurricane Harvey.
NW ODMDS	Place in New Work ODMDS (Homeport)	13,800,000 38,398,600 38,888,600	Located directly next to Channel Dredging Operations	This option does not create any environmental benefit.
B1-B9	Feeder berms offshore of SJI and Mustang Island	8,100,000	Located less than 10 miles from Channel Dredging Operations	This option will nourish beach shoreline by natural sediment transport processes.
MI	Beach Nourishment for Gulf side of Mustang Island	2,000,000	Located directly next to Channel Dredging Operations	This option will nourish beach shoreline by direct sediment placement.
Scenarios for new work placement capacity provided and needed.		64,609,700	Total Capacity Provided	
		60,609,700	Total capacity less SJI (should that option become unavailable)	
		46,283,590	Total NW placement capacity required for Channel Preferred Alternative – Base Option	
		14,326,110	Additional Capacity less SJI (should that option become unavailable)	

Additional Information Specific to SS1:

- 1) *Baseline topography of the site and clarification of BU volumes and specific placement locations inside berm as well as the plan to place it without additional impacts (i.e. best management practices)*

PCCA has contracted multiple surveys to identify sensitive ecological resources (i.e. wetlands, oyster reefs, seagrass beds) within a 500ft buffer of the proposed placement area. PCCA will provide additional detailed drawings with specific placement locations relative to these resources. In order to avoid impacting sensitive resources outside the review area PCCA will combine the proposed berm with other temporary cofferdams, silt fencing or similar devices so that hydraulically placed material remains within the confines of the placement area. **Attachment A** provides a topographic map of SS1.

- 2) *Clear indication of the footprint of the berm on the plan view*

Attachment B1 provides detailed drawings of SS1.

- 3) *Clarify water-elevation benchmark and other ambiguous information in the cross section details (i.e. is the berm constructed of fill or dredged material)*

According to the surveys conducted by Mott McDonald, the Mean High Water (MHW) level is +1.01ft NAVD 88 and the High Tide Line (HTL) is +2.76ft NAVD88. According to the Port Aransas, Texas National Oceanic and Atmospheric Administration (NOAA) tide gauge (8775237) Mean Lower Low Water (MLLW) is -0.15ft NAVD88. PCCA will show these elevations on the cross-sections of the detailed drawings. The berm will be constructed with suitable fill material prior to the placement of an armored exterior levee or rip-rap.

- 4) *Hydrologic information such as tide range, depth and duration both pre and post-construction*

The NOAA tide gauge in Port Aransas, TX Station ID: 8775237 reports the amplitudes of the spring tides to be in an order of 1 ft. Despite the tidal amplitudes being relatively small, they regularly produce peak current velocities at Aransas Pass of approximately 4 to 5 feet per second (fps).

- 5) *Post-construction plans should also identify any inlets and/or outlets designed to manage hydroperiods and residence time.*

PCCA is not proposing to create any inlets or outlets to manage hydroperiod or residence time. The purpose of SS1 is to protect the relatively static environment of Redfish Bay from the highly dynamic environment of the Corpus Christi Ship Channel. Historically SS1 has served as a hydrologic barrier between these two systems, the proposed placement would continue to serve this relationship.

6) *Proposed plant list, including source of plants, and a planting plan with schedule.*

PCCA will utilize native plant species for SS1 including but not limited to the species listed in the table below. PCCA will likely transplant existing plugs sourced from nearby habitats of corresponding elevations and habitat type like Charlie's Pasture or Redfish Bay. PCCA will obtain a TPWD permit to transplant vegetation prior to conducting work. PCCA will transplant plugs on 3-foot centers for all habitat types. Following the placement of dredge material at SS1, PCCA will plant the site during the following spring/fall to take advantage of South Texas seasonal rainfall.

Common Name	Scientific Name	Habitat Type
Smooth cordgrass	<i>Spartina alterniflora</i>	Low marsh
Black mangroves	<i>Avicennia germinans</i>	Low marsh
Marshhay cordgrass	<i>Spartina patens</i>	High marsh
Sea ox-eye daisy	<i>Borrchia frutescens</i>	High marsh
Salt marsh bulrush	<i>Scirpus maritimus</i>	High/brackish marsh
Bushy bluestem	<i>Andropogon glomeratus</i>	Brackish/freshwater

Additional Information Specific to SS2:

1) *Clear indication of the footprint of the berm on the plan view*

Attachment B1 provides detailed drawings of SS2.

2) *Baseline topography of the site and a desktop-level review of pre-Harvey site conditions*

Attachment A provides a recent topographic map of SS2. PCCA has also included a topographic map based on lidar data that pre-dates Hurricane Harvey in **Attachment C**.

3) *Clarify water-elevation benchmark and other ambiguous information in the cross section details (i.e. is the berm constructed of fill or dredged material)*

According to the surveys conducted by Mott McDonald, the Mean High Water (MHW) level is +1.01ft NAVD 88 and the High Tide Line (HTL) is +2.76ft NAVD88. According to the Port Aransas, Texas National Oceanic and Atmospheric Administration (NOAA) tide gauge (8775237) Mean Lower Low Water (MLLW) is -0.15ft. PCCA will show these elevations on the cross-sections of the detailed drawings. The berm will be constructed with suitable fill material prior to the placement of an armored exterior levee or rip-rap.

4) *Hydrologic information such as tide range, depth and duration both pre and post-construction*

The NOAA tide gauge in Port Aransas, TX Station ID: 8775237 reports the amplitudes of the spring tides to be in an order of 1 ft. Despite the tidal amplitudes being relatively small,

they regularly produce peak current velocities at Aransas Pass of approximately 4 to 5 feet per second (fps).

- 5) *Post-construction plans should also identify any inlets and/or outlets designed to manage hydroperiods and residence time.*

PCCA is not proposing to create any inlets or outlets to manage hydroperiod or residence time. The purpose of SS2 is to protect the relatively static environment of Charlie's Pasture from the highly dynamic environment of the Corpus Christi Ship Channel. Historically SS2 has served as a hydrologic barrier between these two systems, the proposed placement would continue to serve this relationship. Hydrologic exchange will occur from Piper Channel, west of SS2 and inundate the surrounding tidal flats and marsh habitats.

- 6) *A detailed workplan will be necessary to inform our evaluation and consultation for federally listed threatened and endangered species that utilize these sites*

The proposed project involves restoration of approximately 1,085 linear ft (LF) of an eroded shoreline by an armored berm constructed with approximately 250,000 cubic yards (CY) of dredge material hydraulically pumped to the site (armoring constructed by others). **Attachment D** provides detailed plans of a section of the bulkhead. Once this section is completed, the remaining bulkhead will be completed by others. Berm elevation design is +7ft MLLW at a 4:1 slope with a crest width of approximately 20ft. Construction of the interior levee, via hydraulic pumping and mechanical placement, at a 10:1 slope will meet the existing sand flats and wetlands at an elevation of approximately +1.5ft MLLW.

The actual start date of SS2 construction is unknown; however, PCCA anticipates the overall construction to occur over a 12-month period. Actual construction timeframes, methodologies, and BMPs may vary. Should PCCA determine that the timeframes, methodologies or BMPs differ significantly from the information contained below, PCCA will coordinate with USACE, USFWS and National NMFS prior to construction.

Proposed placement of dredge material will occur through mechanical or hydraulic methods for both levee and behind levee construction. Equipment used to place materials mechanically will occur by way of barge or land. Dredge material placed through hydraulic methods will occur via pipeline. PCCA will use barges and pipelines to transport equipment and materials. Material pumping distance is dependent on the material source location; however, the anticipated distance is no greater than 3 miles from SS2.

The source of dredge material is from the Channel Deepening Project (CDP). Hydraulic dredgers will remove specified project quantities of material at unknown times of the year. As suitable material (i.e. sandy clays and clays) comes available, it will be utilized for SS2 construction. PCCA will likely utilize a large cutterhead suction dredge (like that currently in use for the Channel Improvement Project (CIP)) but may utilize other dredging methodologies. Smaller barges will be used to deploy and mobilize pipelines to transport hydraulically dredged material from the cutterhead to SS2. PCCA will use barges and other shallow draft vessels for project construction. These barges are typically 140ft by 40ft by

9ft and do not typically exceed 10 miles per hour. Barges will deploy once and remain in the location until completion of work. PCCA will not know where dredging and construction vessels will be deployed from until a dredging contractor is selected. Operations for construction will occur for 8 to 12 hours per day. PCCA agrees to adhere to the Southeast Regional Office NMFS Protected Species Construction Conditions. Additional heavy machinery (i.e. graders, excavators etc.) will be utilized on land to achieve target slopes and elevations after dredge material has been placed and dewatered.

PCCA will implement available BMPs during the construction of this project to minimize potential impacts to endangered species and nearby essential fish habitat. PCCA BMPs may include but are not limited to turbidity curtains during dredging, construction work window restrictions and biological monitors. PCCA may also deploy temporary cofferdams, silt fences or similar devices to maintain hydraulically dredge material within the confines of the SS2 work area. Additionally, PCCA will only perform construction during daylight hours. PCCA expects that the activities will result in short term minimum impacts to aquatic resource functions and services. However, the additional habitat creation accomplished by dredged material placement outweighs any negative short-term impacts that may result from construction.

Additional Information Specific to PA4:

1) Clear indication of the footprint of the berm on the plan view

Attachment B1 provides detailed drawings of the SS1 berm which extends to provide shoreline protection to PA4. In **Attachment B1**, the beneficial use (BU) placement component for PA4 is referred to as SS1 Extension.

2) Baseline topography of the site

Attachment A provides a recent topographic map of PA4.

3) Clarify water-elevation benchmark and other ambiguous information in the cross-section details (i.e. is the berm constructed of fill or dredged material)

According to the surveys conducted by Mott McDonald, the Mean High Water (MHW) level is +1.01ft NAVD 88 and the High Tide Line (HTL) is +2.76ft NAVD88. According to the Port Aransas, Texas National Oceanic and Atmospheric Administration (NOAA) tide gauge (8775237) Mean Lower Low Water (MLLW) is -0.15ft. PCCA will show these elevations on the cross-sections of the detailed drawings. The berm will be constructed with suitable fill material prior to the placement of an armored exterior levee or rip-rap.

4) A detailed workplan will be necessary to inform our evaluation and consultation for federally listed threatened and endangered species that utilize these sites

The proposed project involves restoration of approximately 5,348 LF of an eroded shoreline. **Attachment B1** details the BU component of PA4 in the plans as SS1 Extension. The SS1 Extension provides protection to the PA4 shoreline in the form of an exterior levee (dike). PCCA shall construct SS1 Extension levee (PA4) with 1,646,000cy of sands and stiff clay. Following the construction of the BU component of PA4 (SS1 Extension), an additional 2,861,400cy of dredge material (unsuitable for BU) will be placed between the proposed levee and the existing PA4 levee via hydraulic pumping. *Mechanically placed stiff clay will provide incremental exterior levee raising for dredge material placed between the proposed SS1 Extension levee and the existing PA4 levee to an approximate elevation of +20ft MLLW.* PCCA will place a total of 4,537,000cy of dredge material at PA4; 1,676,000cy of BU suitable material for constructing the SS1 Extension Levee at PA4, followed by an additional 2,861,000cy of unsuitable material for BU within the confines of the proposed and existing levees. (**Attachment B2** provides a conceptual drawing of PA4.)

The actual start date of PA4 construction is unknown; however, PCCA anticipates the overall construction to occur over a 12-month period. Actual construction timeframes, methodologies, and BMPs may vary. Should PCCA determine that the timeframes, methodologies or BMPs differ significantly from the information contained below, PCCA will coordinate with USACE, USFWS and NMFS prior to construction.

Proposed placement of dredge material will occur through mechanical or hydraulic methods for both berm and behind berm construction. Proposed placement of fill will occur through mechanical methods. Equipment used to place materials mechanically will occur by way of barge or land. Dredge material placed through hydraulic methods will occur via pipeline. The project will use barges and pipelines to transport equipment and materials. Material pumping distance is dependent on the material source location; however, the anticipated distance is no greater than 3 miles from PA4.

The source of dredge material is from the CDP. Hydraulic dredgers will remove specified project quantities of material at unknown times of the year. As suitable material (i.e. sandy clays and clays) comes available, it will be utilized for PA4 construction. PCCA will likely utilize a large cutterhead suction dredge (like that currently in use for CIP) but may utilize other dredging methodologies. Smaller barges will be used to deploy and mobilize pipelines to transport hydraulically dredged material from the cutterhead to PA4. PCCA will use barges and other shallow draft vessels for project construction. Barges will deploy once and remain in the location until completion of work. PCCA will not know where dredging and construction vessels will be deployed from until a dredging contractor is selected. These barges are typically 140ft by 40ft by 9ft and do not typically exceed 10 miles per hour. Operations for construction will occur for 8 to 12 hours per day. PCCA agrees to adhere to the Southeast Regional Office NMFS Protected Species Construction Conditions. Additional heavy machinery (i.e. graders, excavators etc.) will be utilized on land to achieve target slopes and elevations after dredge material has been placed and dewatered.

PCCA will implement available BMPs during the construction of this project to minimize potential impacts to endangered species and nearby essential fish habitat. PCCA BMPs may include but are not limited to turbidity curtains during dredging, construction work window restrictions and biological monitors. PCCA may also deploy temporary cofferdams, silt fences or similar devices to maintain hydraulically dredge material within the confines of the PA4 work area. Additionally, PCCA will only perform construction during daylight hours. PCCA expects that the activities will result in short term minimum impacts to aquatic resource functions and services. However, the additional habitat creation accomplished by dredged material placement outweighs any negative short-term impacts that may result from construction.

Additional Information Specific to HI-E:

- 1) *Clear indication of the footprint of the berm on the plan view*

Attachment E provides a conceptual drawing of HI-E.

- 2) *Baseline topography of the site*

Attachment A provides a recent topographic map of HI-E.

- 3) *Clarify water-elevation benchmark and other ambiguous information in the cross section details (i.e. is the berm constructed of fill or dredged material)*

According to the surveys conducted by Mott McDonald, the Mean High Water (MHW) level is +1.01ft NAVD 88 and the High Tide Line (HTL) is +2.76ft NAVD88. According to the Port Aransas, Texas National Oceanic and Atmospheric Administration (NOAA) tide gauge (8775237) Mean Lower Low Water (MLLW) is -0.15ft. PCCA will show these elevations on the cross-sections of the detailed drawings. The berm will be constructed with suitable fill material prior to the placement of an armored exterior levee or rip-rap.

- 4) *A detailed workplan will be necessary to inform our evaluation and consultation for federally listed threatened and endangered species that utilize these sites*

The proposed project involves restoration of approximately 5,068 LF of an eroded shoreline by construction of an armored levee. Exterior and interior levee construction will require approximately 177,800 CY of mechanically placed stiff clay. Exterior shoreline levee design will raise the existing elevation to +15ft MLLW at a 4:1 slope and a crest width of 15ft. Mechanical placement of approximately 23,400 CY of riprap at a 4:1 slope to +7ft MLLW will armor the exterior shoreline levee and provide erosion control. The exterior upland levee design is to a +3ft over grade at a 4:1 slope. Placement of approximately 1,647,200 CY of dredge material within the levees will occur via hydraulic pumping.

The actual start date of HI-E construction is unknown; however, PCCA anticipates the overall construction to occur over a 16-month period. Actual construction timeframes, methodologies, and BMPs may vary. Should PCCA determine that the timeframes, methodologies or BMPs differ significantly from the information contained below, PCCA will coordinate with USACE, USFWS and NMFS prior to construction.

Proposed placement of dredge material will occur through mechanical or hydraulic methods for both levee and behind levee construction. Equipment used to place materials mechanically will occur by way of barge or land. Dredge material placed through hydraulic methods will occur via pipeline. The project will use barges and pipelines to transport equipment and materials. Material pumping distance is dependent on the material source location; however, the anticipated distance is no greater than 3 miles from HI-E.

The source of dredge material is from the CDP. Hydraulic dredgers will remove specified project quantities of material at unknown times of the year. As suitable material (i.e. sandy clays and clays) comes available, it will be utilized for HI-E construction. PCCA will likely utilize a large cutterhead suction dredge (like that currently in use for the CIP) but may utilize other dredging methodologies. Smaller barges will be used to deploy and mobilize pipelines to transport hydraulically dredged material from the cutterhead to HI-E. PCCA will use barges and other shallow draft vessels for project construction. Barges will deploy once and remain in the location until completion of work. PCCA will not know where dredging and construction vessels will be deployed from until a dredging contractor is selected. These barges are typically 140ft by 40ft by 9ft and do not typically exceed 10 miles per hour. Operations for construction will occur for 8 to 12 hours per day. PCCA agrees to adhere to the Southeast Regional Office NMFS Protected Species Construction Conditions. Additional heavy machinery (i.e. graders, excavators etc.) will be utilized on land to achieve target slopes and elevations after dredge material has been placed and dewatered.

PCCA will implement available BMPs during the construction of this project to minimize potential impacts to endangered species and nearby essential fish habitat. PCCA BMPs may include but are not limited to turbidity curtains during dredging, construction work window restrictions and biological monitors. PCCA may also deploy temporary cofferdams, silt fences or similar devices to maintain hydraulically dredge material within the confines of the HI-E work area. Additionally, PCCA will only perform construction during daylight hours.

Attachment A

Path: C:\Users\hmcneil\Desktop\Channel Deepening\Channel Deepening.aprx Date Saved: 10/28/2021 1:01 PM User: hmcneil



Legend

BUSites	SS1	Post-Harvey LiDAR (2018)	0
Site (with 500ft Review Buffer)	SS2	Contour (FT NAVD 88)	2
			4
PA4		-2	



SS1 Topographic Map

PCCA CDP DMPP Information Request
Corpus Christi Ship Channel
Nueces County, Texas

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Legend

BUSites	SS2	0	10	20
Site (with 500ft Review Buffer)	Post-Harvey LiDAR (2018)	2	12	22
	Contour (FT NAVD 88)	4	14	24
PA4		6	16	26
SS1		8	18	28
		-2		



SS2 Topographic Map

PCCA CDP DMPP Information Request
Corpus Christi Ship Channel
Nueces County, Texas

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Legend				
BUSites	Post-Harvey	0	10	20
Site (with	LiDAR (2018)	2	12	22
500ft Review	Contour (FT	4	14	24
Buffer)	NAVD 88)	6	16	26
HI-E	-2	8	18	28



HI-E Topographic Map

PCCA CDP DMPP Information Request
Corpus Christi Ship Channel
Nueces County, Texas

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Legend		
BUSites	Post-Harvey LiDAR (2018)	
Site (with 500ft Review Buffer)	Contour (FT NAVD 88)	
PA4	-2	0
SS1	2	4
	6	8
	10	12
	14	16
	18	20
	22	24
	26	28
	30	



PA4 Topographic Map

PCCA CDP DMPP Information Request
Corpus Christi Ship Channel
Nueces County, Texas

Attachment B1



PORT CORPUS CHRISTI

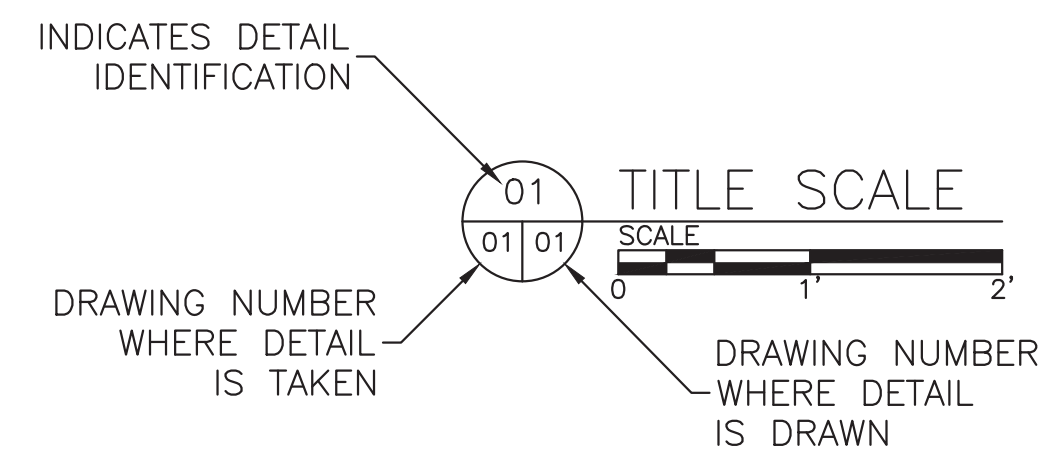
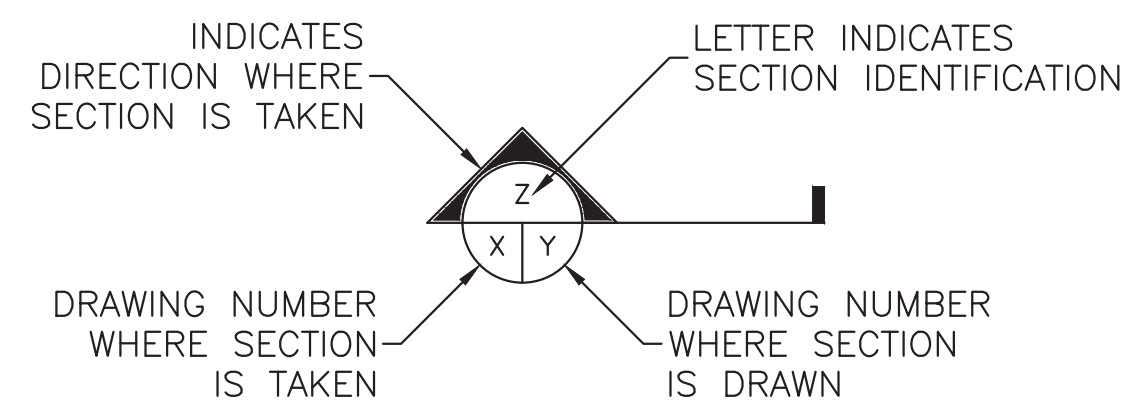
DEVELOPMENT OF BENEFICIAL USE SITES SS1, SS2, AND M10

PORT OF CORPUS CHRISTI AUTHORITY

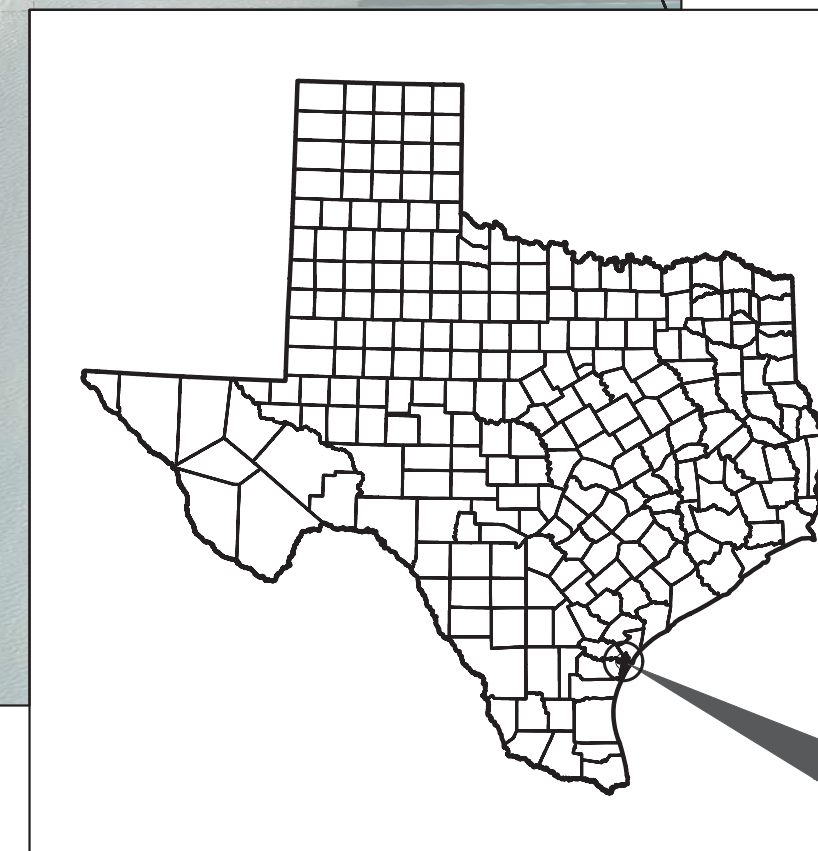
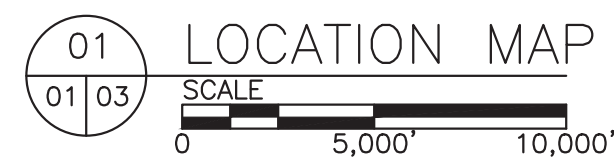
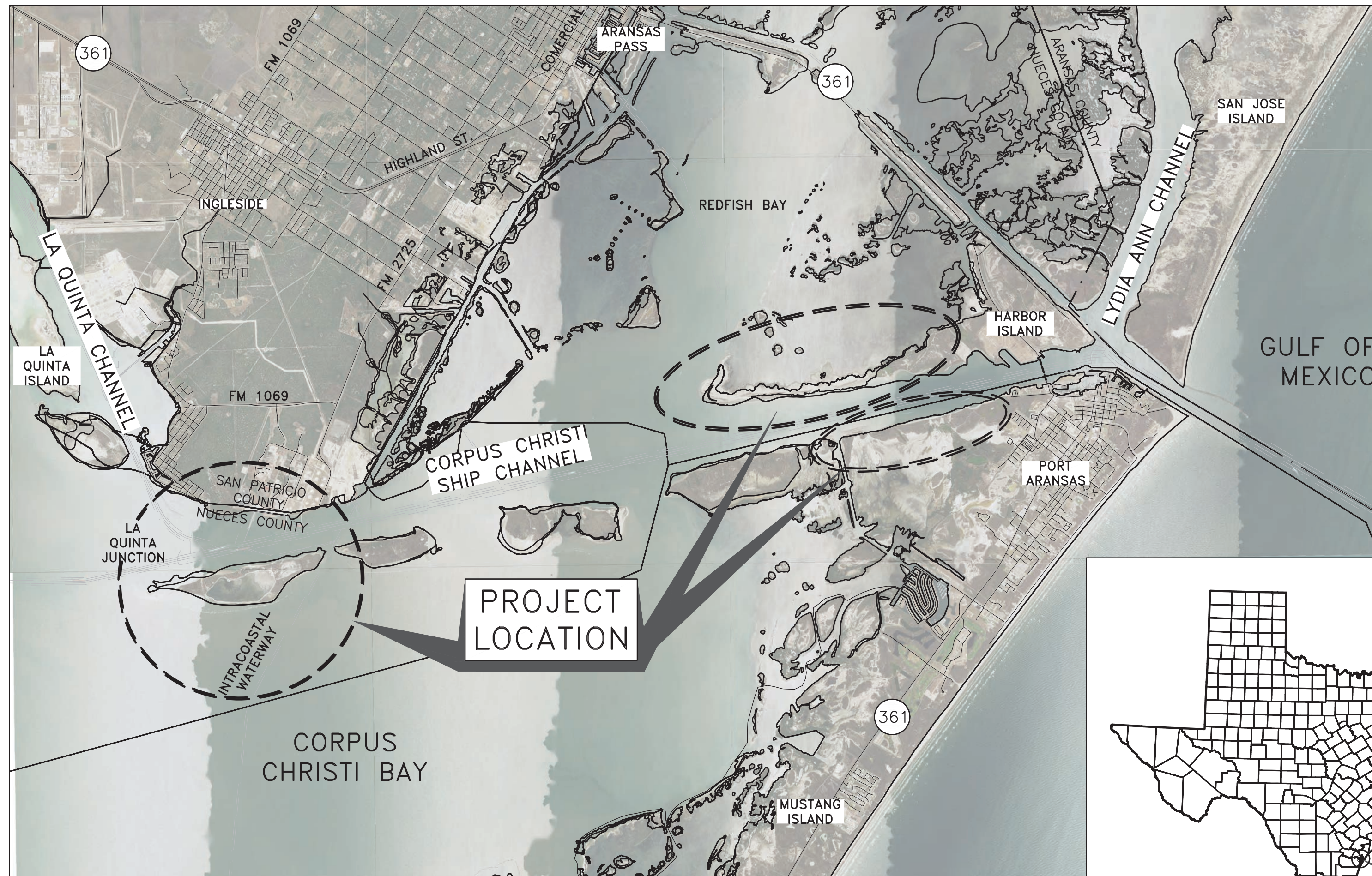
CORPUS CHRISTI, TEXAS

BY AUTHORITY OF THE PORT COMMISSIONERS
SEAN C. STRAWBRIDGE, CHIEF EXECUTIVE OFFICER

November 2019



TYPICAL SECTION AND DETAIL SYMBOLS



PROJECT LOCATION

INDEX OF SHEETS		
DWG NO.	SHEET NO.	SHEET TITLE
18-038B-01	01	TITLE SHEET
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18-038B-03	03	OVERALL SITE PLAN AND KEY MAP
18-038B-04	04	SITE PLAN M10
18-038B-05	05	SITE PLAN SS1 - EXTENSION
18-038B-06	06	SITE PLAN SS1
18-038B-07	07	SITE PLAN SS2
18-038B-08	08	M10 CONSTRUCTED WETLANDS (PHASE 1)
18-038B-09	09	TYPICAL SECTIONS (1 OF 2)
18-038B-10	10	TYPICAL SECTIONS (2 OF 2)
18-038B-11	11	TYPICAL SECTIONS (3 OF 3)
18-038B-12	12	M10 DIKE A - CROSS SECTIONS STA 2+00 - 16+00
18-038B-13	13	M10 DIKE A - CROSS SECTIONS STA 18+00 - 32+00
18-038B-14	14	M10 DIKE A - CROSS SECTIONS STA 34+00 - 48+00
18-038B-15	15	M10 DIKE A - CROSS SECTIONS STA 50+00 - 64+00
18-038B-16	16	M10 DIKE A - CROSS SECTIONS STA 66+00 - 70+00
18-038B-17	17	M10 DIKE B - CROSS SECTIONS STA 2+00 - 16+00
18-038B-18	18	M10 DIKE B - CROSS SECTIONS STA 18+00 - 32+00
18-038B-19	19	M10 DIKE B - CROSS SECTIONS STA 34+00 - 48+00
18-038B-20	20	M10 DIKE B - CROSS SECTIONS STA 50+00 - 52+00
18-038B-21	21	M10 DIKE C - CROSS SECTIONS STA 74+00 - 88+00
18-038B-22	22	M10 DIKE C - CROSS SECTIONS STA 90+00 - 104+00
18-038B-23	23	M10 DIKE C - CROSS SECTIONS STA 106+00 - 120+00
18-038B-24	24	M10 DIKE C - CROSS SECTIONS STA 122+00 - 136+00
18-038B-25	25	M10 DIKE C - CROSS SECTIONS STA 138+00 - 152+00
18-038B-26	26	M10 DIKE C - CROSS SECTIONS STA 154+00 - 168+00
18-038B-27	27	M10 DIKE C - CROSS SECTION STA 170+00
18-038B-28	28	SS1 EXTENSION CROSS SECTIONS STA 4+00 - 14+00
18-038B-29	29	SS1 EXTENSION CROSS SECTIONS STA 16+00 - 26+00
18-038B-30	30	SS1 EXTENSION CROSS SECTIONS STA 28+00 - 38+00
18-038B-31	31	SS1 EXTENSION CROSS SECTIONS STA 40+00 - 50+00
18-038B-32	32	SS1 EXTENSION CROSS SECTIONS STA 52+00 - 62+00
18-038B-33	33	SS1 CROSS SECTIONS STA 2+00 - 16+00
18-038B-34	34	SS1 CROSS SECTIONS STA 18+00 - 32+00
18-038B-35	35	SS1 CROSS SECTIONS STA 34+00 - 48+00
18-038B-36	36	SS1 CROSS SECTIONS STA 50+00 - 64+00
18-038B-37	37	SS1 CROSS SECTIONS STA 66+00 - 80+00
18-038B-38	38	SS1 CROSS SECTIONS STA 82+00 - 96+00
18-038B-39	39	SS1 CROSS SECTIONS STA 98+00 - 112+00
18-038B-40	40	SS1 CROSS SECTIONS STA 114+00 - 116+00
18-038B-41	41	SS2 CROSS SECTIONS STA 2+00 - 8+00
18-038B-42	42	SS2 CROSS SECTIONS STA 10+00 - 38+00
18-038B-43	43	SS2 CROSS SECTIONS STA 40+00 - 46+00
18-038B-44	44	SS2 CROSS SECTIONS STA 48+00 - 54+00
18-038B-45	45	DIKE TIE-IN DETAILS 1 OF 4
18-038B-46	46	DIKE TIE-IN DETAILS 2 OF 4
18-038B-47	47	DIKE TIE-IN DETAILS 3 OF 4
18-038B-48	48	DIKE TIE-IN DETAILS 4 OF 4
18-038B-49	49	M10 CONSTRUCTED WETLANDS DETAILS*
18-038B-50	50	SS1 SITE EXTENSION DRAINAGE DETAILS*

* SHEETS TO BE ADDED IN FUTURE SUBMITTAL

CALL BEFORE YOU DIG!



PARTICIPANTS REQUEST
48 HOURS NOTICE BEFORE YOU DIG,
DRILL, OR BLAST - STOP AND CALL

811

THE LONE STAR
NOTIFICATION COMPANY
AT 1-800-669-8344


THIS DOCUMENT IS
RELEASED FOR THE
PURPOSE OF INTERIM
REVIEW UNDER THE
AUTHORITY OF
TAYLOR NORDSTROM
TX PE#131201
ON 11/14/19.
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PCCA PROJ. 18-038B

NO.	DATE	REVISION



PORT CORPUS CHRISTI

<div><div>AECOM TECHNICAL SERVICES, INC. 19219 KATY FREEWAY, SUITE 100 HOUSTON, TEXAS 77094, UNITED STATES WWW.AECOM.COM TBPE REG. NO. F-3580</div></div>		SHEET 01 OF 50
PORT OF CORPUS CHRISTI AUTHORITY		
DEVELOPMENT OF BENEFICIAL USE SITES SS1, SS2, AND M10		
PLOT SCALE: AS SHOWN	TITLE SHEET	DATE: 11/14/2019
DWN. BY: AB		DWG. NO. 18-038B-01

P:_PWD\Port of Corpus Christi\900 CADD\20-Sheets\Berth_PA_BU\C-PCCA-G-02.dwg 11/13/2019 4:51 PM

GENERAL NOTES

1. SURVEY

- a. TOPOGRAPHIC AND BATHYMETRIC DATA SHOWN WERE COLLECTED BY NAISMITH MARINE SERVICES FROM OCTOBER 3 TO OCTOBER 16, 2019. SEA FLOOR AND TOPOGRAPHIC CONDITIONS ARE SUBJECT TO CHANGE. CONTRACTOR SHALL FIELD-VERIFY ALL ELEVATION DATA PRIOR TO CONSTRUCTION.
- b. HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), TEXAS STATE PLANE SOUTH ZONE 4205, U.S. SURVEY FEET, UNLESS OTHERWISE NOTED.
- c. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET, UNLESS OTHERWISE NOTED.
- d. REFERENCE HORIZONTAL AND VERTICAL CONTROL (REFERENCE MONUMENT “90009 E”):
N: 17,196,159.00
E: 1,445,773.65
ELEV.: 7.2' NAVD88

2. DIMENSIONS

- a. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND ELEVATIONS SHOW ON THE PLANS BY FIELD MEASUREMENT AND MUST NOTIFY THE ENGINEER OF ANY AND ALL DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORK.

3. QUANTITIES

- a. MATERIAL QUANTITIES AND VOLUMES TO CONSTRUCT THE BENEFICIAL USE SITES ARE PROVIDED FOR REFERENCE ONLY AND SHOULD BE CONSIDERED AS ESTIMATES. CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING ALL MATERIAL QUANTITIES AND VOLUMES IDENTIFIED BASED ON THE CHARACTERISTICS OF THE SOURCE MATERIAL USED TO CONSTRUCT THE BENEFICIAL USE (BU) SITES.

4. CONSTRUCTION SCOPE

- a. CONSTRUCTION OF M10 BENEFICIAL USE SITE PHASE 1 (IF EXECUTED).
- b. CONSTRUCTION OF M10 BENEFICIAL USE SITE FULL BUILD-OUT (IF EXECUTED)
- c. CONSTRUCTION OF SS1 BENEFICIAL USE SITE, INCLUDING SS1 EXTENSION (IF EXECUTED).
- d. CONSTRUCTION OF SS2 BENEFICIAL USE SITE (IF EXECUTED).

5. PROJECT SITE CONDITIONS

- a. THE CONTRACTOR IS RESPONSIBLE FOR BECOMING FAMILIAR WITH THE PROJECT SITE CONDITIONS TO DETERMINE HOW HE WILL ACCESS AND PERFORM THE WORK.
- b. THE CONTRACTOR IS RESPONSIBLE FOR BECOMING FAMILIAR WITH THE HYDRODYNAMIC CONDITIONS PRESENT AT THE PROJECT SITE PRIOR TO BIDDING. WATER LEVELS AND WINDS MAY VARY DUE TO SEASONAL AND/OR DAY-TO-DAY VARIATIONS, INCLUDING WEATHER EVENTS.
- c. STAGING AREA MUST BE IDENTIFIED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL AND AUTHORIZATION BY THE PCCA/ENGINEER PRIOR TO MOBILIZATION.
- d. CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE OF PROJECT SITE THROUGHOUT CONSTRUCTION TO PREVENT PONDING WITHIN THE PROJECT SITE.

6. EARTHWORK

- a. ALL DREDGING/EXCAVATION ACTIVITIES ARE TO BE DESIGNED AND SPECIFIED BY OTHERS.
- b. THE CONTRACTOR SHALL CONFIRM THAT THE SOURCE MATERIAL USED TO CONSTRUCT THE M10, SS1, AND SS2 SITES MEETS THE CRITERIA SPECIFIED WITHIN THE PROJECT DRAWINGS AND PROJECT MANUAL.
- c. THE CONTRACTOR MUST LOCATE, IDENTIFY, AND PROTECT EXISTING UTILITIES AND PIPELINES FROM DAMAGE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PREMARK ALL AREA WHERE EXCAVATION AND GRADING OPERATIONS ARE TO OCCUR AND SHALL CONTACT TEXAS 811, THE LONE STAR NOTIFICATION COMPANY (800-669-8344) AND THE OWNER/ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
- d. THE CONTRACTOR SHOULD VISIT THE PROJECT SITE PRIOR TO BIDDING TO ASSESS THE SOIL CONDITIONS WITHIN THE PROJECT SITE AND TO DETERMINE HOW HE WILL ACCESS AND PERFORM THE WORK.
- e. A GEOTECHNICAL INVESTIGATION WAS PERFORMED BY ROCK ENGINEERING AND TESTING LABORATORY IN OCTOBER 2019. THE RESULTS OF THE INVESTIGATION ARE PROVIDED FOR REFERENCE ONLY IN THE PROJECT MANUAL. THE CONTRACTOR IS RESPONSIBLE FOR ASSESSING THE SOIL CONDITIONS PRESENT AT THE PROJECT SITE PRIOR TO BIDDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND CONDUCT AT THEIR EXPENSE ANY ADDITIONAL GEOTECHNICAL INVESTIGATIONS NEEDED TO BID OR PERFORM THE WORK.
- f. EXCAVATION, GRADING AND CONSTRUCTION WILL OCCUR ONLY WITHIN THE PROJECT SITES SHOWN ON THE DRAWINGS, OR WITH PRIOR WRITTEN APPROVAL BY THE OWNER.
- g. A MAGNETOMETER AND/OR PIPELINE LOCATION SURVEY WAS COMPLETED FOR THE M10 SITE BY NAISMITH MARINE SERVICES, INC. IN OCTOBER 2019. THE RESULTS OF THE SURVEY ARE PROVIDED FOR REFERENCE ONLY IN THE PROJECT MANUAL. ADDITIONAL MAGNETOMETER AND/OR PIPELINE LOCATION SURVEYS ARE NOT EXPECTED; HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE NEED FOR AND TO

CONDUCT, IF NECESSARY, ADDITIONAL SURVEYS AS NEEDED TO BID OR PERFORM THE WORK.

- h. CONTRACTOR MUST TAKE APPROPRIATE MEASURES TO PROPERLY COMPACT PROPOSED DIKE(S), IF EXECUTED FOR CONSTRUCTION, AND ESTABLISH DESIGN SLOPES AS INDICATED ON THE PROJECT DRAWINGS.

7. SITE ACCESS

- a. CONTRACTOR MAY USE CONSTRUCTION MATS, OR SIMILAR, DURING CONSTRUCTION WITHIN THE PROJECT SITE. CONSTRUCTION MATS, OR SIMILAR, MUST BE REMOVED IN THEIR ENTIRETY AT THE CONCLUSION OF THE PROJECT. EXISTING IMPROVEMENTS (E.G., SURVEY MONUMENTATION, REVETMENT, BULKHEAD, ETC.) MUST BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY USE OF CONSTRUCTION MATS AND/OR TEMPORARY SAFETY FENCING, OR SIMILAR. COST TO REPAIR DAMAGE TO BE THE RESPONSIBILITY OF THE CONTRACTOR, NO SEPARATE PAYMENT WILL BE MADE.
- b. THE EXISTING GEOTUBE LOCATED AT THE SS1 EXTENSION SITE MUST BE PROTECTED FROM CONSTRUCTION ACTIVITIES AS NOTED ABOVE. ALL OR A PORTION OF THE GEOTUBE MAY BE REMOVED WHEN IT CAUSES AN OBSTRUCTION TO CONSTRUCTION ACTIVITIES WITH PRIOR APPROVAL BY THE PORT OF CORPUS CHRISTI (PCCA) AND ENGINEER.
- c. CONTRACTOR IS RESPONSIBLE FOR THE REPAIR AND/OR BACKFILL OF ANY RUTTING IN THE CONTRACTOR ACCESS AREAS THAT MAY RESULT FROM THE CONTRACTOR'S ACTIVITIES INCLUDING THE USE OF CONSTRUCTION MATS, OR SIMILAR.

8. SITE PROTECTION

- a. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF TEMPORARY SAFETY FENCING AND/OR CONTROLS TO ESTABLISH LIMITS OF CONSTRUCTION, AVOIDANCE AREAS, TRAFFIC CONTROLS AND ACCESS ROUTES, AND TO PROTECT THE GENERAL VICINITY OF THE PROJECT SITE. LOCATION OF THE INSTALLED FENCING AND/OR CONTROLS MUST BE APPROVED BY THE PCCA/ENGINEER PRIOR TO ANY MOBILIZATION OR CONSTRUCTION BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR REINSTALLATION, REPAIR, AND MAINTENANCE OF SAFETY CONTROLS AT ALL TIMES.

9. OBSTRUCTION OF NAVIGATION CHANNELS

- a. THE CONTRACTOR MUST KEEP NAVIGATION CHANNELS FREE FROM OBSTRUCTIONS. THE CONTRACTOR MUST CONDUCT THE WORK IN SUCH A MANNER AS TO PRECLUDE ANY OBSTRUCTIONS TO NAVIGATION.

10. ENVIRONMENTAL PROTECTION

- a. CONTRACTOR MUST TAKE APPROPRIATE MEASURES TO ENSURE CONSTRUCTION ACTIVITIES DO NOT DISTURB EXISTING WETLANDS/AQUATIC HABITAT. IF EXISTING WETLANDS/AQUATIC HABITAT ARE DAMAGED DURING CONSTRUCTION, THEY MUST BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
- b. DURING PLACEMENT OF FILL MATERIAL FOR THE PROPOSED DIKE(S) AND BACKFILL AREAS, CONTRACTOR MUST AVOID SEDIMENTATION IMPACTS FROM MISPLACED MATERIAL AND TURBIDITY TO EXISTING, ADJACENT WETLAND VEGETATION AND SEAGRASS AREAS. THE CONTRACTOR MUST INSTALL AND MAINTAIN SEDIMENT BARRIERS (SILT CURTAIN OR OWNER APPROVED EQUIVALENT) AS NECESSARY TO PROTECT THESE AREAS FROM IMPACTS DURING CONSTRUCTION OPERATIONS AS DIRECTED BY THE PCCA/ENGINEER.
- c. IN THE EVENT OF EXCESS TURBIDITY AT THE PROJECT SITE, AS SPECIFIED IN THE CONTRACT, THE CONTRACTOR MAY BE REQUIRED TO INSTALL AND MAINTAIN SILT CURTAINS OR OTHER APPROPRIATE BMPs AS NECESSARY TO MAINTAIN WATER QUALITY AS DIRECTED BY THE PCCA/ENGINEER.

11. OTHER CONTRACTS AND CONTRACTORS WORKING IN THE AREA

- a. PROJECTS BY OTHERS ARE ANTICIPATED TO BE ONGOING NEAR AND IN CLOSE PROXIMITY TO THE PROJECT SITE AREA DURING THE SAME TIME PERIOD AS CONSTRUCTION. THE CONTRACTOR MUST COORDINATE THE WORK AS NECESSARY TO AVOID IMPACTS TO ADJACENT WORK.


12. SAFETY


- a. THE CONTRACTOR SHALL FOLLOW PROCEDURES AND GUIDELINES CONSISTENT WITH OSHA REGULATIONS AND ANY ADDITIONAL REQUIREMENTS AS SPECIFIED IN THE PROJECT MANUAL.

ABBREVIATIONS AND ACRONYMS

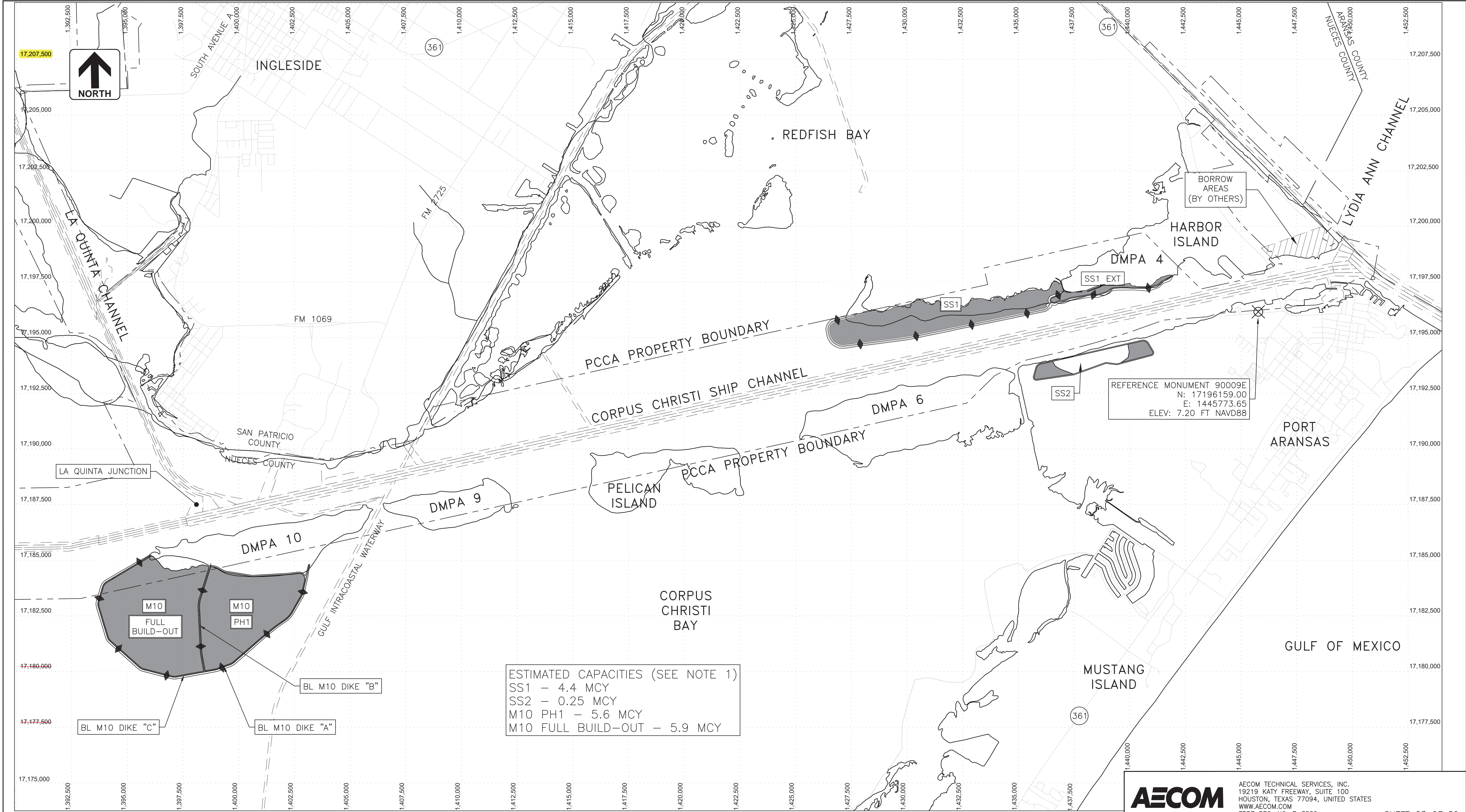
BL	BASELINE
BU	BENEFICIAL USE [OF DREDGED MATERIAL]
DMPA	DREDGED MATERIAL PLACEMENT AREA
E	EAST OR EASTING
EL / ELEV	ELEVATION
EXT	EXTENSION
FM	FARM-TO-MARKET ROAD
H	HORIZONTAL
MLLW	MEAN LOWER LOW WATER
N	NORTH OR NORTHING
NAVD88	NORTH AMERICAN VERTICAL DATUM 1988
NTS	NOT TO SCALE
PCCA	PORT OF CORPUS CHRISTI AUTHORITY
PH1	PHASE 1
PROJ.	PROJECT
S	SOUTH OR SOUTHING
STA	STATION
V	VERTICAL
W	WEST OR WESTING
°	DEGREES
'	FOOT/FEET OR MINUTES
"	INCH(ES) OR SECONDS

PCCA PROJ. #18-038B

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 PORT CORPUS CHRISTI			

		AECOM TECHNICAL SERVICES, INC. 19219 KATY FREEWAY, SUITE 100 HOUSTON, TEXAS 77094, UNITED STATES WWW.AECOM.COM TBPE REG. NO. F-3580		SHEET 02 OF 50	
PORT OF CORPUS CHRISTI AUTHORITY					
DEVELOPMENT OF BENEFICIAL USE SITES SS1, SS2, AND M10					
SCALE: N/A		GENERAL NOTES LEGEND AND ABBREVIATIONS		DATE: 11/13/2019	
DRAWN BY: AB				DWG. NO. 18-038B-02	

P:_PWD\Port of Corpus Christi\900 CADD\20-Sheets\Berth_PA_BU\PCCA-C01-SITE_KEY.dwg 11/14/2019 3:31 PM



LEGEND

BENEFICIAL USE SITE

NEW DIKE BASELINE (BL)

BORROW AREA (BY OTHERS)

PORT OF CORPUS CHRISTI AUTHORITY (PCCA)
PROPERTY BOUNDARY

SURVEY BENCHMARK

01
03 03

SITE PLAN

SCALE

0 2,000' 4,000'

NOTES:
1. ALL CAPACITIES ARE ESTIMATED FOR REFERENCE ONLY. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR DETERMINING ALL MATERIAL QUANTITIES NEED TO COMPLETE THE WORK.

ESTIMATED CAPACITIES (SEE NOTE 1)
SS1 - 4.4 MCY
SS2 - 0.25 MCY
M10 PH1 - 5.6 MCY
M10 FULL BUILD-OUT - 5.9 MCY

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PORT **CORPUS CHRISTI**

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SHEET 03 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

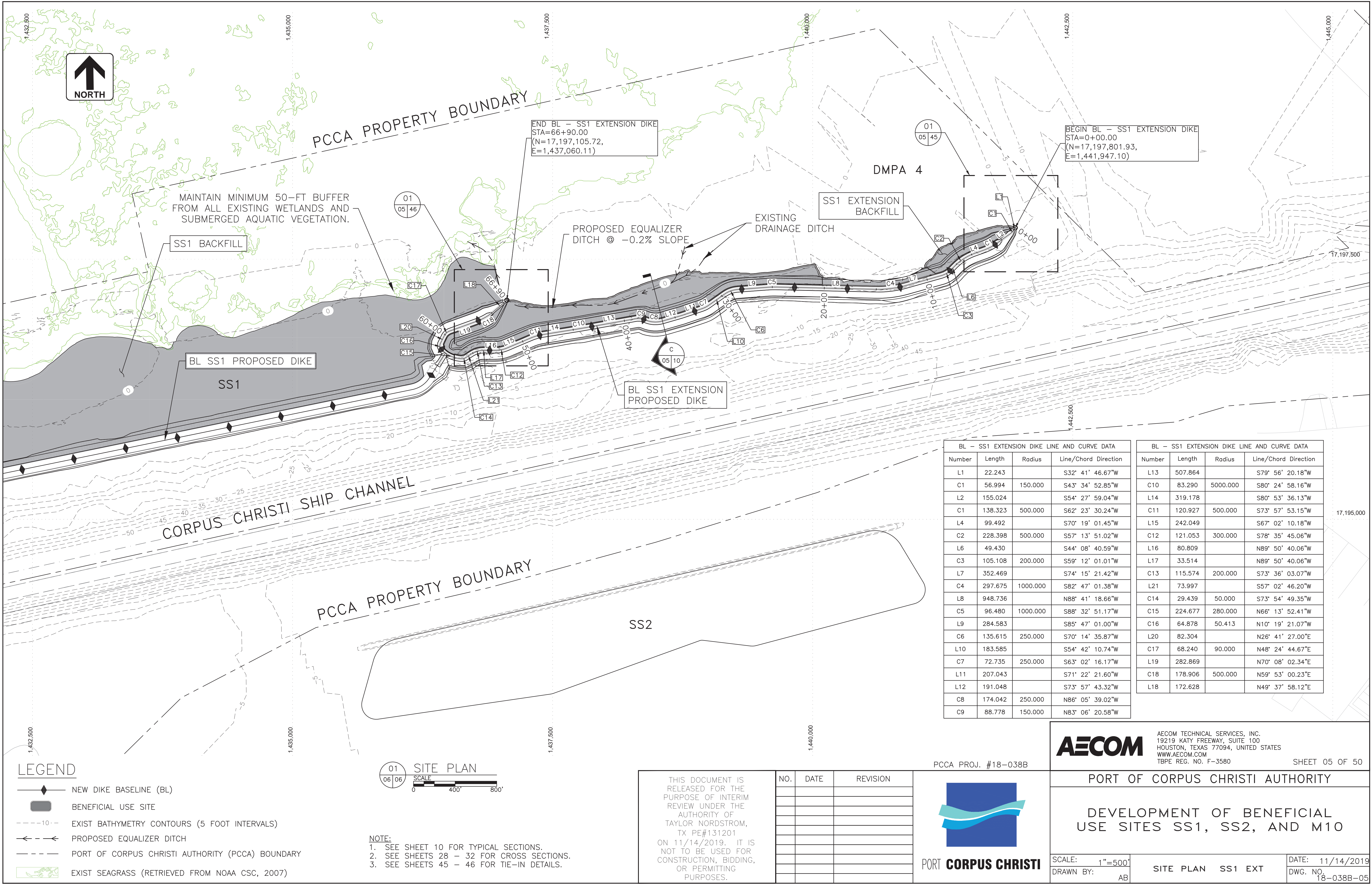
SCALE: 1"=2000'

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OVERALL SITE PLAN
AND KEY MAP

DATE: 11/14/2019
DWG. NO. 18-038B-03

P:_PWD\Port of Corpus Christi\900 CADD\20-Sheets\Berth_PA_BU\PCCA-C-SITE_SS1-EXT.dwg 11/14/2019 4:34 PM



BL - SS1 EXTENSION DIKE LINE AND CURVE DATA				
Number	Length	Radius	Line/Chord Direction	
L1	22.243		S32° 41' 46.67"W	
C1	56.994	150.000	S43° 34' 52.85"W	
L2	155.024		S54° 27' 59.04"W	
C1	138.323	500.000	S62° 23' 30.24"W	
L4	99.492		S70° 19' 01.45"W	
C2	228.398	500.000	S57° 13' 51.02"W	
L6	49.430		S44° 08' 40.59"W	
C3	105.108	200.000	S59° 12' 01.01"W	
L7	352.469		S74° 15' 21.42"W	
C4	297.675	1000.000	S82° 47' 01.38"W	
L8	948.736		N88° 41' 18.66"W	
C5	96.480	1000.000	S88° 32' 51.17"W	
L9	284.583		S85° 47' 01.00"W	
C6	135.615	250.000	S70° 14' 35.87"W	
L10	183.585		S54° 42' 10.74"W	
C7	72.735	250.000	S63° 02' 16.17"W	
L11	207.043		S71° 22' 21.60"W	
L12	191.048		S73° 57' 43.32"W	
C8	174.042	250.000	N86° 05' 39.02"W	
C9	88.778	150.000	N83° 06' 20.58"W	

BL - SS1 EXTENSION DIKE LINE AND CURVE DATA				
Number	Length	Radius	Line/Chord Direction	
L13	507.864		S79° 56' 20.18"W	
C10	83.290	5000.000	S80° 24' 58.16"W	
L14	319.178		S80° 53' 36.13"W	
C11	120.927	500.000	S73° 57' 53.15"W	
L15	242.049		S67° 02' 10.18"W	
C12	121.053	300.000	S78° 35' 45.06"W	
L16	80.809		N89° 50' 40.06"W	
L17	33.514		N89° 50' 40.06"W	
C13	115.574	200.000	S73° 36' 03.07"W	
L21	73.997		S57° 02' 46.20"W	
C14	29.439	50.000	S73° 54' 49.35"W	
C15	224.677	280.000	N66° 13' 52.41"W	
C16	64.878	50.413	N10° 19' 21.07"W	
L20	82.304		N26° 41' 27.00"E	
C17	68.240	90.000	N48° 24' 44.67"E	
L19	282.869		N70° 08' 02.34"E	
C18	178.906	500.000	N59° 53' 00.23"E	
L18	172.628		N49° 37' 58.12"E	

- LEGEND**
- NEW DIKE BASELINE (BL)
 - BENEFICIAL USE SITE
 - EXIST BATHYMETRY CONTOURS (5 FOOT INTERVALS)
 - PROPOSED EQUALIZER DITCH
 - PORT OF CORPUS CHRISTI AUTHORITY (PCCA) BOUNDARY
 - EXIST SEAGRASS (RETRIEVED FROM NOAA CSC, 2007)



- NOTE:
- SEE SHEET 10 FOR TYPICAL SECTIONS.
 - SEE SHEETS 28 - 32 FOR CROSS SECTIONS.
 - SEE SHEETS 45 - 46 FOR TIE-IN DETAILS.

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NO.	DATE	REVISION



PCCA PROJ. #18-038B

PORT **CORPUS CHRISTI**



AECOM TECHNICAL SERVICES, INC.
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HOUSTON, TEXAS 77094, UNITED STATES
WWW.AECOM.COM
TBPE REG. NO. F-3580

SHEET 05 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

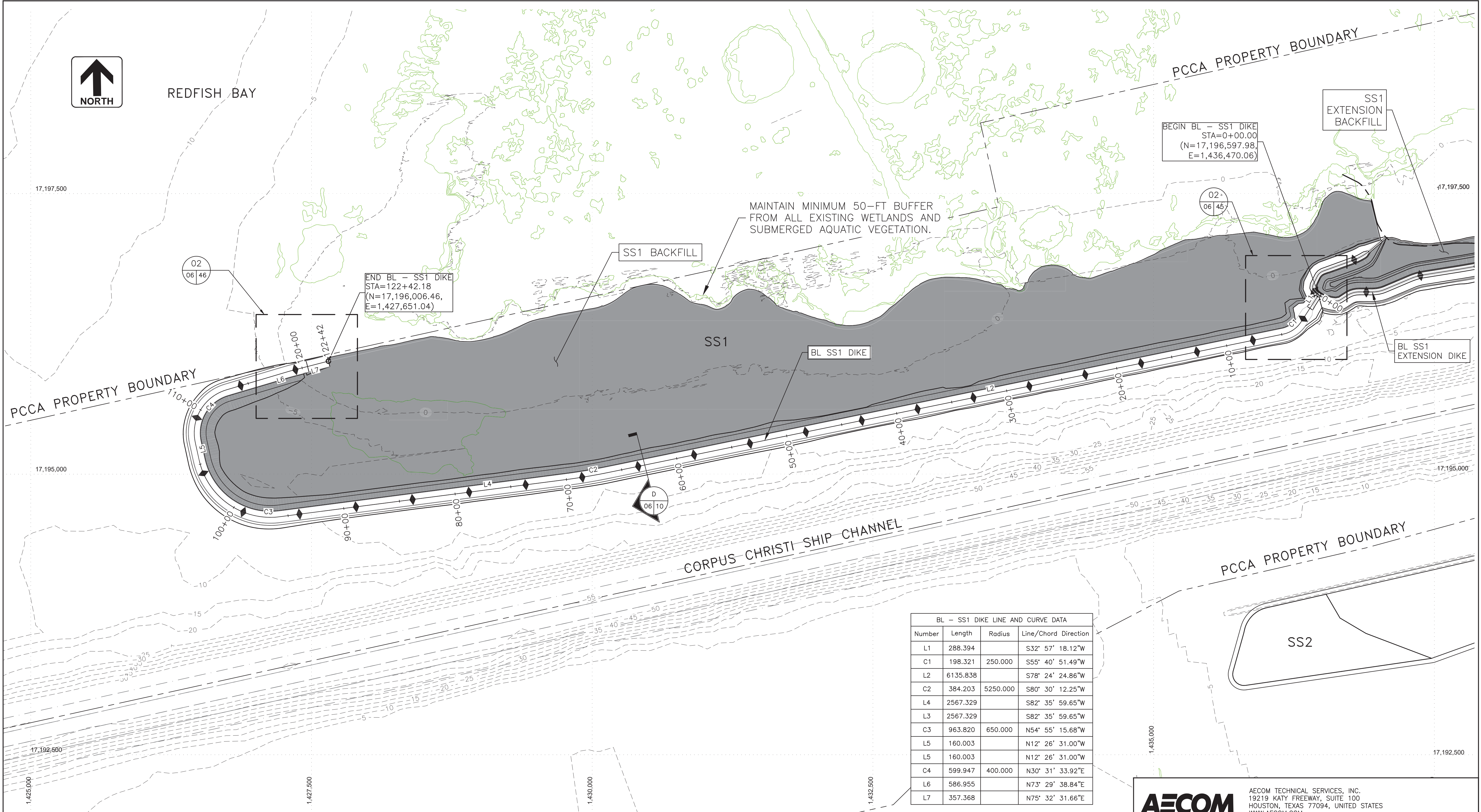
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=500'
DRAWN BY: AB

SITE PLAN SS1 EXT

DATE: 11/14/2019
DWG. NO. 18-038B-05

P:_PWD\Port of Corpus Christi\900 CADD\20-Sheets\Berth_PA_BU\PCCA-C-SITE_SS1.dwg 11/14/2019 5:38 PM



BL - SS1 DIKE LINE AND CURVE DATA			
Number	Length	Radius	Line/Chord Direction
L1	288.394		S32° 57' 18.12"W
C1	198.321	250.000	S55° 40' 51.49"W
L2	6135.838		S78° 24' 24.86"W
C2	384.203	5250.000	S80° 30' 12.25"W
L4	2567.329		S82° 35' 59.65"W
L3	2567.329		S82° 35' 59.65"W
C3	963.820	650.000	N54° 55' 15.68"W
L5	160.003		N12° 26' 31.00"W
L5	160.003		N12° 26' 31.00"W
C4	599.947	400.000	N30° 31' 33.92"E
L6	586.955		N73° 29' 38.84"E
L7	357.368		N75° 32' 31.66"E

- LEGEND**
- NEW DIKE BASELINE (BL)
 - BENEFICIAL USE SITE
 - EXIST BATHYMETRY CONTOURS (5 FOOT INTERVALS)
 - PORT OF CORPUS CHRISTI AUTHORITY (PCCA) BOUNDARY
 - EXIST SEAGRASS (RETRIEVED FROM NOAA CSC, 2007)



- NOTE:**
- SEE SHEET 10 FOR TYPICAL SECTIONS.
 - SEE SHEETS 33-40 FOR CROSS SECTIONS.
 - SEE SHEET 45-46 FOR TIE-IN DETAILS.

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TBPE REG. NO. F-3580

SHEET 06 OF 50

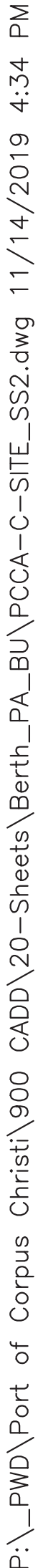
PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=500'
DRAWN BY: AB







SITE PLAN SS1

DATE: 11/14/2019
DWG. NO. 18-038B-06



BL — SS2 DIKE LINE AND CURVE DATA			
Number	Length	Radius	Line/Chord Direction
L1	4465.74		S77° 09' 03.72"W
L2	960.13		S77° 09' 03.72"W

LEGEND

-  NEW DIKE BASELINE (BL)
 BENEFICIAL USE DREDGED MATERIAL PLACEMENT AREA
 ---10--- EXIST BATHYMETRY CONTOURS (5 FOOT INTERVALS)
 - - - - - PORT OF CORPUS CHRISTI AUTHORITY (PCCA) BOUNDARY
  EXIST SEAGRASS (RETRIEVED FROM NOAA CSC, 2007)



NOTE:

1. SEE SHEET 11 FOR TYPICAL SECTION.
2. SEE SHEETS 41-44 FOR CROSS SECTIONS.

60% SUBMITTAL
ISSUED FOR REVIEW ONLY.
NOT FOR PERMITTING,
BIDDING, OR CONSTRUCTION.

[illegible]PORT **CORPUS CHRISTI**

PCCA PROJ. #18-038B

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SHEET 07 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

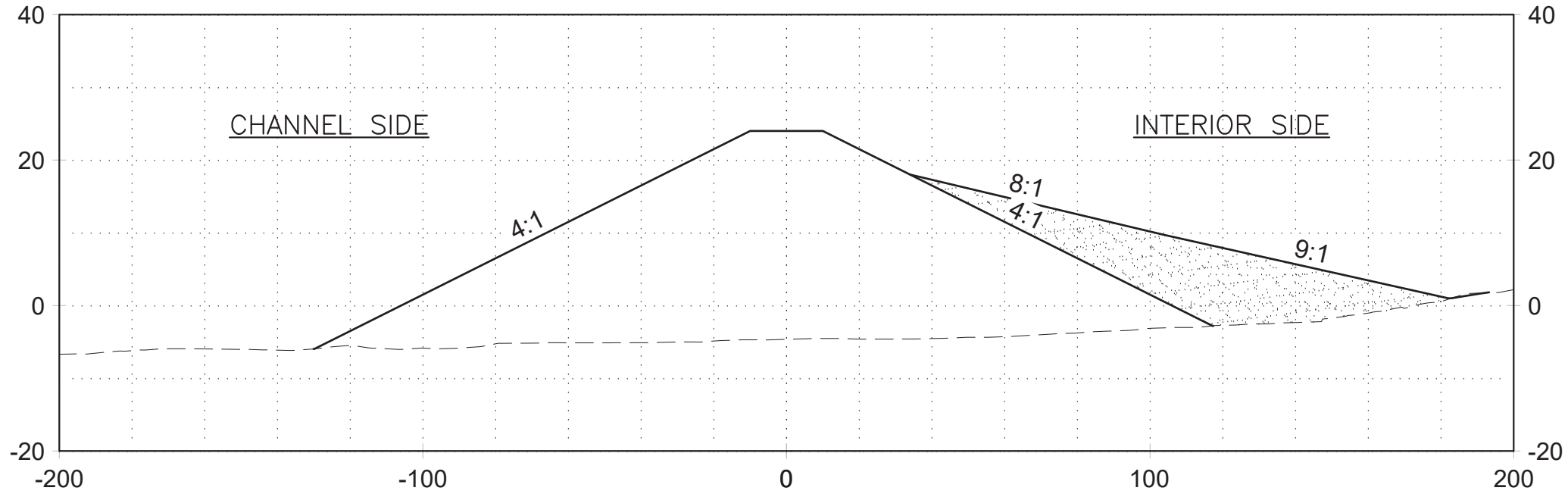
DEVELOPMENT OF BENEFICIAL USE SITES SS1, SS2, AND M10

SCALE:	1"=500'
DRAWN BY:	AB

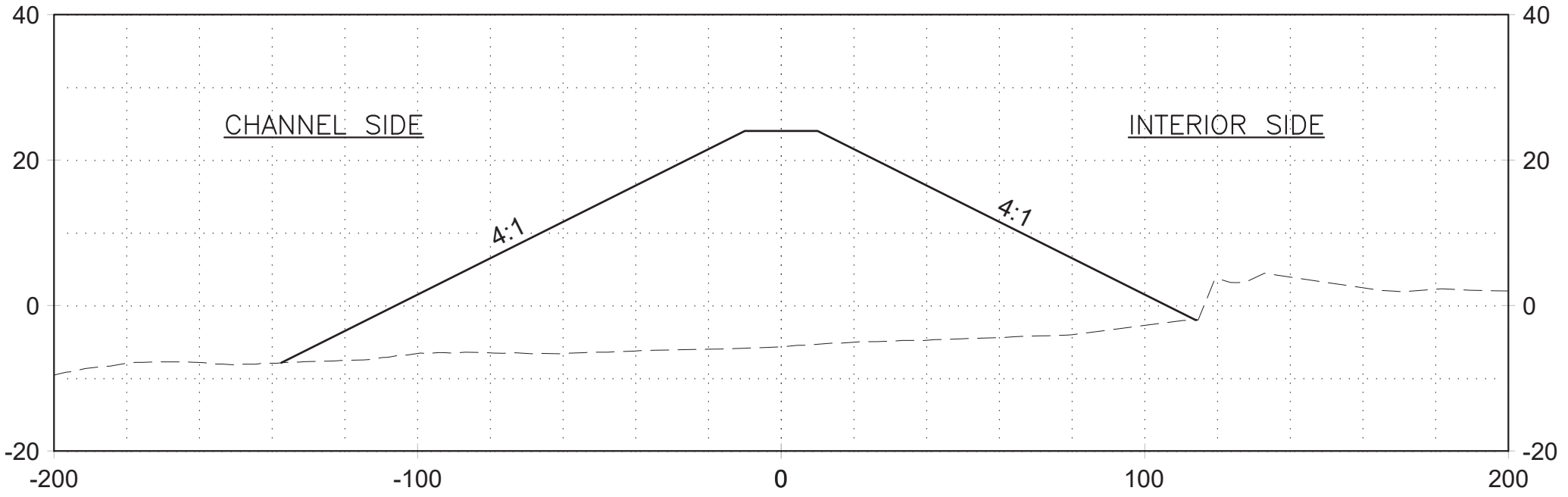
SITE PLAN SS2

DATE: 11/14/2019
DWG. NO. 18-038B-07

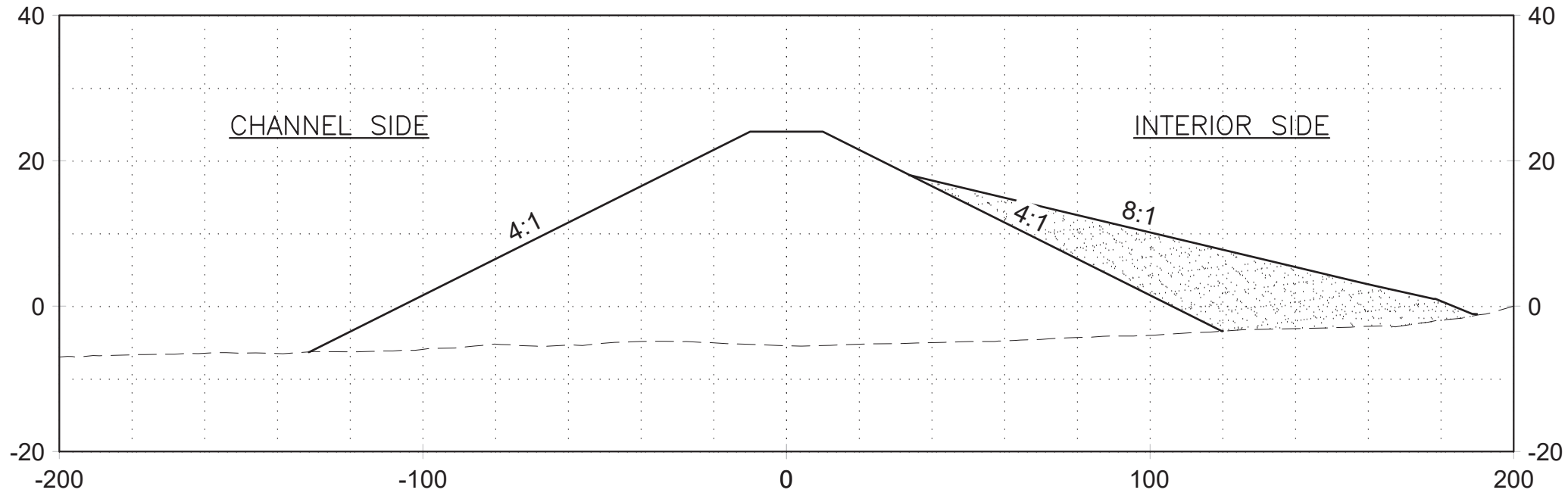
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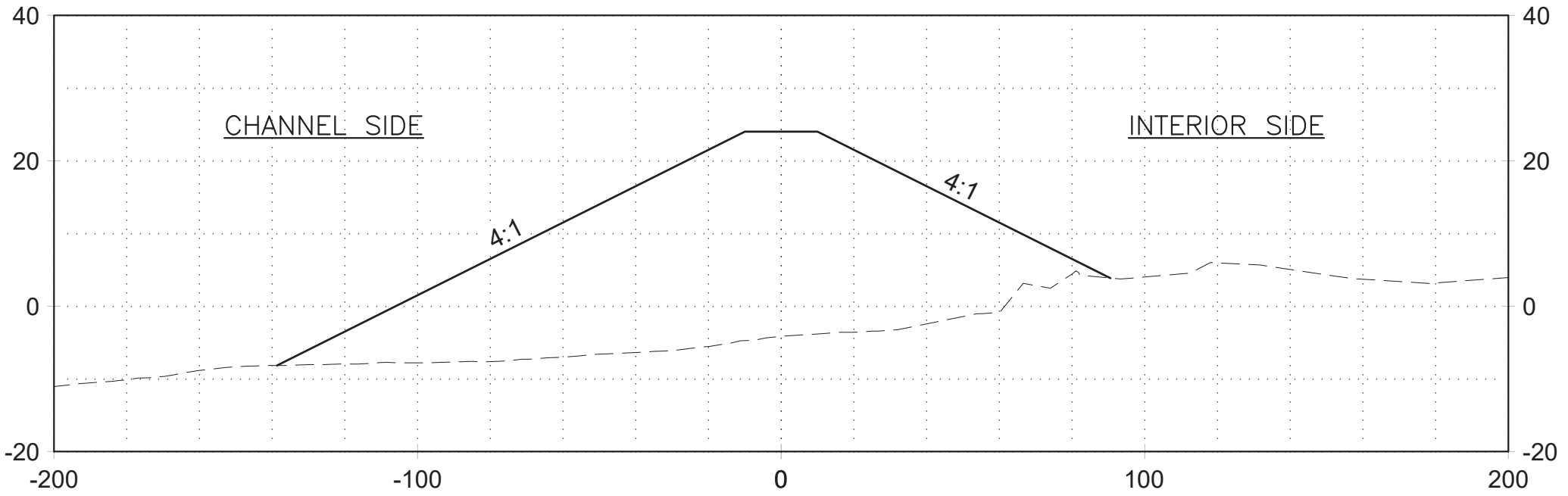
BL - SS1 EXTENSION DIKE
STA 4+00



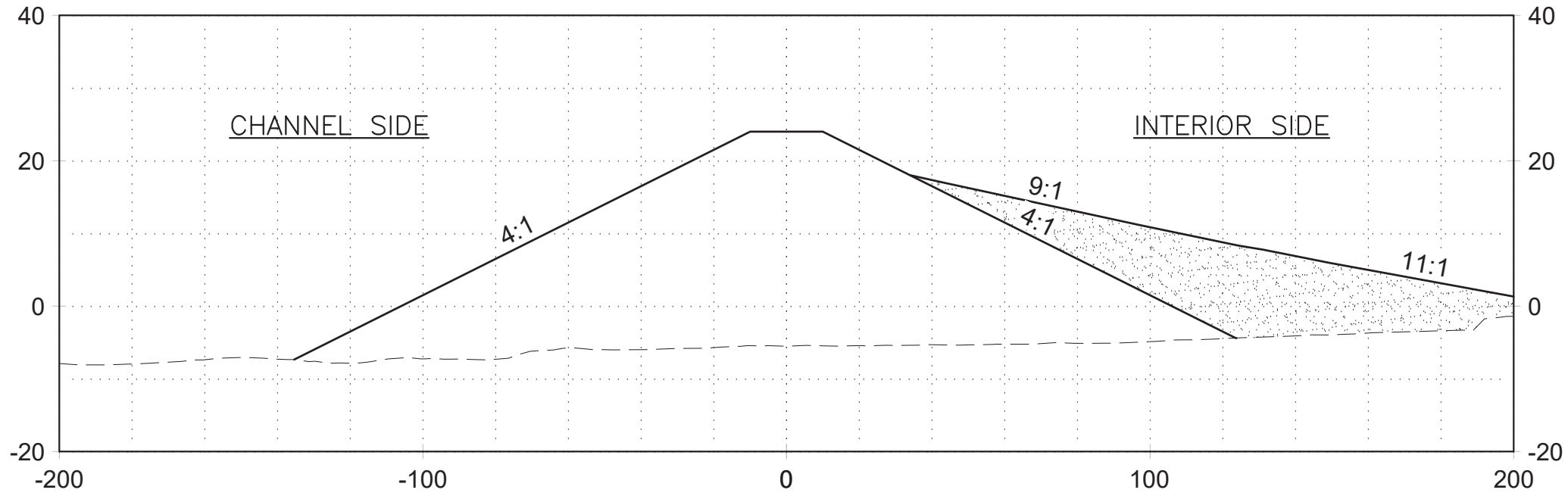
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STA 10+00



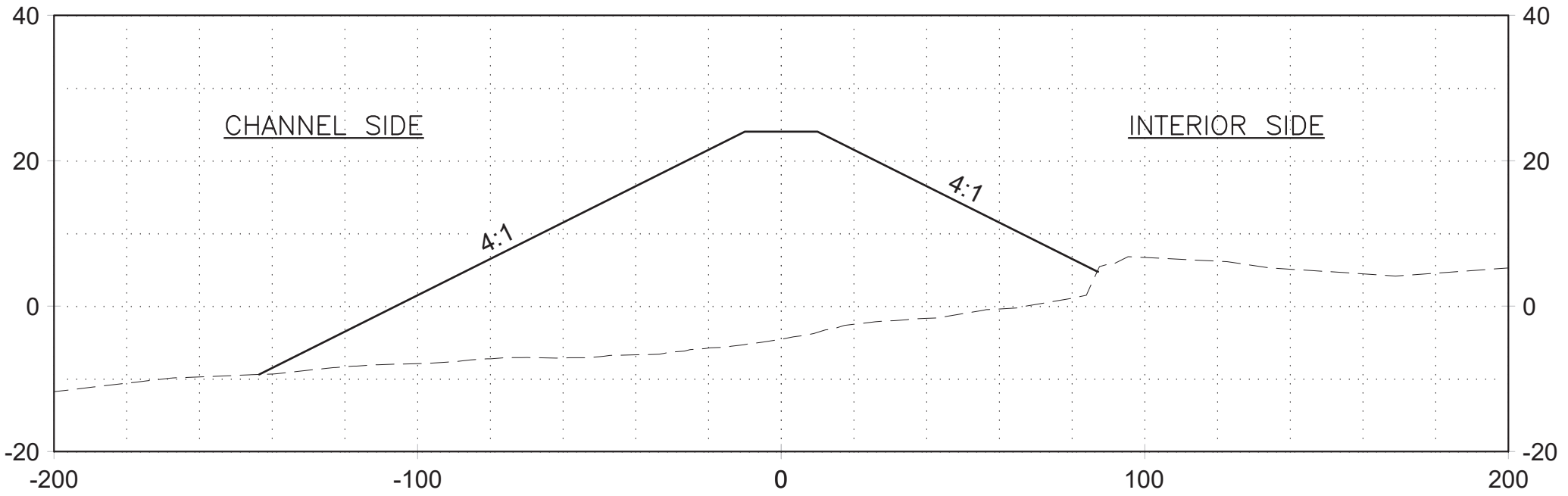
BL - SS1 EXTENSION DIKE
STA 6+00



BL - SS1 EXTENSION DIKE
STA 12+00



BL - SS1 EXTENSION DIKE
STA 8+00

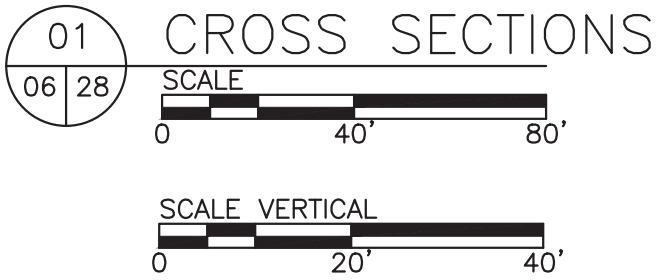


BL - SS1 EXTENSION DIKE
STA 14+00

- NOTE:
1. CONTRACTOR TO IDENTIFY, TRANSPORT, AND PLACE FILL FROM DREDGING SITE (DESIGN BY OTHERS). REFER TO THE PROJECT MANUAL FOR MATERIAL SPECIFICATIONS BY BU SITE.
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 4. ALL CAPACITIES ARE ESTIMATED FOR REFERENCE ONLY. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR DETERMINING ALL MATERIAL QUANTITIES NEED TO COMPLETE THE WORK.

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL




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PCCA PROJ. #18-038B



PORT **CORPUS CHRISTI**



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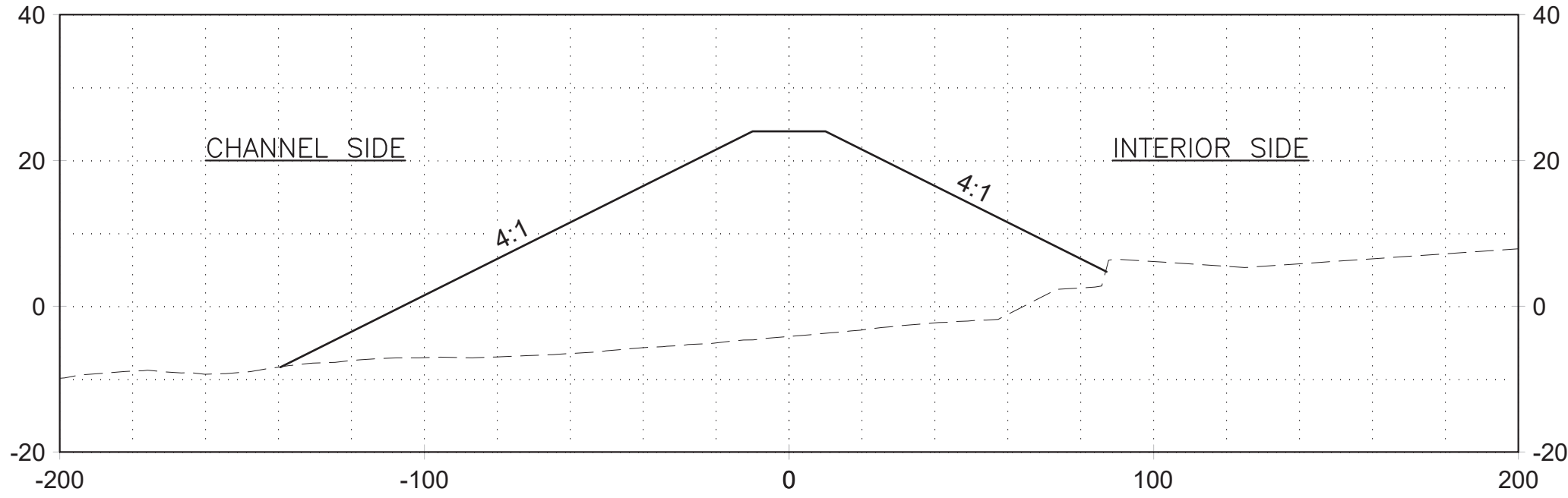
SHEET 28 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

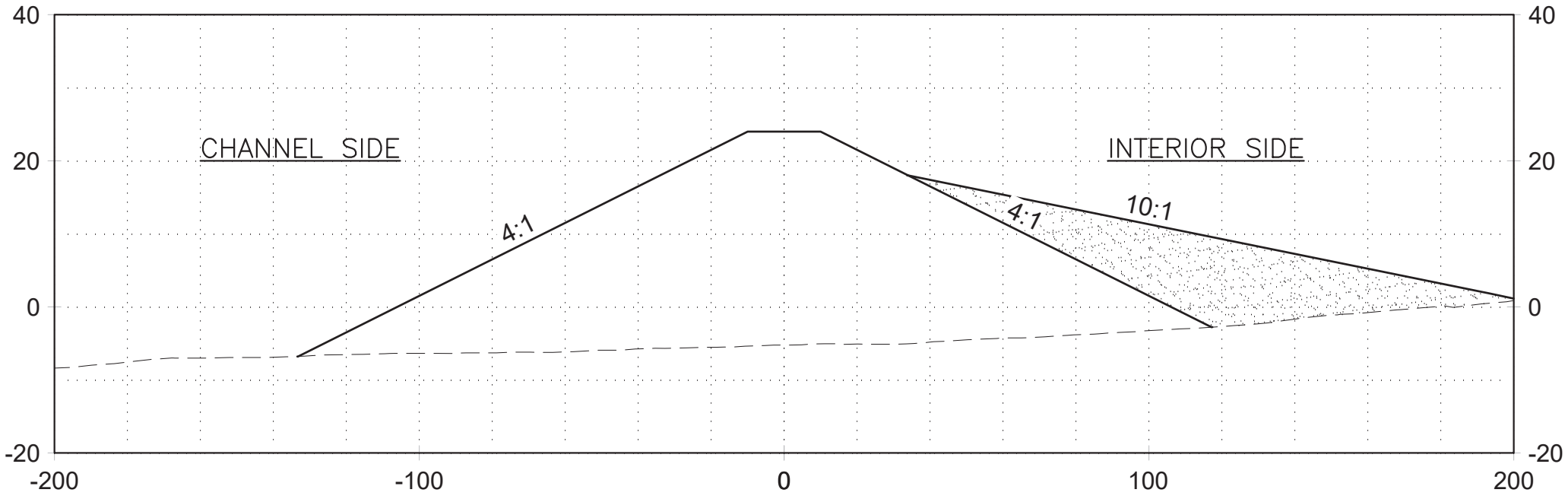
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'	SS1 EXT CROSS SECTIONS STA 4+00 - 14+00	DATE: 11/14/2019
DRAWN BY: AB		DWG. NO. 18-038B-28

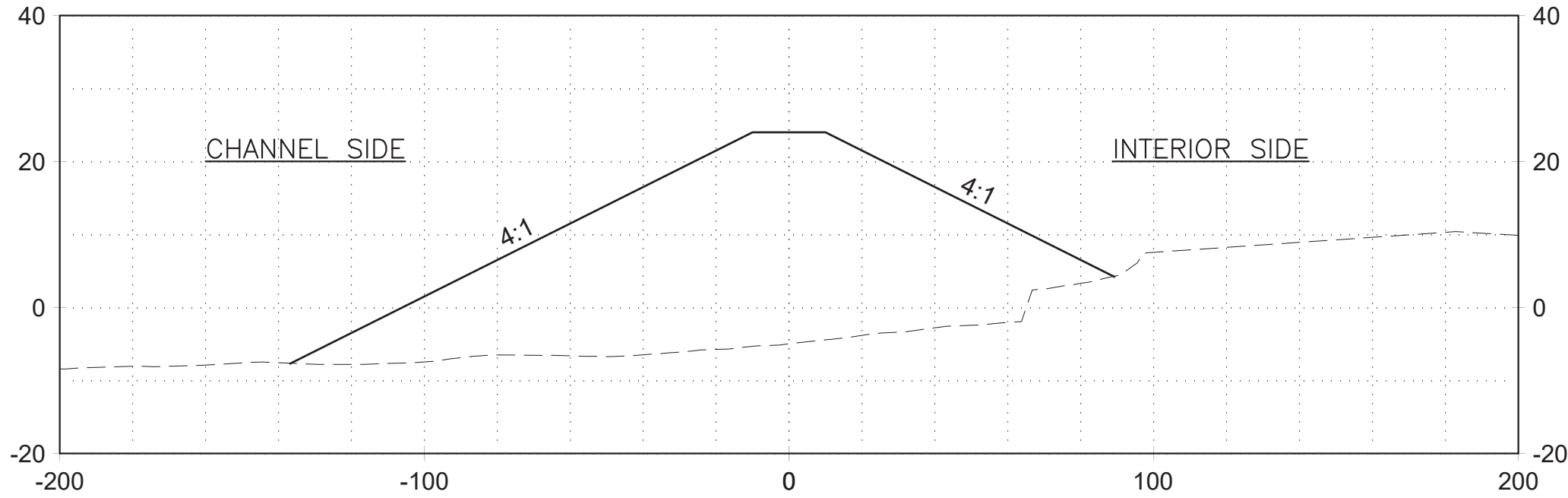
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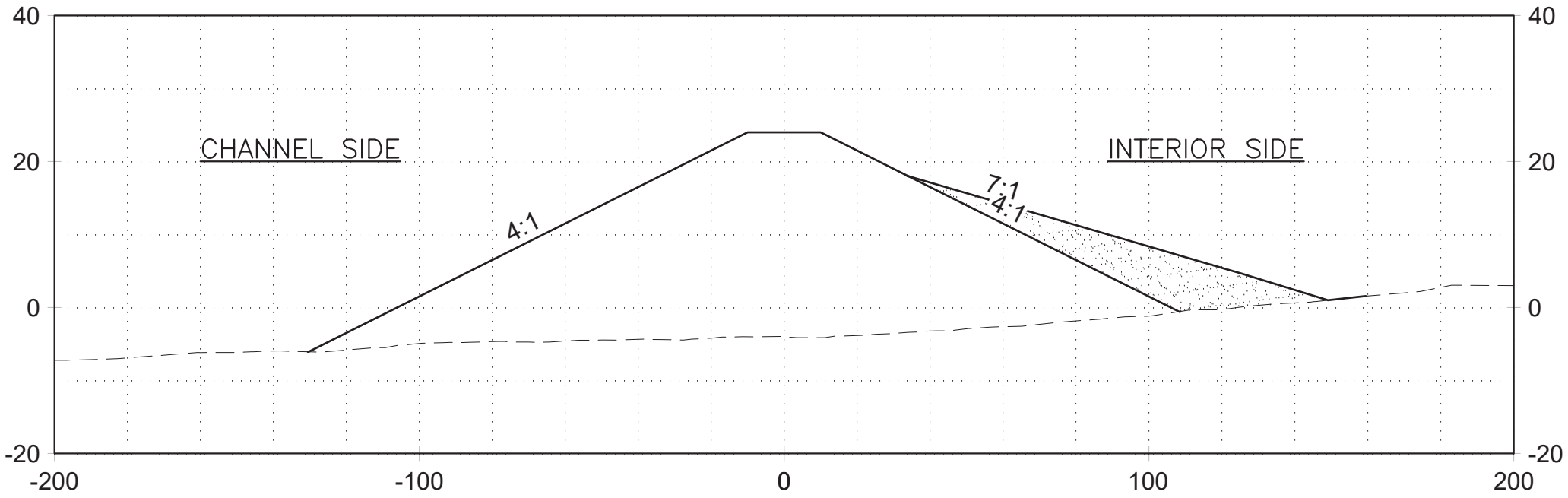
BL - SS1 EXTENSION DIKE
STA 16+00



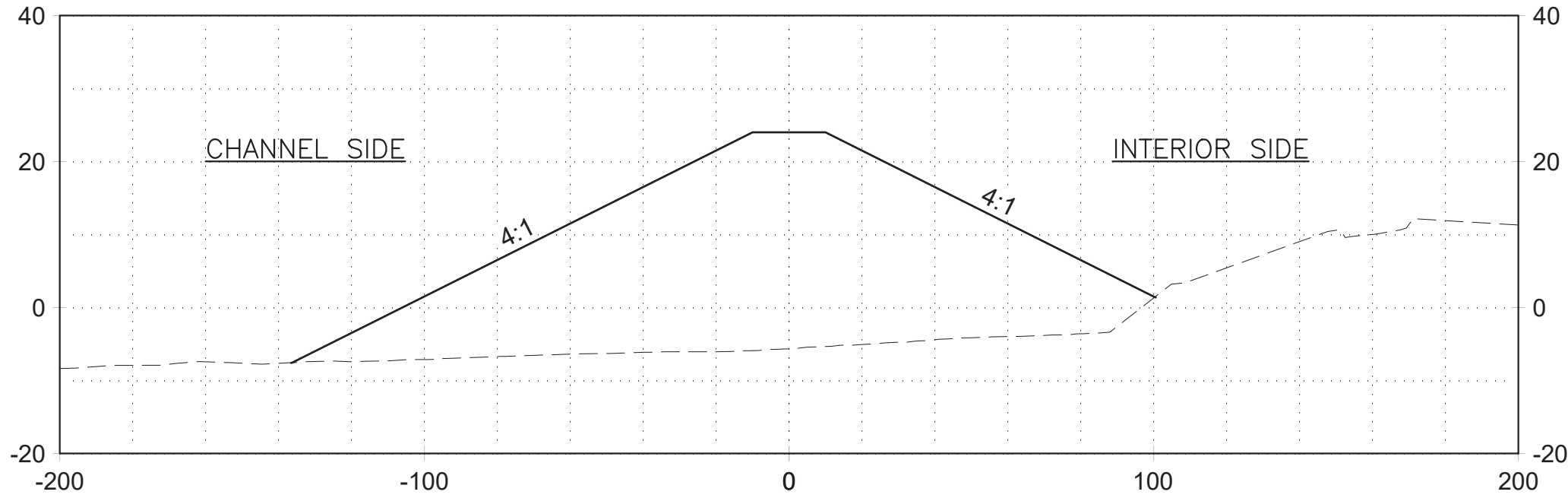
BL - SS1 EXTENSION DIKE
STA 22+00



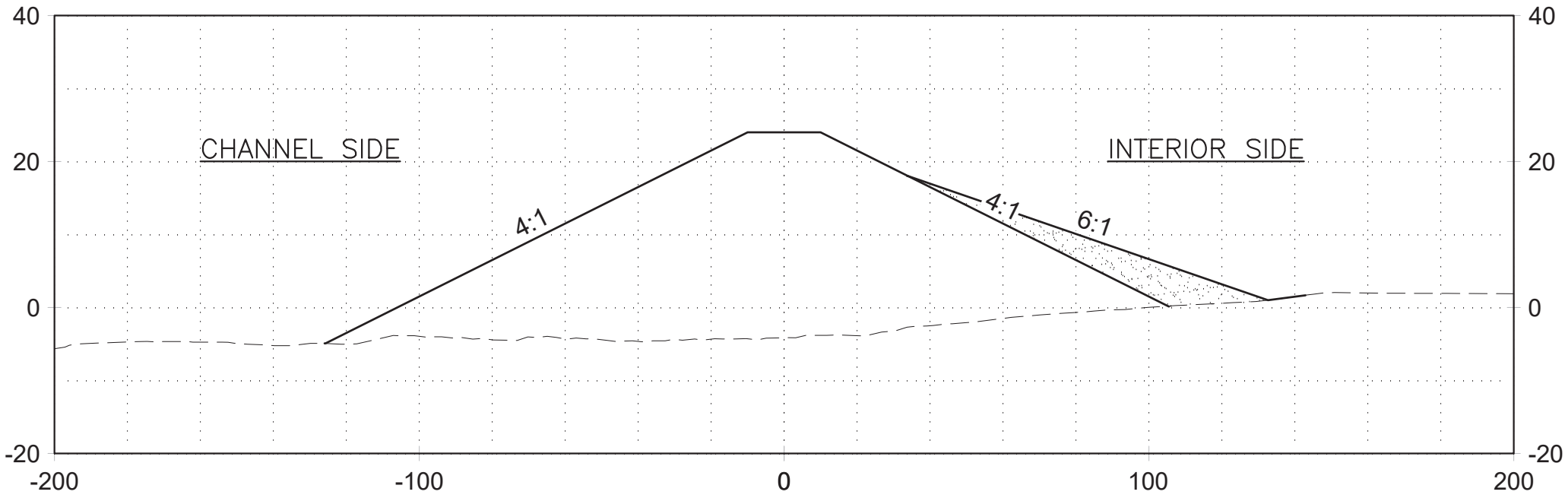
BL - SS1 EXTENSION DIKE
STA 18+00



BL - SS1 EXTENSION DIKE
STA 24+00



BL - SS1 EXTENSION DIKE
STA 20+00

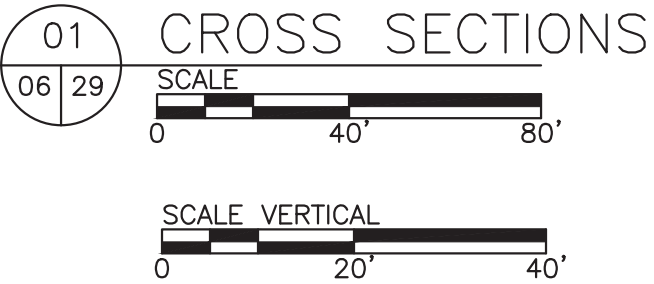


BL - SS1 EXTENSION DIKE
STA 26+00

- NOTE:
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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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SHEET 29 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

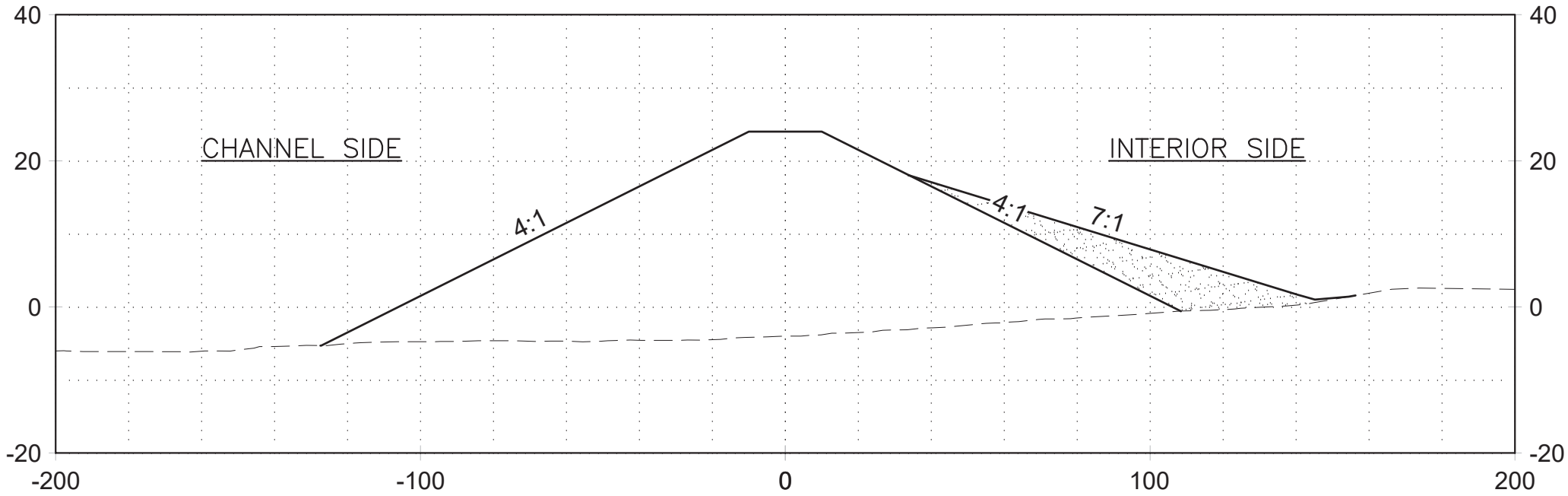
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

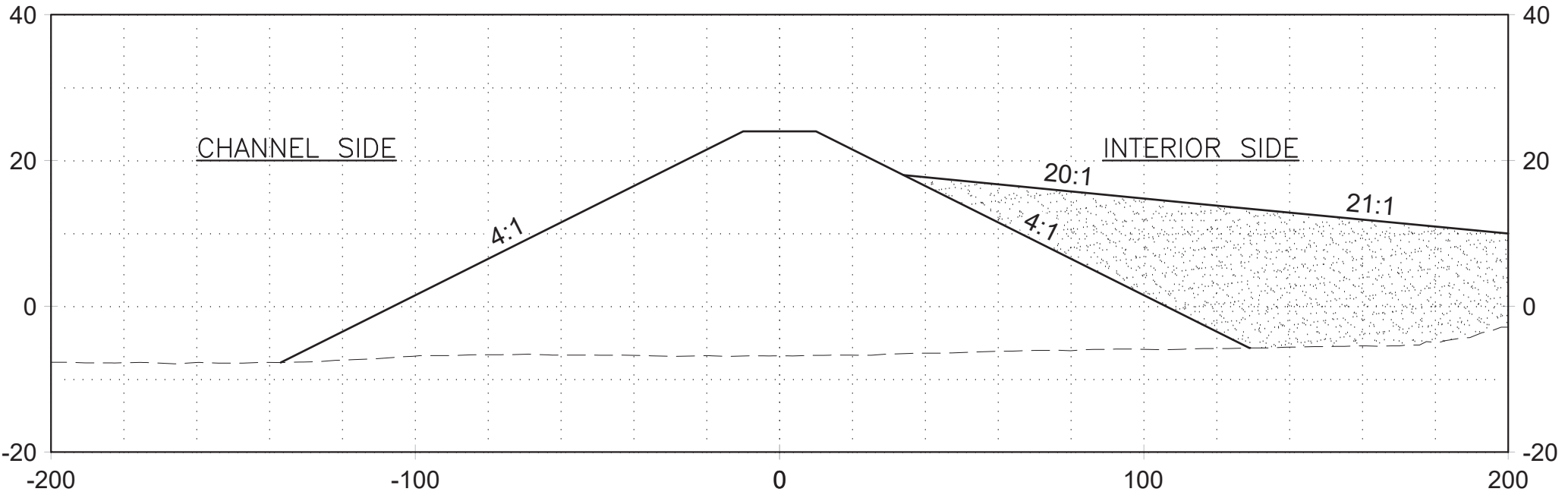
SS1 EXT CROSS
SECTIONS STA 16+00
- 26+00

DATE: 11/14/2019
DWG. NO. 18-038B-29

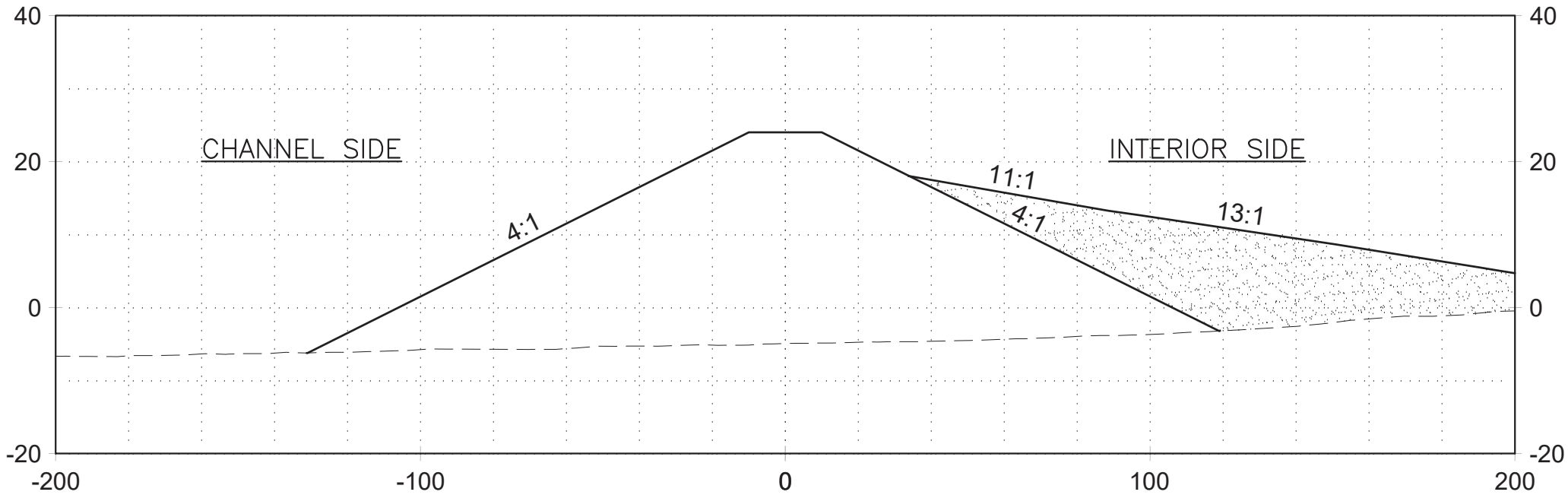
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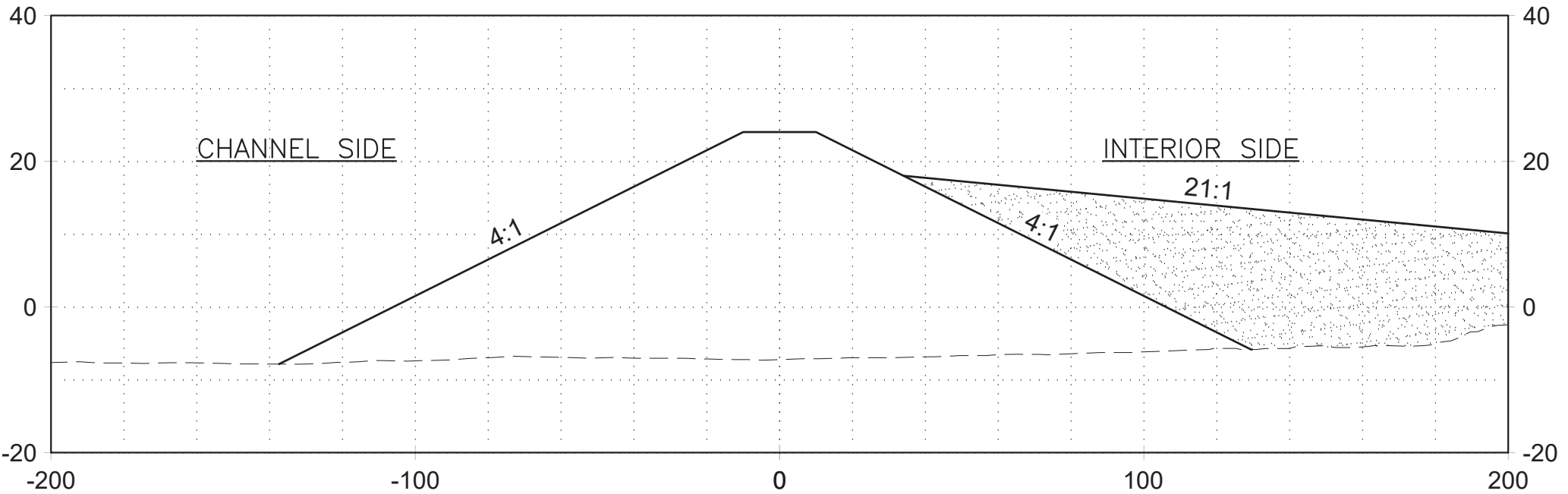
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STA 28+00



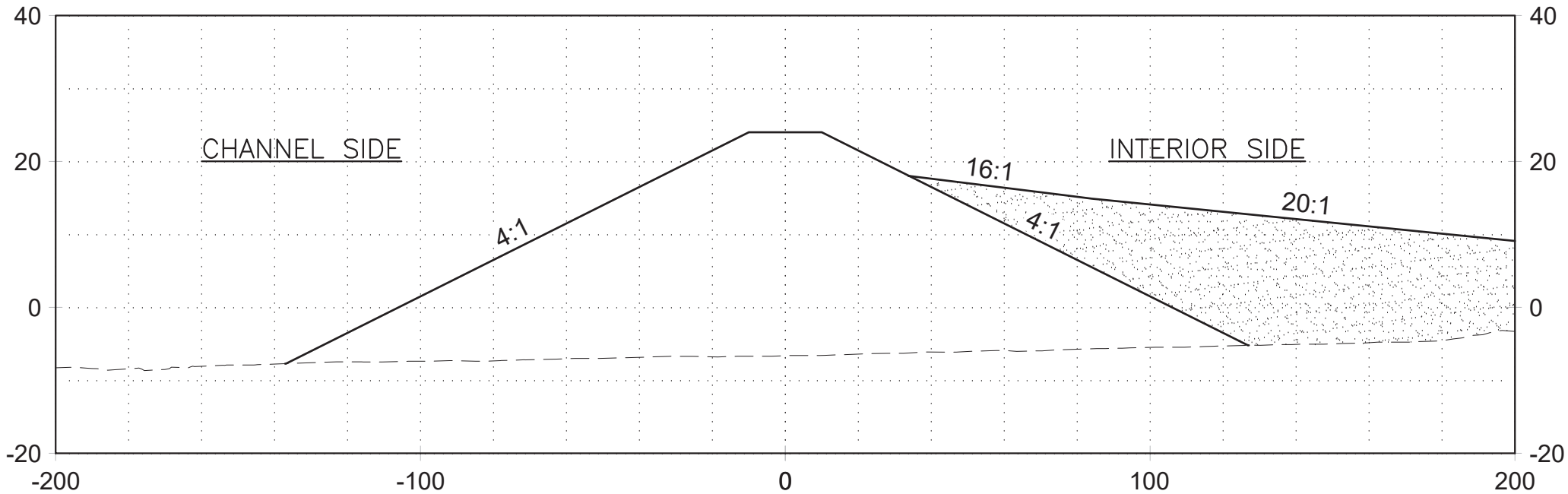
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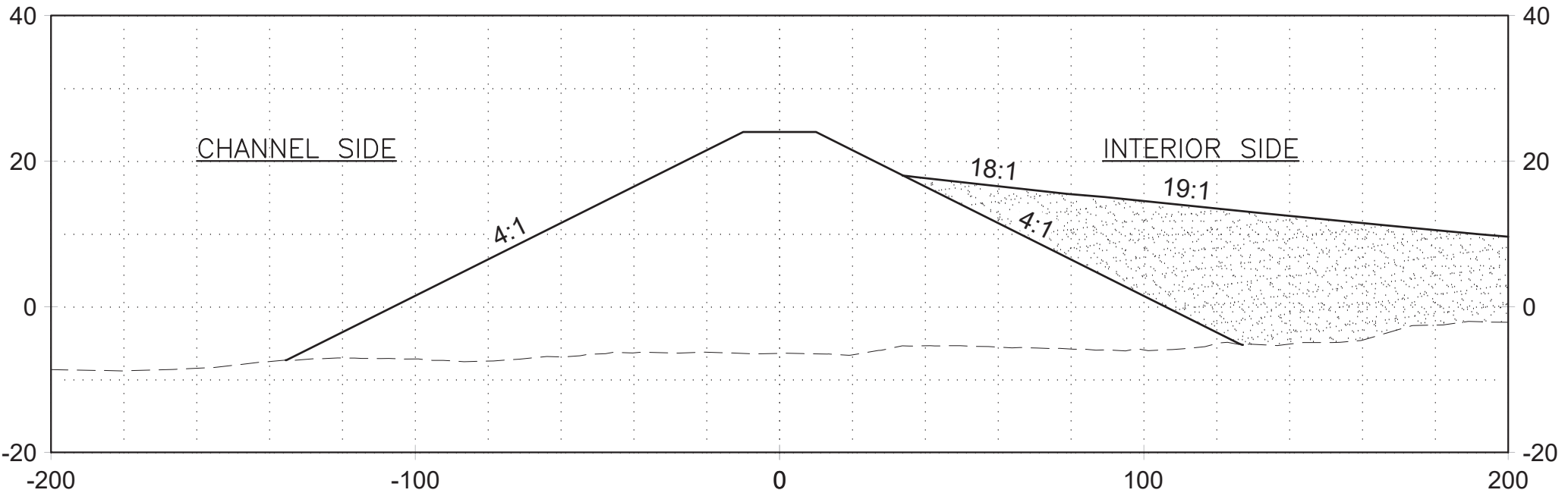
BL - SS1 EXTENSION DIKE
STA 30+00



BL - SS1 EXTENSION DIKE
STA 36+00



BL - SS1 EXTENSION DIKE
STA 32+00

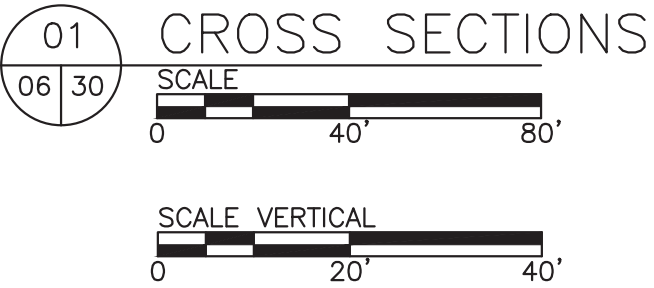


BL - SS1 EXTENSION DIKE
STA 38+00

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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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SHEET 30 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

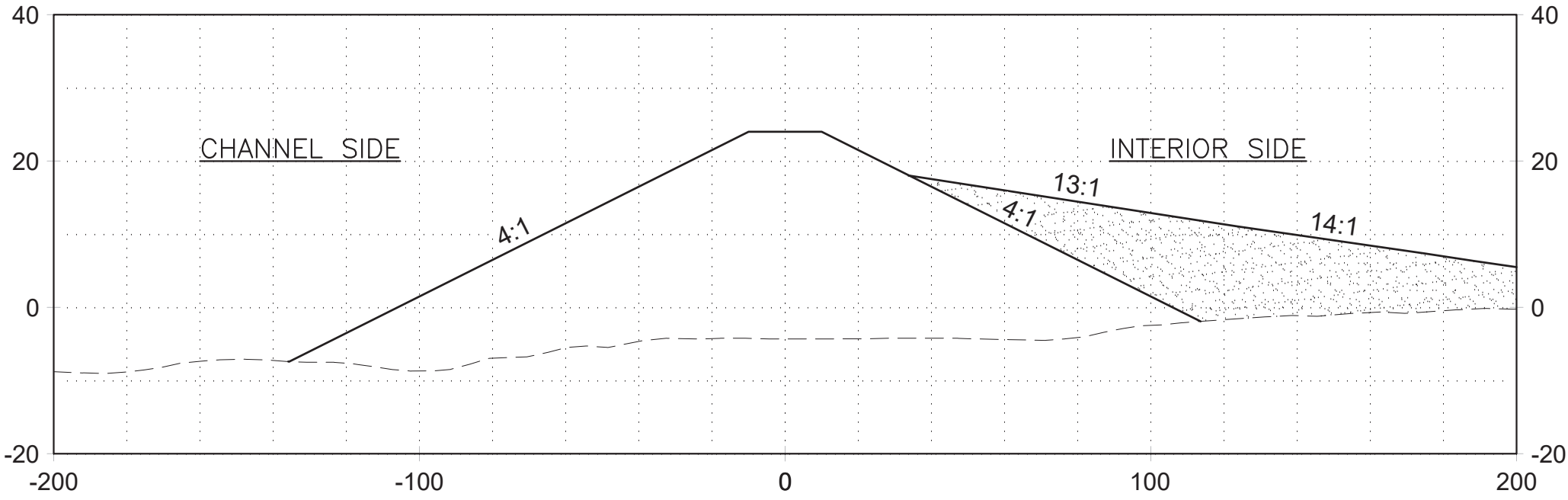
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

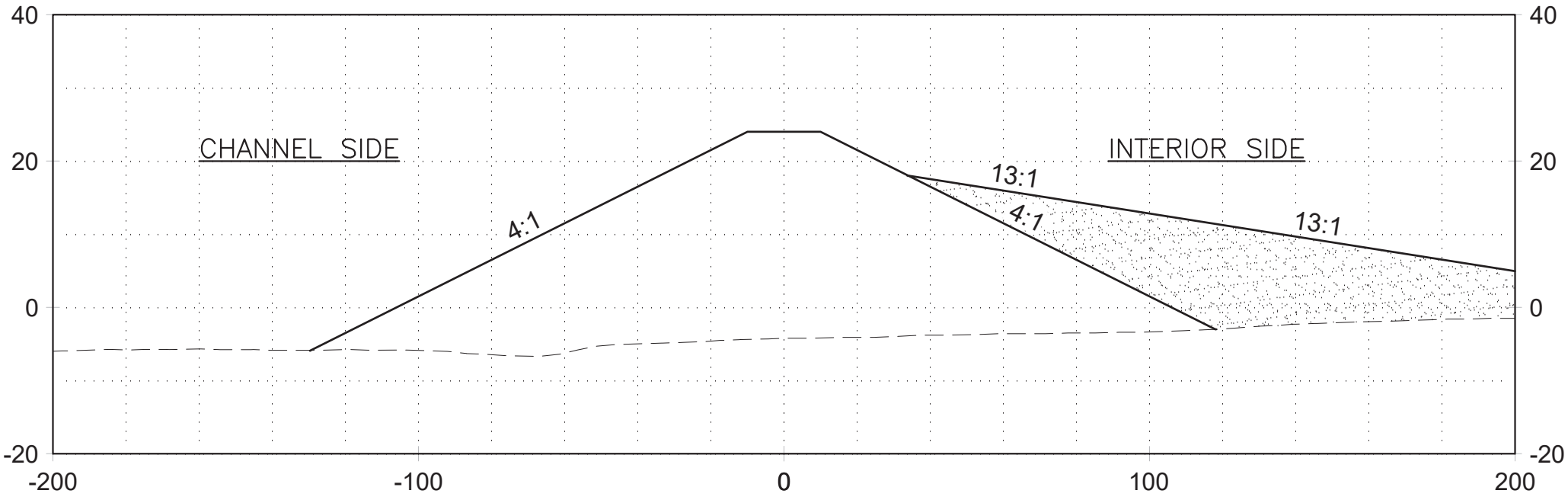
SS1 EXT CROSS
SECTIONS STA 28+00
- 38+00

DATE: 11/14/2019
DWG. NO. 18-038B-30

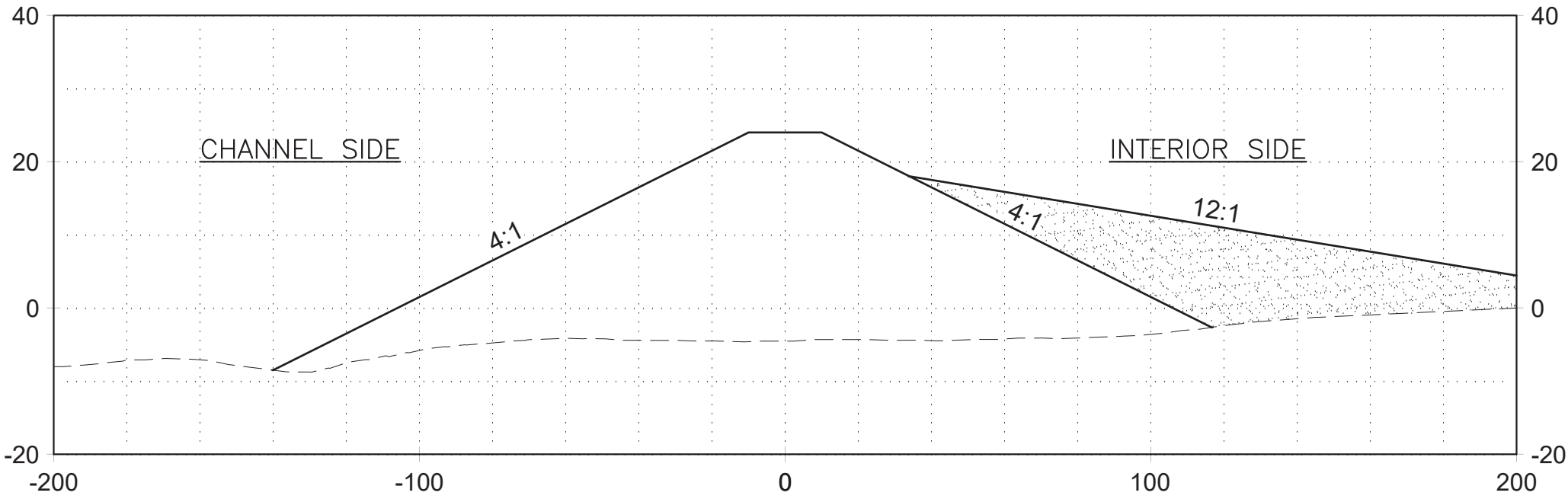
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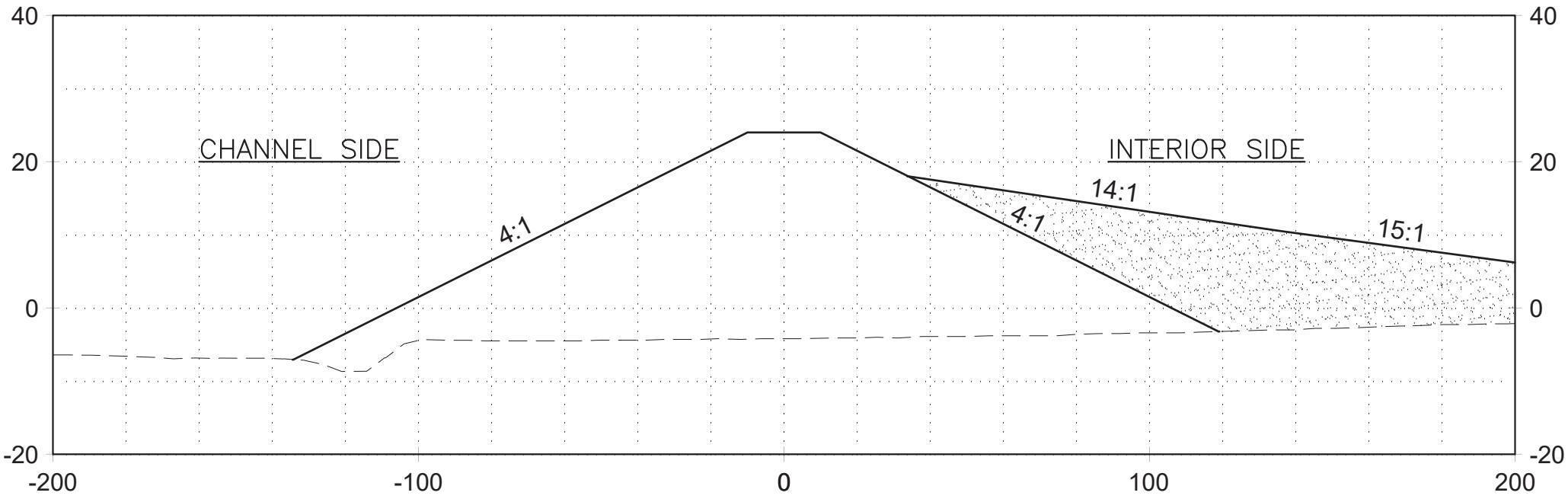
BL - SS1 EXTENSION DIKE
STA 40+00



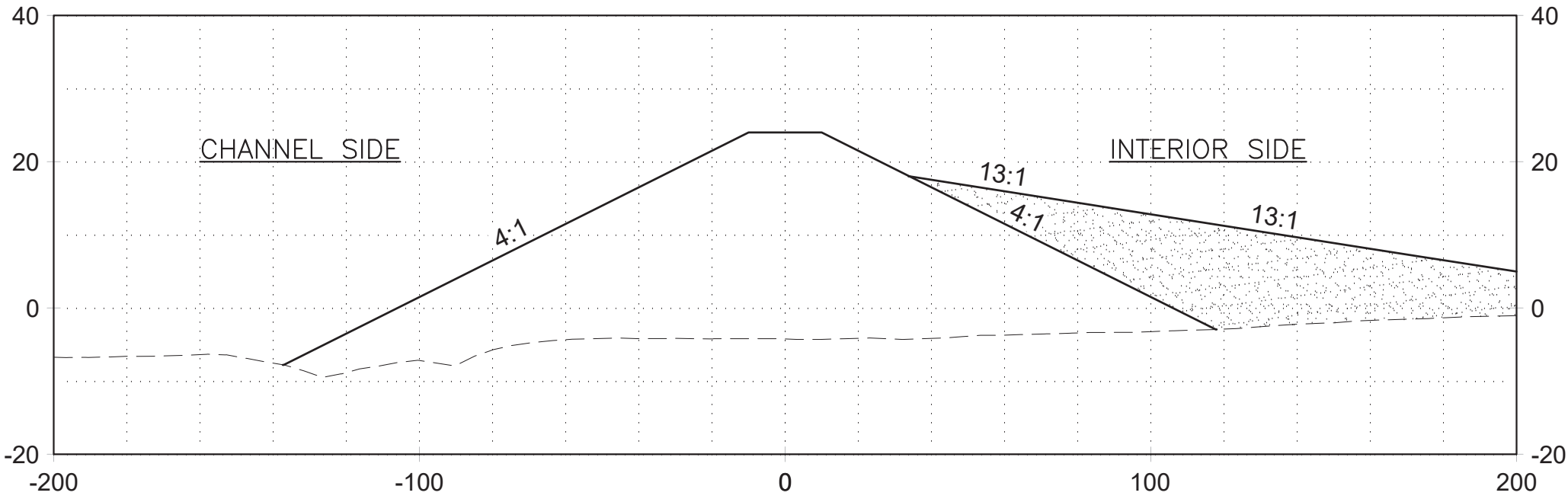
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STA 46+00



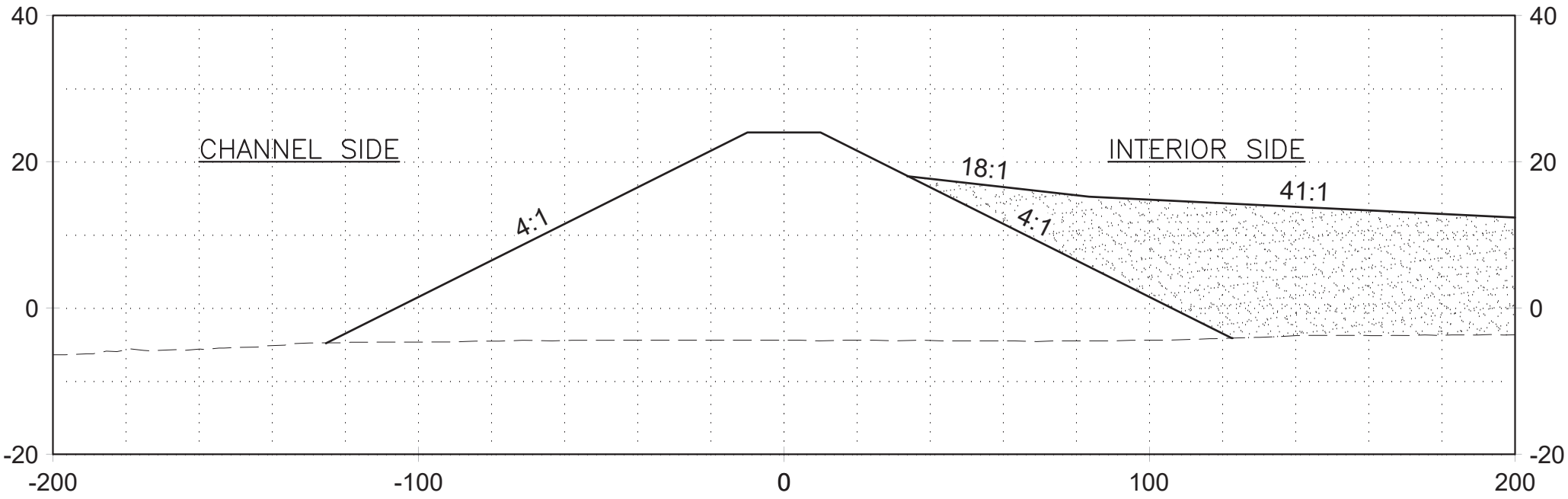
BL - SS1 EXTENSION DIKE
STA 42+00



BL - SS1 EXTENSION DIKE
STA 48+00



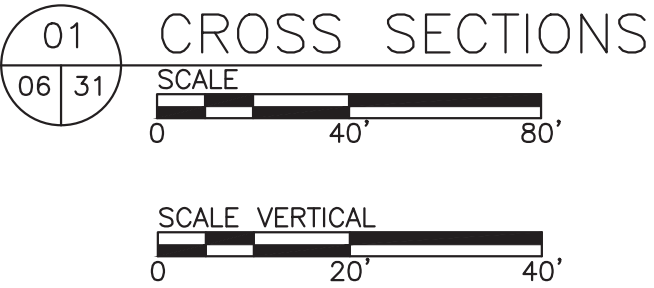
BL - SS1 EXTENSION DIKE
STA 44+00



BL - SS1 EXTENSION DIKE
STA 50+00

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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SHEET 31 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

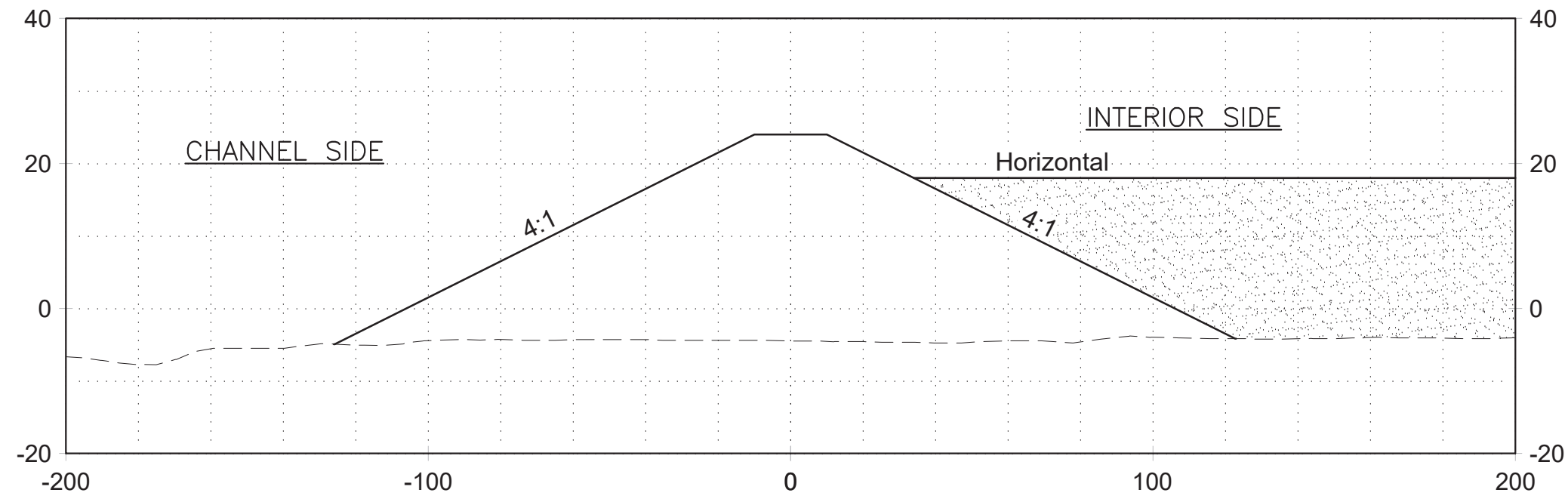
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

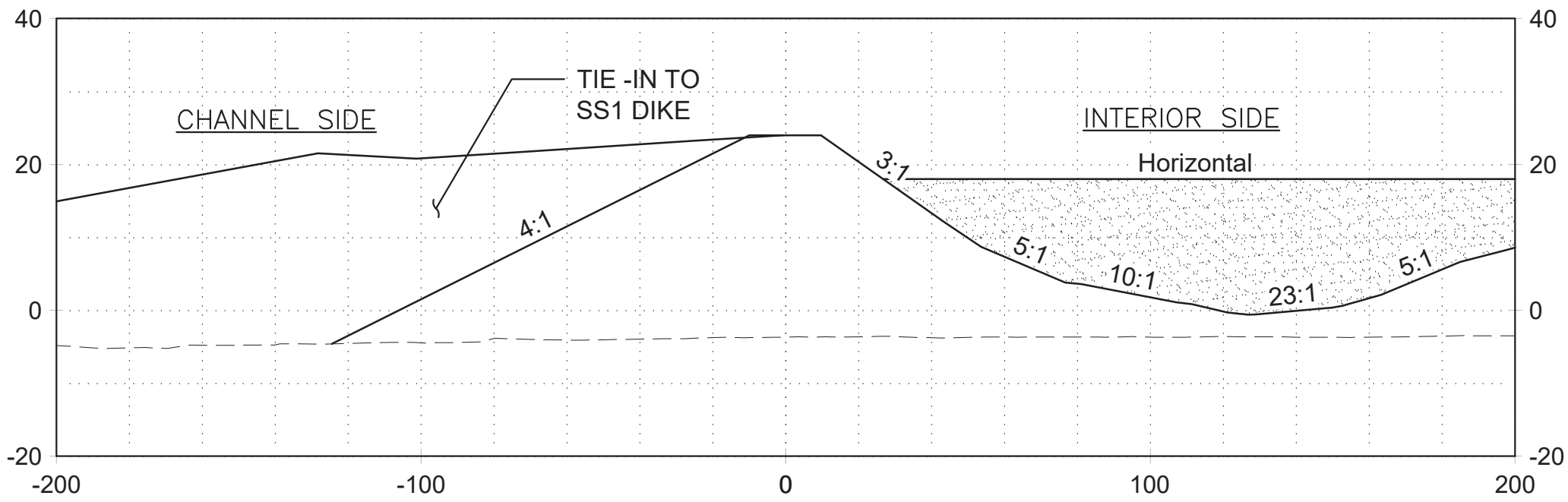
SS1 EXT CROSS
SECTIONS STA 40+00
- 50+00

DATE: 11/14/2019
DWG. NO. 18-038B-31

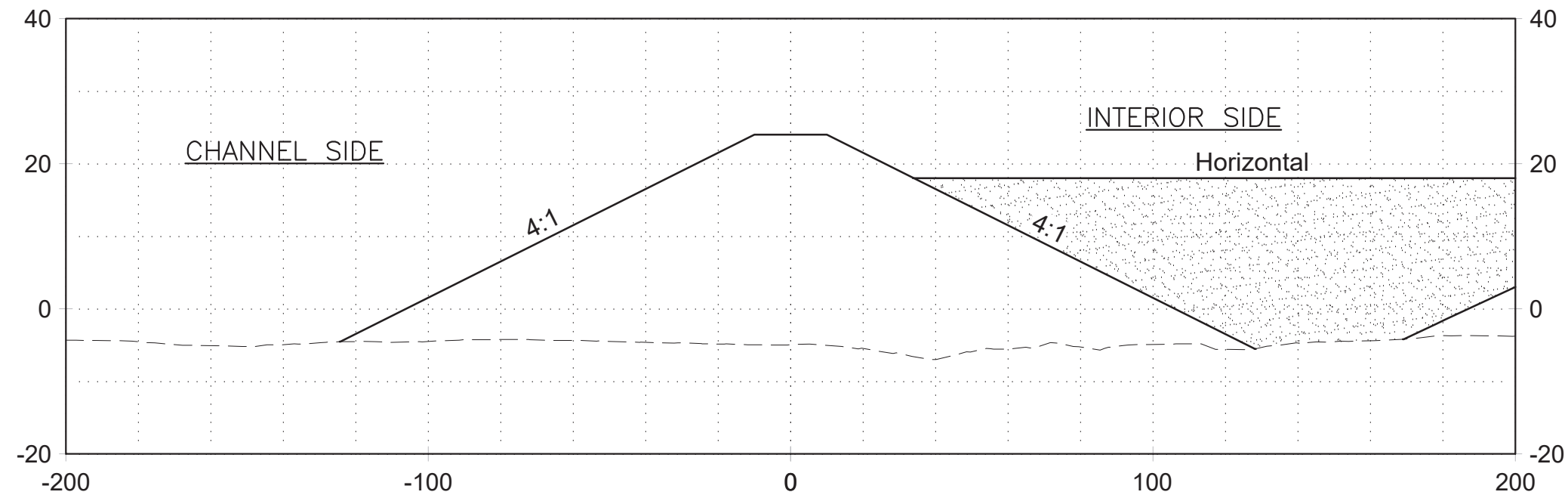
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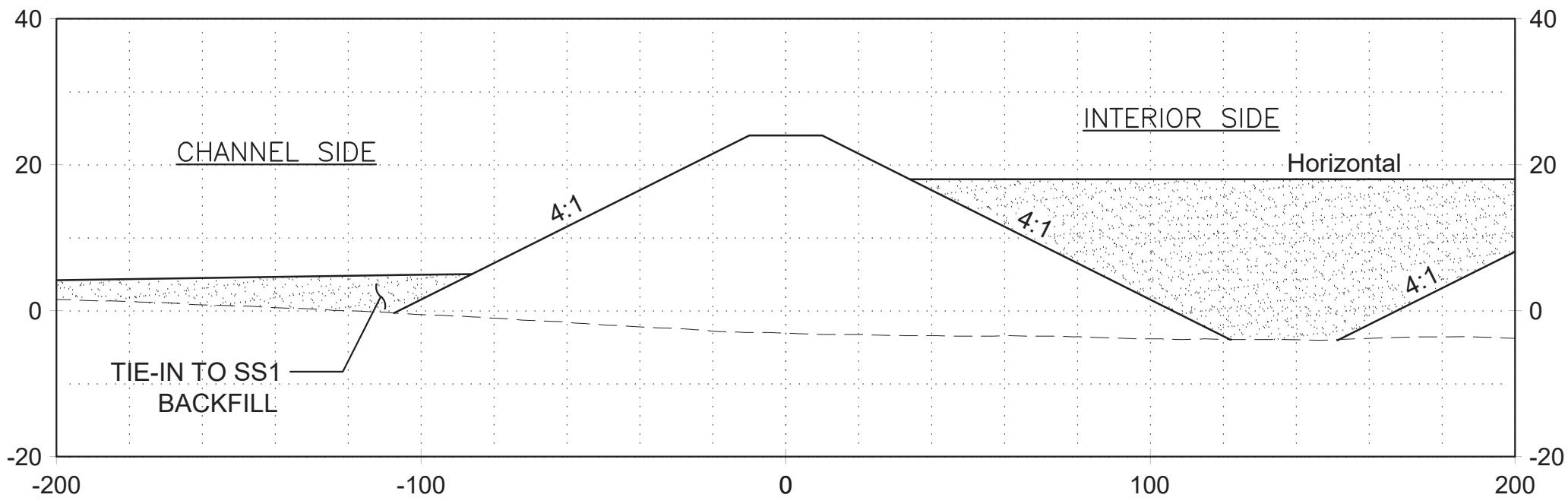
BL - SS1 EXTENSION DIKE
STA 52+00



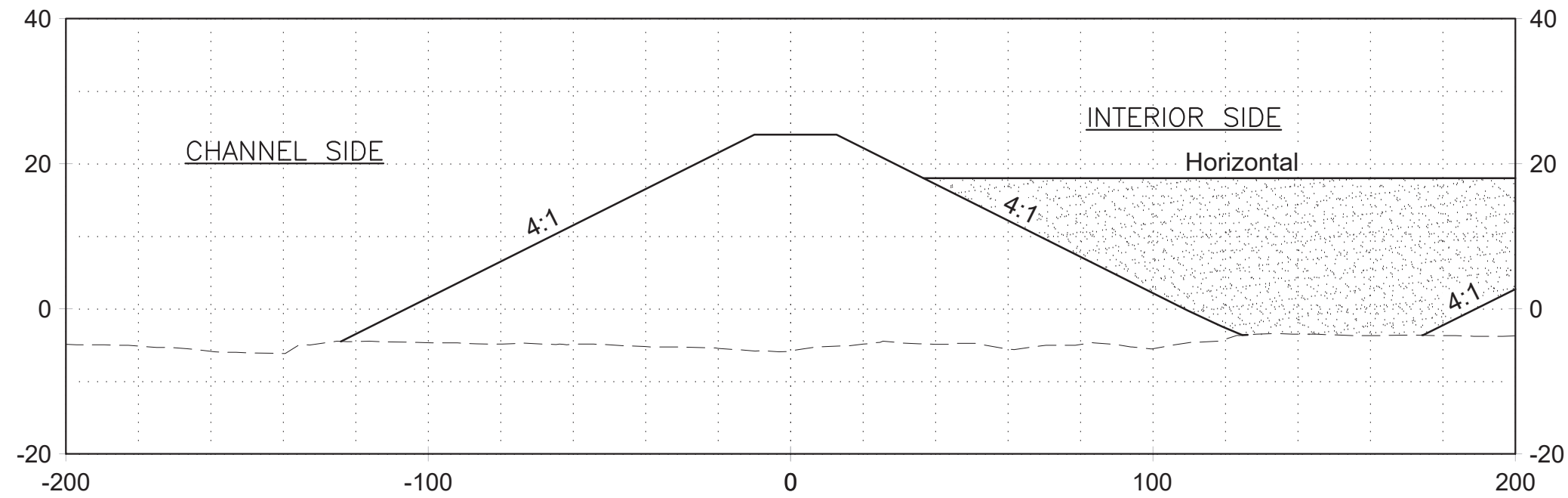
BL - SS1 EXTENSION DIKE
STA 58+00



BL - SS1 EXTENSION DIKE
STA 54+00



BL - SS1 EXTENSION DIKE
STA 62+00



BL - SS1 EXTENSION DIKE
STA 56+00

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL

01
06 32

CROSS SECTIONS

SCALE
0 40' 80'

SCALE VERTICAL
0 20' 40'

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SHEET 32 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

SS1 EXT CROSS
SECTIONS STA 52+00
- 62+00

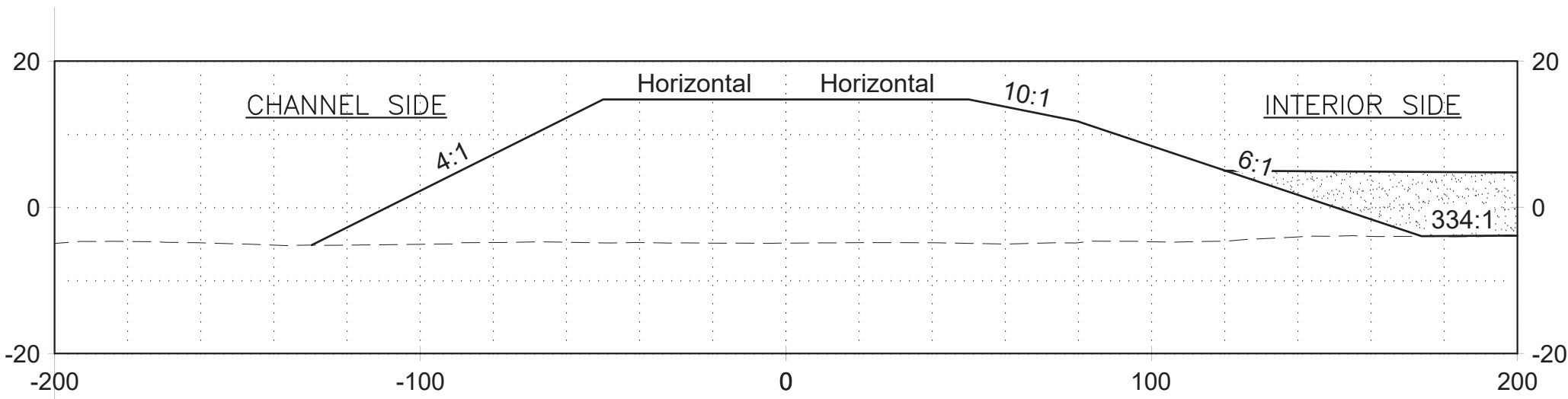
DATE: 11/14/2019
DWG. NO. 18-038B-32

SS1 EXTENSION VOLUME SUMMARY			
BU SITE FEATURE	SURFACE AREA	NET VOLUME	MATERIAL TYPES
	(FT2)	[CY (FILL)]	
SS1 EXTENSION DIKE	1,591,021	1,459,000	STIFF CLAY
SS1 EXTENSION BACKFILL	976,726	217,000	SAND
TOTALS	2,567,746	1,676,000	

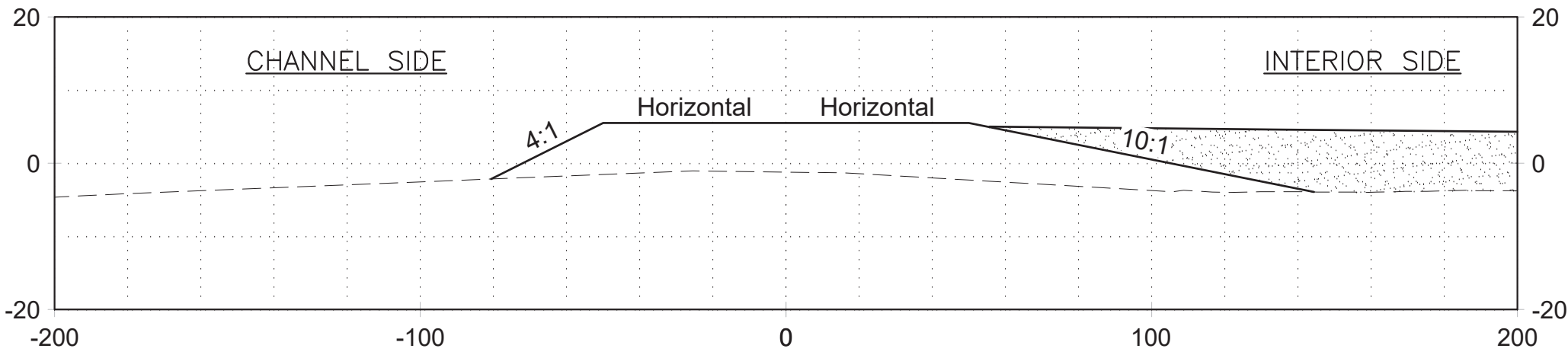
NOTE:

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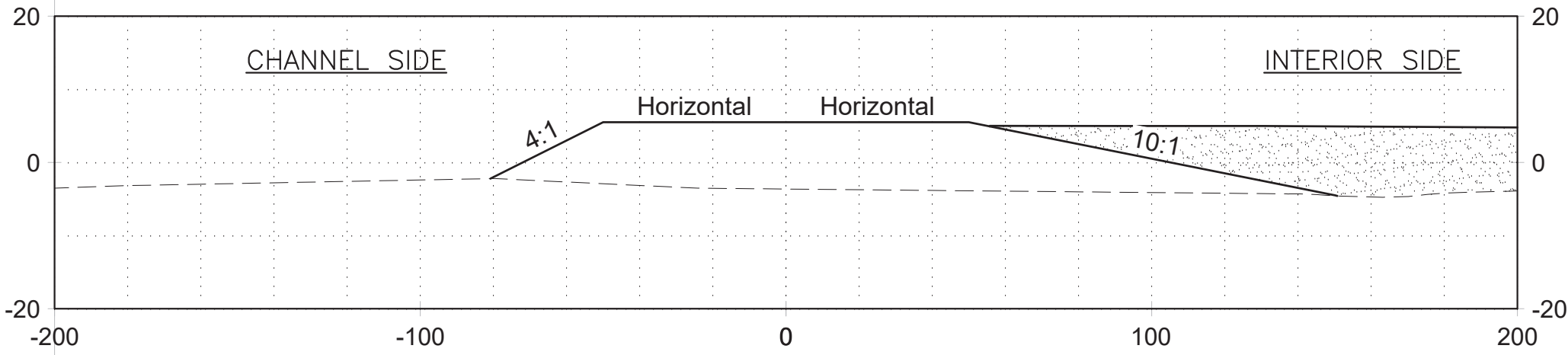
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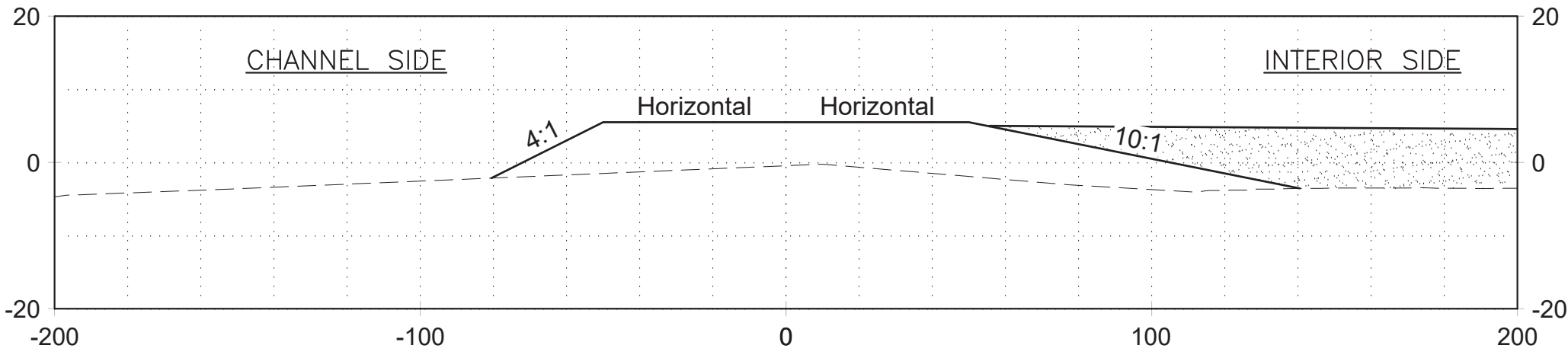
BL - SS1 DIKE
STA 2+00



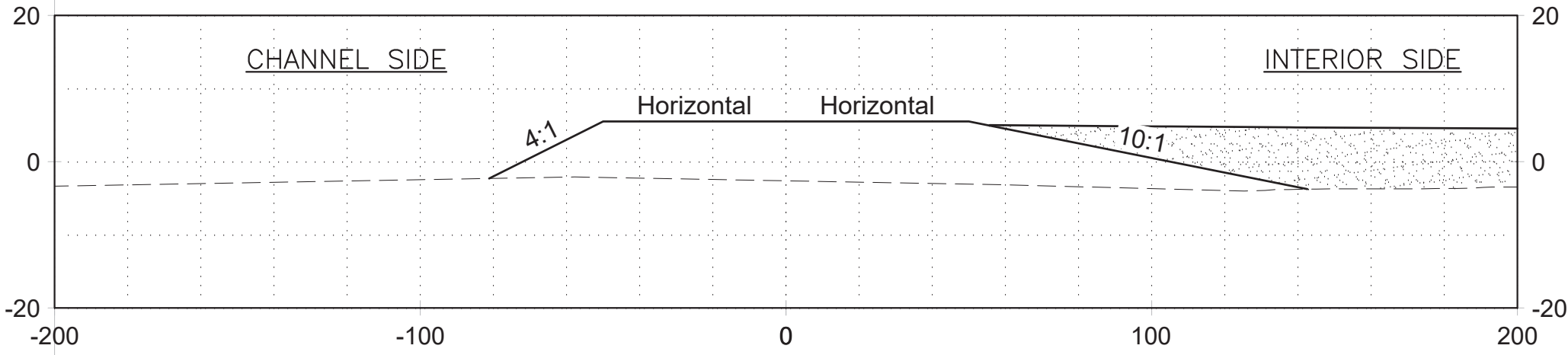
BL - SS1 DIKE
STA 10+00



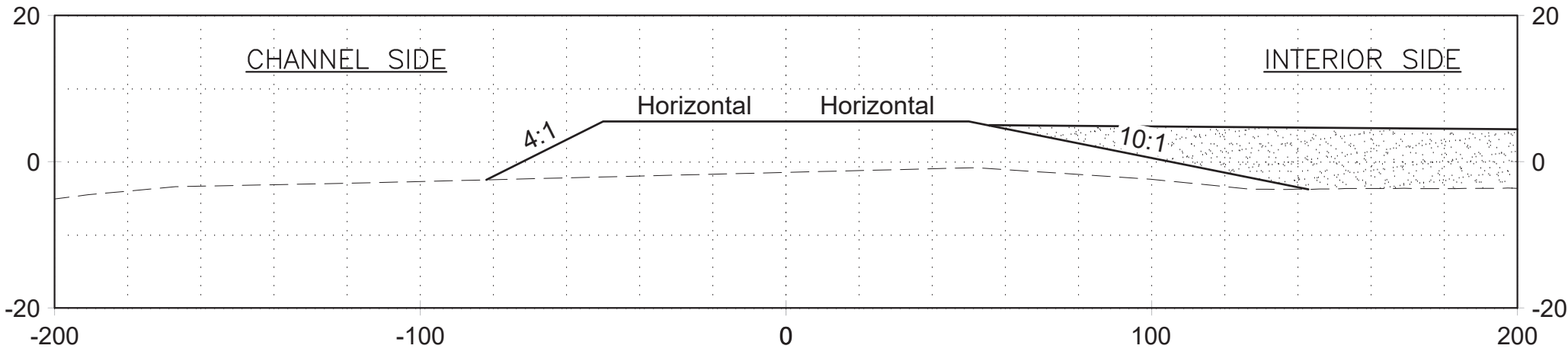
BL - SS1 DIKE
STA 4+00



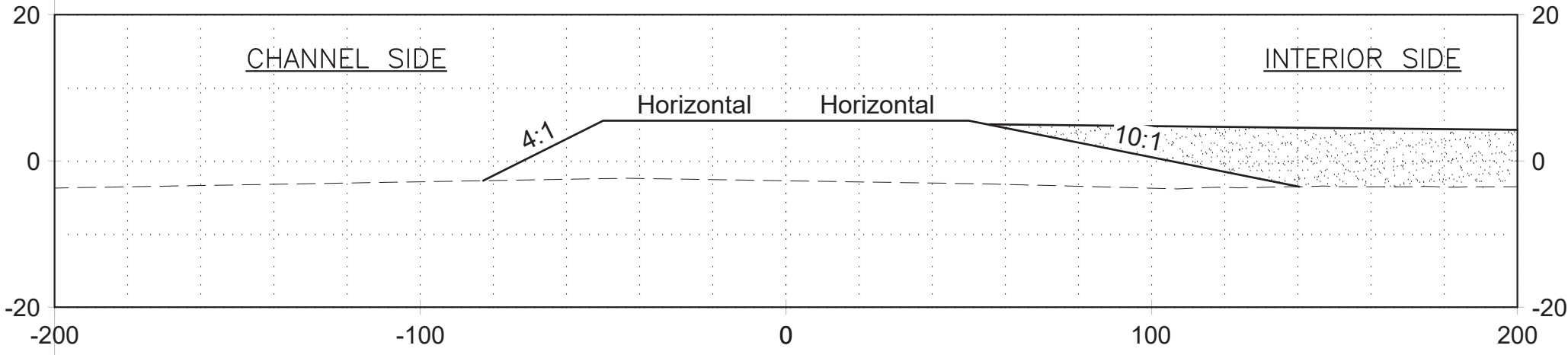
BL - SS1 DIKE
STA 12+00



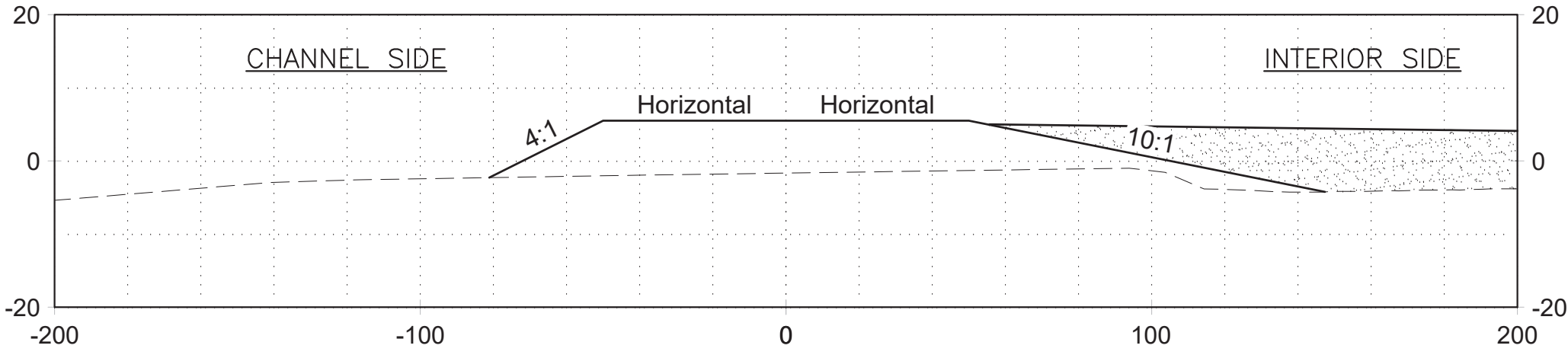
BL - SS1 DIKE
STA 6+00



BL - SS1 DIKE
STA 14+00



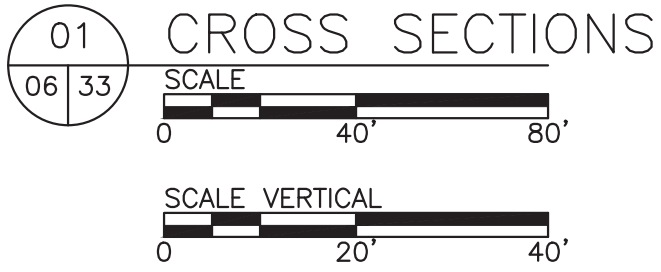
BL - SS1 DIKE
STA 8+00



BL - SS1 DIKE
STA 16+00

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- ▨ PROPOSED BACKFILL



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NO.	DATE	REVISION

PCCA PROJ. #18-038B



PORT **CORPUS CHRISTI**

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HOUSTON, TEXAS 77094, UNITED STATES
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TBPE REG. NO. F-3580

SHEET 33 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

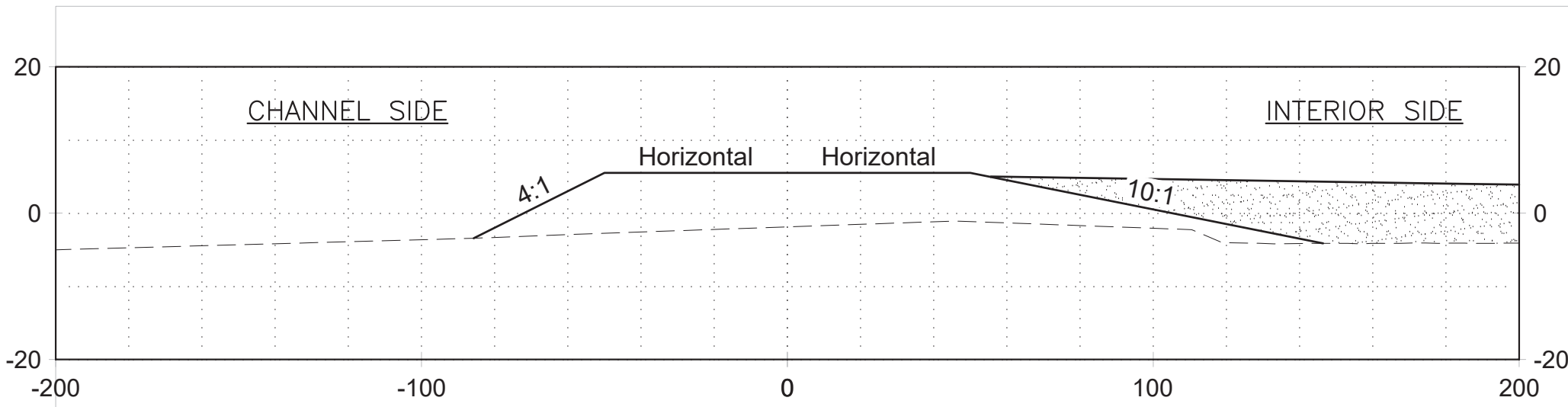
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

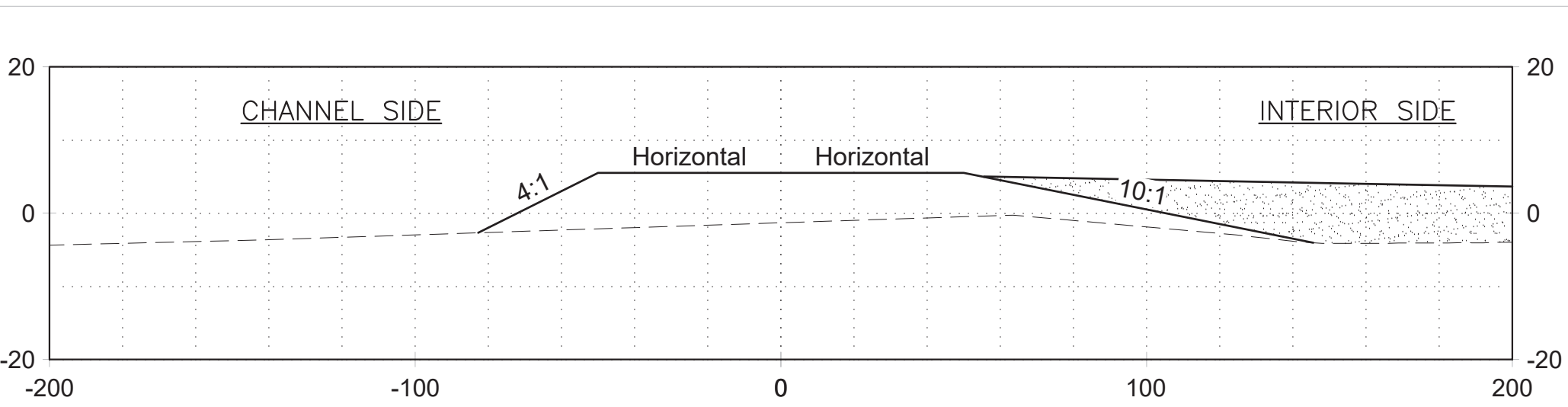
SS1 CROSS SECTIONS STA
2+00 - 16+00

DATE: 11/14/2019
DWG. NO. 18-038B-33

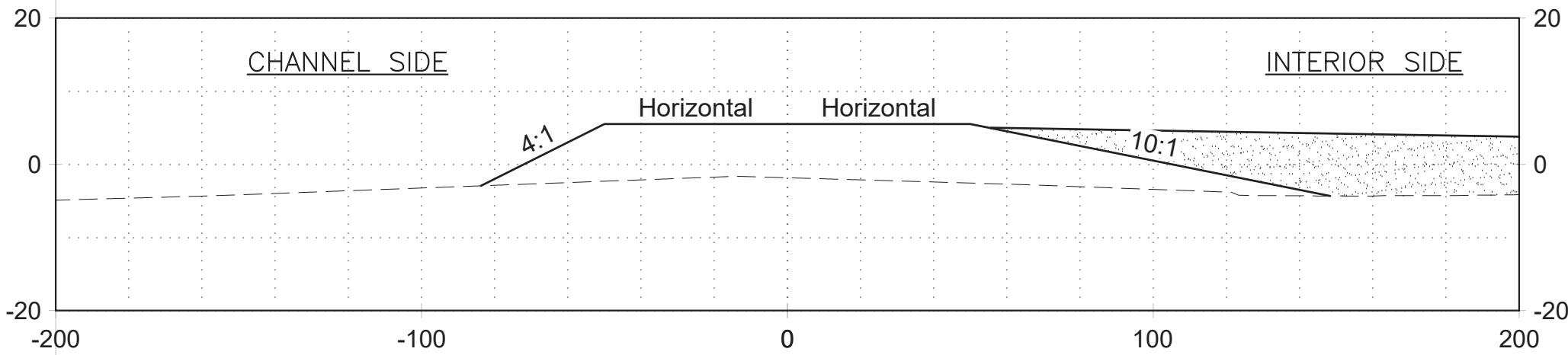
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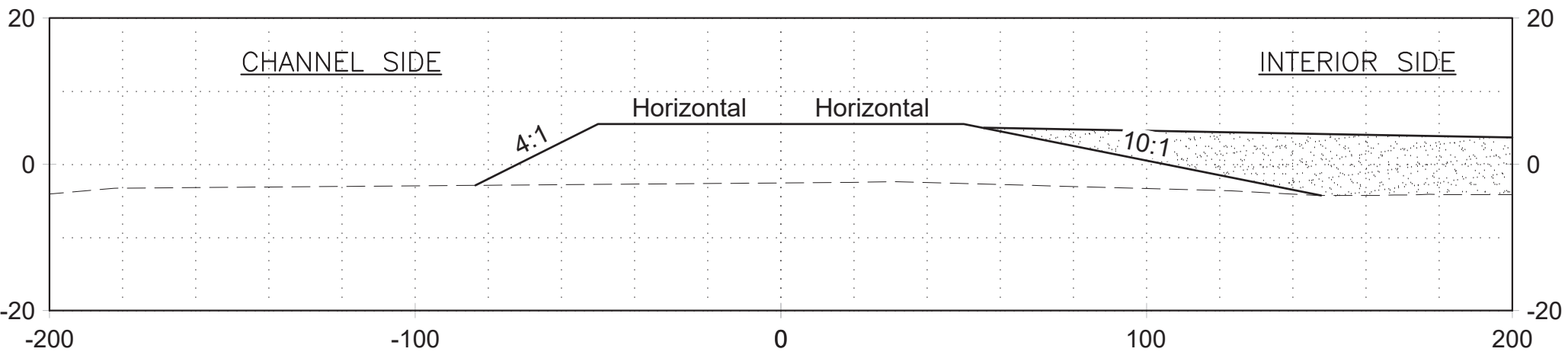
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STA 18+00



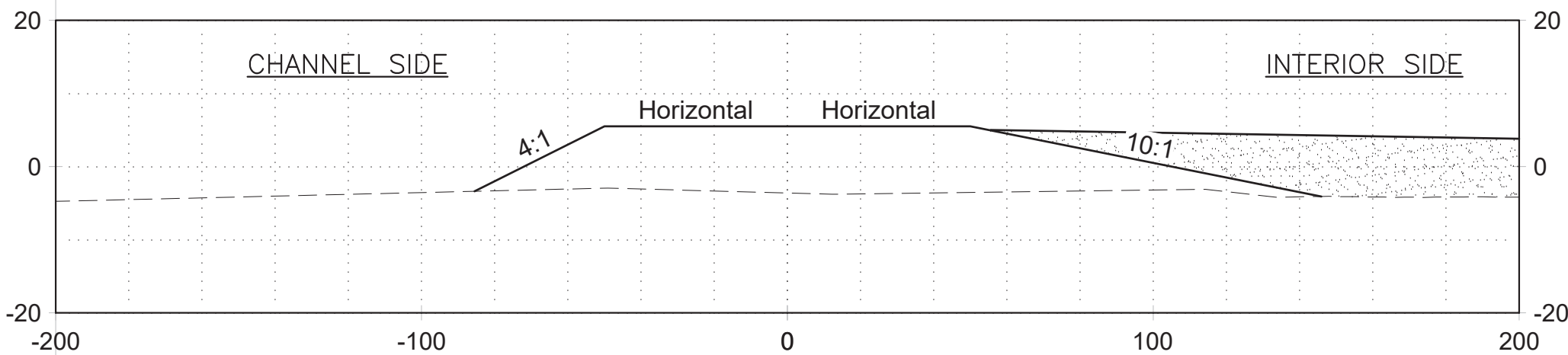
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STA 26+00



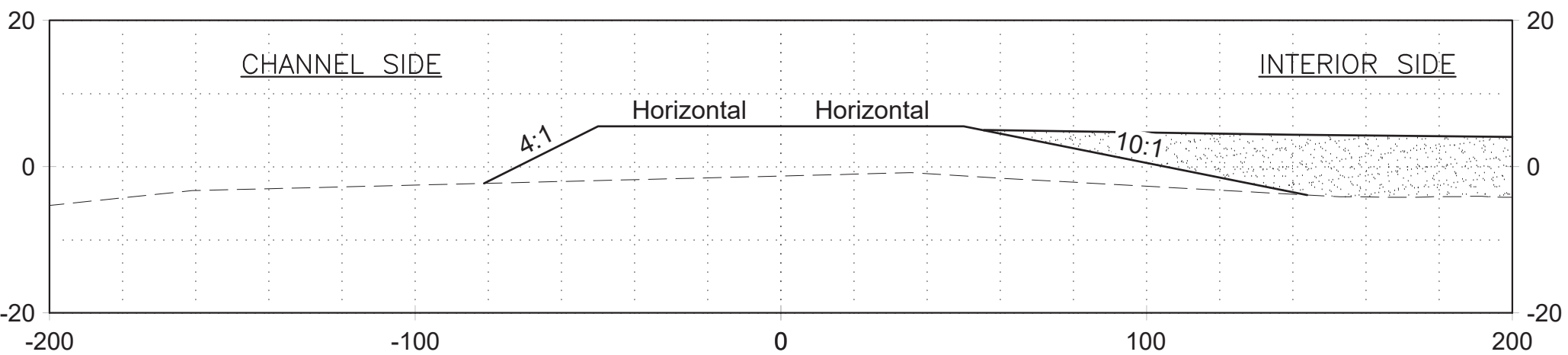
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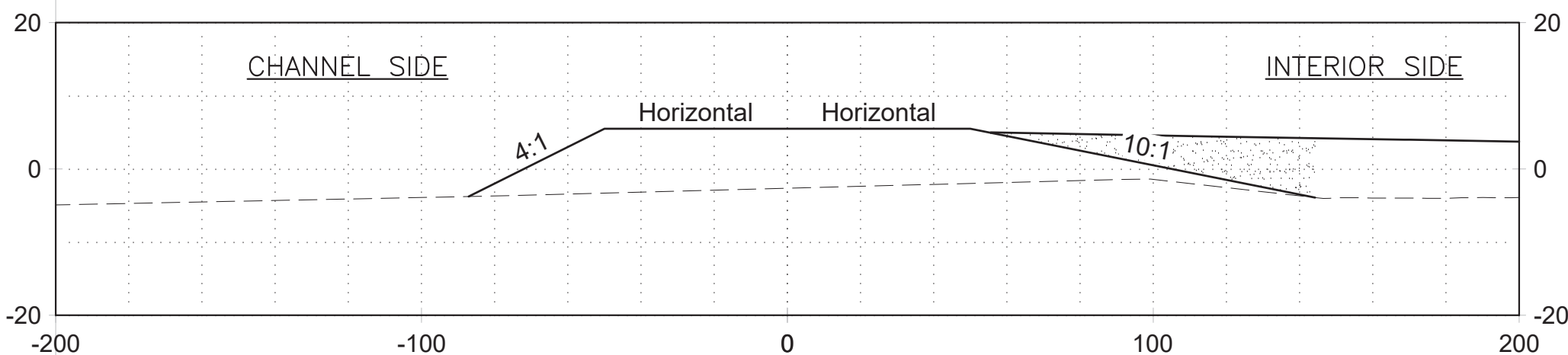
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STA 28+00



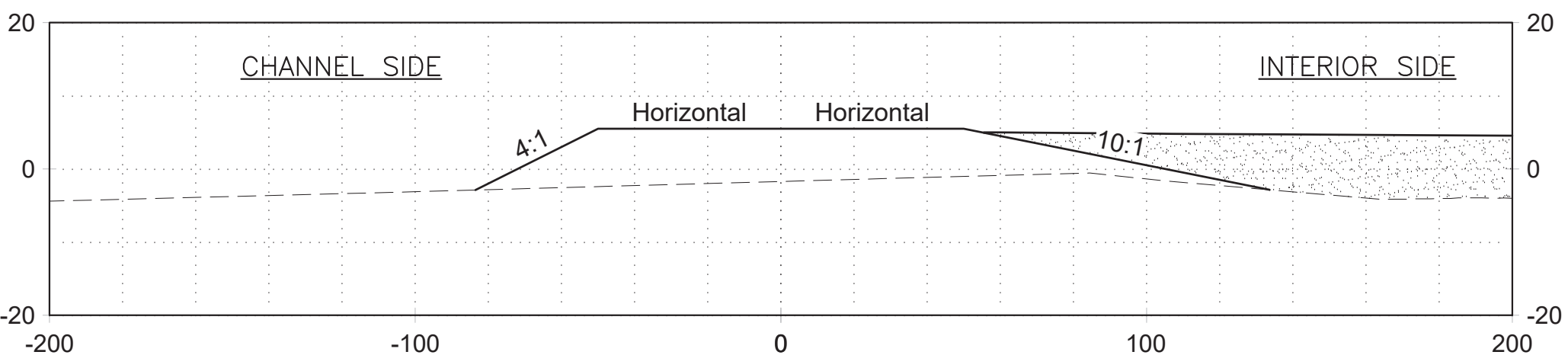
BL - SS1 DIKE
STA 22+00



BL - SS1 DIKE
STA 30+00



BL - SS1 DIKE
STA 24+00



BL - SS1 DIKE
STA 32+00

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL




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NO.	DATE	REVISION

PCCA PROJ. #18-038B



PORT **CORPUS CHRISTI**



AECOM TECHNICAL SERVICES, INC.
19219 KATY FREEWAY, SUITE 100
HOUSTON, TEXAS 77094, UNITED STATES
WWW.AECOM.COM
TBPE REG. NO. F-3580

SHEET 34 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

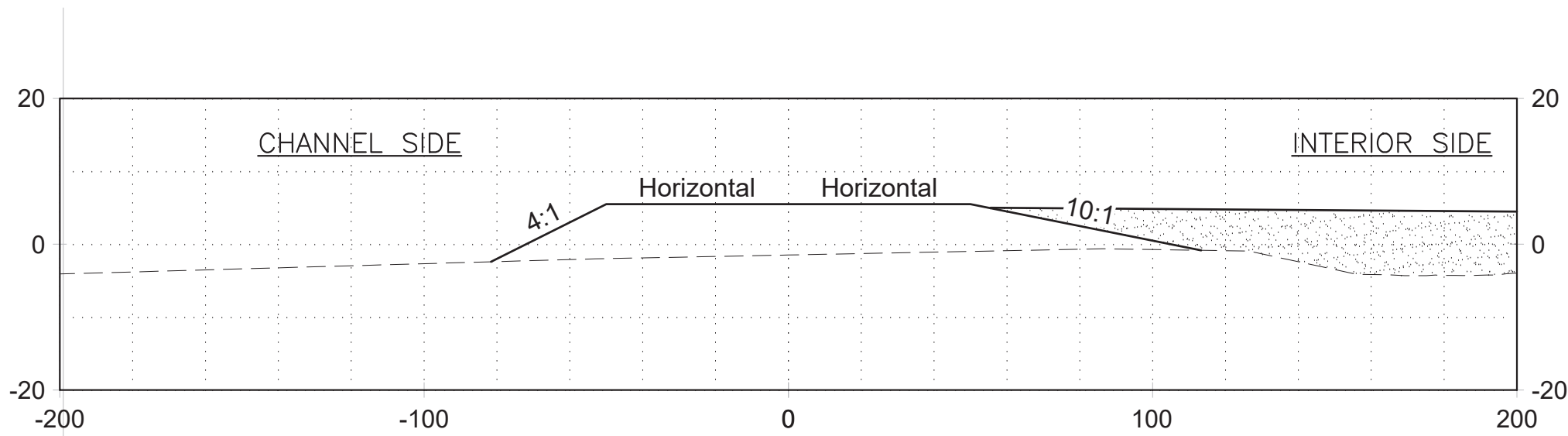
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

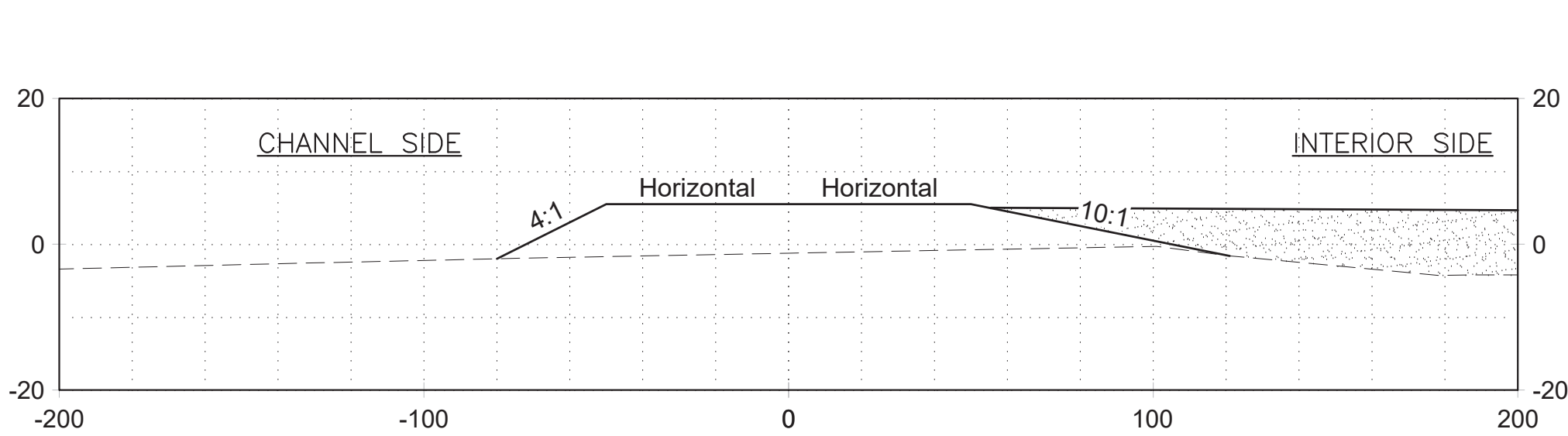
SS1 CROSS SECTIONS STA
18+00 - 32+00

DATE: 11/14/2019
DWG. NO.
18-038B-34

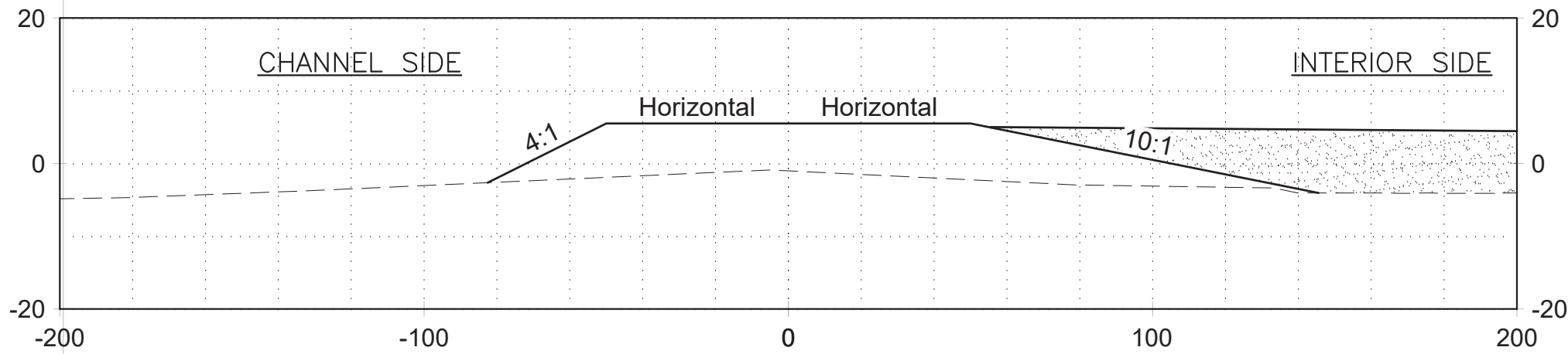
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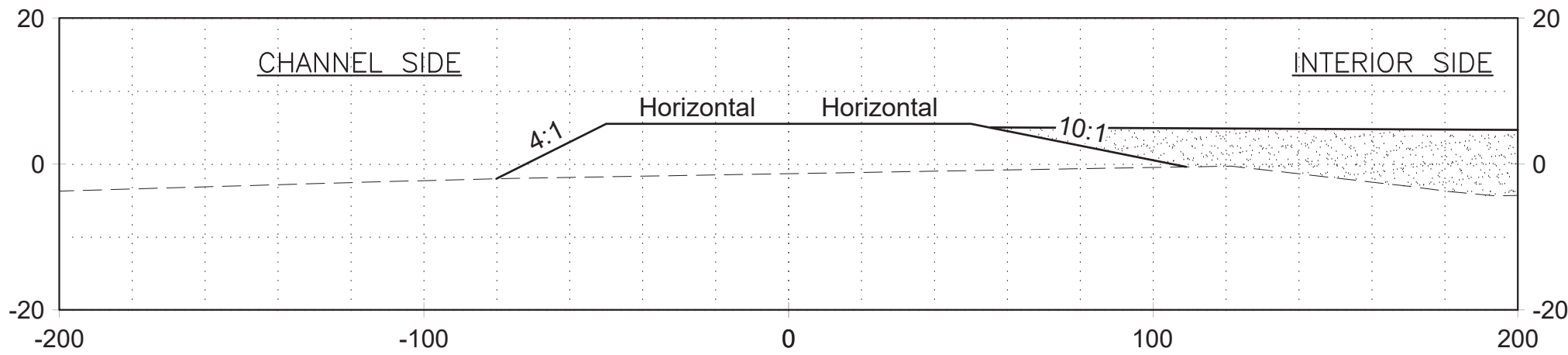
BL - SS1 DIKE
STA 34+00



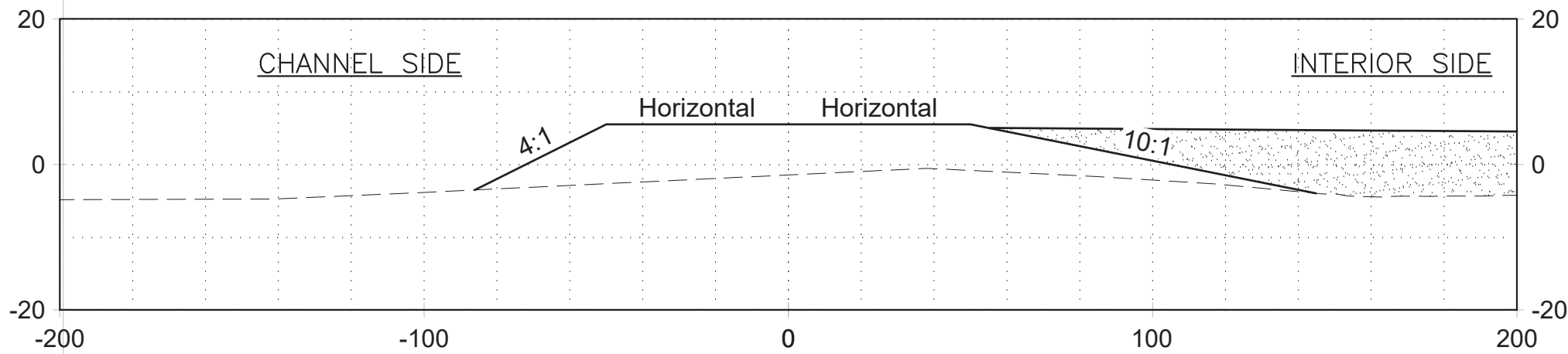
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STA 42+00



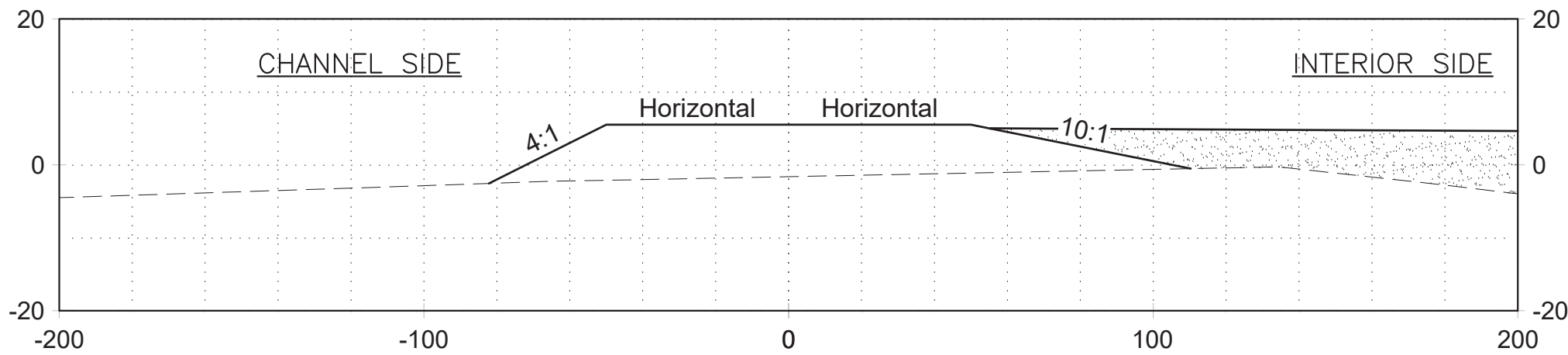
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STA 36+00



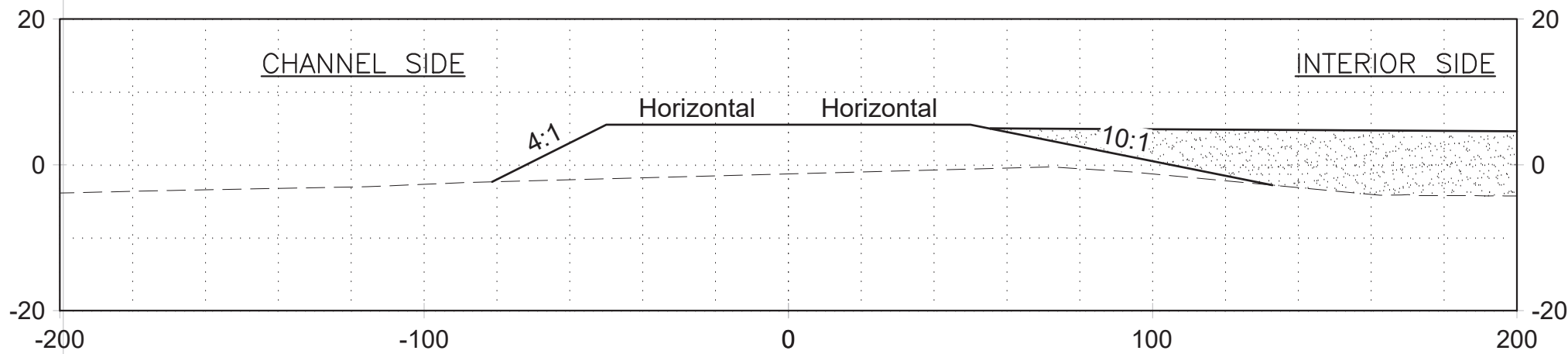
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STA 44+00



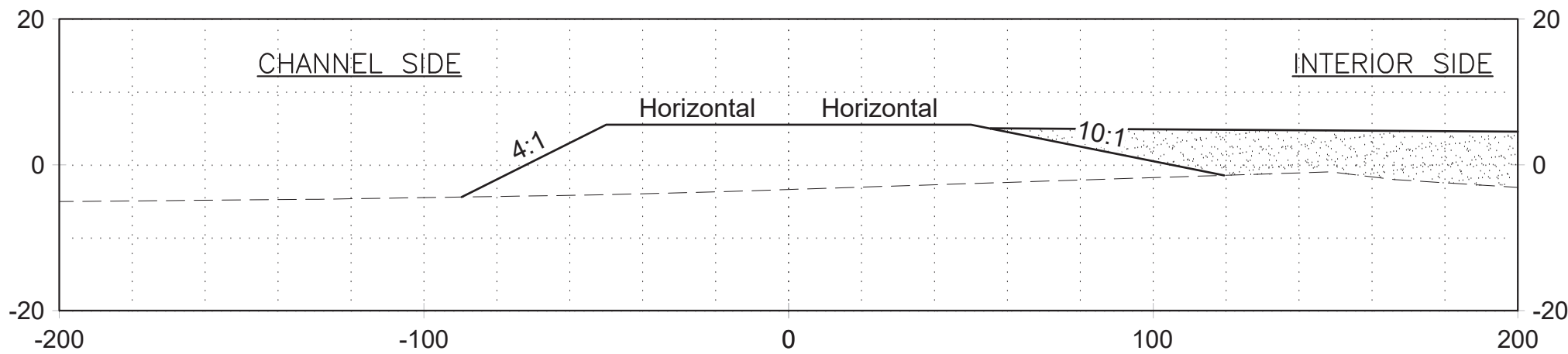
BL - SS1 DIKE
STA 38+00



BL - SS1 DIKE
STA 46+00



BL - SS1 DIKE
STA 40+00

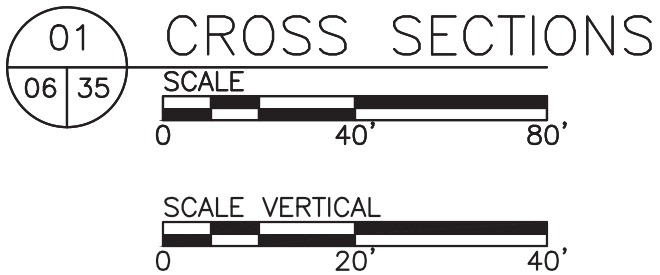


BL - SS1 DIKE
STA 48+00

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1. CONTRACTOR TO IDENTIFY, TRANSPORT, AND PLACE FILL FROM DREDGING SITE (DESIGN BY OTHERS). REFER TO THE PROJECT MANUAL FOR MATERIAL SPECIFICATIONS BY BU SITE.
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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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NO.	DATE	REVISION

PCCA PROJ. #18-038B



PORT **CORPUS CHRISTI**

AECOM

AECOM TECHNICAL SERVICES, INC.
19219 KATY FREEWAY, SUITE 100
HOUSTON, TEXAS 77094, UNITED STATES
WWW.AECOM.COM
TBPE REG. NO. F-3580

SHEET 35 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

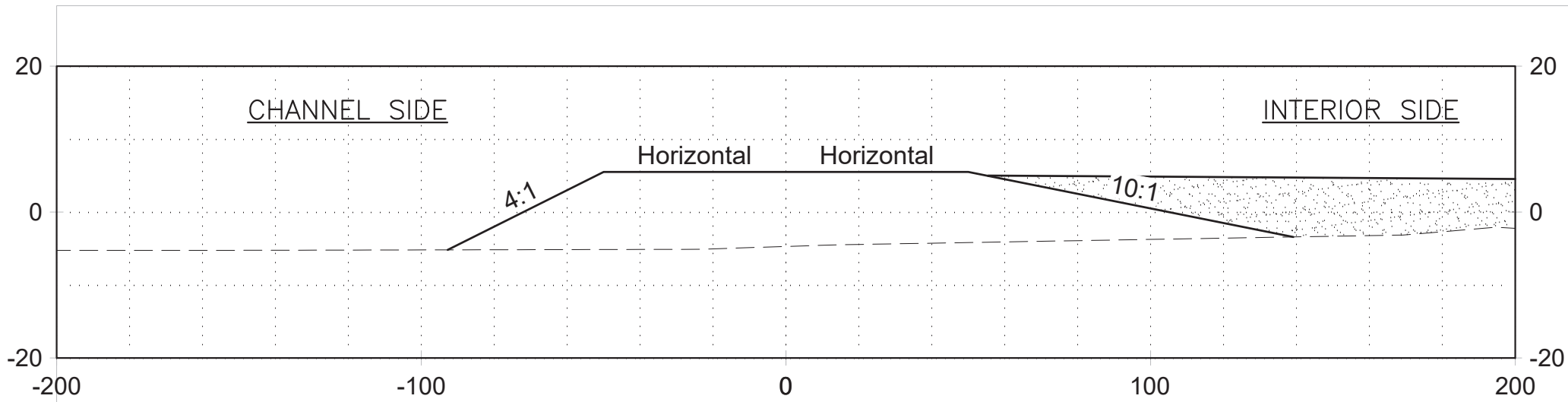
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

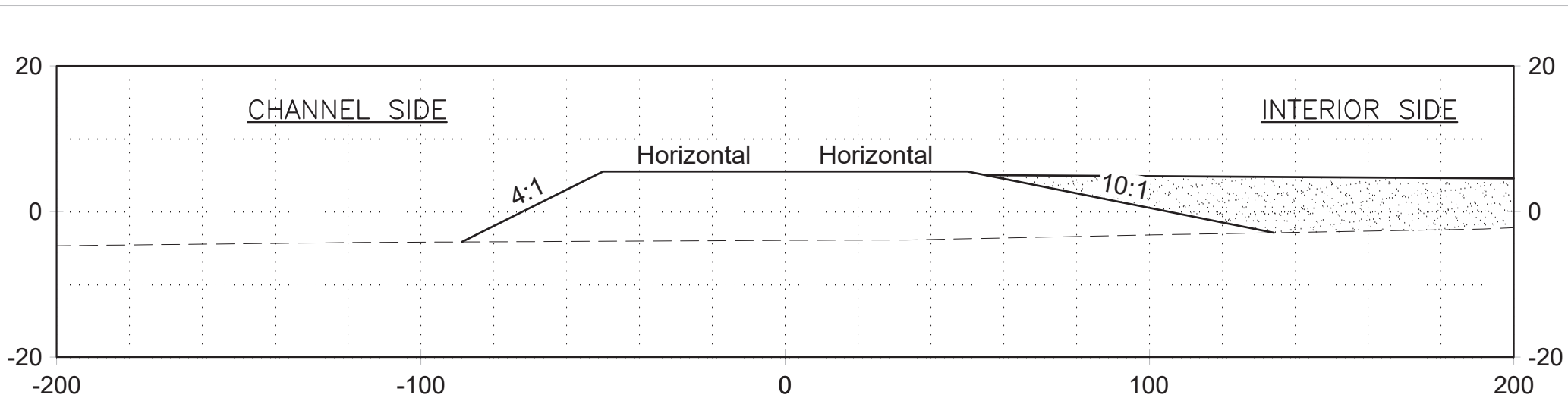
SS1 CROSS SECTIONS STA
34+00 - 48+00

DATE: 11/14/2019
DWG. NO. 18-038B-35

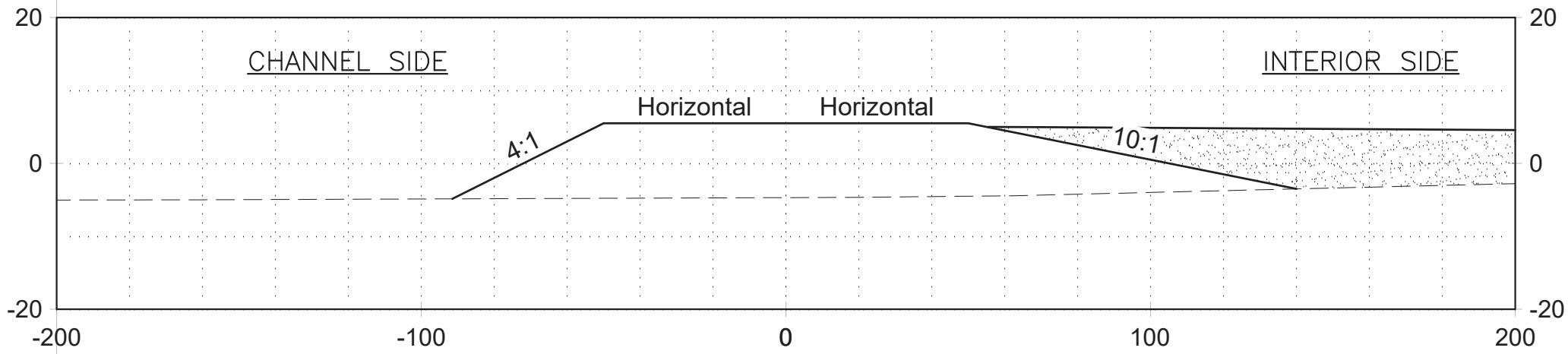
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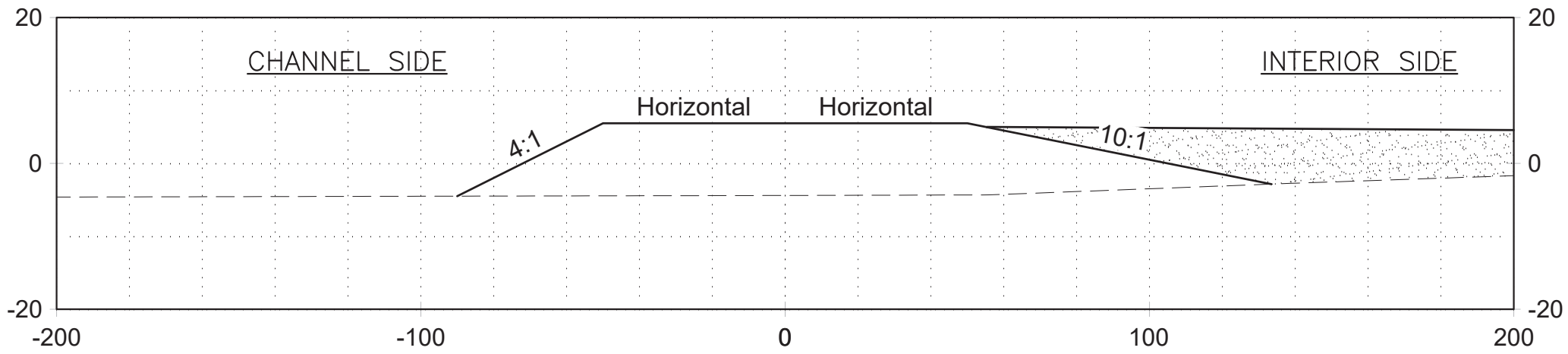
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STA 50+00



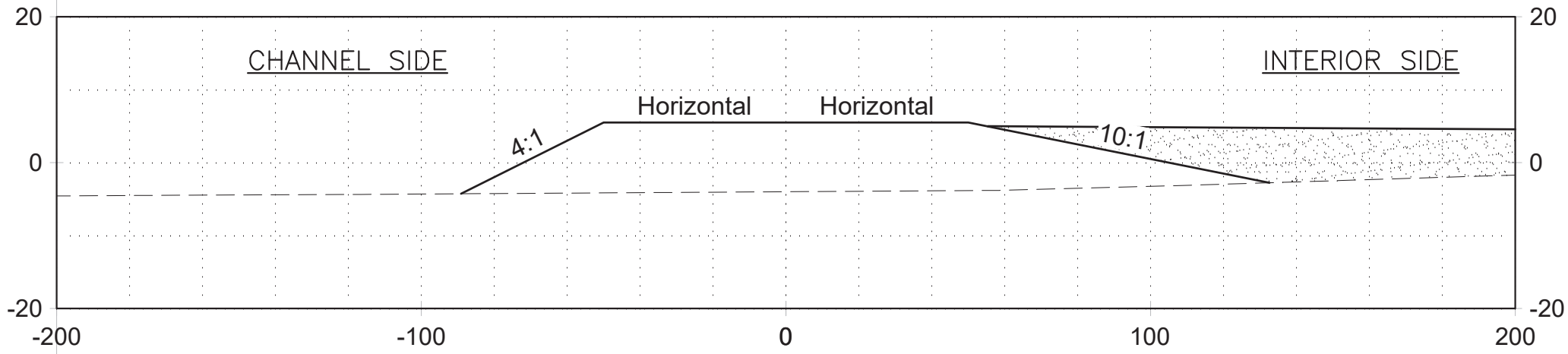
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STA 58+00



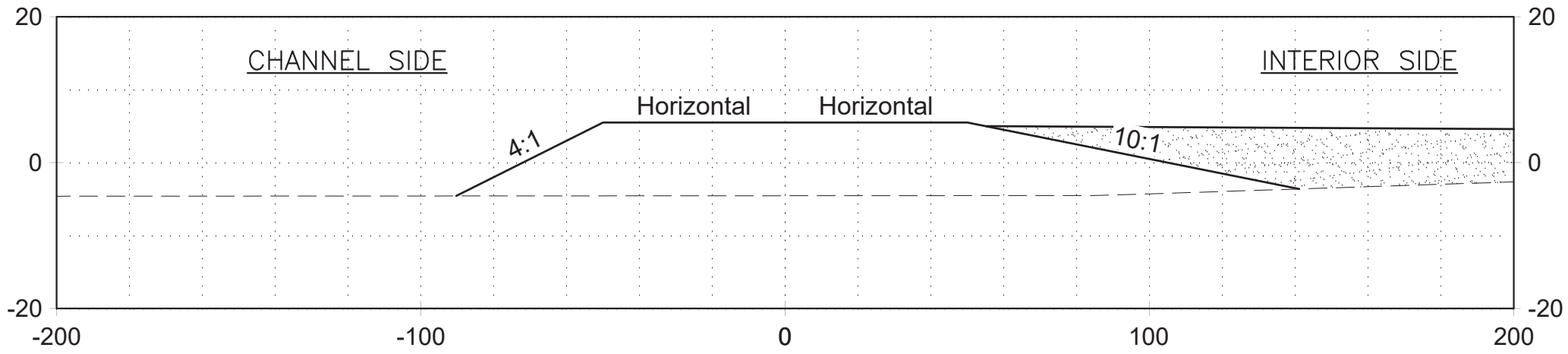
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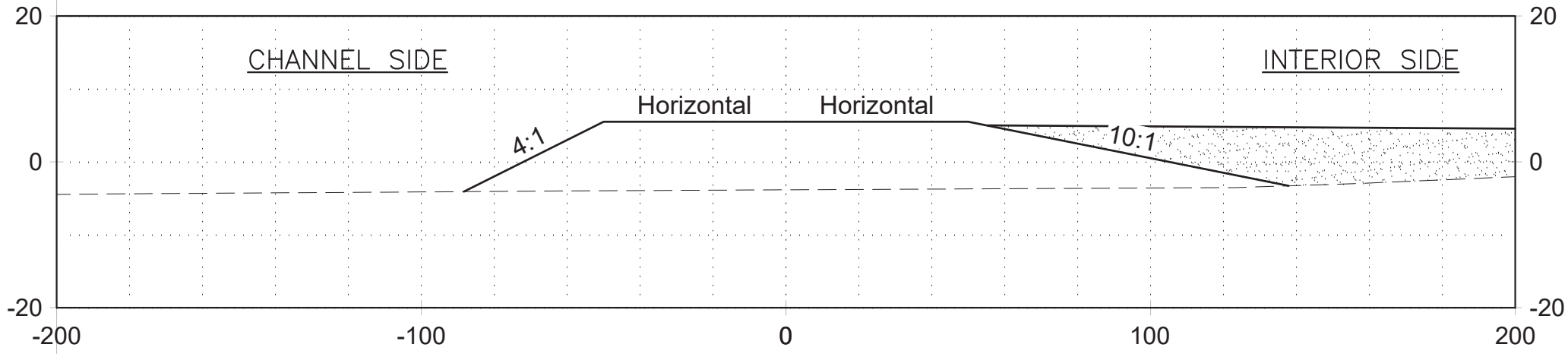
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STA 60+00



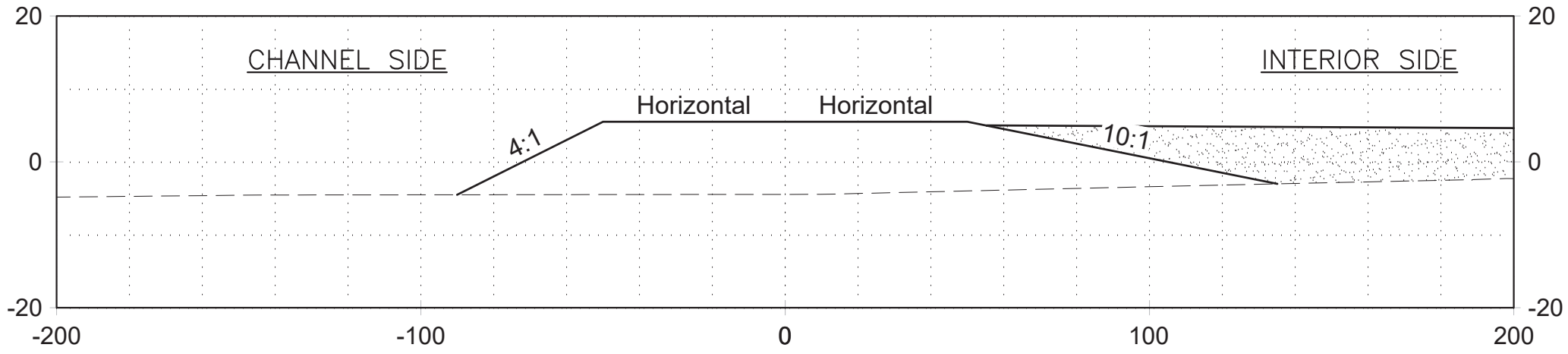
BL - SS1 DIKE
STA 54+00



BL - SS1 DIKE
STA 62+00



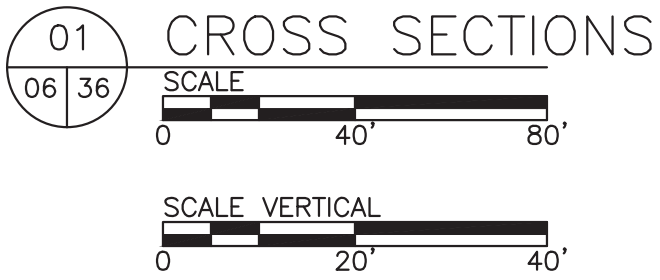
BL - SS1 DIKE
STA 56+00



BL - SS1 DIKE
STA 64+00

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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SHEET 36 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

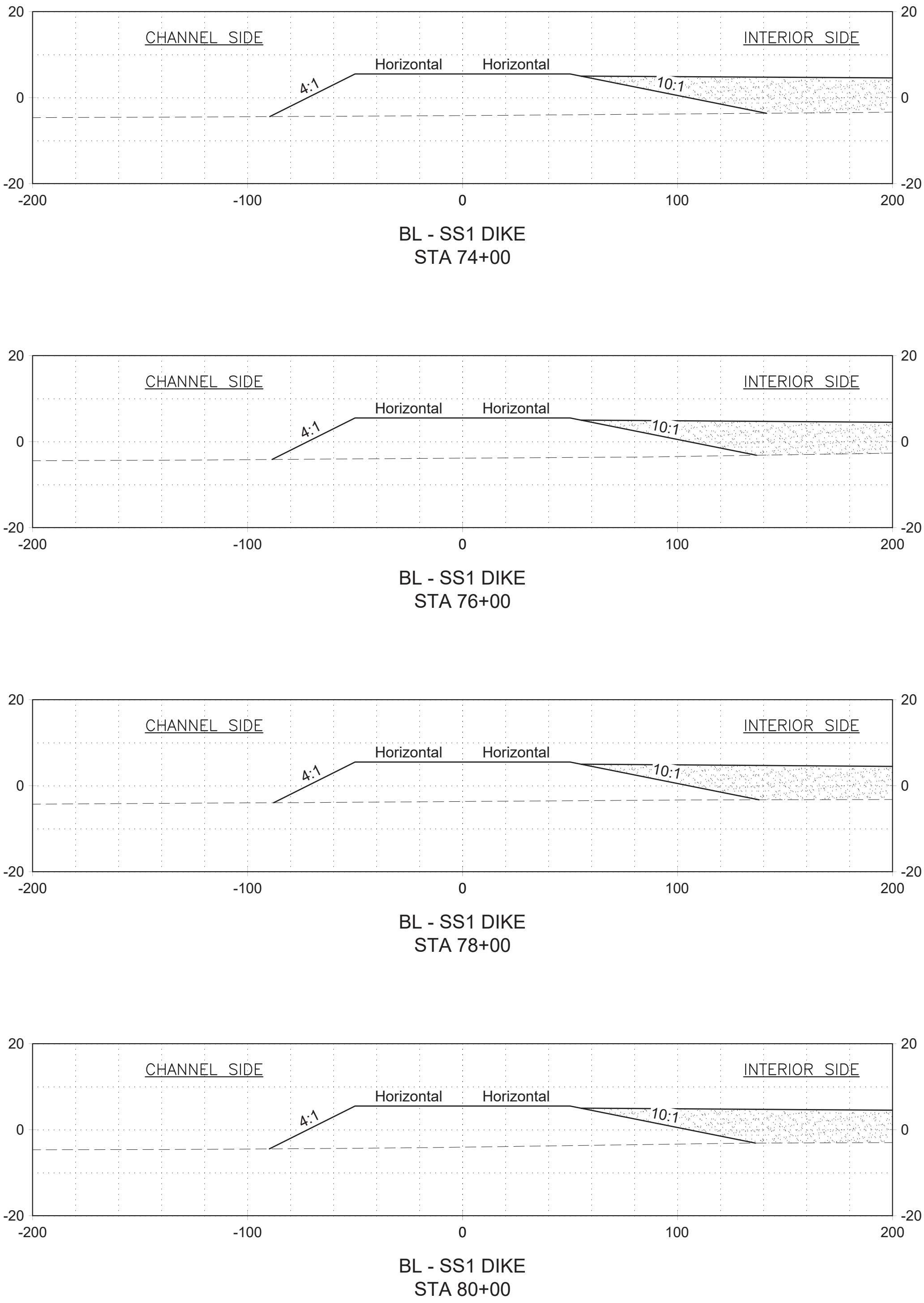
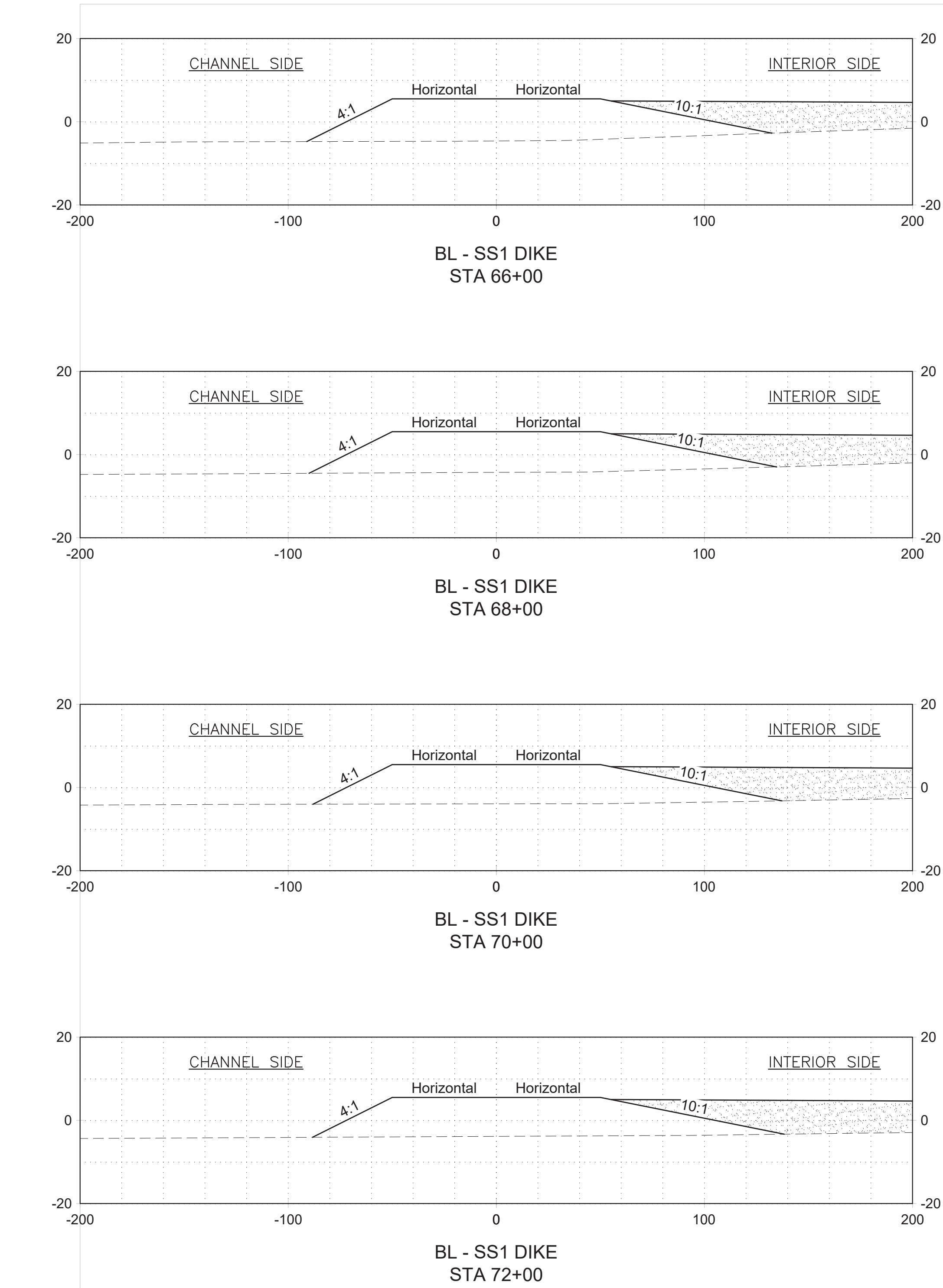
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

SS1 CROSS SECTIONS STA
50+00 - 64+00

DATE: 11/14/2019
DWG. NO. 18-038B-36

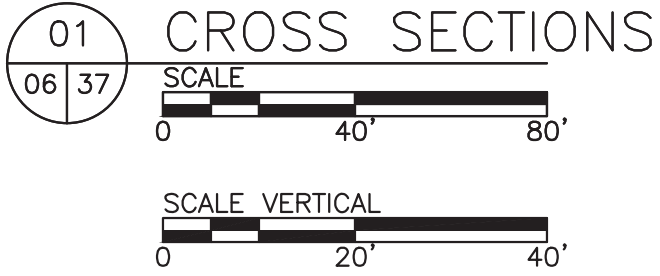
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- NOTE:
1. CONTRACTOR TO IDENTIFY, TRANSPORT, AND PLACE FILL FROM DREDGING SITE (DESIGN BY OTHERS). REFER TO THE PROJECT MANUAL FOR MATERIAL SPECIFICATIONS BY BU SITE.
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- ▨ PROPOSED BACKFILL



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SHEET 37 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

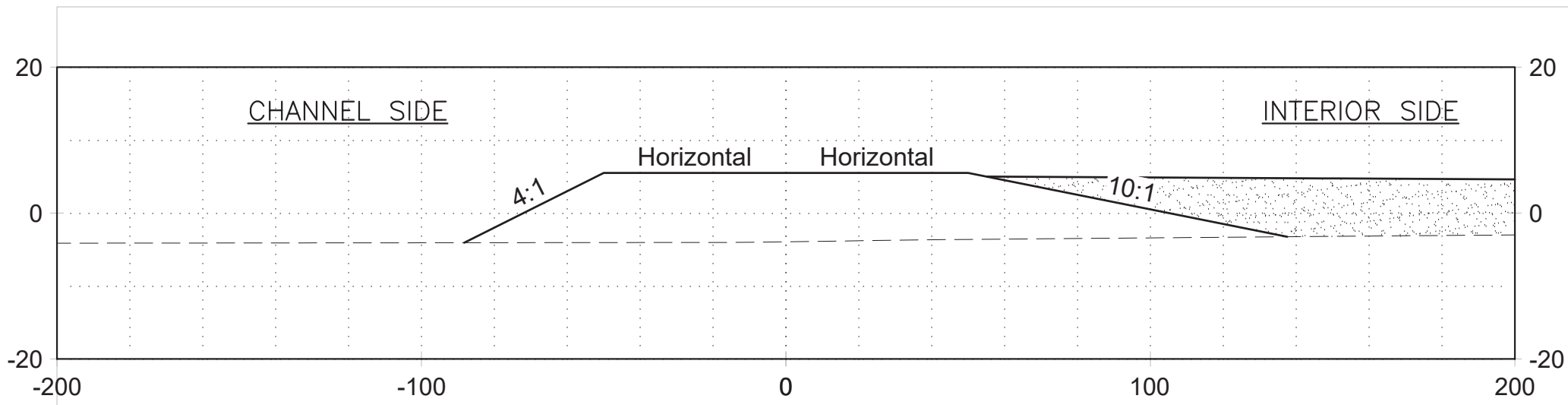
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

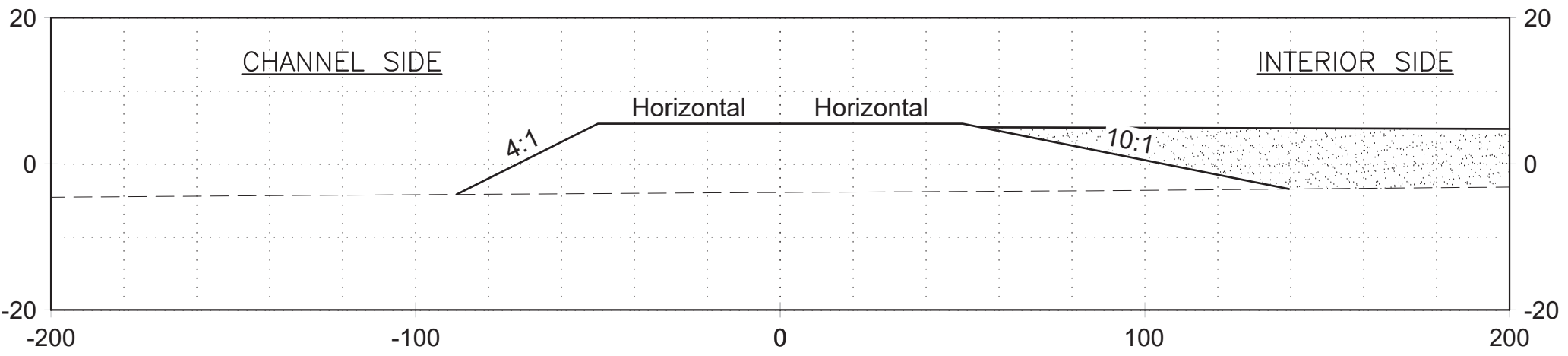
SS1 CROSS SECTIONS STA
66+00 - 80+00

DATE: 11/14/2019
DWG. NO. 18-038B-37

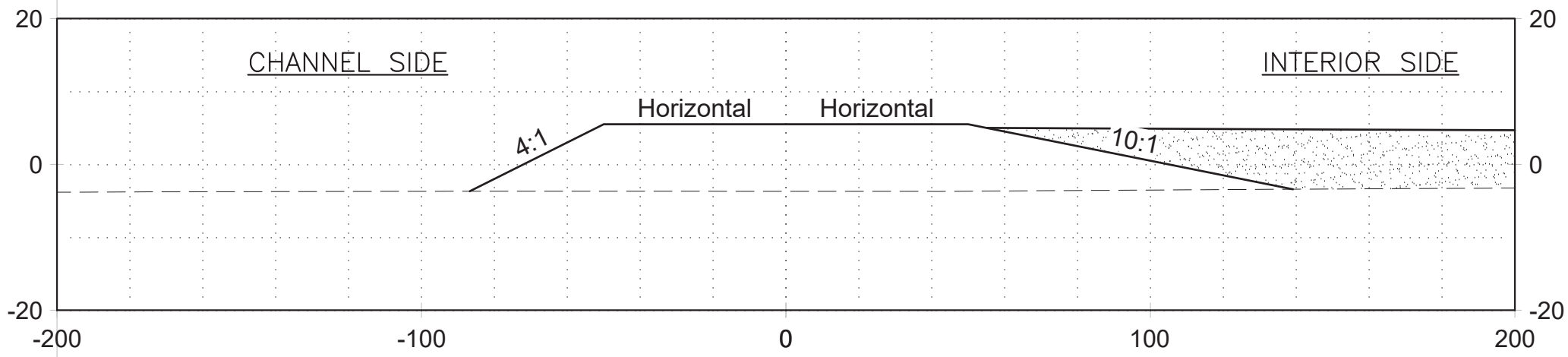
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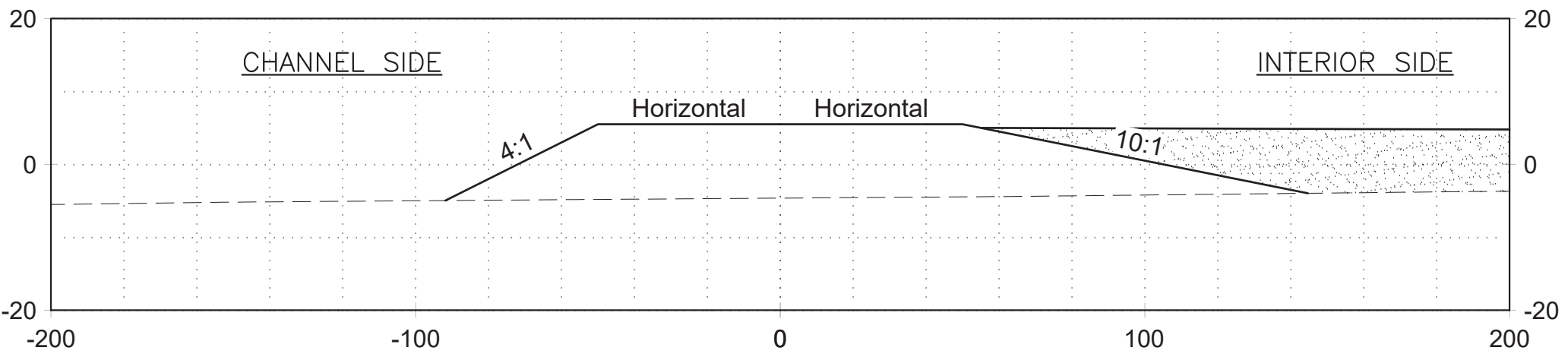
BL - SS1 DIKE
STA 82+00



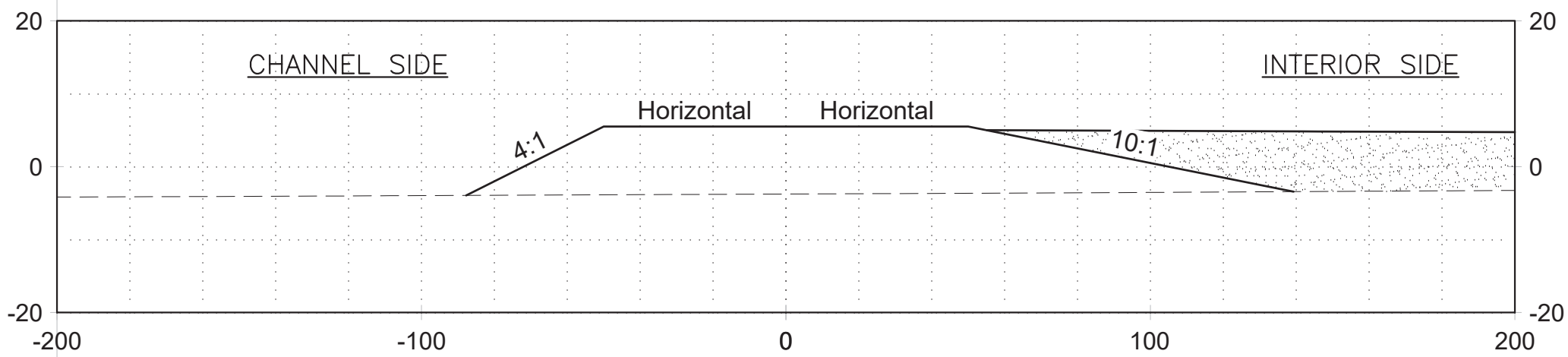
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STA 90+00



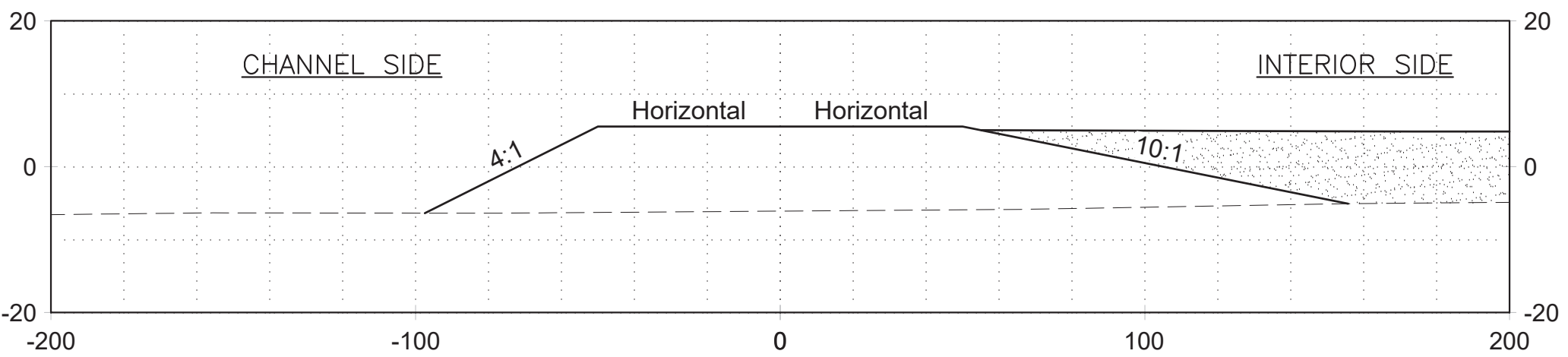
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STA 84+00



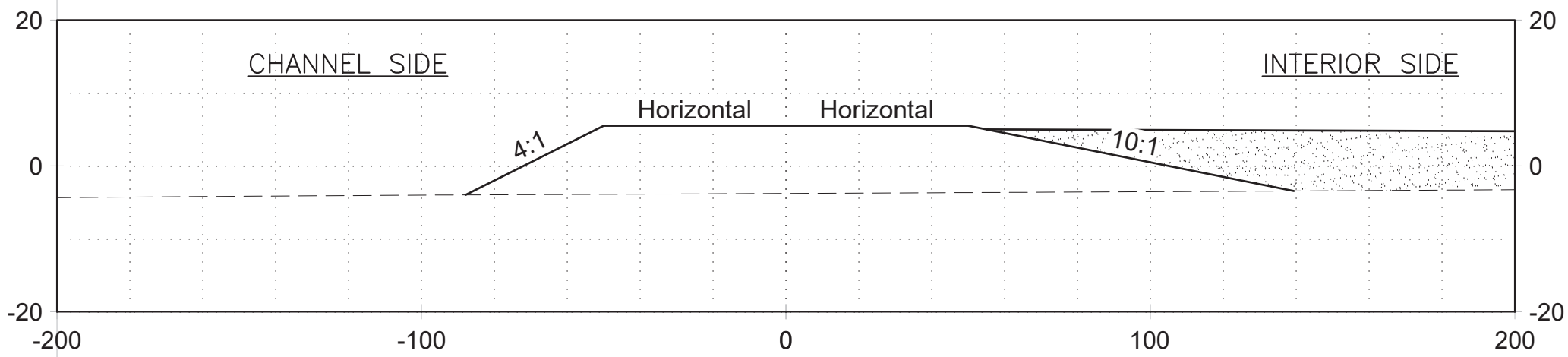
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STA 92+00



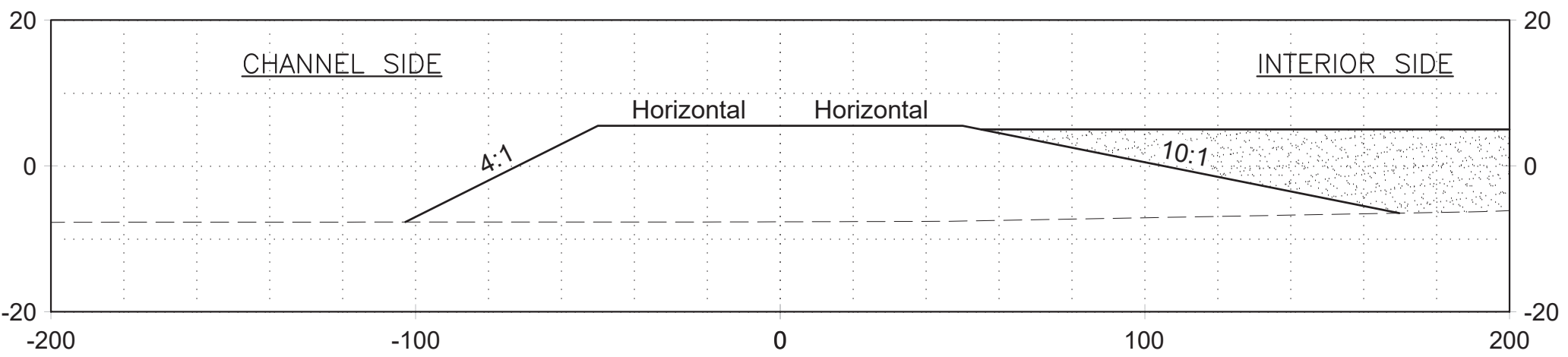
BL - SS1 DIKE
STA 86+00



BL - SS1 DIKE
STA 94+00



BL - SS1 DIKE
STA 88+00

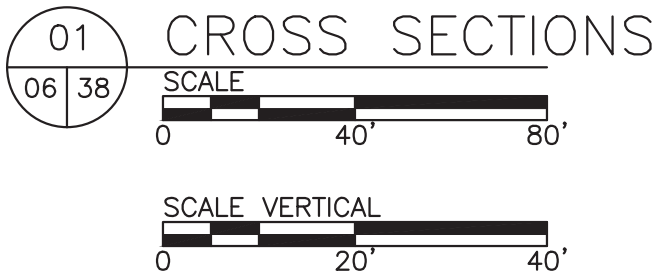


BL - SS1 DIKE
STA 96+00

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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- PROPOSED BACKFILL



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NO.	DATE	REVISION

PCCA PROJ. #18-038B



PORT **CORPUS CHRISTI**

AECOM

AECOM TECHNICAL SERVICES, INC.
19219 KATY FREEWAY, SUITE 100
HOUSTON, TEXAS 77094, UNITED STATES
WWW.AECOM.COM
TBPE REG. NO. F-3580

SHEET 38 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

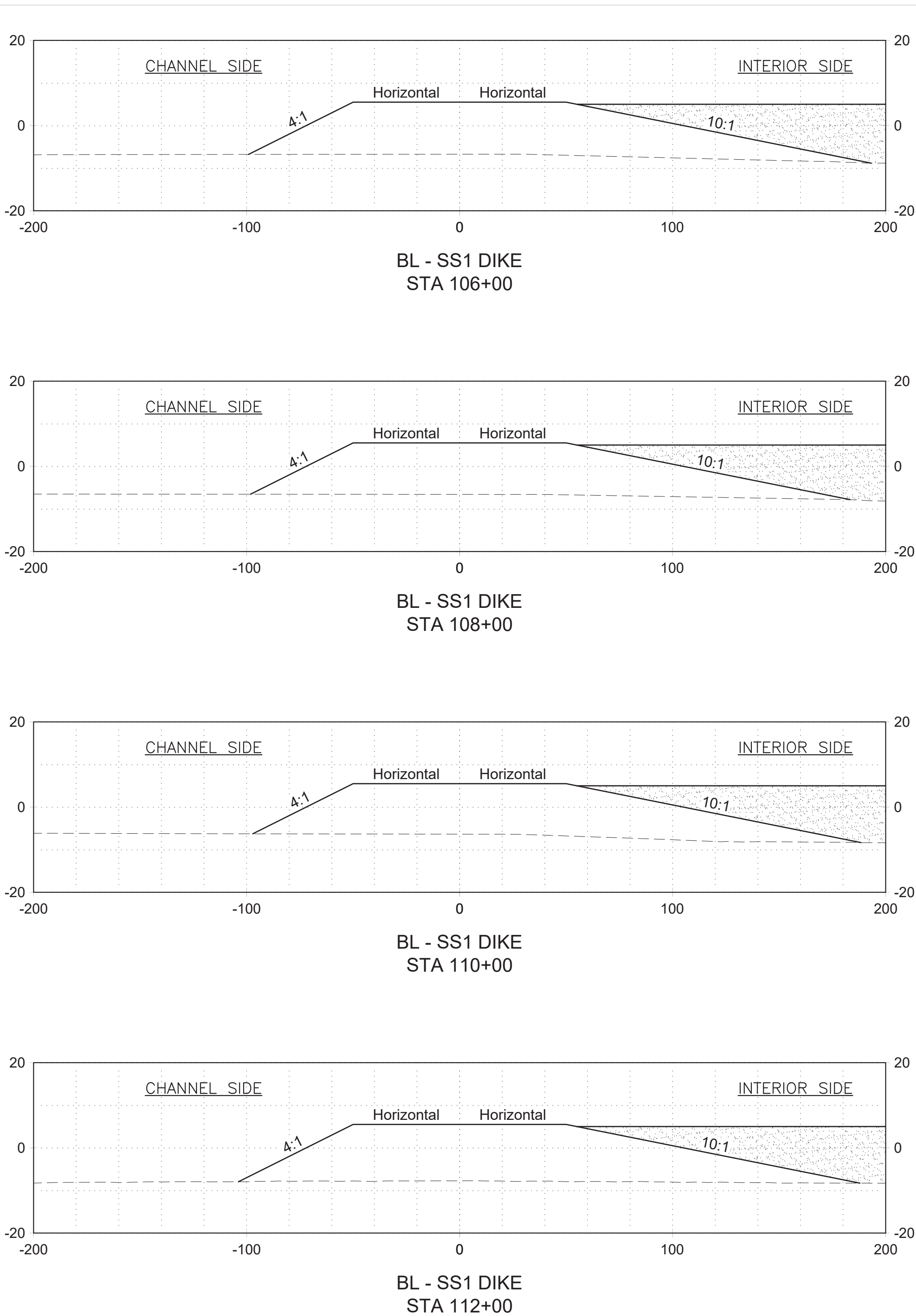
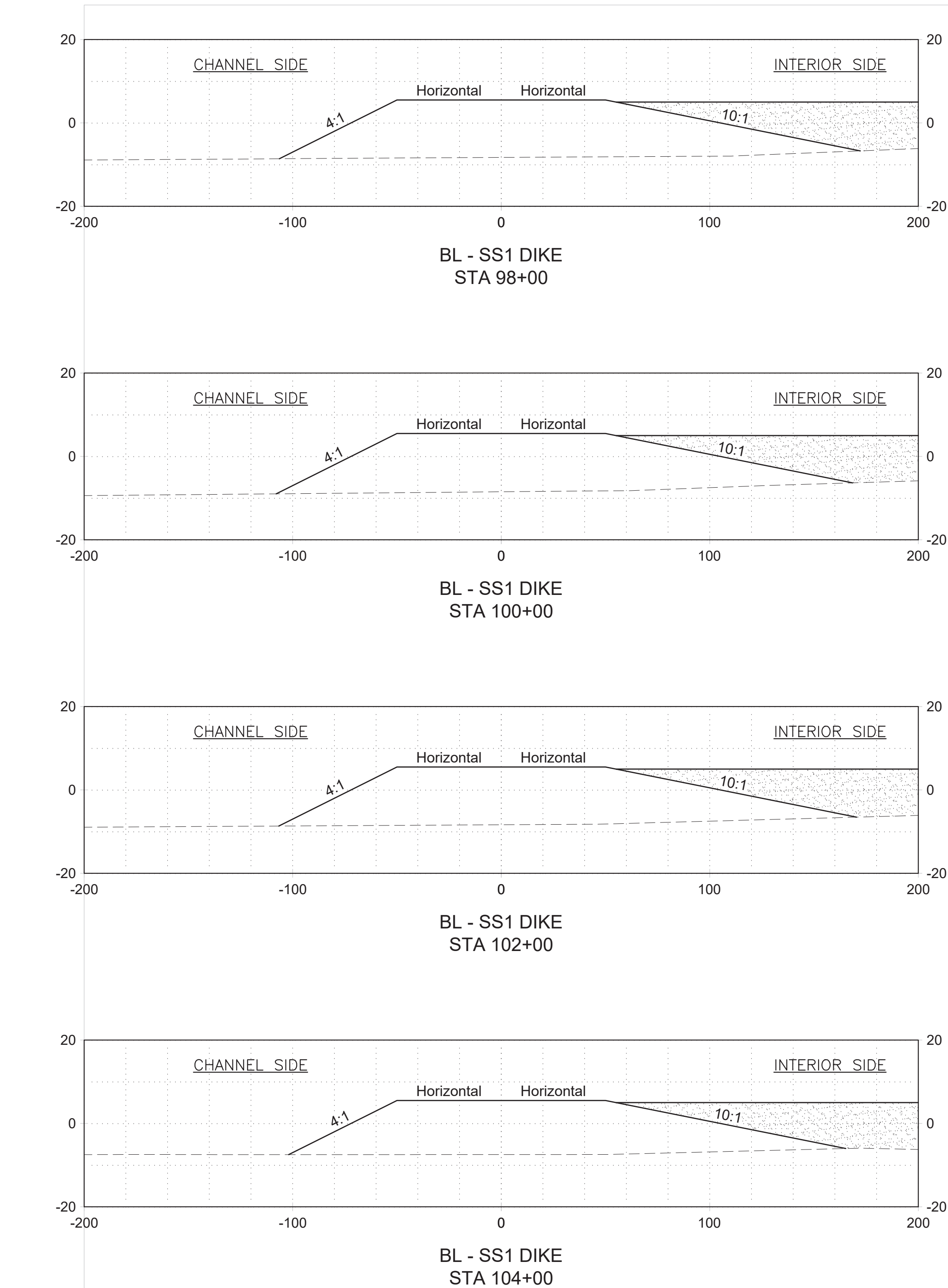
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

SS1 CROSS SECTIONS STA
82+00 - 96+00

DATE: 11/14/2019
DWG. NO. 18-038B-38

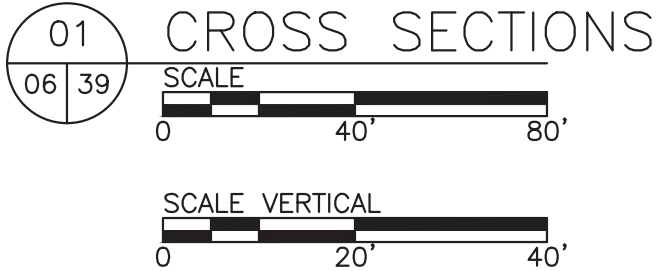
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- NOTE:
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LEGEND

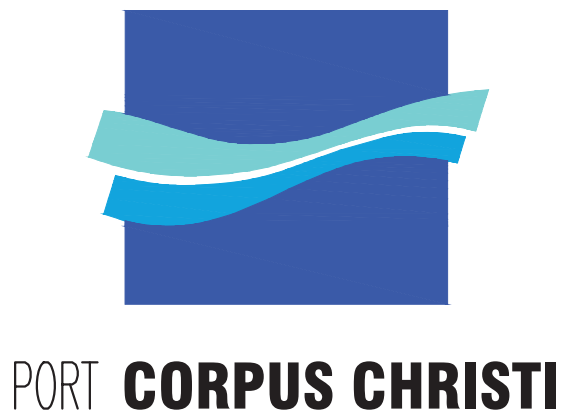
- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
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SHEET 39 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

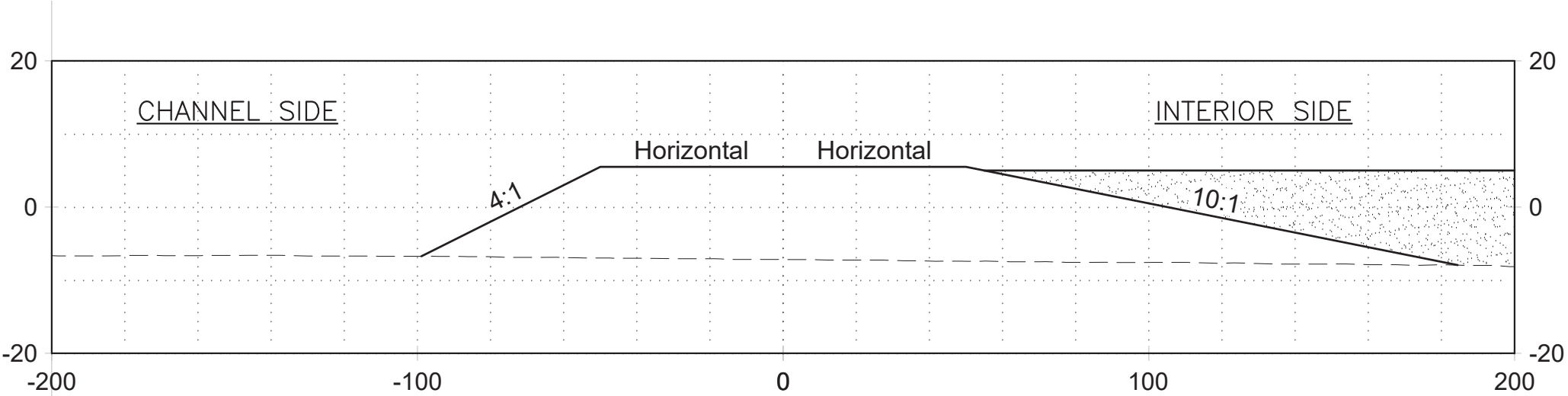
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'
DRAWN BY: AB

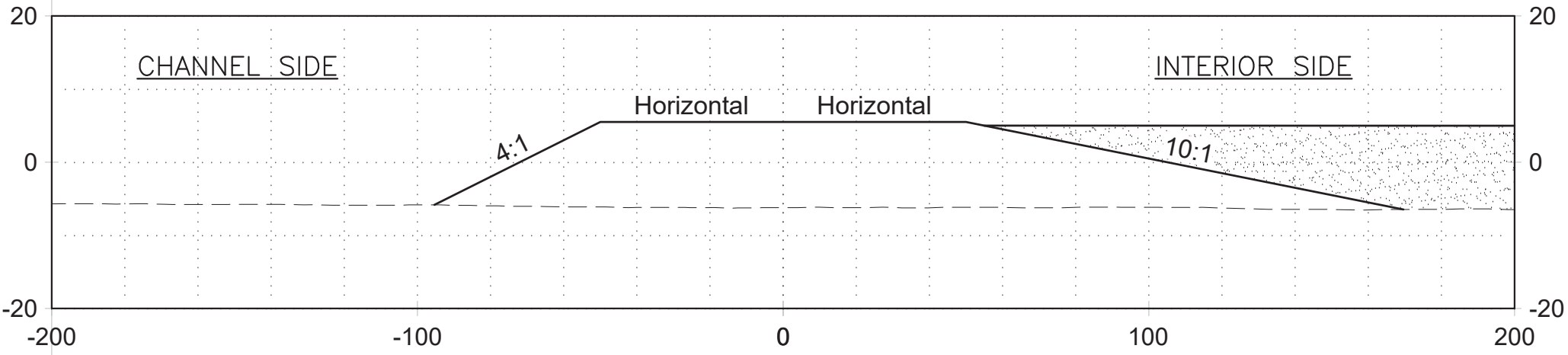
SS1 CROSS SECTIONS STA
98+00 - 112+00

DATE: 11/14/2019
DWG. NO. 18-038B-39

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BL - SS1 DIKE
STA 114+00



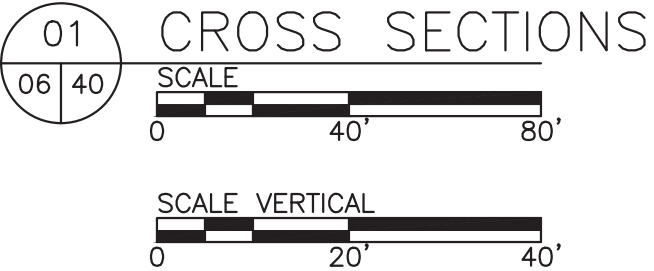
BL - SS1 DIKE
STA 116+00

SS1 VOLUME SUMMARY			
BU SITE FEATURE	SURFACE AREA	NET VOLUME	MATERIAL TYPES
	(FT2)	[CY (FILL)]	
SS1 DIKE	2,793,755	1,140,000	STIFF CLAY
SS1 BACKFILL	11,182,670	1,653,000	SAND
TOTALS	13,976,425	2,793,000	

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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED FINISHED GROUND
- ▨ PROPOSED BACKFILL




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19219 KATY FREEWAY, SUITE 100
HOUSTON, TEXAS 77094, UNITED STATES
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SHEET 40 OF 50

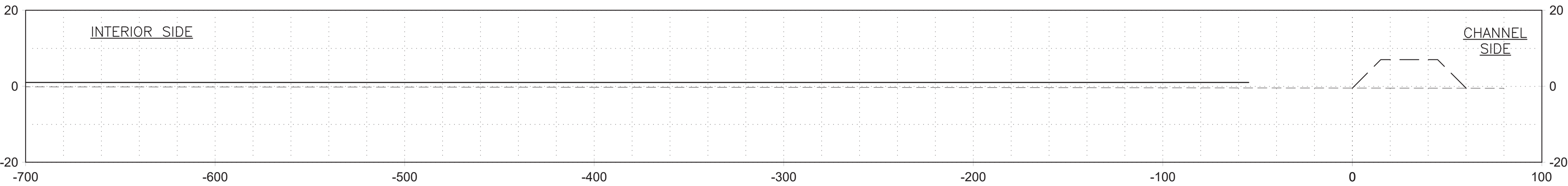
PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

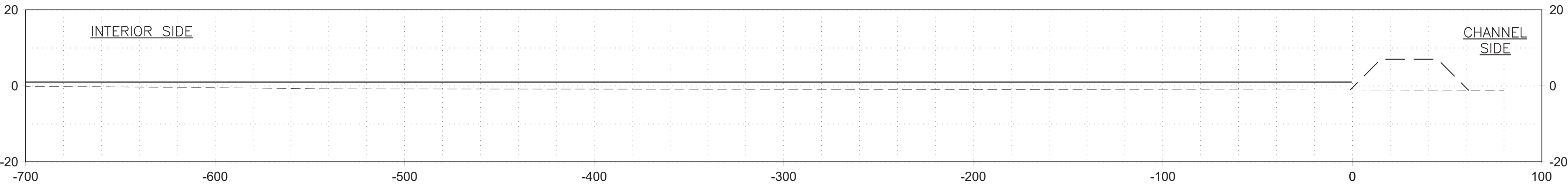
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DRAWN BY: AB

SS1 CROSS SECTIONS STA
114+00 - 116+00

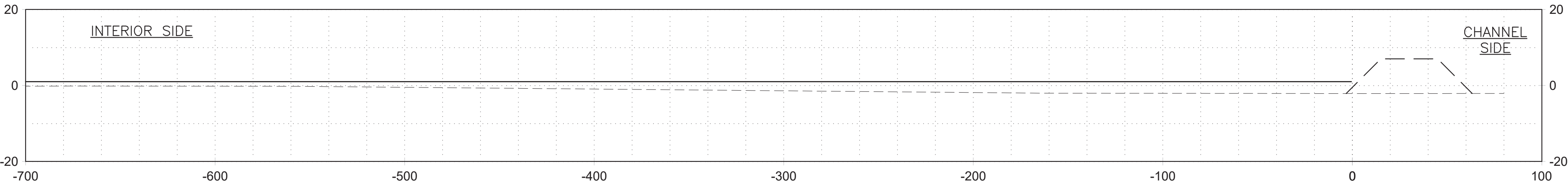
DATE: 11/14/2019
DWG. NO.
18-038B-40



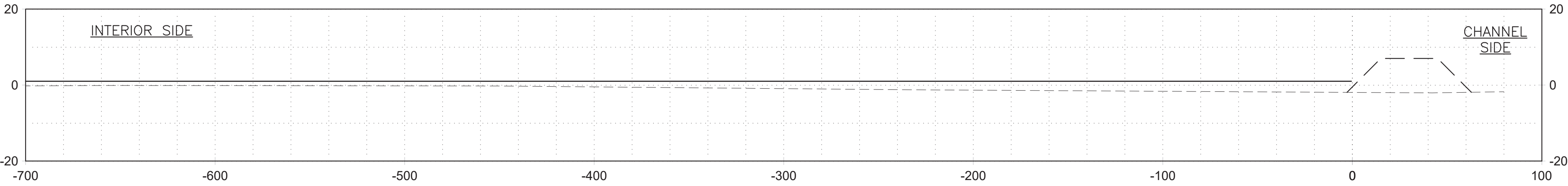
BL - SS2 DIKE
STA 2+00



BL - SS2 DIKE
STA 4+00



BL - SS2 DIKE
STA 6+00



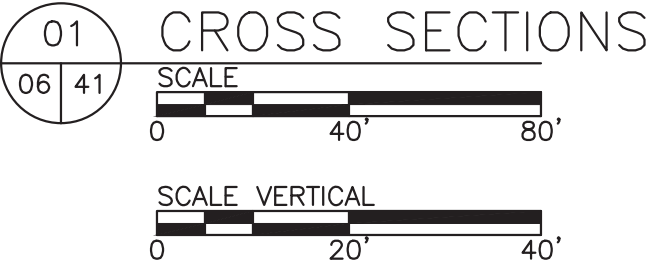
BL - SS2 DIKE
STA 8+00

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BIDDING, OR CONSTRUCTION.

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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED SS2 FILL
- SS2 APPROX. 60–FT SHORELINE REPAIR (BY OTHERS)



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PURPOSES.

NO.	DATE	REVISION

PCCA PROJ. #18–038B



PORT **CORPUS CHRISTI**

AECOM TECHNICAL SERVICES, INC.
19219 KATY FREEWAY, SUITE 100
HOUSTON, TEXAS 77094, UNITED STATES
WWW.AECOM.COM
TBPE REG. NO. F–3580

SHEET 41 OF 50

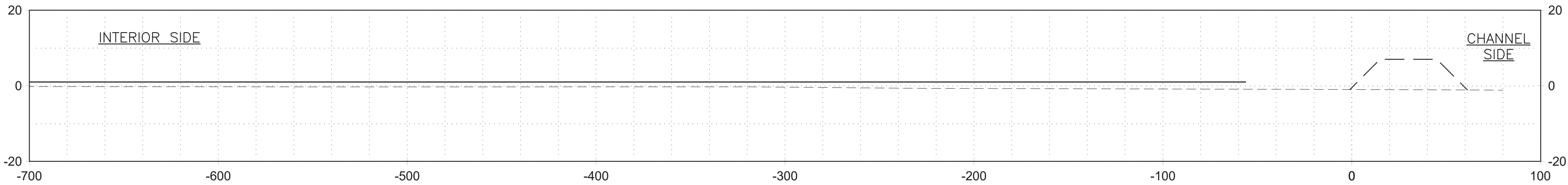
PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

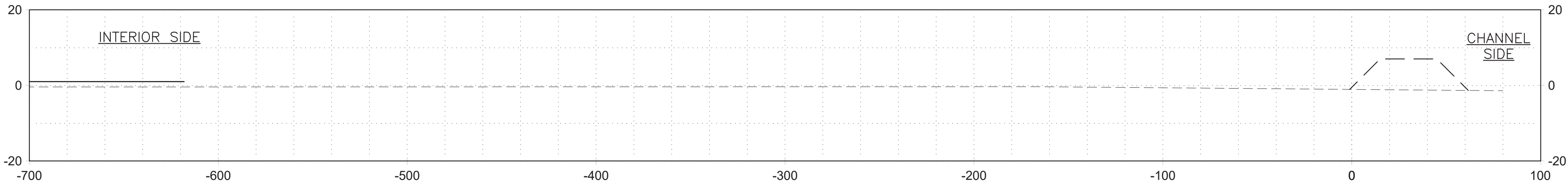
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DRAWN BY: AB

SS2 CROSS SECTIONS STA
2+00 – 8+00

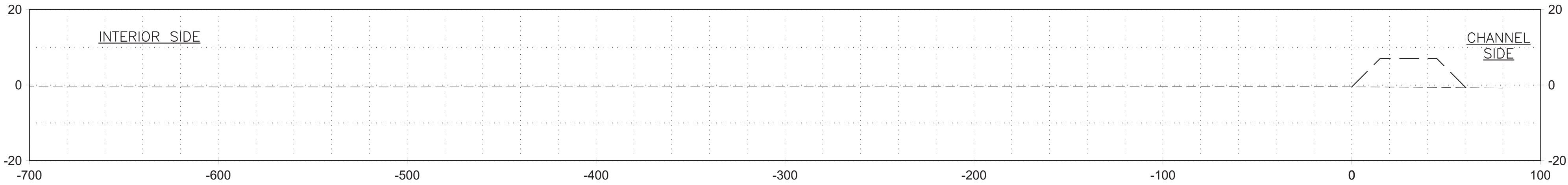
DATE: 11/14/2019
DWG. NO.
18–038B–41



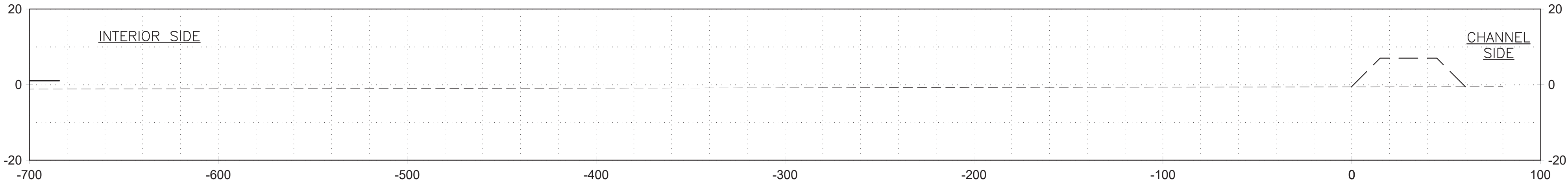
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STA 10+00



BL - SS2 DIKE
STA 12+00



BL - SS2 DIKE
STA 14+00



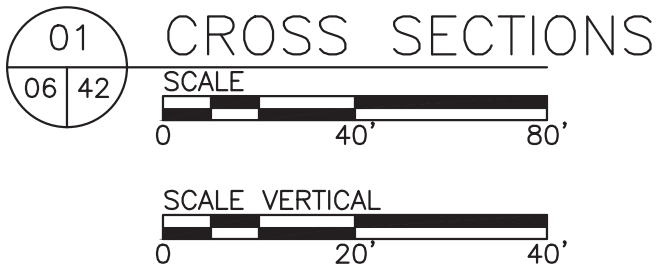
BL - SS2 DIKE
STA 38+00

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- PROPOSED SS2 FILL
- SS2 APPROX. 60–FT SHORELINE REPAIR (BY OTHERS)



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NO.	DATE	REVISION

PCCA PROJ. #18–038B



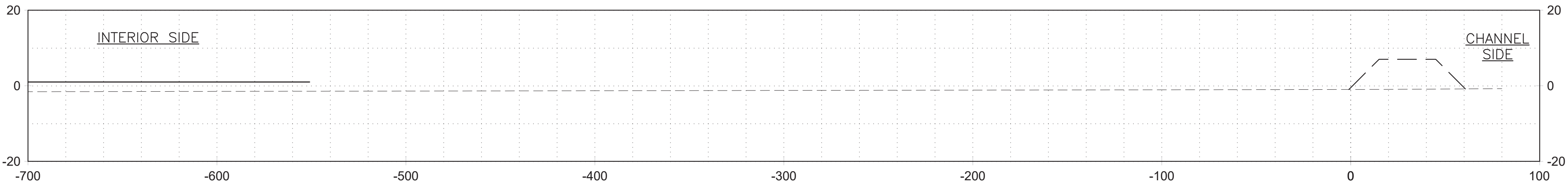
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WWW.AECOM.COM
TBPE REG. NO. F–3580

SHEET 42 OF 50

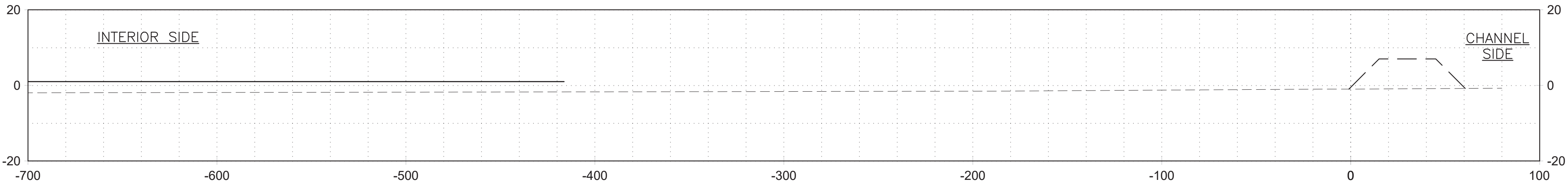
PORT OF CORPUS CHRISTI AUTHORITY

DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

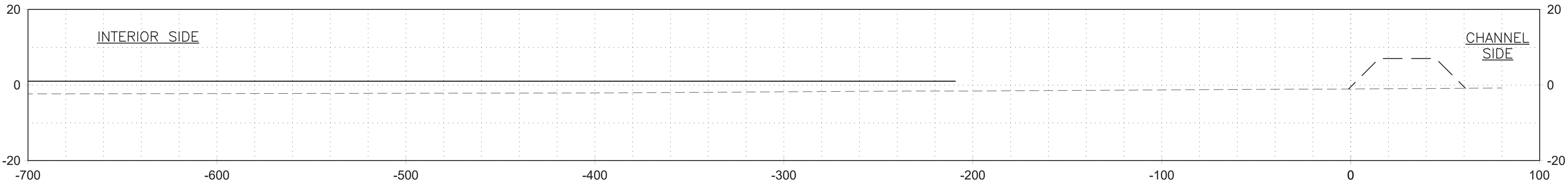
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DRAWN BY: AB		DWG. NO. 18–038B–42



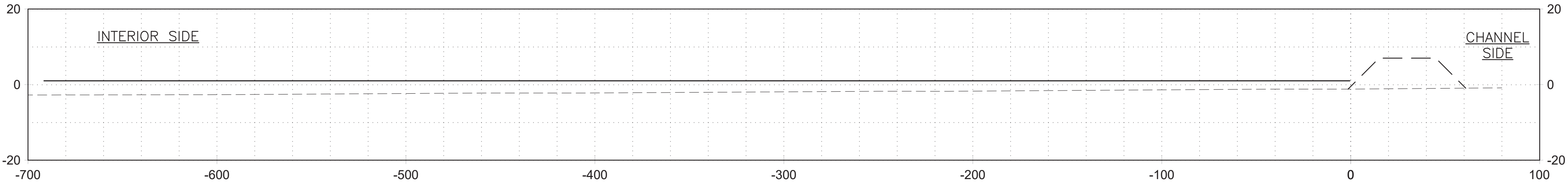
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STA 40+00



BL - SS2 DIKE
STA 42+00



BL - SS2 DIKE
STA 44+00



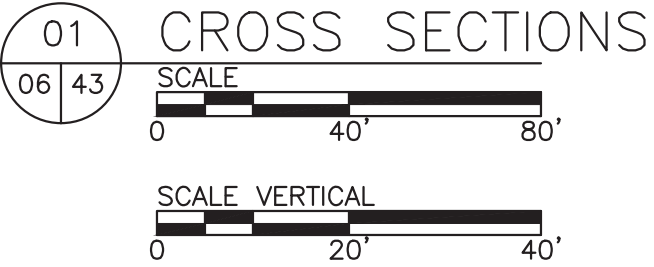
BL - SS2 DIKE
STA 46+00

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LEGEND

- EXISTING BAY BOTTOM
- PROPOSED SS2
- SS2 APPROX. 60–FT SHORELINE REPAIR (BY OTHERS)



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SHEET 43 OF 50

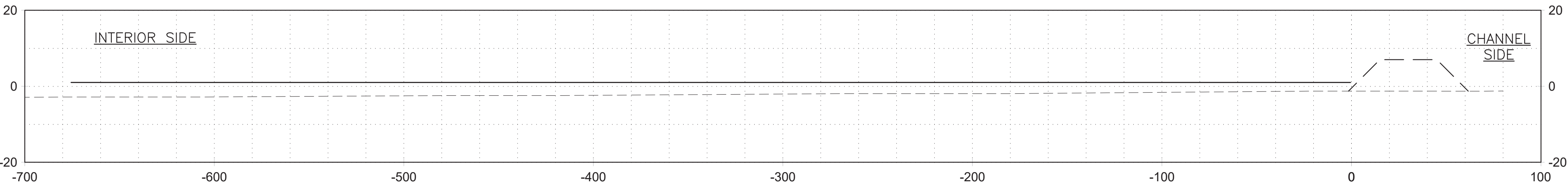
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DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

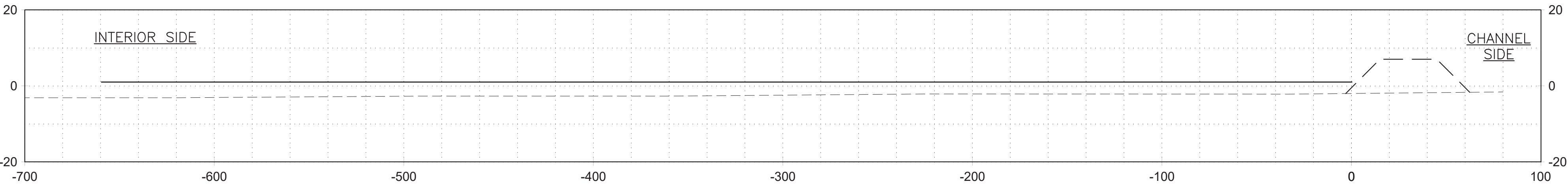
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DRAWN BY: AB

SS2 CROSS SECTIONS STA
40+00 – 46+00

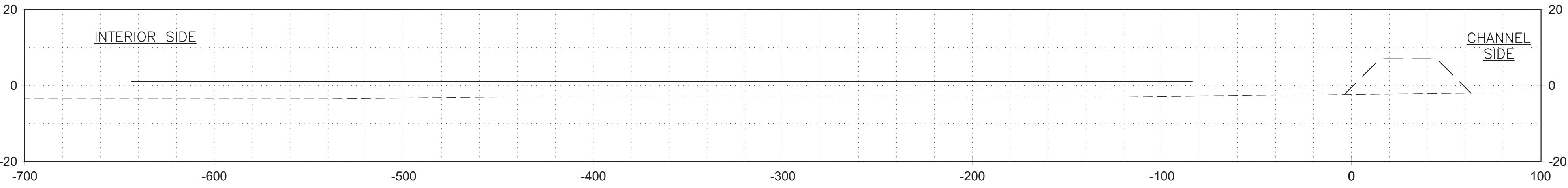
DATE: 11/14/2019
DWG. NO. 18–038B–43



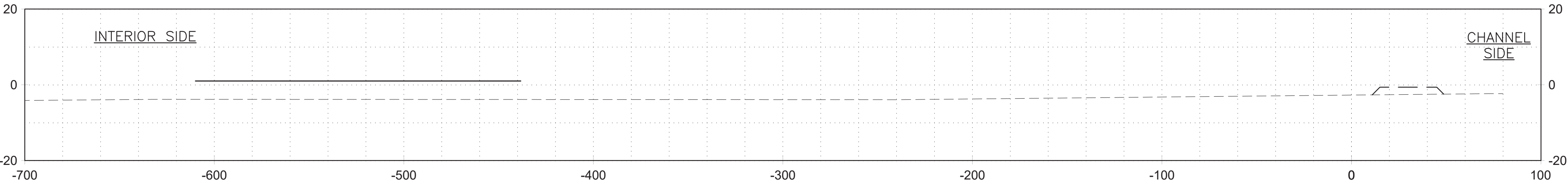
BL - SS2 DIKE
STA 48+00



BL - SS2 DIKE
STA 50+00



BL - SS2 DIKE
STA 52+00



BL - SS2 DIKE
STA 54+00

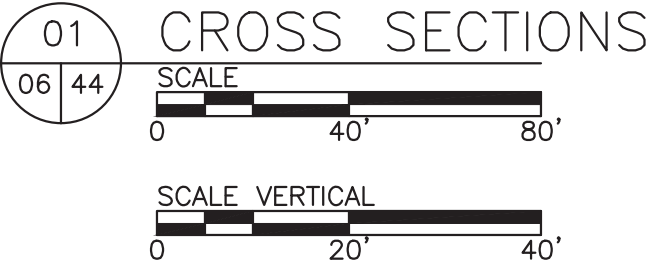
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SS2 VOLUME SUMMARY**			
BU SITE FEATURE	SURFACE AREA	NET VOLUME	MATERIAL TYPES
	(FT2)	[CY (FILL)]	
SS2 FILL TO +0 FT ELEV	1,492,566	84,000	SAND / SOFT CLAY
SS2 THIN-LAYER DEPOSITION	108,350	166,000	SAND / SOFT CLAY
TOTALS	1,600,916	250,000	
**Note: Volumes are estimated based on pre-Hurricane Harvey bathymetry and are likely significantly underestimated. For accurate volumes, additional survey should be collected.			

LEGEND

- EXISTING BAY BOTTOM
- PROPOSED SS2 FILL
- SS2 APPROX. 60–FT SHORELINE REPAIR (BY OTHERS)



NO.	DATE	REVISION

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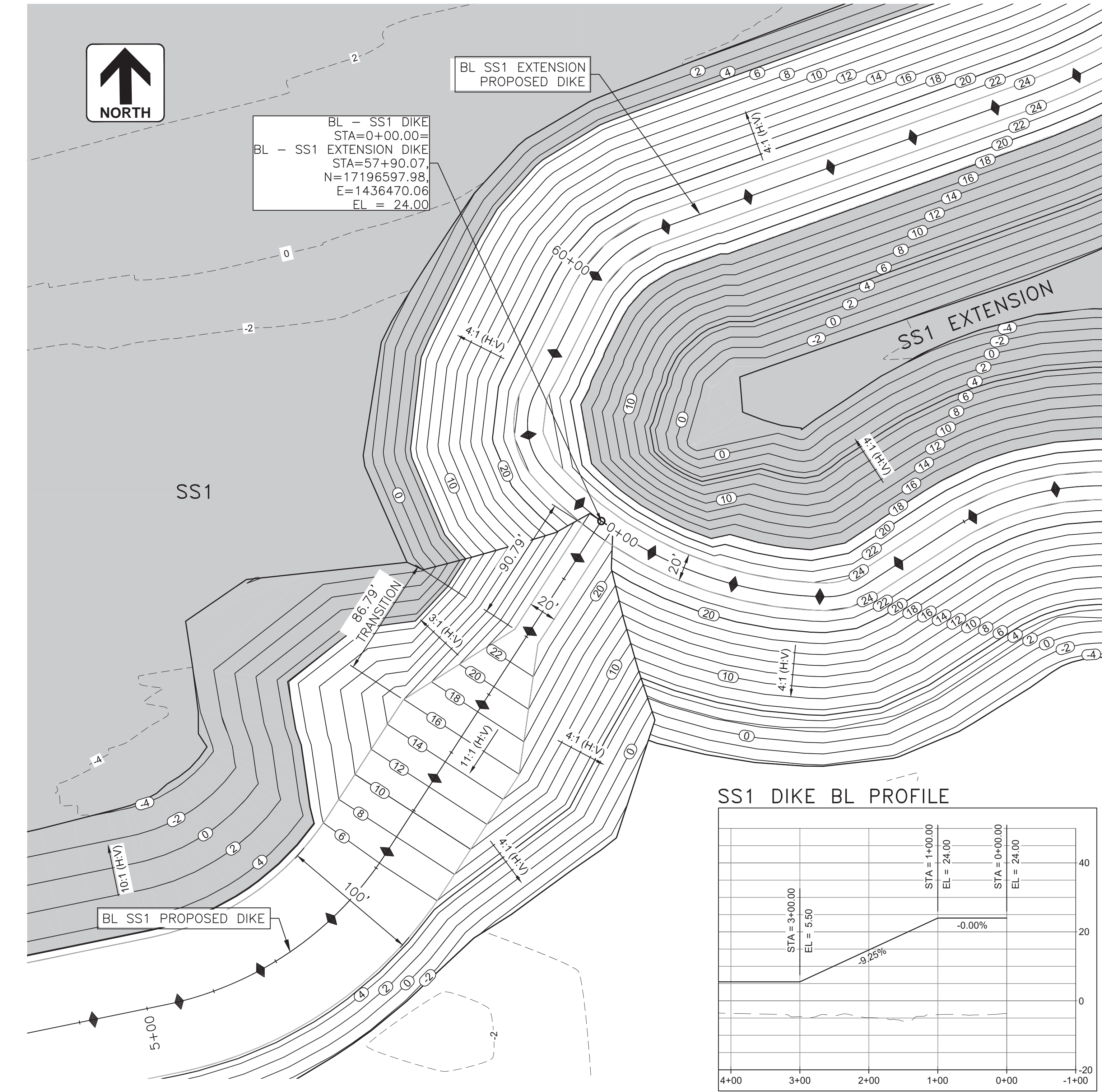
SHEET 44 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

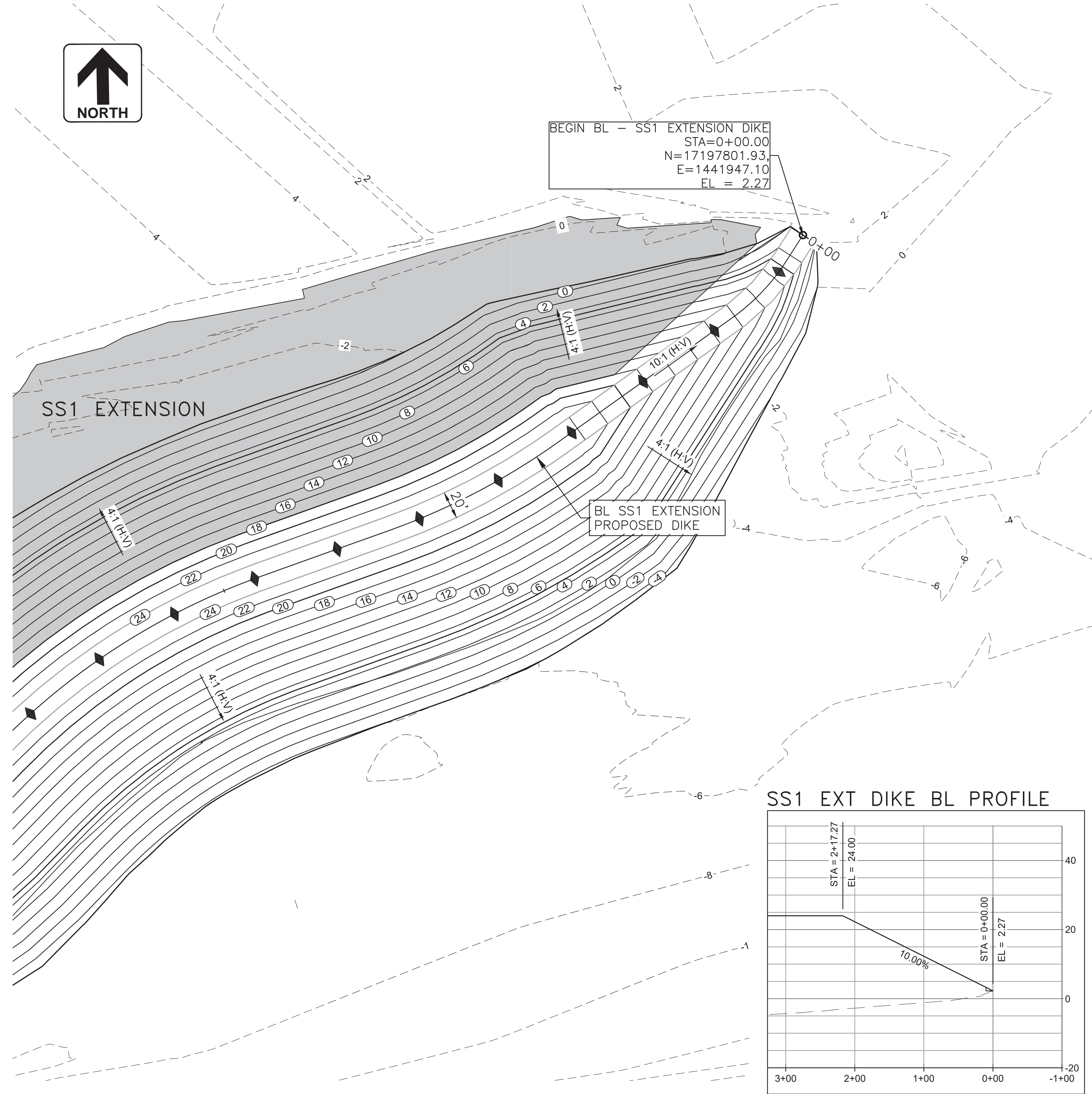
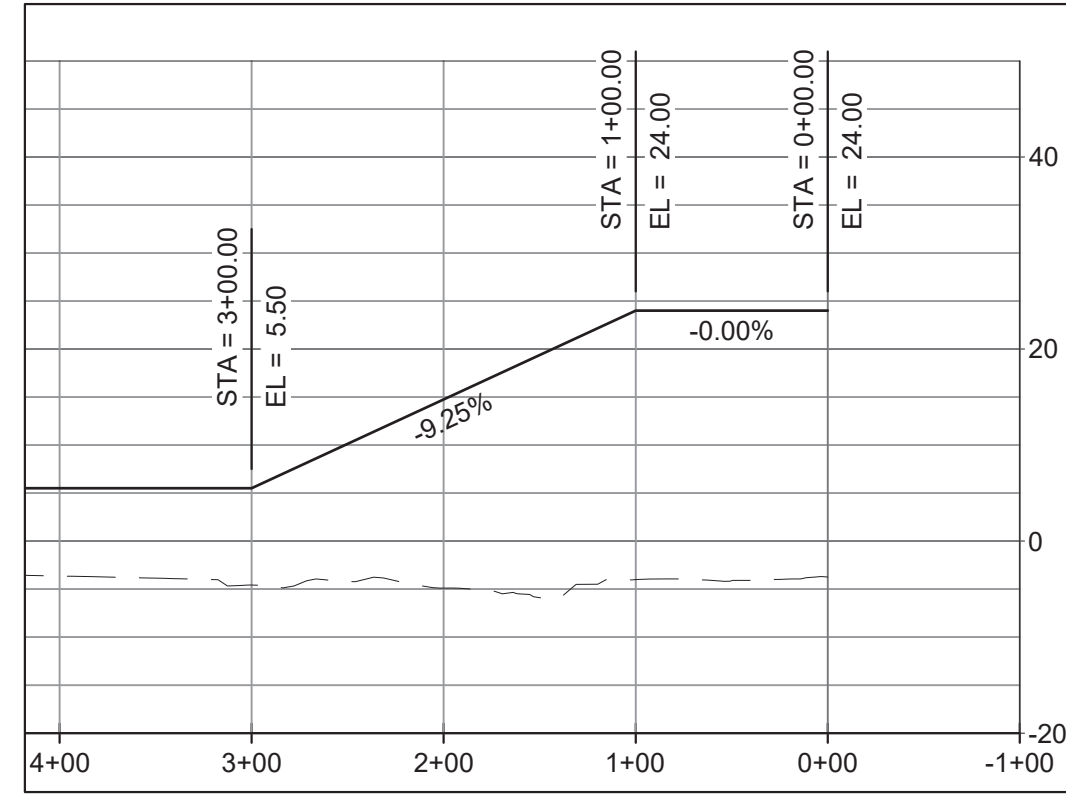
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=40'	SS2 CROSS SECTIONS STA 48+00 – 54+00	DATE: 11/14/2019
DRAWN BY: AB		DWG. NO. 18–038B–44

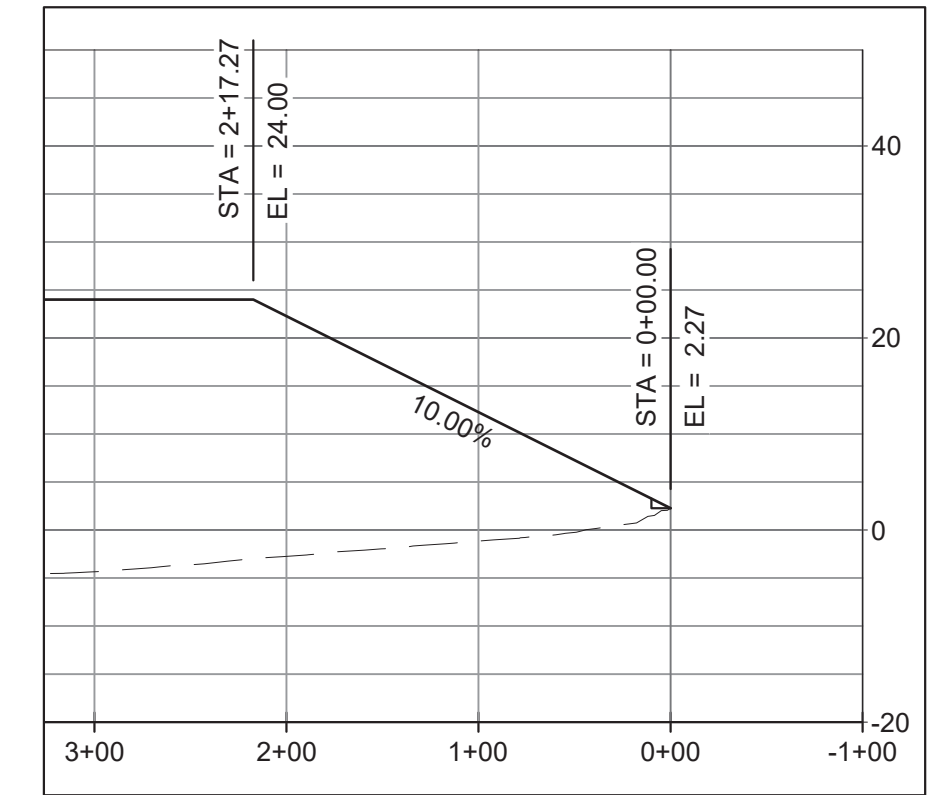
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SS1 DIKE BL PROFILE



SS1 EXT DIKE BL PROFILE



02
06 45
SCALE
0 50' 100'

01
06 06
SCALE
0 50' 100'

LEGEND

- NEW DIKE BASELINE (BL)
- BENEFICIAL USE DREDGED MATERIAL PLACEMENT AREA
- EXIST BATHYMETRY CONTOURS (2 FOOT INTERVALS)
- PROPOSED CONTOURS (2 FOOT INTERVALS)
- PORT OF CORPUS CHRISTI AUTHORITY (PCCA) BOUNDARY

NOTE:
1. SEE SHEET 06 FOR SITE PLAN.

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SHEET 45 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

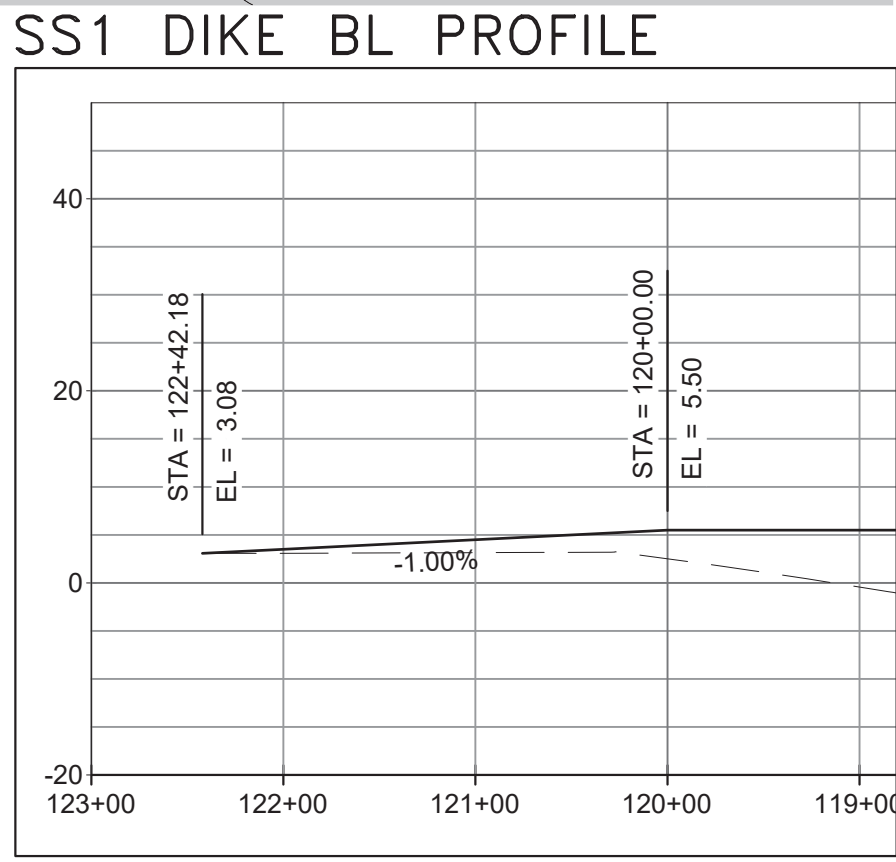
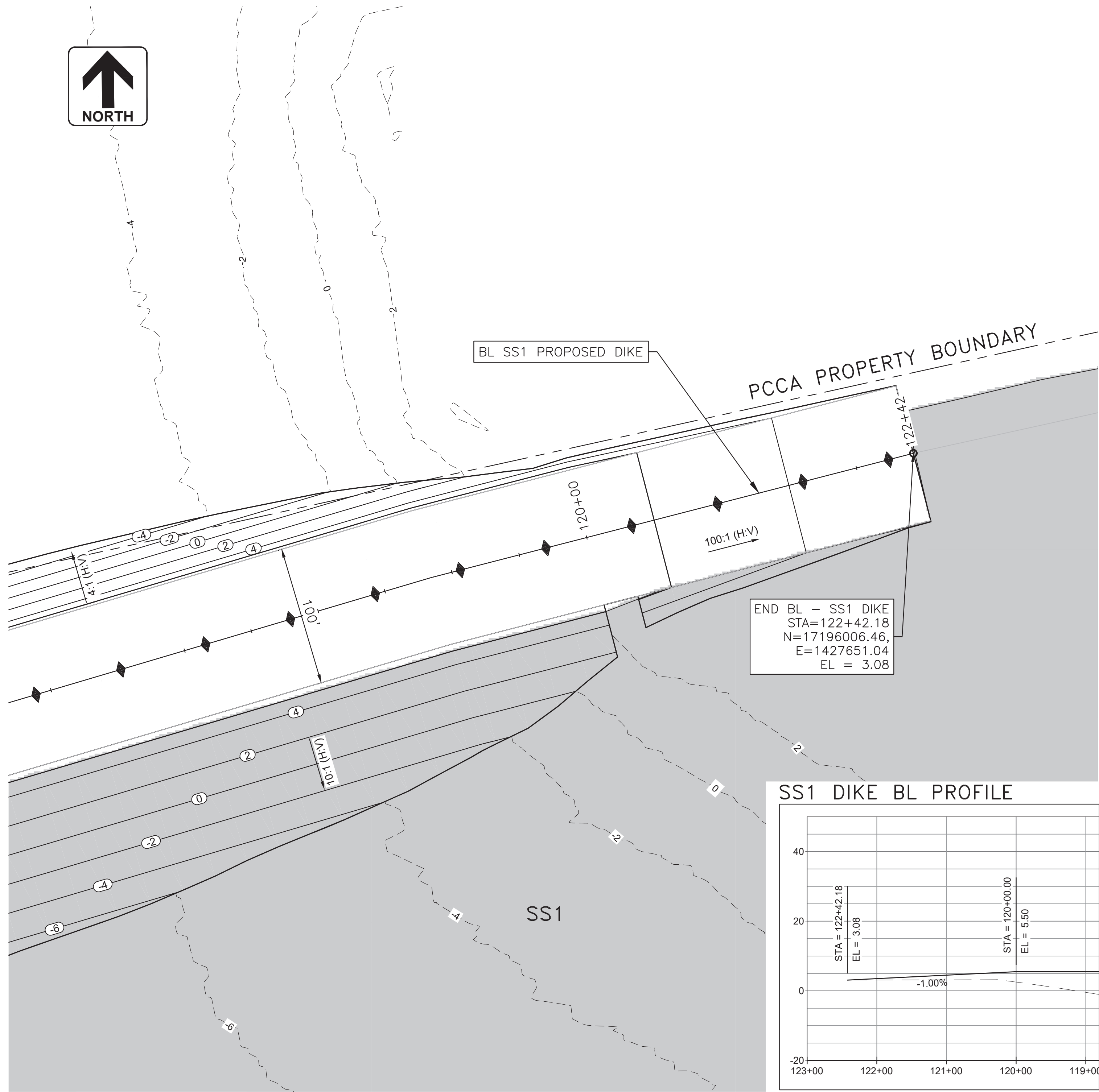
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=50'
DRAWN BY: AB

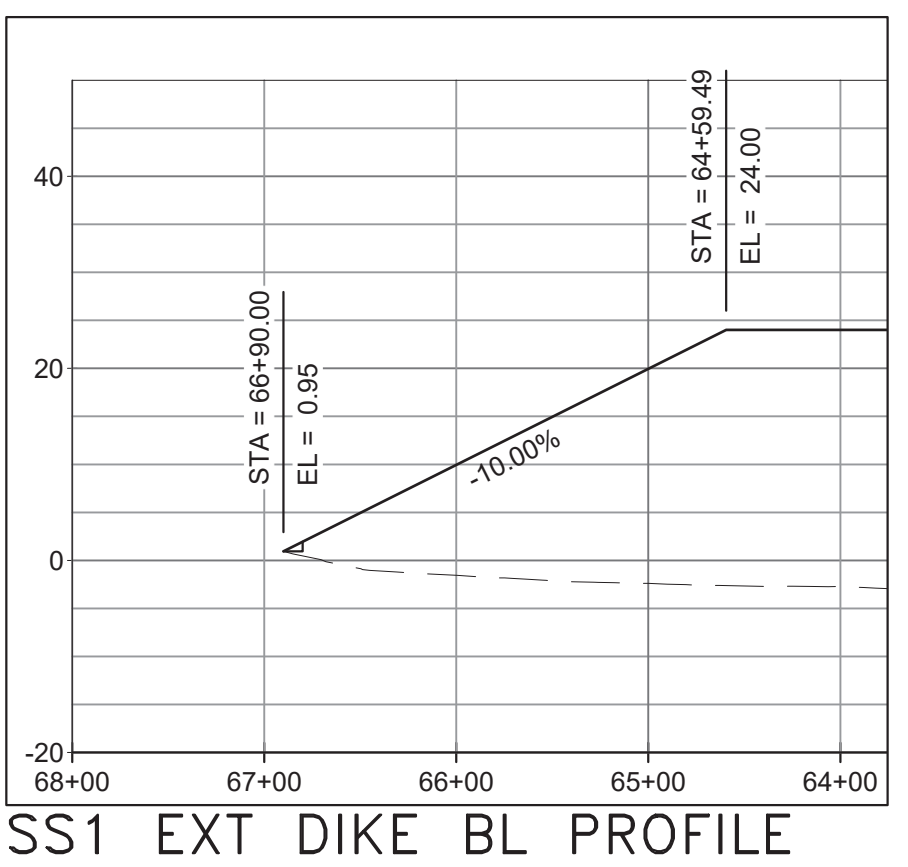
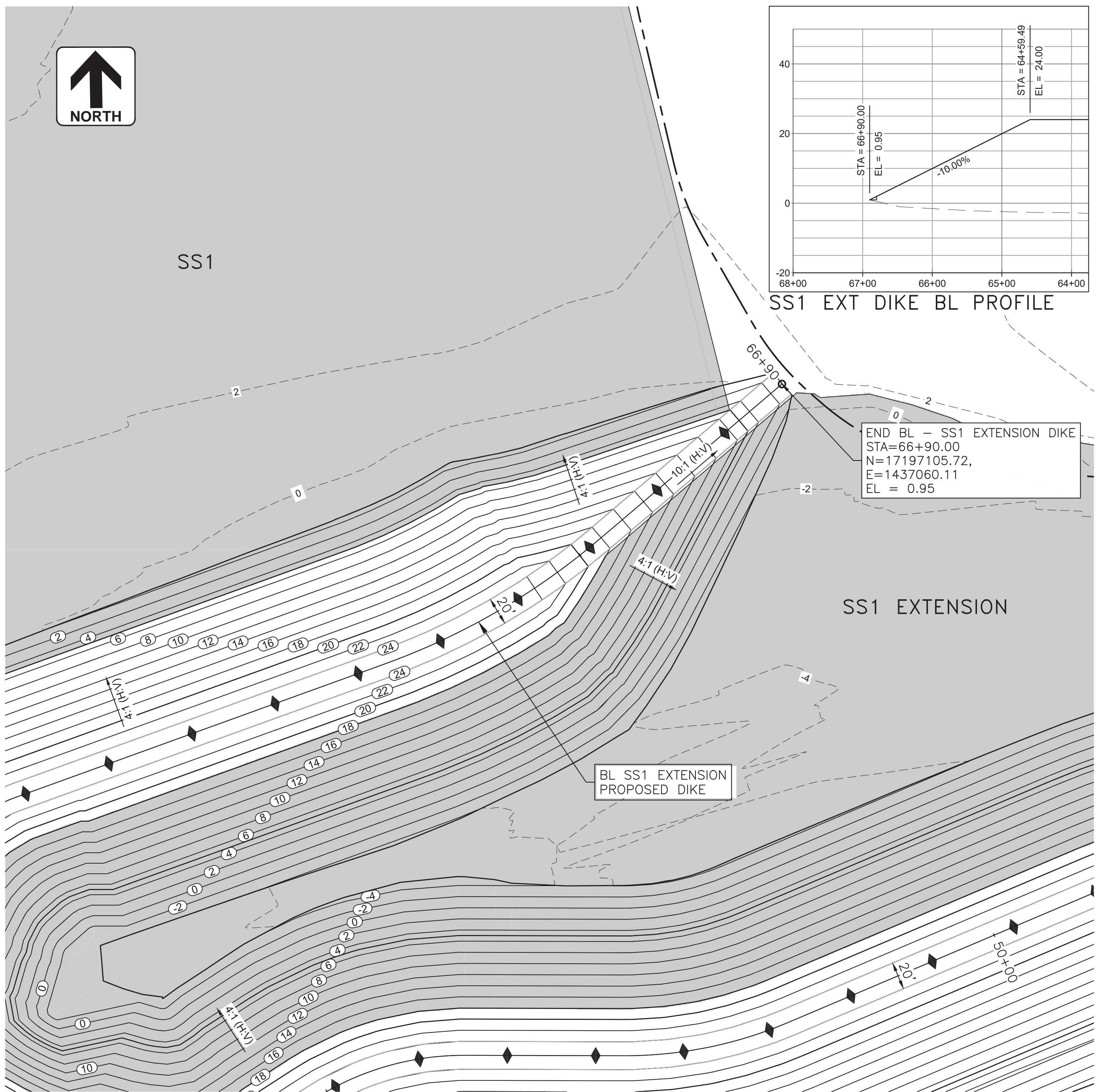
DIKE TIE-IN DETAILS 1
OF 4

DATE: 11/14/2019
DWG. NO. 18-038B-45

P:_PWD\Port of Corpus Christi\900 CADD\20-Sheets\Berth_PA_BU\PCCA-C-PROP-TIE-IN_DETAILS.dwg 11/14/2019 5:10 PM



02
06 46
SCALE
0 50' 100'
DETAIL - SS1 TIE-IN TO EXISTING GRADE



01
06 06
SCALE
0 50' 100'
DETAIL - SS1 EXT TIE-IN TO UPLAND

LEGEND

- NEW DIKE BASELINE (BL)
- BENEFICIAL USE DREDGED MATERIAL PLACEMENT AREA
- EXIST BATHYMETRY CONTOURS (2 FOOT INTERVALS)
- PROPOSED CONTOURS (2 FOOT INTERVALS)
- PORT OF CORPUS CHRISTI AUTHORITY (PCCA) BOUNDARY

NOTE:
1. SEE SHEET 06 FOR SITE PLAN.

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SHEET 46 OF 50

PORT OF CORPUS CHRISTI AUTHORITY

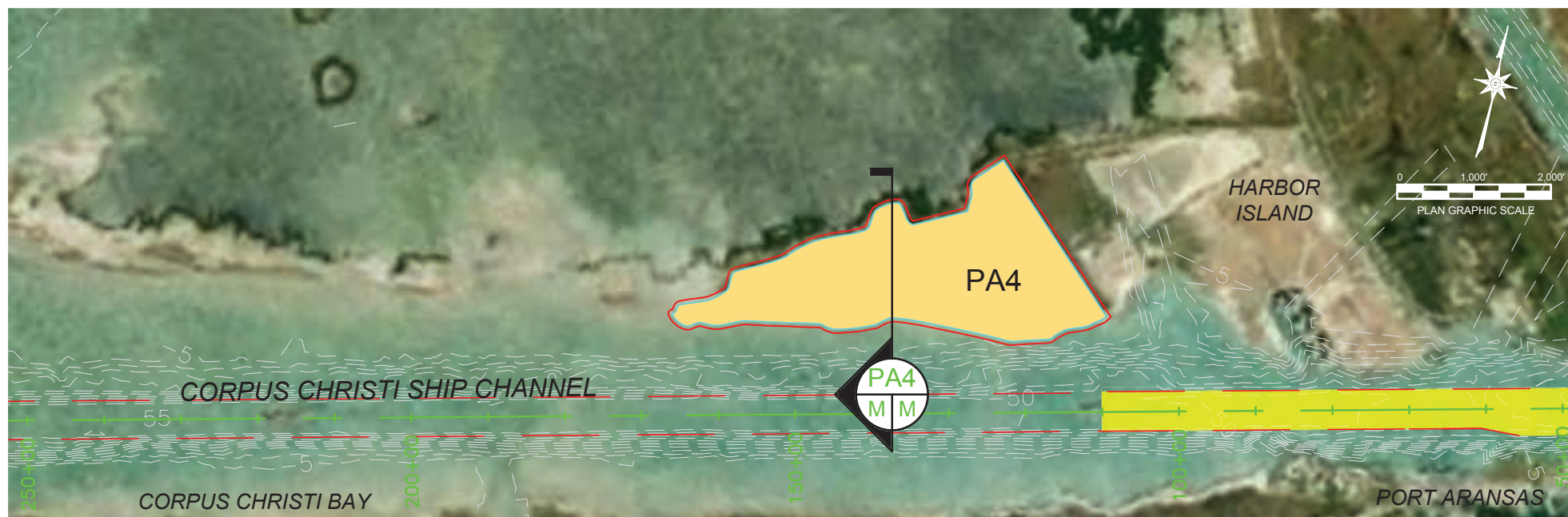
DEVELOPMENT OF BENEFICIAL
USE SITES SS1, SS2, AND M10

SCALE: 1"=50'
DRAWN BY: AB

DIKE TIE-IN DETAILS 2
OF 4

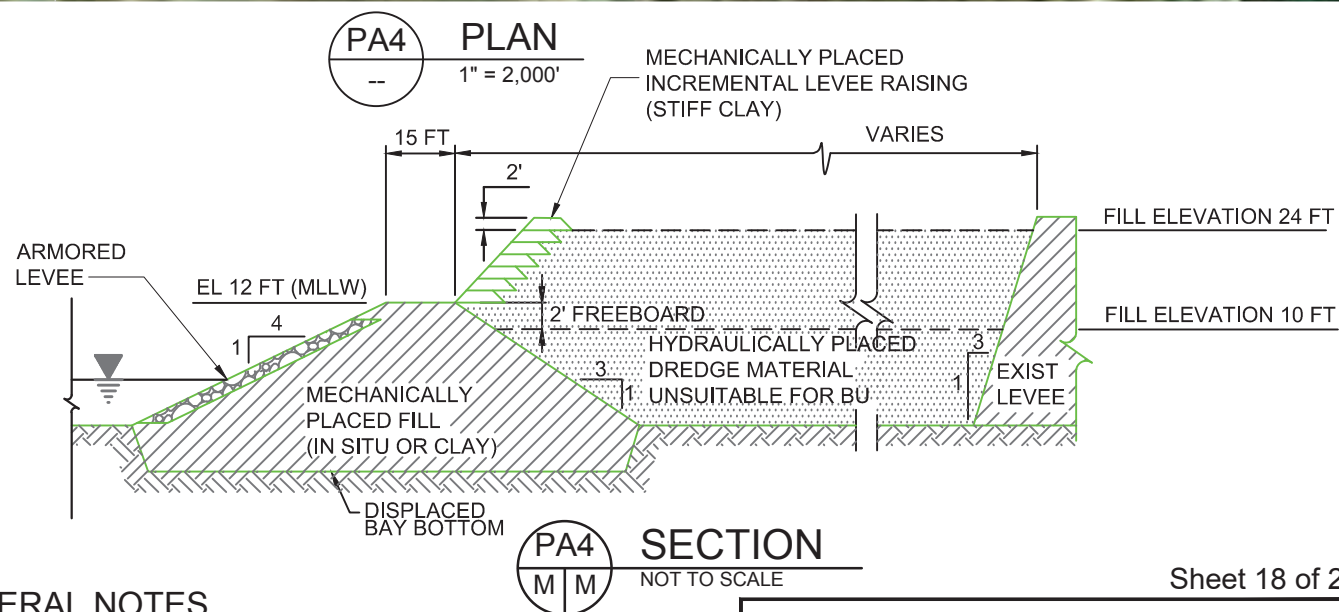
DATE: 11/14/2019
DWG. NO. 18-038B-46

Attachment B2



Placement Site Neatline Quantity – Site PA 4	
Feature Description	Construction Volume (CY)
Levee	1,459,000
Levee Back Fill	217,000
PA Fill	2,861,400
Total	4,537,000

*Note: Quantity not included in CY total



LEGEND

- — EXISTING / PROPOSED SHIP CHANNEL DEEPENING
- DREDGE MATERIAL PLACEMENT
- EXIST CONTOURS

GENERAL NOTES

- BASE MAPPING SHOWN IS ESRI WORLD IMAGERY, RETRIEVED FROM ARCGIS TO AUTOCAD IN MAY 2019 - LAST UPDATED IN SEPT 2018.
- HORIZONTAL COORDINATE SYSTEM IS NAD83 TEXAS STATE PLANE, SOUTH ZONE, US FOOT.
- VERTICAL DATUM IS REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- PIPELINE DATA FOR ARANSAS AND NUECES COUNTIES RETRIEVED FROM RAILROAD COMMISSION OF TEXAS ON NOVEMBER 19, 2018.

Corpus Christi Ship Channel Deepening Project
Individual Permit Application SWG-2019-00067

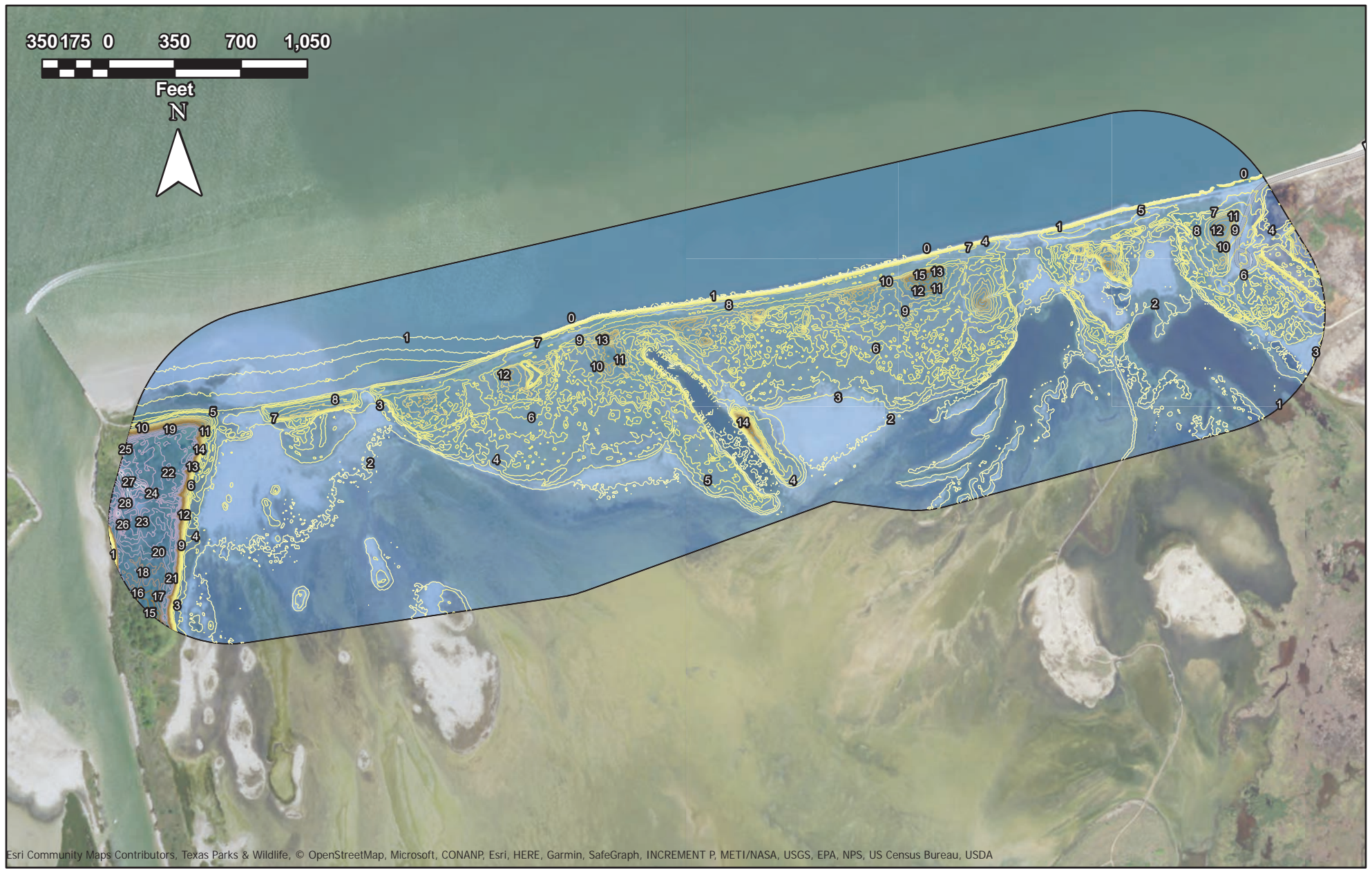
DREDGE MATERIAL PLACEMENT SITE AND SECTION VIEW - PA4 LEVEE CONSTRUCTION & FILL

County: Aransas and Nueces
Application By: Port of Corpus Christi Authority

State: Texas
Date: May 2019

Attachment C

Path: C:\Users\hmcneil\Desktop\Channel Deepening\Channel Deepening.aprx Date Saved: 10/28/2021 1:01 PM User: hmcneil



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Legend

BUSites	— 2	— 16
Site (with 500ft Review Buffer)	— 0	— 18
	— 2	— 20
SS2	— 4	— 22
Pre-Harvey LiDAR	— 6	— 24
2011	— 8	— 26
Contour (FT NAVD88)	— 10	— 28
	— 12	— 30
	— 14	

BUSites selection

Site (with 500ft Review Buffer)	— 2
SS2	— 4



SS2 Pre-Harvey Aerial Imagery and Topographic Map

PCCA CDP DMPP Information Request
Corpus Christi Ship Channel
Nueces County, Texas

Attachment D

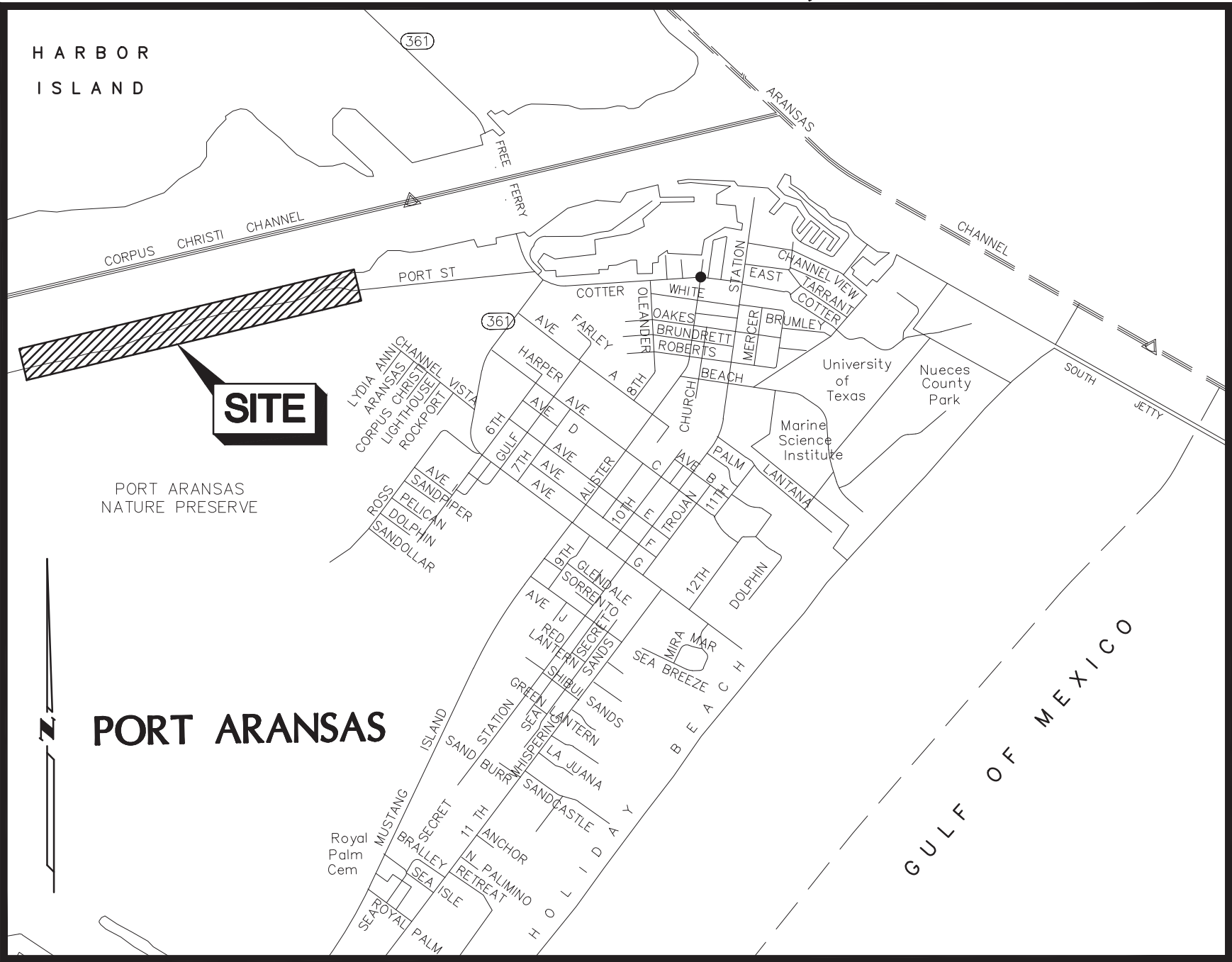
CONSTRUCTION PLANS
FOR
CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842
UE PN 006100-B8-03
PORT ARANSAS, TEXAS

OWNER:
CITY OF PORT ARANSAS
710 W. AVENUE A
PORT ARANSAS, TEXAS 78373
(361) 749-4111

ENGINEER:
URBAN ENGINEERING
2725 SWANTNER STREET
CORPUS CHRISTI, TEXAS 78404
(361) 854-3101

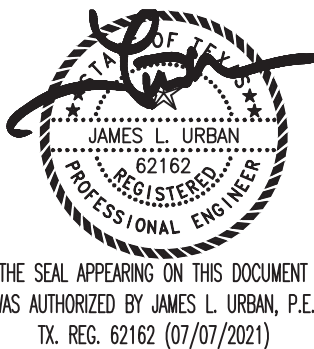
HURRICANE HARVEY PROGRAM MANAGERS:
BROADDUS AND ASSOCIATES
1301 S. CAPITAL OF TEXAS HWY.
SUITE A-302

DEL-SOL CONSULTING
#2 SANCTUARY BLVD. SUITE 205
MANDEVILLE, LA 70471



LOCATION MAP
1"=2000'

- INDEX:
1. TITLE SHEET
 2. PROJECT SIGNAGE AND GENERAL NOTES
 3. SURVEY CONTROL AND KEY MAP
 4. SIDEWALK REPAIR PLAN VIEW (1)
 5. SIDEWALK REPAIR PLAN VIEW (2)
 6. SIDEWALK REPAIR PLAN VIEW (3)
 7. SIDEWALK REPAIR PLAN VIEW (4)
 8. SIDEWALK REPAIR DETAILS
 9. SIDEWALK PLAN VIEW
 10. PROPOSED SIDEWALK
 11. NOTES
 12. EXISTING TEMPORARY BULKHEAD PLAN VIEW
 13. EXISTING TEMPORARY BULKHEAD DETAILS
 14. PERMANENT BULKHEAD PLAN VIEW
 15. PERMANENT BULKHEAD SECTIONS
 16. PERMANENT BULKHEAD DETAILS
 17. DETAILS
 18. LEFT BLANK
 19. MISCELLANEOUS DETAILS
 20. POLLUTION PREVENTION DETAILS

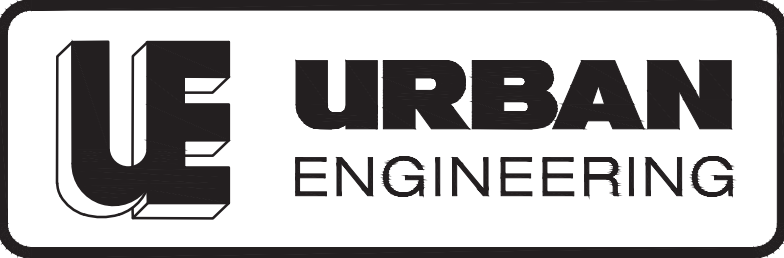


ENGINEER: _____
JAMES L. URBAN, P.E.

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 **TEXAS 811**
Know what's below. Call before you dig.

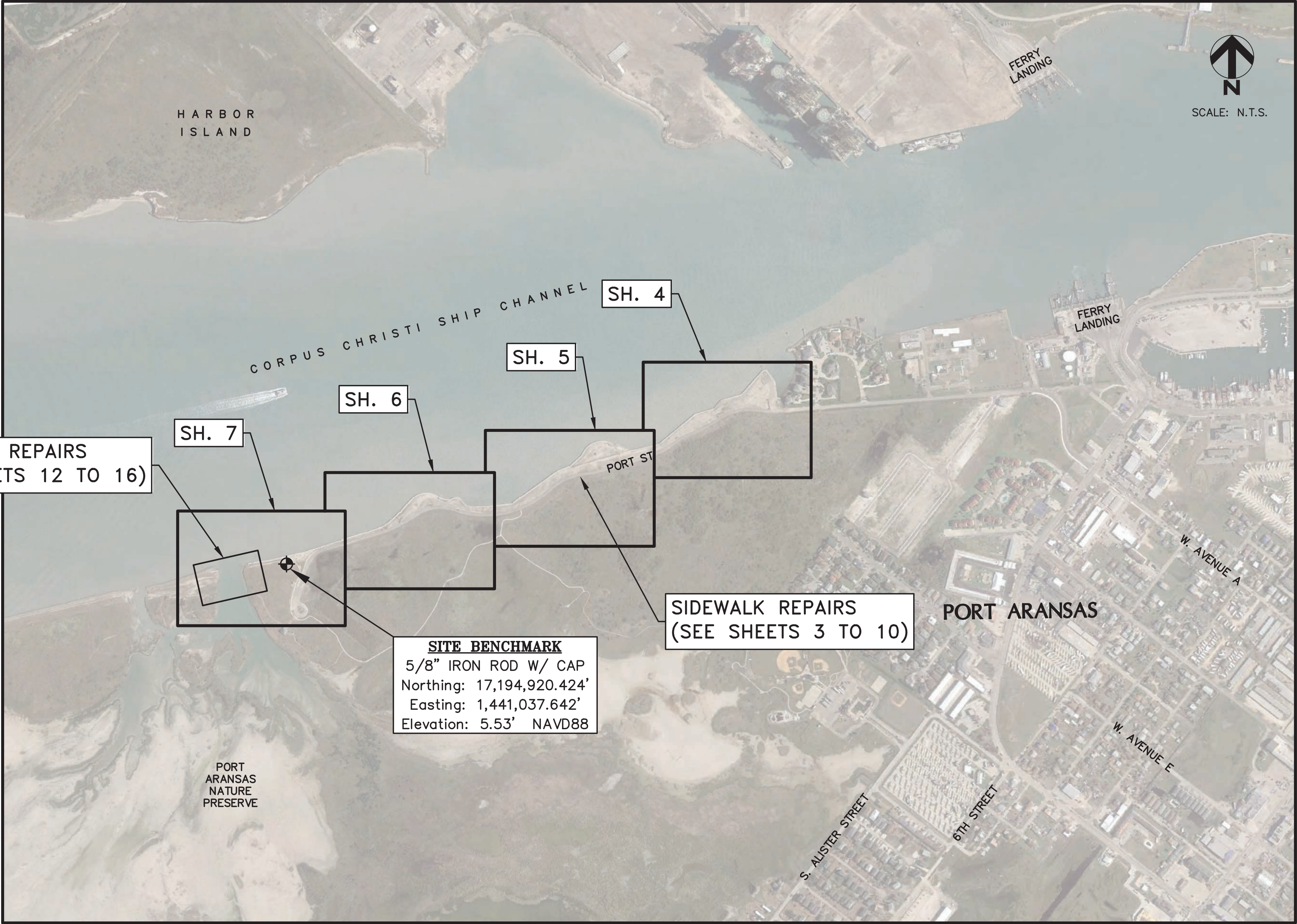
PARTICIPANTS REQUEST
48 HOURS NOTICE BEFORE YOU DIG,
DRILL, OR BLAST - STOP AND CALL
811
1-800-344-8377



TBPE FIRM NO. 145, TBPLS FIRM NO. 10032400
2725 SWANTNER DR., CORPUS CHRISTI, TX 78404
PHONE: 361.854.3101 WWW.URBANENG.COM

JOB NO. 06100.B8.03
DATE: July 2021
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JOB NO.
06100.B8.03



Legend:
Benchmark

CALL BEFORE YOU DIG!



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Call before you dig.

PARTICIPANTS REQUEST
48 HOURS NOTICE BEFORE YOU DIG,
DRILL, OR BLAST – STOP AND CALL

811
1-800-545-6005

REV. BY

DATE

DESCRIPTION

APPROVED BY

SCALE: 1"=20'

DRAWN: CG

CHECKED: WCC

DATE: July 2021



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY JAMES L. URBAN, P.E.
TX REG. 62162 (07/07/2021)

SURVEY CONTROL AND KEY MAP

CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX



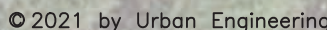
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TX REG. NO. 145, TXBLS. FIRM NO. 10992403
2725 SWANIER DR., CORPUS CHRISTI, TX 78404
PHONE: 361.654.3101 WWW.URBANENG.COM

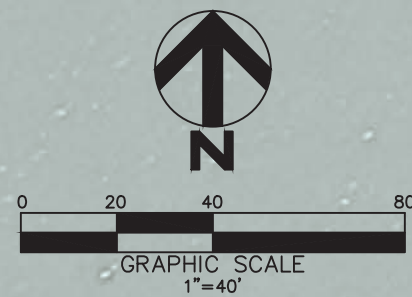
SHEET 3 OF 20

JOB NO. 06100.B8.03

\\urbanfs03\data\Projects\00000UP\06100\B803 - Charles Pasture Shoreline Bulkhead\Design\100% Phase II Drawings\SURVEY CONTROL MAP.dwg modified by cyg on Jul 07, 2021 - 8:46am © 2021 by Urban Engineering







CORPUS CHRISTI SHIP CHANNEL

MATCH LINE

MATCH LINE

REMOVE AND DEMO EXISTING SIDEWALK AND CONSTRUCT NEW 8' SIDEWALK FROM SEE DETAIL ON SHEETS 8 TO 11.

PROPOSED LADDER SEE DETAIL ON SHEET 19

TEMPORARY SHEET PILE. NOT TO EXCEED 500 LF (TYPICAL)

PROPOSED LADDER SEE DETAIL ON SHEET 19

REMOVE AND DEMO EXISTING SIDEWALK AND CONSTRUCT NEW 8' SIDEWALK FROM SEE DETAIL ON SHEETS 8 TO 11.

TEMPORARY SHEET PILE GDSE TO 10' OFF BULKHEAD IN FRONT OF NEW AREA

N:17194930.12
E:1440824.43

EXISTING INLET
3'x3' GRATE INLET
TOP=5.50
REPLACE EXIST. 4' GRATE
INLET AND 12" RCP
PROP. INLET TOP=4.50

BENCHMARK
CONTROL POINT S
58 I.R. WC UE

GRAPHIC APPROXIMATION OF EROSION LINE. CONTRACTOR TO COORDINATE WITH ENGINEER FOR BACKFILLING PER ACTUAL FIELD CONDITIONS.

NATIVE BACKFILL MATERIAL

BULKHEAD REPAIRS
(SEE SHEETS 12 TO 16)

GRAPHIC APPROXIMATION OF EROSION LINE. CONTRACTOR TO COORDINATE WITH ENGINEER FOR BACKFILLING PER ACTUAL FIELD CONDITIONS.

PORT ARANSAS
NATURE PRESERVE

Port Street

LEGEND

- x 4.50 EXISTING GRADE
- PROPOSED BOLLARD
- EXISTING BOLLARD
- (5.0) PROPOSED GRADE
- [Pattern] PROPOSED CONCRETE SIDEWALK
- [Pattern] PROPOSED CRUSHING SITE
- [Pattern] PROPOSED 4' BULKHEAD EXTENSION
- [Pattern] 6" RECYCLED CONCRETE
- x — x — PROPOSED TEMPORARY SHEET PILE

REV.	BY	DATE	DESCRIPTION

SCALE: 1"=40'	DRAWN: CG	CHECKED: WCC	DATE: July 2021
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THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JAMES L. URBAN, P.E. TIL REC. 62162 (07/07/2021)

SIDEWALK REPAIR PLAN VIEW (4)

CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX

URBAN ENGINEERING

TYPE: FEMA 15, 145, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

SHEET 7 OF 20

JOB NO. 06100.B8.03



1. REBAR SPLICES SHOWN SHALL BE QUICK WEDGE SPLICE, OR LOCK SPLICE, MANUFACTURED BY NVENT LENTON OR AN APPROVED EQUAL.



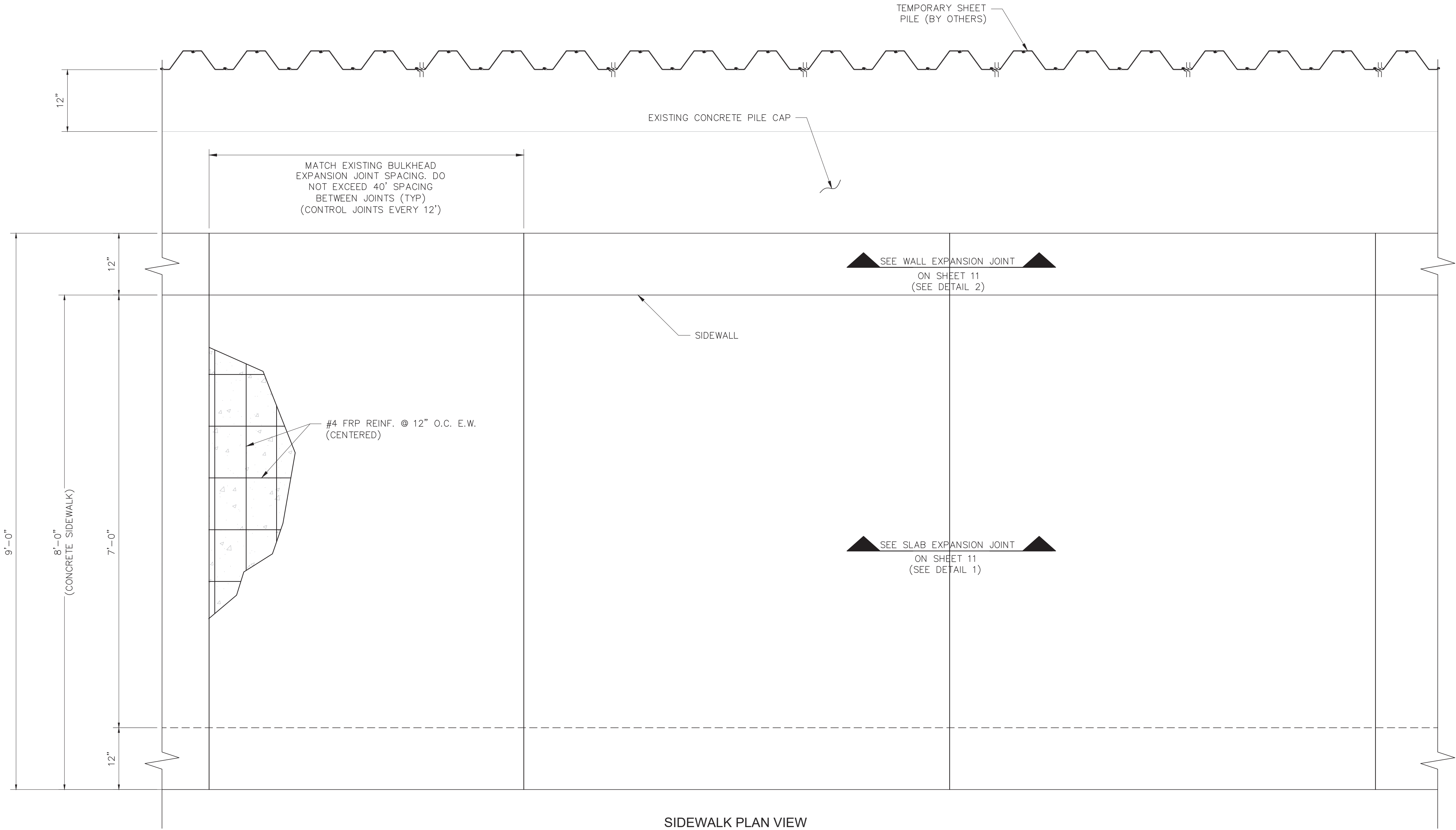
CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX

725 SWANTNER DR, CORPUS CHRISTI, TX 78404
PHONE: 361.854.3101 WWW.URBANENG.COM

JOB NO.
6100.B8.03

F:\SD\PROJECTS\2020 Projects\20073-Urban Engineering-William Causy-Port Aransas Charlie's Pasture Bulkhead Extension Wall\CADD FILES\20073 CADD\New WORKING FOLDER DATE CREATED 02-03-21\20073 - PORT ARANSAS DETAILS(NEW).dwg cadd

PLOTTED: Jun 30,2021 - 10:02am



SIDEWALK PLAN VIEW
SCALE: 1" = 1' -0"

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SIDEWALK PLAN VIEW
PHASE 2 CHARLIE'S PASTURE
BULKHEAD REPAIR FEMA PROJECT #46842
PORT ARANSAS, TEXAS



DRAWN BY: AR	REV.	BY	DATE	DESCRIPTION	APPROVED BY
DESIGN BY: AH					
CHECKED: JMS					
DATE: 02-24-2020					

GENERAL NOTES:

1. IF FIELD CONDITIONS ARE DIFFERENT THAN EXPECTED NOTIFY ENGINEER AS ADDITIONAL DESIGN MY BE REQUIRED.
2. DESIGN IS BASED ON THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-11)
-DESIGN IS BASED ON GUIDE FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL CONCRETE REINFORCED WITH FIBER-REINFORCED POLYMER (FRP) BARS.
3. DESIGN LOADS:
TOP SLAB LIVE LOAD (NON TRAFFIC RATED) 125 PSF
4. CONCRETE:

A. CONCRETE SHALL BE PROPORTIONED IN ACCORDANCE WITH ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS, AND ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

B. CEMENT TYPE, MAXIMUM W/C RATIO, AND COMPRESSIVE STRENGTH SHOULD BE ACCORDING TO TABLE 4-B

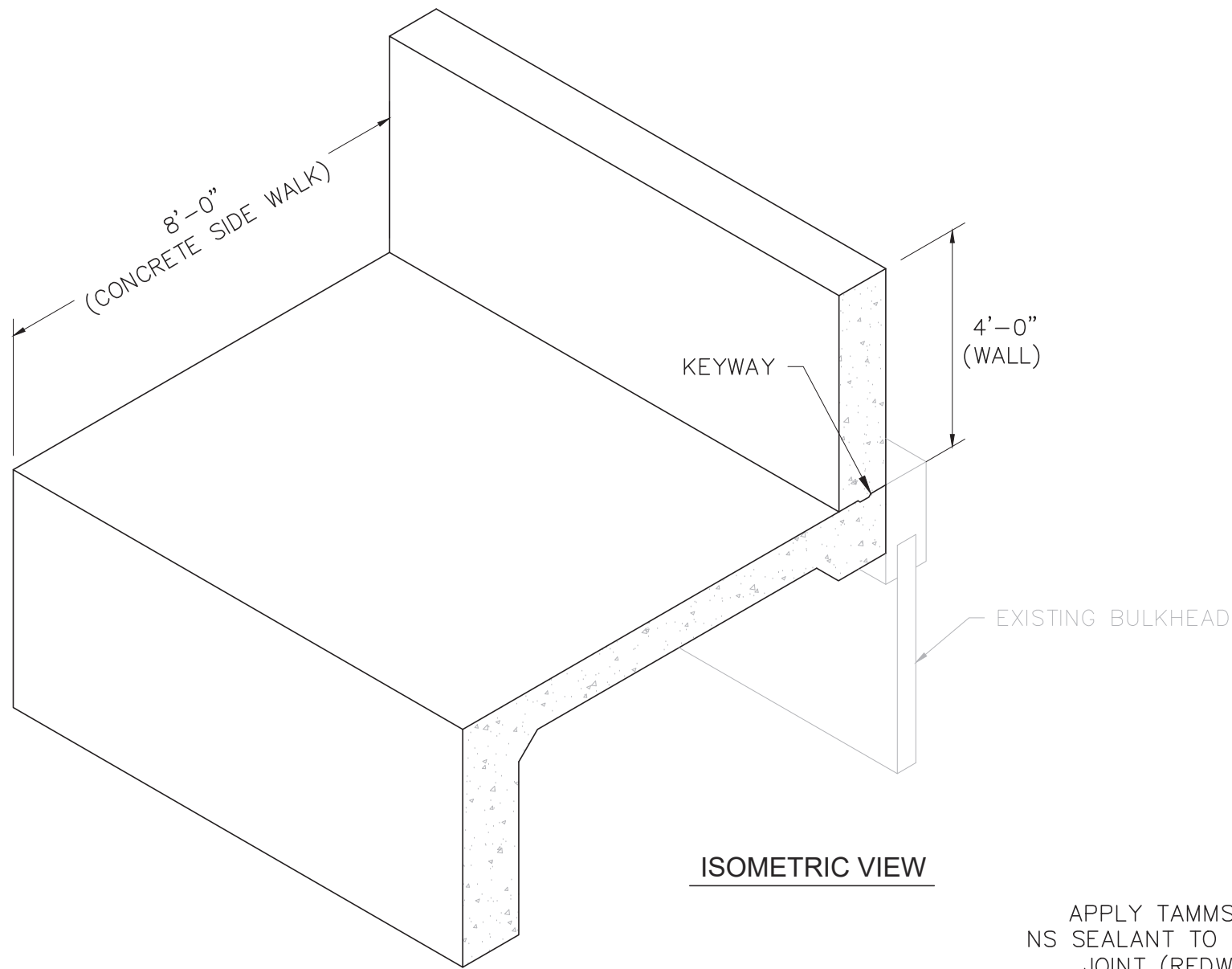
TABLE 4-B:
CONCRETE MIX

CLASS	CEMENT TYPE	ZONE	MAXIMUM W/C	MIN 28-DAY CYLINDER COMPRESSIVE STRENGHT
"A"	II	SUBMERGED	0.40	5,000PSI
"A"	II	SPLASH	0.40	5,000PSI

- C. CONCRETE MIX SHOULD HAVE MINIMUM OF 600 POUNDS OF CEMENT PER CUBIC YARD (PCY).
- D. WATER REDUCING AND HIGH-RANGE WATER REDUCING ADMIXTURES MEETING THE REQUIREMENTS OF ASTM C494 CAN BE USED TO ENHANCE CEMENT DISTRIBUTION AND TO PROVIDE WORKABLE MIXES IF REQUIRED.
- E. AGGREGATES CHARACTERISTICS SHOULD CONFIRM ASTM C 33 FOR USE, AND MUST BE CLEAN WITH FRESH WATER BEFORE CONCRETING.
- F. COVER OF THE GLASS FIBER REINFORCED (GFRP) CONCRETE SECTION SHOULD CONFIRM THE TABLE 4-F

TABLE 4-F:
RECOMMENDED CONCRETE COVER

ZONE	COVER OVER REINFORCING (IN.)	COVER OVER REINFORCING DUCTS (IN.)
ATMOSPHERIC ZONE NOT SUBJECTED TO SALT SPRAY	2	3
SPLASH AND ATMOSPHERIC ZONE SUBJECT TO SALT SPRAY	2.5	3.5
SUBMERGED	2	3
COVERED TO STIRRUP	1/2" LESS THAN THOSE LISTED ABOVE	



ISOMETRIC VIEW

- G. CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE MINIMUM CEMENT CONTENT SHALL BE DETERMINED BY TRIAL MIXES BASED ON THE PROPOSED AGGREGATE, CEMENT, AND ADMIXTURES.
- H. ADMIXTURES SHALL BE SELECTED BASED ON THEIR ABILITY TO REDUCE CONCRETE SHRINKAGE.

5. GLASS FIBER REINFORCED POLYMER (GFRP)

1). GLASS CONTENT BY WEIGHT - 70% MINIMUM PER ASTM D2584

2). DIE WICKING - ASTM D5117

3). BARCOL HARDNESS - 50 PER ASTM D2583

4). CROSS-SECTIONAL AREA - ASTM D7205

5). MASS UPTAKE IN WATER - ASTM D570

6). INTERLAMINEAR SHEAR OR SHEAR IN FLEXURE - ASTM D4475

7). MINIMUM MODULUS OF ELASTICITY 5.92X10⁶ PSI

8). MINIMUM LAP SPLICE LENGTH (SEE TABLE 6.1 & 6.2)

9). MAXIMUM BOND STRESS 1,679 PSI

10). SPECIFIC GRAVITY - ASTM D792 2.0

11). WHEN GFRP REINFORCING IS SPECIFIED, SPECIAL CARE MUST BE OBSERVED TO PREVENT THE PRESENCE OF ANY METALLIC OBJECT OR MATERIALS IN THE CONCRETE. THE USE OF PLASTIC TIES, CHAIRS AND ALL OTHER ACCESSORIES MUST BE NON METALLIC. IF A METAL TOOL SUCH AS A VIBRATOR IS LOST IN A POUR, IT MUST BE REMOVED.

REINFORCING GFRP E=5,920 ksi		TENSILE MODULES
BAR SIZE	f _t ksi	psi 10 ⁶
2	120	5.92
3	110	5.92
4	100	5.92
5	95	5.92
6	90	5.92
7	85	5.92
8	80	5.92
9	75	5.92

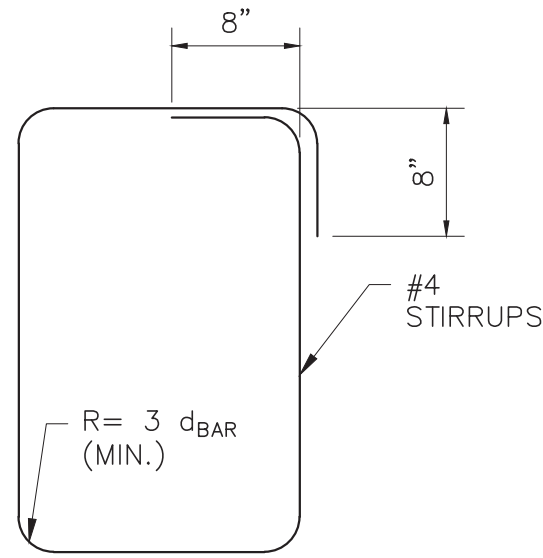
6. SPLICE IN THE GFRP BARS SHOULD BE AVOIDED, UNLESS METIONED IN TABLE 6.1

TABLE - 6.1
DEVELOPMENT LENGTH FOR STRAIGHT BARS.

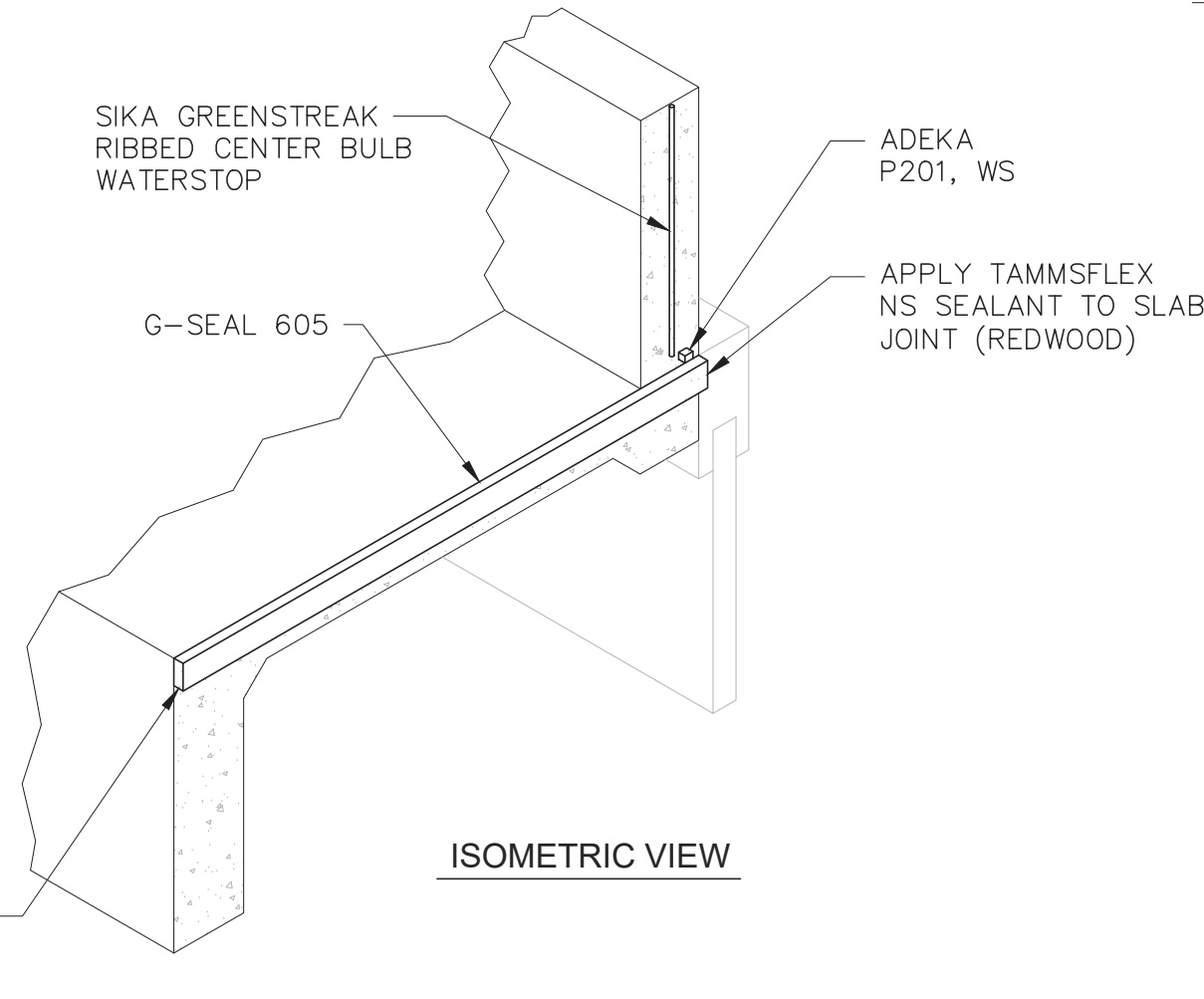
BAR SIZE	TENSILE STRENGTH (psi)	APPLIED STRESS (psi)	TENSION SPLICE CLASS-A (IN.)	TENSION SPLICE CLASS-B (IN.)
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	95,000	65,000	64	50
5	95,000	65,000	84	65
6	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A

TABLE - 6.2
DEVELOPMENT LENGTH FOR SHEAR REINFORCEMENT.

BAR SIZE	BEND RADIUS (INCHES)	TAIL LENGTH (IN.)	DEVELOPMENT LENGTH (IN.)
2	0.80	3	4
3	1.10	5	6
4	1.50	6	8
5	1.90	8	9
6	2.30	9	11
7	2.60	11	13
8	3.00	12	15
9	3.40	14	17



SHEAR REINFORCEMENT DETAILS



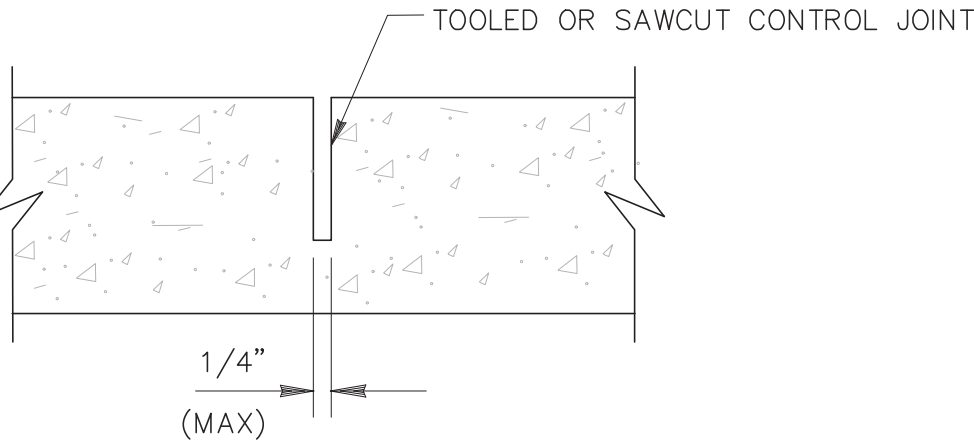
ISOMETRIC VIEW

ADHESIVE:

1. ANCHORS: HILTI HIT-HY 200 OR EQUIVALENT. FOLLOW MANUFACTURER'S INSTALLATION AND INSPECTION PROCEDURE

FOUNDATION NOTES:

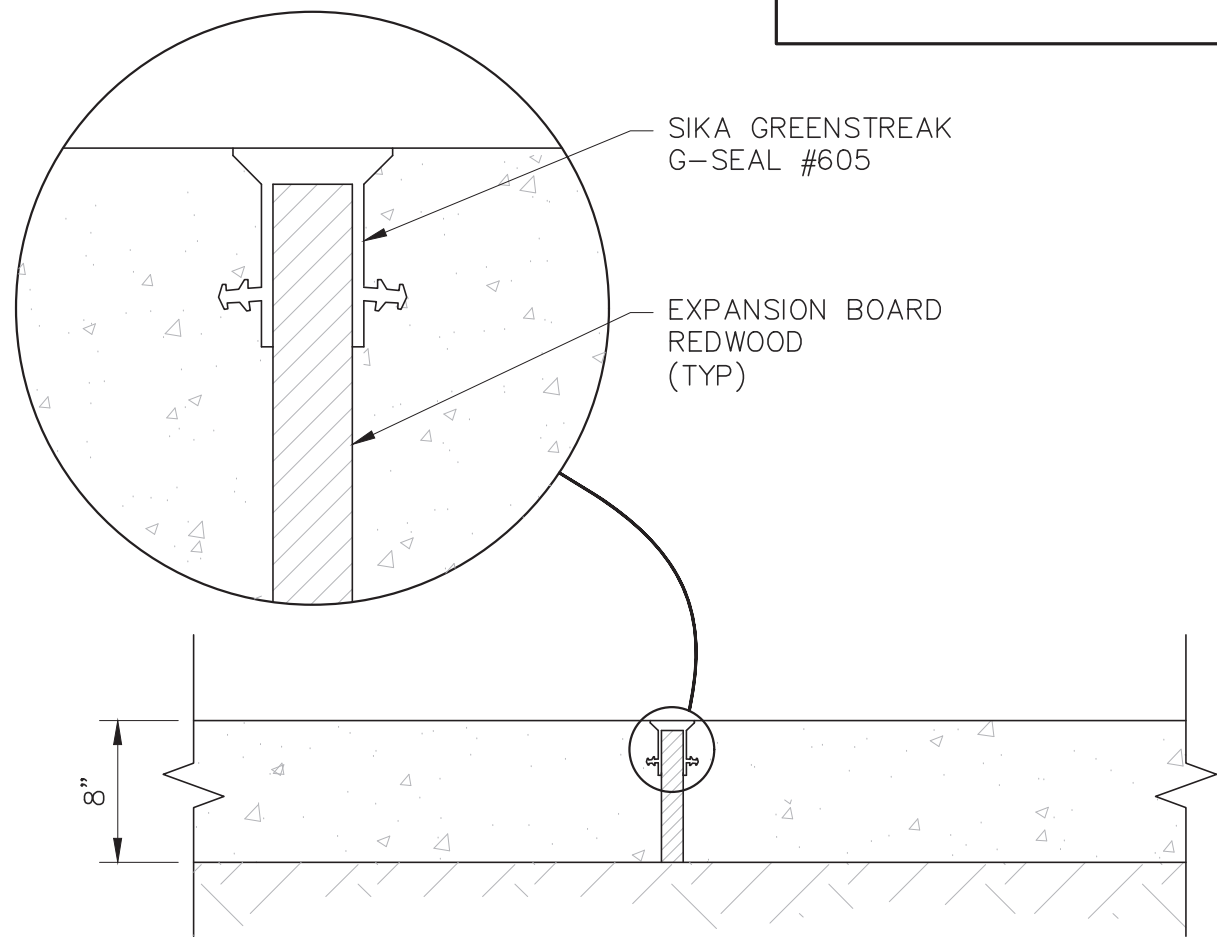
1. STRUCTURAL FILL SHALL BE A SELECT MATERIAL DEFINED AS HOMOGENEOUS LEAN CLAY HAVING A PLASTICITY INDEX (PI) BETWEEN 7 AND 20 AND A LIQUID LIMIT LESS THAN 40. IT SHALL BE PLACED A MAXIMUM OF 8-INCHES THICK IN LOOSE LIFTS. EACH LIFT SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST (ASTM D698). THE MOISTURE CONTENT OF THE STRUCTURAL FILL SHALL BE WITHIN THREE(3) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT.
2. PROOF ROLLING SHOULD BE ACCOMPLISHED IN ORDER TO LOCATE ANY WEAK COMPRESSIBLE ZONES UNDER THE STRUCTURE PRIOR TO PLACEMENT OF THE VAULT BOTTOM SLAB. A MINIMUM OF 10 PASSES OF A 25 TON PNEUMATIC ROLLER SHOULD BE USED FOR PLANNING PURPOSES. THE OPERATING LOAD AND TIRE PRESSURE SHOULD CONFORM TO THE MANUFACTURES SPECIFICATION TO PRODUCE A MINIMUM GROUND CONTACT PRESSURE OF 90 POUNDS PER SQUARE INCH. PROOF ROLLING SHOULD BE PERFORMED UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. THE SOILS THAT YIELD OR SETTLE UNDER PROOF ROLLING OPERATIONS SHOULD BE REMOVED, DRIED AND COMPACTED AND REPLACED WITH COMPACTED SELECT FILL TO GRADE. DENSITY TEST SHOULD BE CONDUCTED AS SPECIFIED UNDER CONTROLLED TESTING AND FIELD OBSERVATION AFTER SATISFACTORY PROOF ROLLING OPERATIONS.



CONTROL JOINT DETAIL

NOTES:

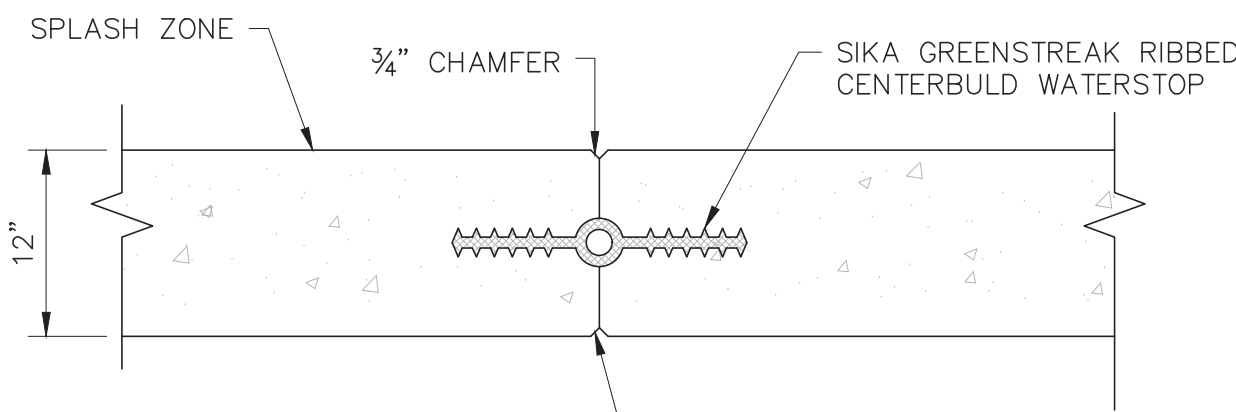
1. SPACE CONTROL JOINTS AT APPROXIMATELY 12 FT SPACING, MATCH EVERY OTHER PRECAST BULKHEAD JOINT SPACING.



SLAB EXPANSION JOINT DETAIL

SCALE: 1/2" = 1' -0"

1



WALL EXPANSION JOINT DETAIL

SCALE: 1/2" = 1' -0"

2



PHASE 2 CHARLIE'S PASTURE
BULKHEAD REPAIR FEMA PROJECT #46842
PORT ARANSAS, TEXAS

NOTES

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TXE PER NO. 145 TRS PER NO. 0036400
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SHEET
11
OF 20

JOB NO.
06100.B8.03

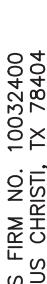


- ① STEEL SHEETPILE- AZ-26 SHEET PILE
- ② I-BEAM WALER- HP14x117 @ 7.0 ELEVATION
- ③ I-BEAM COLUMN- HP14x117 @ 8 FT OC
- ④ I-BEAM SUPPORT @ 30° ANGLE- HP18x204 @ 4 FT OC



**EXISTING TEMPORARY
BULKHEAD DETAILS**

**CHARLE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARKANAS, TX**

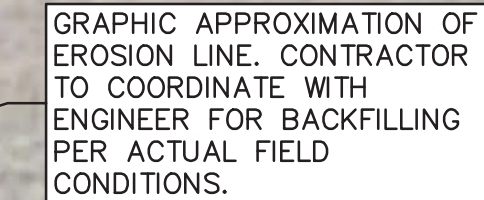


URBAN
ENGINEERING

TBPE FIRM NO. 145 TBPLS FIRM NO. 10032400
 2725 SWANNIER DR. CORPUS CHRISTI, TX 78404
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SHEET
13
 OF 20






JOB NO.
 06100.B8.03

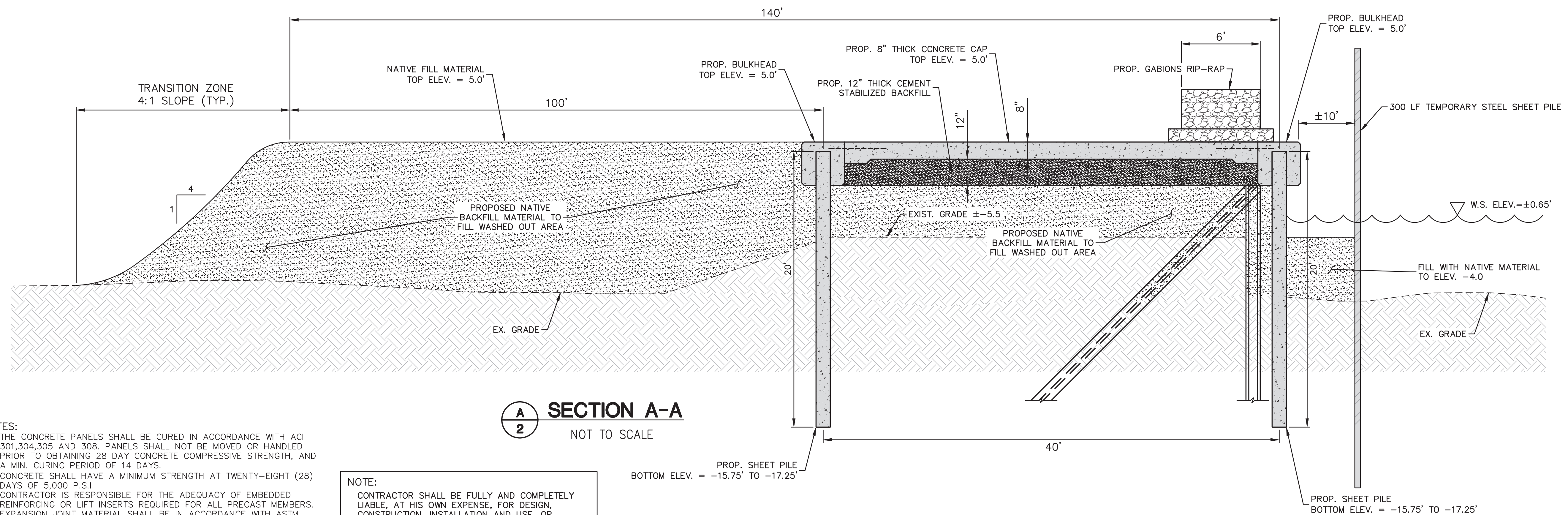


**PERMANENT BULKHEAD
PLAN VIEW**

**CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX**

LEGEND

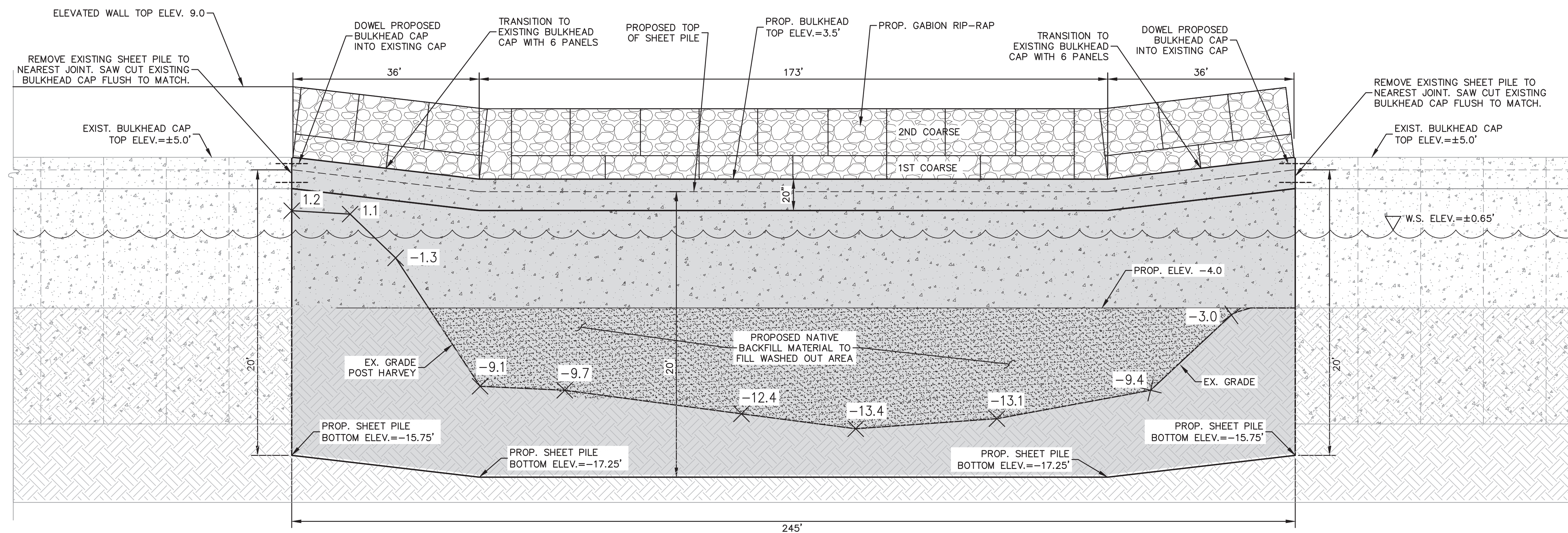
	PROPOSED STONE RIP-RAP
	PROPOSED NATIVE MATERIAL FILL
	PROPOSED CONCRETE CAP
	PROPOSED TEMPORARY SHEET PILE
	PROPOSED PERMANENT CONCRETE SHEET PILE



- NOTES:**
1. THE CONCRETE PANELS SHALL BE CURED IN ACCORDANCE WITH ACI 308.1, 304, 305 AND 308. PANELS SHALL NOT BE MOVED OR HANDLED PRIOR TO OBTAINING 28 DAYS CONCRETE COMPRESSIVE STRENGTH, AND A MIN. CURING PERIOD OF 14 DAYS.
 2. CONCRETE SHALL HAVE A MINIMUM STRENGTH AT TWENTY-EIGHT (28) DAYS OF 5,000 P.S.I.
 3. CONTRACTOR IS RESPONSIBLE FOR THE ADEQUACY OF EMBEDDED REINFORCING OR LIFT INSERTS REQUIRED FOR ALL PRECAST MEMBERS.
 4. EXPANSION JOINT MATERIAL SHALL BE IN ACCORDANCE WITH ASTM D7151.
 5. JOINT SEALANT MATERIAL SHALL BE IN ACCORDANCE WITH ASTM C920 TYPE S OR M, CLASS 25 AND GRADE P OR NS DEPENDING ON APPLICATION.
 6. UNLESS NOTED OTHERWISE, ALL CONCRETE REINFORCEMENT SHALL BE FRP (FIBER REINFORCED POLYMER) BARS PER SPECIFICATION 3B4.

NOTE:

CONTRACTOR SHALL BE FULLY AND COMPLETELY
LIABLE, AT HIS OWN EXPENSE, FOR DESIGN,
CONSTRUCTION, INSTALLATION AND USE, OR
NON-USE, OF ALL ITEMS AND METHODS INCIDENT
TO PERFORMANCE OF THE CONTRACT, AND FOR
LOSS, DAMAGE OR INJURY INCIDENT THERETO,
EITHER TO PERSON OR PROPERTY, INCLUDING,
WITHOUT LIMITATION, THE ADEQUACY OF ALL
TEMPORARY SUPPORTS, SHORING, BRACING,
SCAFFOLDING, MACHINERY OR EQUIPMENT, SAFETY
PRECAUTION OR DEVICES, AND SIMILAR ITEMS OR
DEVICES USED BY HIM DURING CONSTRUCTION.



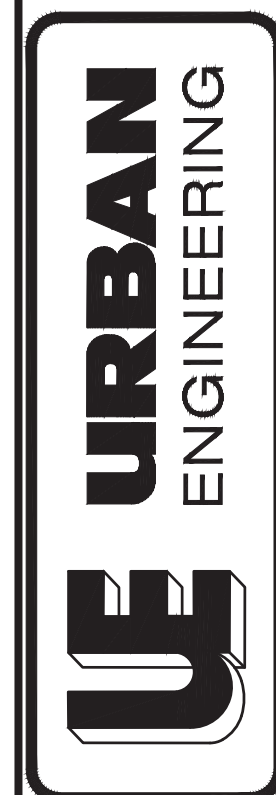
SCALE:	AS NOTED	REV.	BY	DATE	DESCRIPTION	APPROVED BY
DRAWN:	CG					
CHECKED:	WCC					
DATE:	July 2021					



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY JAMES L. URBAN, P.E.
TX. REG. 62162 (07/07/2021)

PERMANENT BULKHEAD SECTIONS

**CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX**



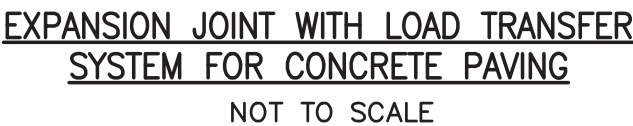
BBPE FIRM NO. 145, TBPLS FIRM NO. 10032400
725 SWANTNER DR, CORPUS CHRISTI, TX 78404
PHONE: 361.854.3101 WWW.URBANENG.COM

SHEET
15
OF 20

JOB NO.
06100.B8.03



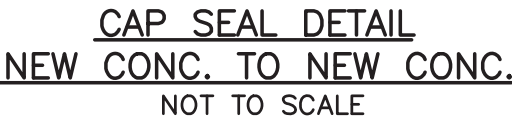
1. ALL REINFORCING FRP BARS SHALL BE 40 BARS DIAMETERS. BAR LENGTHS SHALL BE SUCH TO PROVIDE A CLEARANCE OF AT LEAST 2" ALONG PAVEMENT EDGES AND AT JOINTS WHERE THE REINFORCING STEEL IS NOT TO BE CONTINUOUS.
2. EXPANSION JOINT SEALANT SHALL BE G SEAL 605 OR 628 AS MANUFACTURED BY GREENSTREAK OR APPROVED EQUAL. POLYURETHANE JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM C920-87, TYPE S OR M, GRADE P, CLASS 25 USES T,M,A AND O. SHALL BE USED IN ALL EXPANSION JOINTS WHERE CAP SEAL IS NOT FEASIBLE. WHERE GRADE IS GREATER THAN 3% SLOPE USE BOSTIK 900 SEALANT. SEALANT NOT REQUIRED AT CAP SEAL JOINTS.
3. CONCRETE PAVEMENT SHALL BE 3,000 P.S.I.
4. REINFORCING SHALL BE SUPPORTED DURING CONSTRUCTION TO MAINTAIN NOT LESS THAN 3 INCHES AND NOT GREATER THAN 4 INCHES COVER FROM TOP OF SLAB.
5. ALL EXPANSION JOINTS SHALL ALIGN WITH JOINT IN ADJACENT STRUCTURES.



1. THE CONCRETE PANELS SHALL BE CURED IN ACCORDANCE WITH ACI 301,304,305 AND 308. PANELS SHALL NOT BE MOVED OR HANDLED PRIOR TO OBTAINING 28 DAY CONCRETE COMPRESSIVE STRENGTH, AND A MIN. CURING PERIOD OF 14 DAYS.
2. CONCRETE SHALL HAVE A MINIMUM STRENGTH AT TWENTY-EIGHT (28) DAYS OF 5,000 P.S.I.
3. CONTRACTOR IS RESPONSIBLE FOR THE ADEQUACY OF EMBEDDED REINFORCING OR LIFT INSERTS REQUIRED FOR ALL PRECAST MEMBERS.
4. EXPANSION JOINT MATERIAL SHALL BE IN ACCORDANCE WITH ASTM D1751.
5. JOINT SEALANT MATERIAL SHALL BE IN ACCORDANCE WITH ASTM C920 TYPE S OR M, CLASS 25 AND GRADE P OR NS DEPENDING ON APPLICATION.
6. ALL CONCRETE REINFORCEMENT SHALL BE FRP (FIBER REINFORCED POLYMER) BARS PER SPECIFICATION 3B4.

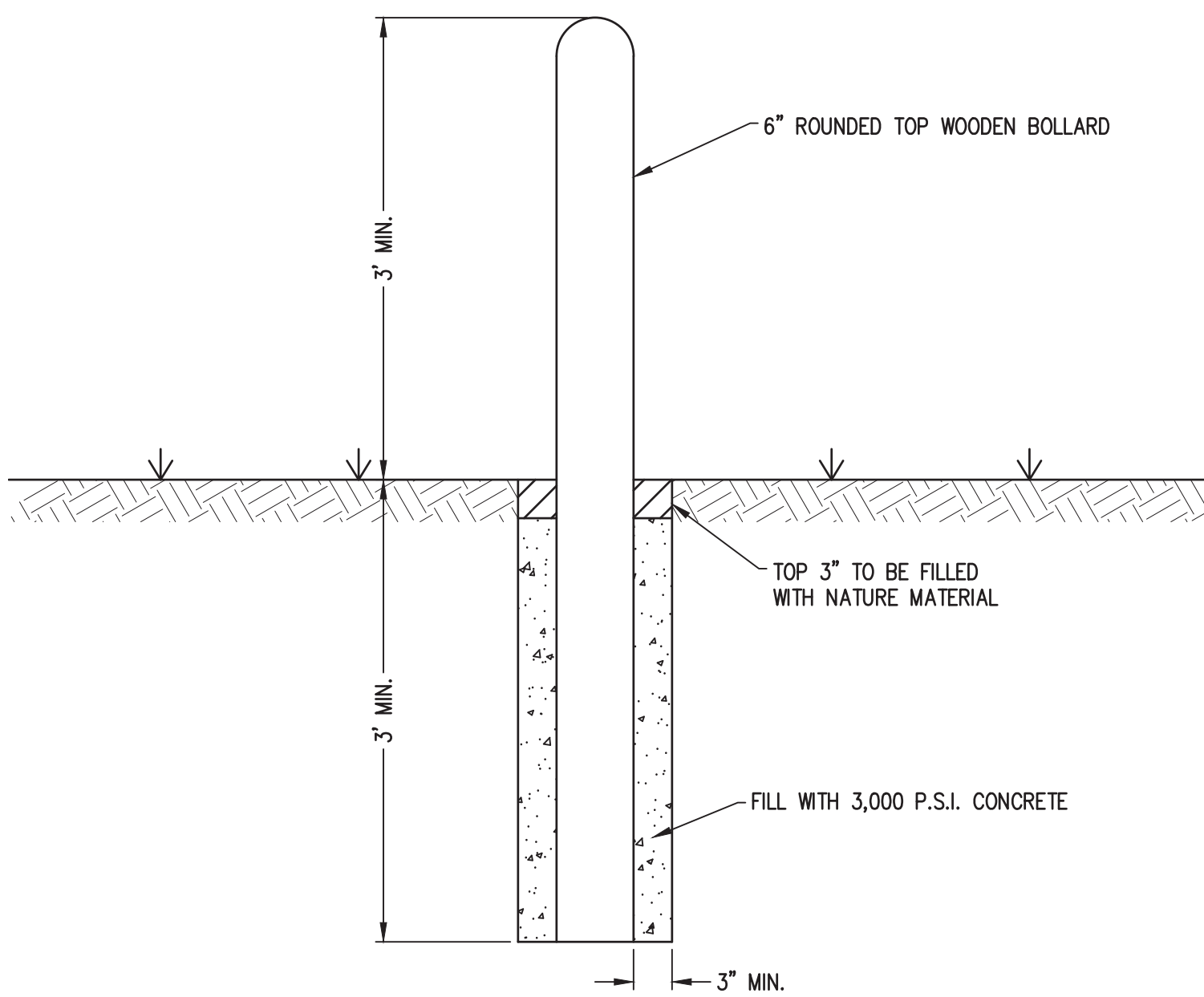


1. TERMINATE STAKES BELOW THE TOP OF THE BOARD A DISTANCE EQUAL TO THE DEPTH OF THE CAP SEAL PROFILE PLUS 1/4".
2. MITER AND COE INTERSECTIONS AND CHANGES OF DIRECTION. INSURE ALL SECTIONS TO BE SPLICED ARE CUT SQUARE AND BOUND TOGETHER USING CAP SEAL ADHESIVE.
3. SECURE CAP SEAL TO THE EXPANSION BOARD WITH STAPLES, NAILS, SCREWS (APPROXIMATELY 18" ON CENTER) OR ADHESIVE TO PREVENT DISLOCATION DURING CONCRETE PLACEMENT.
4. PLACE CONCRETE USING NORMAL PLACEMENT TECHNIQUES, UTILIZING THE CAP SEAL AS SCREED RAIL. VIBRATE CONCRETE TO INSURE GOOD CONSOLIDATION AROUND CAP SEAL.



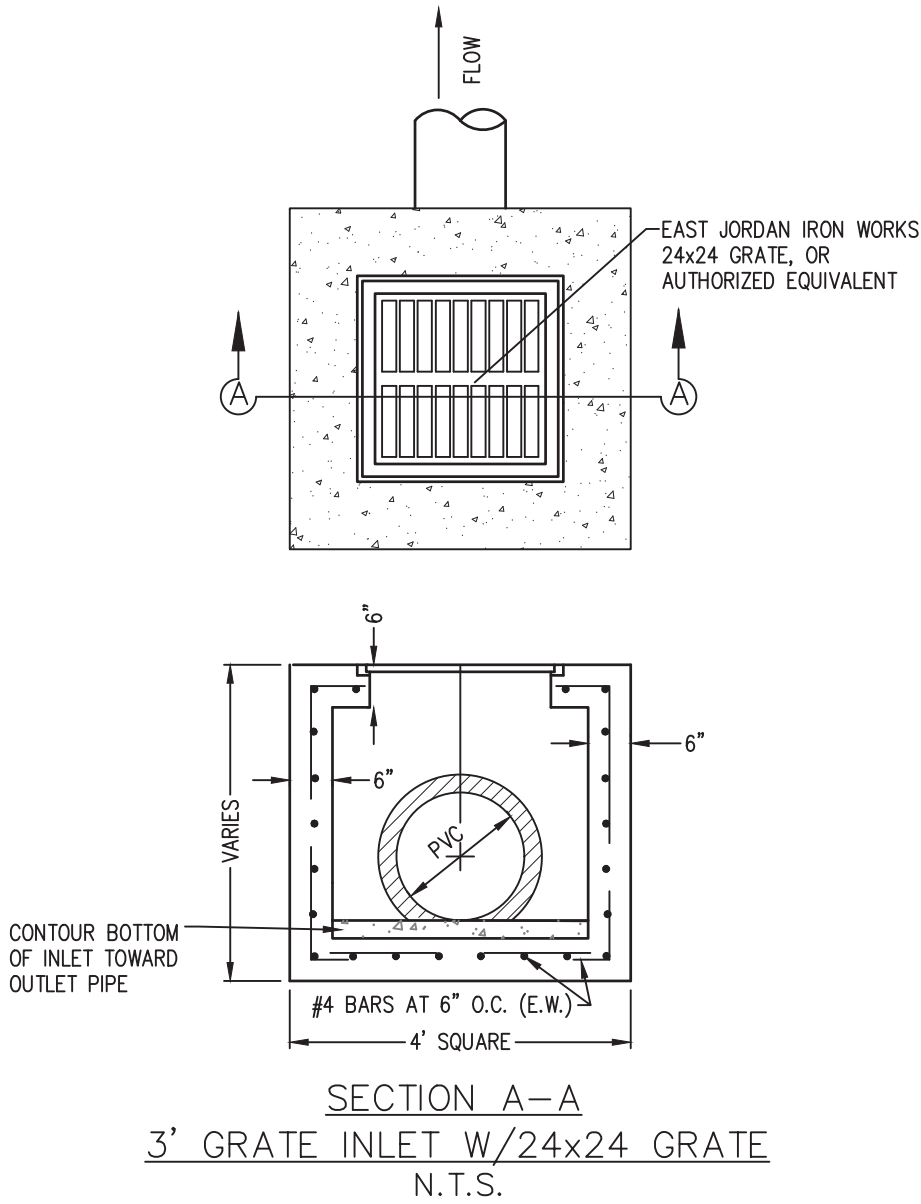
- IMPROPER DOWEL ALIGNMENT- REGARDLESS OF THE JOINT SEALING METHOD USED, IMPROPER DOWEL ALIGNMENT MAY CAUSE CRACKING OR SPALLING. PROPER USE OF A DOWEL ALIGNING DEVICE WILL ELIMINATE THIS CONCERN.





WOODEN BOLLARD DETAIL

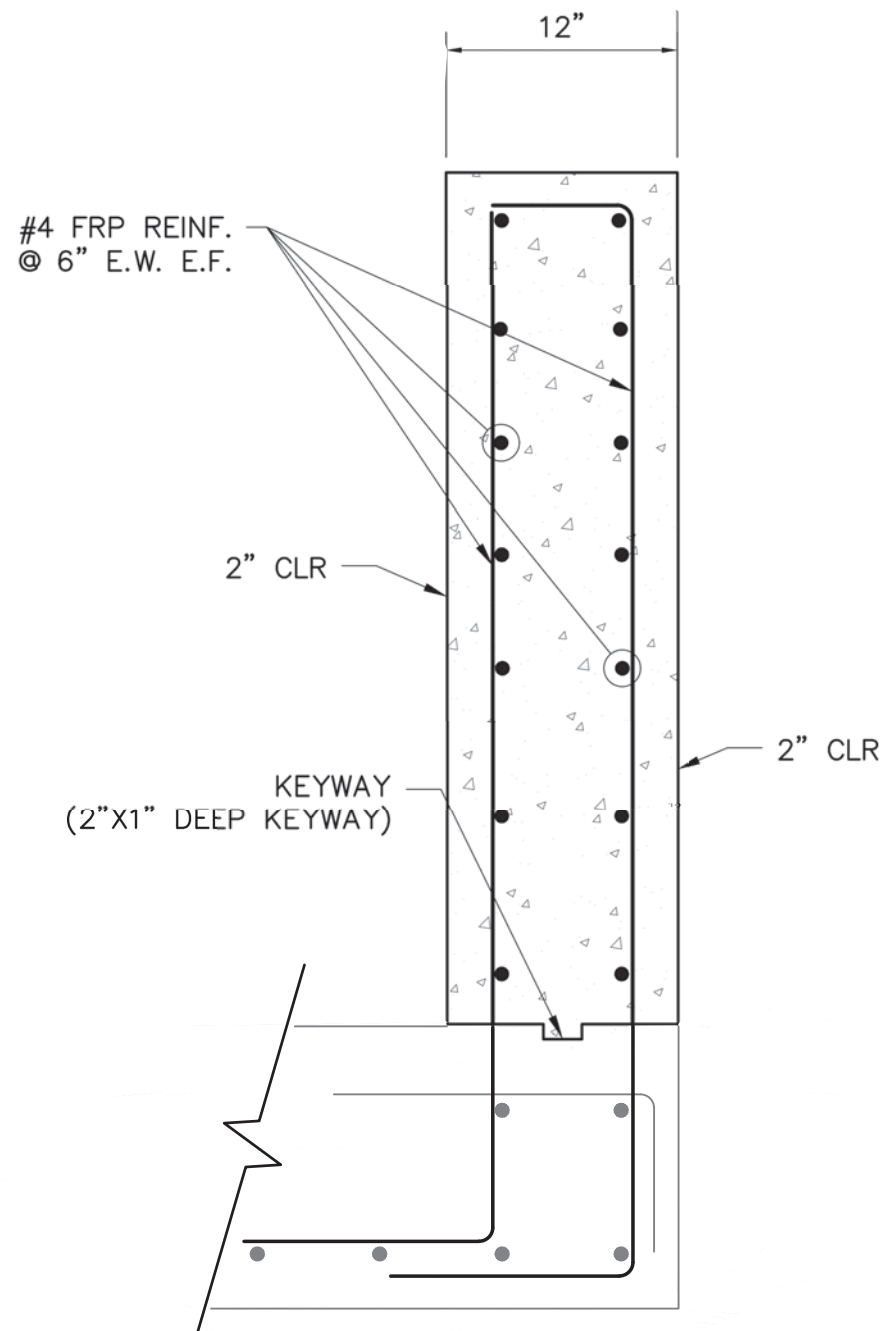
SCALE: 1"=1'



GRATE INLET DETAIL

SCALE: N.T.S.

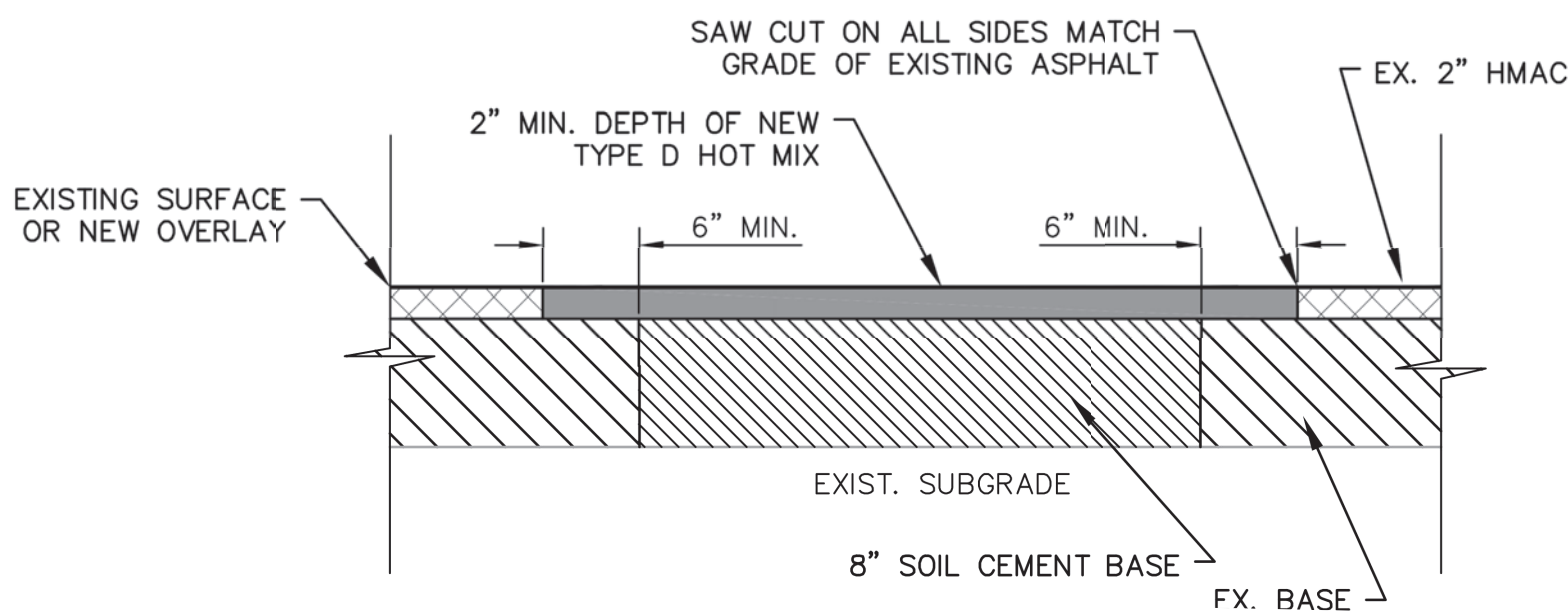
SIZE	DIMENSIONS					SLOT SIZE W	SLOT SIZE L	NO. OF SLOTS	OPEN AREA	WEIGHTS (LBS)		
	A	B	C	D	E					GRATE	FRAME	SET
24 X 24	24	2 1/2	22 1/2	26	2 1/2	1	10 1/2	22	231	137	80	217



ADDITIVE ALTERNATE No. 1 - 4' CONCRETE WALL

SCALE: N.T.S.

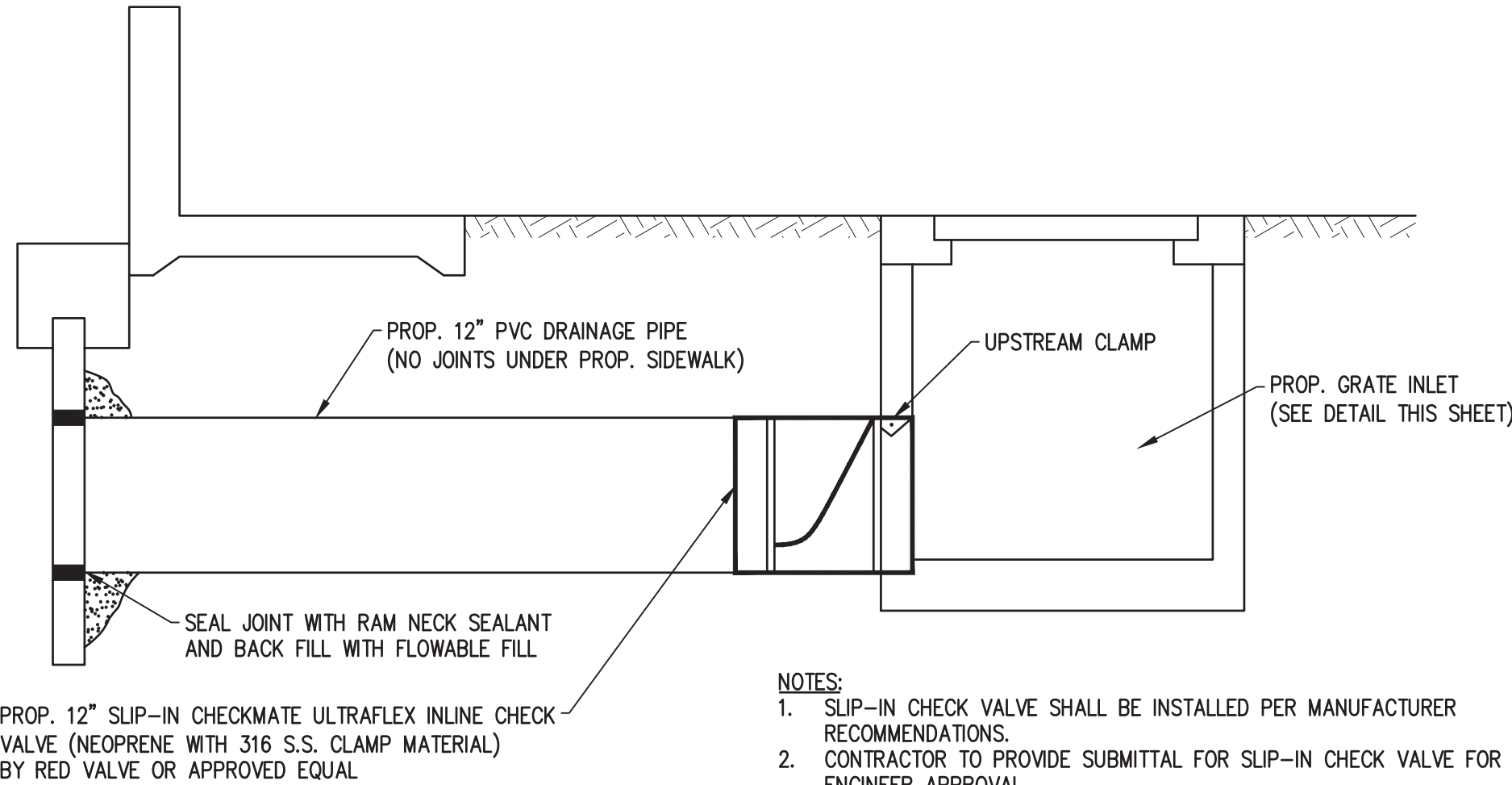
- NOTE:
- 4' CONCRETE WALL IS AN ADDITIVE ALTERNATE AND INCLUDES FURNISHING AND INSTALLING FORM WORK, CONCRETE AND FRP WALL REINFORCEMENT AND 12" HOOK BARS.



PAVEMENT REPAIR DETAIL

SCALE: 1"=1'

INLET DRAIN PIPING LENGTHS	
INLET	APPROX. DRAIN PIPE LENGTH (FT)
INLET A	70
INLET B	45
INLET C	45
INLET D	45
INLET E	25
INLET F	45
INLET G	50



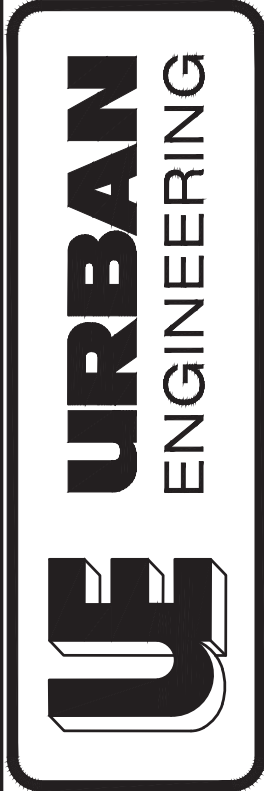
DRAINAGE PIPE DETAIL

SCALE: 1"=1'



DETAILS

CHARLIE'S PASTURE SHORELINE BULKHEAD
FEMA PROJECT #46842/ UE PN 006100-B8-03
PORT ARANSAS, TX



SHEET
17
OF 20

JOB NO.
06100.B8.03





SCOPE: PROVIDE DUST CONTROL WHENEVER THE CONSTRUCTION AREA SURFACE SOIL IS LOOSE AND WATER UNTIL THE SURFACE IS WET. PROVIDE DUST CONTROL UNTIL THE SEEDING OR SODDING HAS PROGRESSED ENOUGH TO PREVENT THE WIND EROSION.



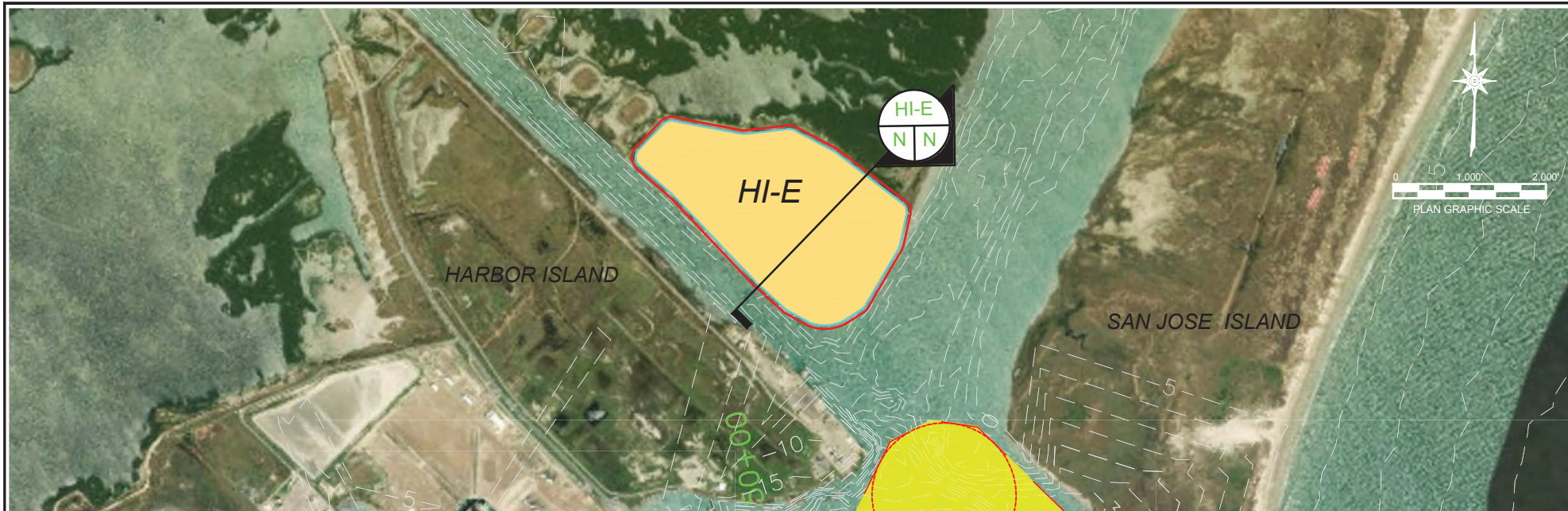
CONSTRUCTION ENTRANCES ARE ALSO REQUIRED AT ANY OTHER LOCATION THE CONTRACTOR PROPOSES TO ACCESS THE PROJECT.

REMOVAL: AFTER COMPLETION OF THE PROJECT REMOVE GRAVEL AND FABRIC AND COMPLETE THE FINAL GRADING AND SODDING REQUIREMENTS.

URBAN
ENGINEERING

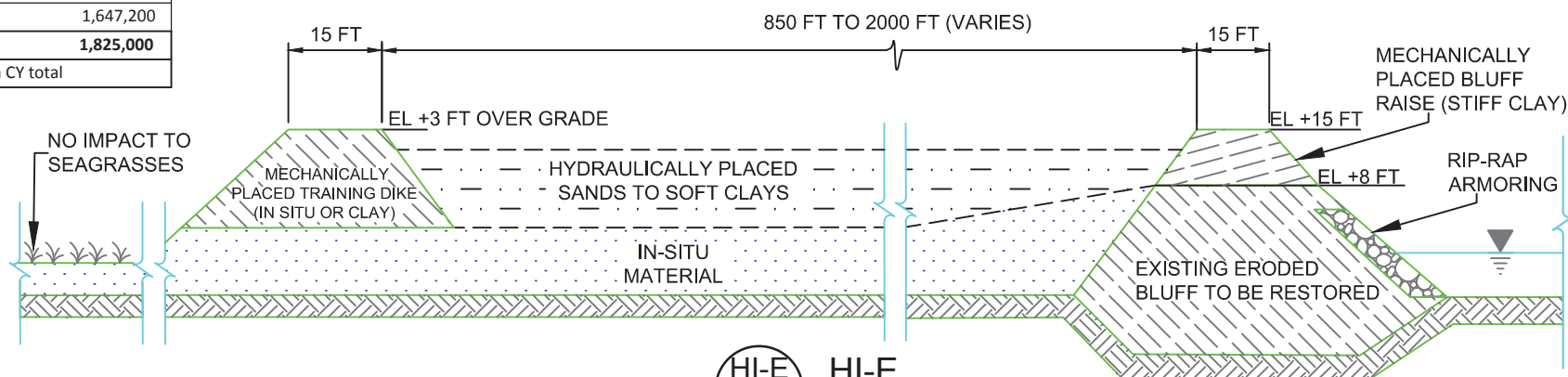
1595 FRY RD. #5, TELUS FRY RD. 10326400
2795 SWANNER RD. CORNING, CHARTER, T7B6A
PHONE: 351.954.3101 WWW.URBANENG.COM

Attachment E



Placement Site Neatline Quantity – Site HI-E	
Feature Description	Construction Volume (CY)
Armoring*	23,400
Levee	177,800
Fill Placement	1,647,200
Total	1,825,000

*Note: Quantity not included in CY total



LEGEND

- PROPOSED SHIP CHANNEL DEEPENING
- DREDGE MATERIAL PLACEMENT
- EXIST CONTOURS

GENERAL NOTES

1. BASE MAPPING SHOWN IS ESRI WORLD IMAGERY, RETRIEVED FROM ARCGIS TO AUTOCAD IN MAY 2019 - LAST UPDATED IN SEPT 2018.
2. HORIZONTAL COORDINATE SYSTEM IS NAD83 TEXAS STATE PLANE, SOUTH ZONE, US FOOT.
3. VERTICAL DATUM IS REFERENCED TO MEAN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
4. PIPELINE DATA FOR ARANSAS AND NUECES COUNTIES RETRIEVED FROM RAILROAD COMMISSION OF TEXAS ON NOVEMBER 19, 2018.

Sheet 19 of 23

Corpus Christi Ship Channel Deepening Project
Individual Permit Application SWG-2019-00067
**DREDGE MATERIAL PLACEMENT
SITE AND SECTION VIEW HI-E
SITE GRADING FILL AND
SHORELINE RESTORATION**

County: Aransas and Nueces
Application By: Port of Corpus Christi Authority

State: Texas
Date: May 2019

Appendix C2

Dredged Material Management Plan Matrix

PCCA CDP Description of Proposed Placement Sites - DMMP Matrix

Placement Area	Description	Dredged Material Placement Area Capacity					Dredged Material Volume (cy)	Features Being Built			Construction Methods	
		Dike		Fill		Total					PCCA Dredge Method	PCCA Other Construction Equipment
		Volume (cy)	Material	Volume (cy)	Material	Volume (cy)		Purpose	From Dredged Material	Others (Armoring etc.)		
SS1	Restoring eroded and washed out shoreline	1,140,000	Stiff clay	1,653,000	Sand	2,793,000	2,793,000	Restore eroded shoreline landmass and provide protection to Harbor Island Seagrass area	Dikes, landmass backfill	Slope armoring/riprap	Cutterhead suction hydraulic with pipelines or barge for placement	• Temporary cofferdams, silt fencing or similar to confine hydraulically placed material in PA • Wetland plantings
SS2	Restore two shoreline breaches and landmass along Port Aransas Nature Preserve resulting from Hurricane Harvey. Would add land mass behind FEMA shoreline bulkhead project.	84,000	Sand/ Soft Clay	166,000	Sand/ Soft Clay	250,000	250,000	Restore shoreline washed out by Hurricane Harvey to protect Piping Plover sand flat Critical Habitat	Interior dikes, landmass backfill	Bulkhead by others	Cutterhead suction hydraulic with pipelines or barge for placement	• Hydraulically pump material behind armored bulkhead built by others • Hydraulically or mechanically construct interior containment levee to meet existing sand flats and wetlands • Temporary cofferdams, silt fencing or similar to confine hydraulically placed material in PA • Thin layer placement
SS1 Extension (PA4 Shoreline Restoration)	Reestablish eroded shoreline and land loss in front of PA4	1,459,000	Stiff clay	217,000	Sand	1,676,000	1,676,000	Restore eroded shoreline and land loss, and provide protection to Harbor Island seagrass area. Raise levees for placement of new work material unsuitable for BU	Exterior containment dike, landmass backfill, interior levee raises	Slope armoring/riprap	• Large cutterhead suction hydraulic • Other methods possible	• Mechanically or hydraulically place exterior berms • Levee raising: Mechanically place stiff clays (barge or land). • Backfill: Hydraulically pump dredge material (pipeline <3 miles) Barges for pipeline mobilization • Heavy machinery for land-side grading and excavating of dewatered dredged material
PA4 (Upland Placement)	Upland placement within PA4		Stiff clays	2,861,400	Material unsuitable for BU	2,861,400	2,861,000	No environmental benefit	PA interior fill		Cutterhead suction hydraulic with pipelines for placement	
HI-E	Bluff and shoreline land mass restoration with site fill on eastern Harbor Island	177,800	CDP for levee stiff clays	1,647,200	CDP for backfill sand to soft clays	1,825,000	1,825,000	Restore eroded bluff and shoreline to historic profiles	Containment levees, landmass backfill	Slope armoring/riprap	• Large cutterhead suction hydraulic dredge for dredged material • Barges for pipeline mobilization • Heavy machinery for land-side grading and excavating of dewatered dredged material	• Levees: Mechanically place stiff clays (barge or land) • Armor: Mechanically place rip-rap (barge or land) • Backfill: Hydraulically pump dredge material (pipeline <3 miles)
PA6	Raise PA dike 5 feet and fill with 4 feet of new work material	103,000	Mechanically placed stiff clay or in situ material	1,693,400	Hydraulically placed dredge material unsuitable for BU	1,796,400	1,796,400	No environmental benefit	Levee raise, PA interior fill		Cutterhead suction hydraulic with pipelines for placement	Mechanically placed or in situ borrow material for levee raise
SJI	Dune and beach restoration on San José Island		CDP new work sands	4,000,000	Sand	4,000,000	4,000,000	Restores dune washouts and several miles of beach profile that was washed away during Hurricane Harvey	Dunes and beach		Cutterhead suction hydraulic or hopper	Hydraulically placed fill
B1-B9	Nearshore berms offshore of San José Island and Mustang Island		CDP new work sands	8,100,000	Sand	8,100,000	8,100,000	Nearshore berms within transport zone to indirectly nourish barrier islands	Offshore berms		Cutterhead suction hydraulic or hopper	Hydraulically placed fill
MI	Beach Nourishment for Gulf side of Mustang Island		CDP new work sands	2,000,000	Sand	2,000,000	2,000,000	Mustang Island beach nourishment to enhance shoreline	Beach		Cutterhead suction hydraulic or hopper	Hydraulically or mechanically placed beach fill
New Work ODMDS	Place material in existing New Work ODMDS			38,888,600	Material suitable for ocean placement	38,888,600	20,998,600	No environmental benefit	Placement mound		Cutterhead suction hydraulic or hopper	
		TOTAL CAPACITY*				64,190,400	46,300,000	TOTAL DREDGED MATERIAL VOLUME				

* Based on PCCA's Dredged Material Management Plan (January 11, 2021) with clarification provided in PCCA's BU Plan (November 3, 2021).

Appendix C3

Depth of Closure and Nearshore Berm Analysis

October 11, 2021

Mr. Jayson Hudson
Regulatory Project Manager
USACE Galveston District
2000 Fort Point Road
Galveston, Texas 77550

Re: Port of Corpus Christi Authority Channel (PCCA) Deepening Project Third-Party EIS and 408 Permissions Analysis – PCCA Proposed Beneficial Use Nearshore Feeder Berms Review

Dear Mr. Hudson,

Freese and Nichols, Inc. (FNI) has reviewed PCCA's proposed beneficial use nearshore feeder berm configurations ahead of undertaking the scheduled sediment transport numerical modeling.

The originally proposed feeder berm considerations, configurations, and preliminary designs are reported in AECOM's Memorandum to USACE Galveston District dated November 14, 2019, Subject: "Corpus Christi Ship Channel Channel Deepening Project Feeder Berms for Shoreline Nourishment" (AECOM Memo).

In summary, AECOM proposed a series of nine (9) nearshore feeder berms to be located offshore of San José Island and Mustang Island at the -24 ft bathymetric contour as the outer seaward extent. Detailed dimensions of these originally proposed feeder berms are presented in Table 13 of the attached Depth of Closure and Nearshore Feeder Berm Analysis report.

FNI evaluated AECOM's preliminary designs of the originally proposed nearshore feeder berms to: 1) validate that the locations of the feeder berms are within an active zone for the potential shoreward migration of sediments; and, 2) validate the capacity of the feeder berms to receive the Corpus Christi Ship Channel (CCSC) Channel Deepening Project (CDP) dredged material quantities planned for nearshore placement.

FNI's findings from the evaluation are presented in the attached Depth of Closure and Nearshore Feeder Berm Analysis report. In summary, it was concluded:

- 1) The original nearshore feeder berms as proposed in the AECOM Memo are anticipated to be active berms, with a resulting expectation that the nearshore feeder berm sediments will migrate to shore.
- 2) The total capacity of nearshore feeder berms as proposed in the AECOM Memo is not sufficient to accommodate the total in-situ volume of dredged material planned to be placed within the nearshore (See Table 14, Depth of Closure and Nearshore Feeder Berm Analysis report).

Based on the original AECOM feeder berm cross-section geometry, FNI formulated a modification to the nearshore feeder berm configurations to accommodate the total amount of the planned CCSC CDP dredged material quantities to be beneficially placed within the nearshore. The modification requires siting of the nearshore feeder berms within deeper waters (See Figures 6 and 7, Depth of Closure and Nearshore Feeder Berm Analysis report), but remain within the active feeder zone, and elongating the lateral extent of each feeder berm (See Tables 15 and 16, Depth of Closure and Nearshore Feeder Berm Analysis report).

FNI is required to incorporate the nearshore feeder berm beneficial use features into the sediment transport modeling to assess potential impacts to the existing CCSC. FNI requests guidance on the preferred nearshore feeder berm configurations to be used for the sediment transport modeling purposes.

It should be noted that if AECOM's original nearshore feeder berm configuration is selected for advancement into the sediment transport model, any CCSC CDP dredge material quantity in excess of the evaluated volumetric berm capacity may need to be repurposed to another dredged material placement area(s). It should be further noted that the FNI modification to the original feeder berm as an alternative configuration was not developed as an optimization feeder plan, but was developed to minimally meet the criteria of capacity and active transport.

Please feel free to contact me at 512.617.3158 should you have any questions regarding this matter.

Respectfully,



Lisa Vitale, FP-C
Marine Biologist / Project Manager

**CORPUS CHRISTI SHIP CHANNEL
CHANNEL DEEPENING PROJECT
DEPTH OF CLOSURE AND NEARSHORE FEEDER BERM ANALYSIS**

DEFINITIONS

Inner Depth of Closure (DOC): The Inner DOC marks the seaward extent of the littoral zone, which is characterized by increased bed stresses and sediment transport due to waves near breaking and fluid circulation (U.S. Army Corps of Engineers [USACE], 2016).

Outer DOC: The Outer DOC is the seaward limit of the offshore zone, where wave shoaling is the dominant process and bed agitation remains relatively moderate (USACE, 2016).

Sediment Grain Sizes: Classifications of sediments are provided in Attachment A (Wentworth Grain Size Chart), and classifications of sand are detailed in Table 1.

Table 1
Sand Classifications

Sieve Size	Sand Sizes				
	Very Coarse	Coarse	Medium	Fine	Very Fine
mm	1.000 to 2.000	0.500 to 1.000	0.250 to 0.500	0.125 to 0.250	0.062 to 0.125
phi	0 to -1	1 to 0	2 to 1	3 to 2	4 to 3
Mesh (ASTM)	18 to 10	35 to 18	60 to 35	120 to 60	230 to 120

Source: Wentworth (1922).

Note: 200 sieve size is equivalent to 0.074 mm, which is very fine sand (Wentworth Grain Size Chart).

mm = millimeters; phi = negative log base 2 of the diameter in mm; ASTM = American Society for Testing and Materials

EMPIRICAL OBSERVATIONS (Hands and Allison, 1991)

Berms that were placed shallower than the Inner DOC (i.e., in the littoral zone) were always active while berms placed deeper than the Outer DOC were always stable.

If a berm was placed 50% shallower than the Outer DOC, the berm was also found to be active, but to significantly varying degrees. Berms placed in locations with less than half the water depth of the Outer DOC tended to be active, indicating a potential cutoff point for active feeder berms.

Hands and Allison (1991) concluded that, in general, if the 75 percentile velocity (u_{dmax75}) exceeds 1.3 ft/second (ft/sec) (40 centimeters/second [cm/sec]), or the 95 percentile (u_{dmax95}) exceeds 2.3 ft/sec (70 cm/sec), then sand berms should not be expected to remain stable, regardless of depth or sand size.

GRAIN SIZE STATISTICS

Median grain sizes for Mustang Island along the beach profile are provided in tables 2 and 3.

Table 2
North Padre and Mustang Island Beaches

Year	Mean Median Grain Size (mm) at Shore Profile Locations					
	Toe of Dune	Mid Berm	Shoreline	–3 feet (ft)	–12 ft	–24 ft
2003	0.15	0.15	0.15	0.14	0.14	0.13
2004	0.15	0.15	0.15	0.14	0.12	0.13

Source: Williams et al. (2005).

Table 3
Mustang Island Profile

Median Grain Size	Shore Profile Locations (x-ft)												
	Dune (-19)	Mid (48)	Surf (115)	Off-1 (258)	Off-2 (287)	Off-3 (404)	Off-4 (707)	Off-5 (1533)	Off-6 (2110)	Off-7 (2494)	Off-8 (2877)	Off-9 (3343)	Off-10 (3959)
d ₅₀	0.159	0.157	0.183	0.163	0.149	0.135	0.139	0.121	0.130	0.127	0.132	0.129	0.134

Source: Knezek (1997).

In addition, review of the Texas Sediment Geodatabase (TxSed) (Texas General Land Office, 2021) of sediment grab samples taken within the nearshore of Mustang Island and San José Island indicate sand fractions in excess of 90% for each pertinent sample.

Based upon review of the Furgo (2018) data, it is estimated the average sand content of the new work dredged material that will be generated by the Port of Corpus Christi Authority (PCCA) Corpus Christi Ship Channel (CCSC) Channel Deepening Project (CDP) is 54% (PCCA, 2018), with a 0.13 mm median grain size.

DEPTH OF CLOSURE EQUATIONS (USACE, 2016)

Hallermeier Inner DOC (HIL):	$d_i = 2.28H_e - 68.5(H_e^2/gT_e^2)$
Hallermeier Inner DOC - Simplified (HIL-S):	$d_i = 2H_s + 11\sigma_s$
Hallermeier Outer DOC (HOL):	$d_i = (H_s - 0.3\sigma_s)T_s(g/5000D)^{1/2}$
Birkmeier Inner DOC (BIR):	$d_i = 1.75H_e - 57.9(H_e^2/gT_e^2)$
Birkmeier Simplified (BIR-S):	$d_i = 1.57H_e$

DEPTH OF CLOSURE EQUATIONS VARIABLES DEFINITIONS (USACE, 2016)

d_i = Inner Depth of Closure

H_e = Effective Wave Height = Wave Condition exceeded only 12 hours in a year (or the greatest 0.137% waves in a year), or

$$H_e = \text{Effective Wave Height} = H_s + 5.6\sigma_s$$

T_e = Effective Wave Period

g = acceleration due to gravity = 32.2 ft/s² = 9.81 m/s²

H_s = Significant Wave Height = Mean of the Highest 1/3 of Waves

T_s = Significant Wave Period

σ_s = Standard Deviation of Significant Wave Height = $(\sum(x_i - u)^2/N)^{1/2}$

$u = H_s$

x_i = Each H to calculate H_s

N = Total No. of H to calculate H_s

DEPTH OF CLOSURE COMPUTATIONS FOR WIS STATION 73040

Table 4 shows Hallermeier and Birkmeier's calculated Inner DOCs for WIS ST73040's 2011 Wave Time Series Record.

Table 4
Inner Depths of Closure for Year 2011

Equation	2011	
	meters	ft
Hallermeier Inner DOC (HIL)	5.577	18
Hallermeier Inner DOC - Simplified (HIL-S)	8.146	27
Birkmeier Inner DOC (BIR)	4.203	14
Birkmeier Simplified (BIR-S)	4.522	15

Source: USACE (2021a).

GOM_DOC-yearly_0116 (2)_73040_waves.xlsx

Hallermeier's Outer DOC for WIS ST73040's 2011 Wave Time Series Record by grain size are provided in Table 5, with the associated 50% shallower depths of Hallermeier's Outer DOC Record is displayed in Table 6.

Table 5
Hallermeier Outer Depths of Closure by Median Grain Size for Year 2011

HOL = Hallermeier Outer Depth of Closure = $d_i = (H_s - 0.3\sigma_s)T_s(g/5000D)^{1/2}$											
HOL (DOC)	D = d50 = Median Grain Size (mm/0.001 = m)										
	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50
	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20
2011 (meters)	26	24	23	22	22	21	20	20	19	19	18
2011 (ft)	84	80	77	74	71	69	66	64	63	61	59

Source: USACE (2021a).

GOM_DOC-yearly_0116 (2)_73040_waves2.xlsx

Table 6
50% Shallower Depths from Hallermeier's Outer Depths of Closure for Year 2011

50% Shallower Depth from Hallermeier Outer Depths of Closure											
HOL (DOC)	D = d50 = Median Grain Size (mm/0.001 = m)										
	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50
	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20
2011 (meters)	13	12	12	11	11	10	10	10	10	9	9
2011 (ft)	42	40	38	37	35	34	33	32	31	30	30

Source: USACE (2021a).

GOM_DOC-yearly_0116 (2)_73040_waves2.xlsx

Hallermeier's Outer DOC for the WIS ST73040 Wave Time Series Full Record (from 1980 to 2019) by grain size are provided in Table 7, with the associated 50% shallower depths of Hallermeier's Outer DOC Record is displayed in Table 8.

Table 7
Hallermeier Outer Depths of Closure by Median Grain Size for Full Record Years 1980 to 2019

HOL = Hallermeier Outer Depth of Closure = $d_i = (H_s - 0.3\sigma_s)T_s(g/5000D)^{1/2}$											
HOL (DOC)	D = d50 = Median Grain Size (mm/0.001 = m)										
	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50
	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20
FullRec (m)	23	22	21	21	20	19	18	18	17	17	17
FullRec (ft)	77	73	70	67	65	63	61	59	57	56	54

Source: USACE (2021b).

ST73040_FullRecord_ajr_calcs.xlsm

Table 8
50% Shallower Depths from Hallermeier's Outer Depths of Closure for Full Record Years 1980 to 2019

50% Shallower Depth from Hallermeier Outer Depths of Closure											
HOL (DOC)	D = d50 = Median Grain Size (mm/0.001 = m)										
	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50	d50
	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20
FullRec (m)	12	11	11	10	10	10	9	9	9	8	8
FullRec (ft)	38	37	35	34	32	31	30	29	29	28	27

Source: USACE (2021b).

ST73040_FullRecord_ajr_calcs.xlsm

NEAR BOTTOM VELOCITIES

If the 75th percentile velocity (udmax75) exceeds 1.3 ft/sec, or the 95th percentile (udmax95) exceeds 2.3 ft/sec, then sand berms should not be expected to remain stable, regardless of depth or sand size (Hands and Allison, 1991) (Table 9). The green shading reflects instances when both the udmax75 and udmax95 exceed the Hands and Allison (1991) bottom velocity thresholds for active sand berms, and the yellow shading reflect instances when only udmax75 exceeds the Hands and Allison (1991) bottom velocity threshold.

Table 9
WIS 73040 Udmax for 2011 Wave Time Series at Varying Depths

Depth (ft)	Percentile	Udmax (ft/sec)
25	95	3.10
	75	2.09
30	95	2.68
	75	1.79
35	95	2.34
	75	1.54
36	95	2.28
	75	1.50
40	95	2.06
	75	1.34
45	95	1.83
	75	1.17

Source: Hands and Allison (1991); USACE (2021b).

WIS-ocean_waves_ST73040_2011b.xlsx

SUMMARY OF DEPTH OF CLOSURES BY SAND GRAIN SIZE

Based on Hallermeier and Birkmeier's equations and Hands and Allison (1991), a summary of depths of closure and berm instability depths by sand grain size and by the 2011 wave time series at WIS Station 73040 is provided in Table 10. As noted earlier, the Outer DOC is dependent upon median grain size.

SEDIMENT MOBILITY TOOL

USACE's Sediment Mobility Tool (SMT) (2021c) was used as an application to provide additional scoping level analysis to site the nearshore feeder berm locations by depth. For the proposed PCCA CCSC CDP nearshore feeder berms located offshore of Mustang Island and San José Island the SMT defaulted to WIS 73039 to access 1980 to 2019 wave characteristics to predict cross-shore sediment migration by considering placement depths and median sediment grain sizes. For nearshore feeder berms located

north and south of the CCSC Entrance Channel, the predicted percent of onshore movement of sediments are presented in Tables 11 (South) and 12 (North), and in Figure 1 (South) and Figure 2 (North).

Table 10
Depth of Closure/Berm Stability Summary by Sand Grain Size for Wave Year 2011

Grain Size	Inner DOC (Birkmeier)	Inner DOC – Simplified (Birkmeier)	Inner DOC (Hallermeier)	Inner DOC – Simplified (Hallermeier)	50% Outer DOC (Hands and Allison, 1991)	Max Depth for Berm Instability - (Udmax) (Hands and Allison, 1991)	Outer DOC (Hallermeier)
0.12 mm	14 ft	15 ft	18 ft	27 ft	38 ft	40 ft	77 ft
0.13 mm	14 ft	15 ft	18 ft	27 ft	37 ft	40 ft	74 ft
0.14 mm	14 ft	15 ft	18 ft	27 ft	35 ft	40 ft	71 ft
0.15 mm	14 ft	15 ft	18 ft	27 ft	34 ft	40 ft	69 ft
0.16 mm	14 ft	15 ft	18 ft	27 ft	33 ft	40 ft	66 ft
0.17 mm	14 ft	15 ft	18 ft	27 ft	32 ft	40 ft	64 ft

Table 11
SMT Predicted % Sediment Onshore Migration (South of CCSC Entrance Channel)

Median Grain Size (mm)	Depth (ft)							
	16	20	24	28	32	36	40	44
0.12	55%	57%	58%	59%	59%	60%	61%	61%
0.13	68%	70%	71%	72%	73%	73%	74%	74%
0.14	76%	78%	79%	80%	81%	81%	82%	82%
0.15	81%	83%	84%	84%	85%	86%	86%	86%

Table 12
SMT Predicted % Sediment Onshore Migration (North of CCSC Entrance Channel)

Median Grain Size (mm)	Depth (ft)							
	16	20	24	28	32	36	40	44
0.12	53%	55%	56%	57%	58%	59%	60%	60%
0.13	67%	68%	70%	71%	72%	73%	73%	74%
0.14	75%	77%	78%	79%	80%	81%	81%	82%
0.15	81%	82%	83%	84%	85%	85%	86%	86%

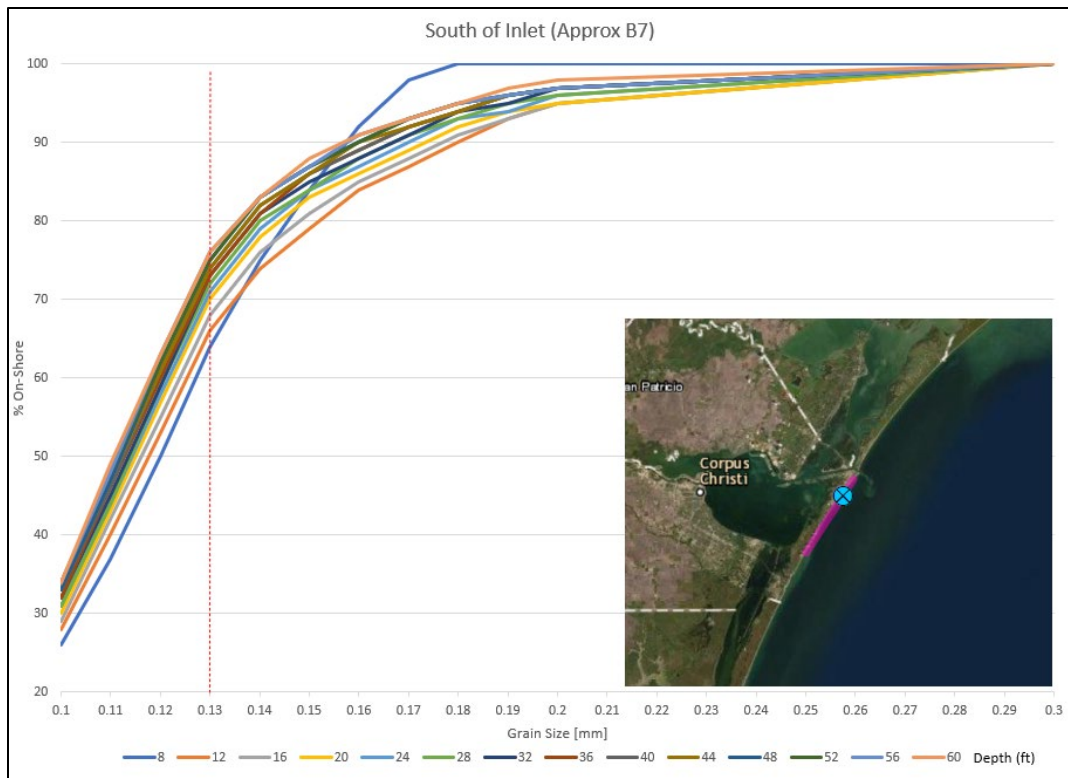


Figure 1. SMT Predicted % Sediment Onshore Migration Curves (South of CCSC Entrance)

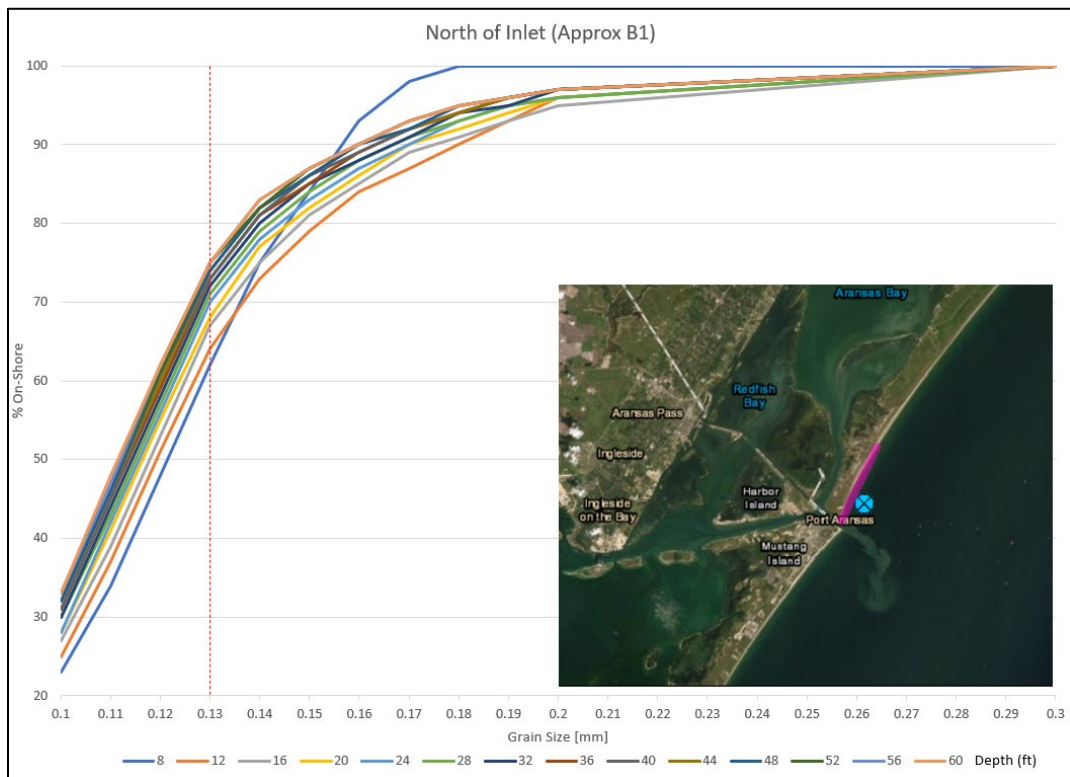


Figure 2. SMT Predicted % Sediment Onshore Migration Curves (North of CCSC Entrance)

CURRENT FEEDER BERM CONFIGURATIONS

AECOM (2019) proposed to place 4.5 million cubic yards (mcy) of CDP sediments within six nearshore feeder berms offshore of San José Island (Figure 3) and placing an additional 3.6 mcy of CDP sediments within three nearshore feeder berms offshore of Mustang Island (Figure 4). AECOM (2019) proposed the offshore toe of each feeder berm be located along the -24-ft elevation contour. AECOM (2019) dimensions for typical sections of the nearshore feeder berms north and south of the CCSC Entrance Channel are listed in Table 13.

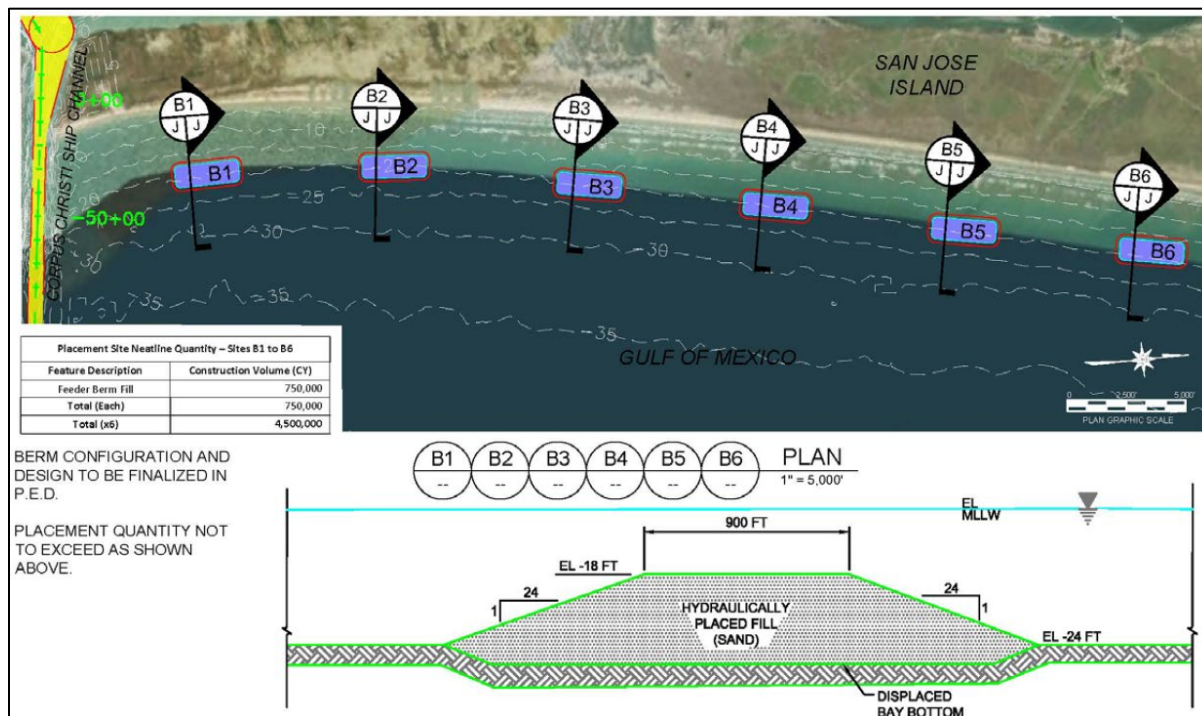


Figure 3. San José Island Proposed Nearshore Feeder Berms (AECOM, 2019)

Table 13
Dimensions for Typical Nearshore Feeder Berm Sections

Feeder Berm Features	North Feeder Berm	South Feeder Berm
Bottom Elevation (Offshore Toe)	-24 ft	-24 ft
Crest Elevation	-18 ft	-18 ft
Berm Height	6 ft	6 ft
Crest Width	900 ft	800 ft
Bottom Width	1,188 ft	1,088 ft
Berm Length	Approx. 3,000 ft	Approx. 5,000 ft
Side Slopes	1V:24H	1V:24H
Bottom Displacement	Yes	Yes

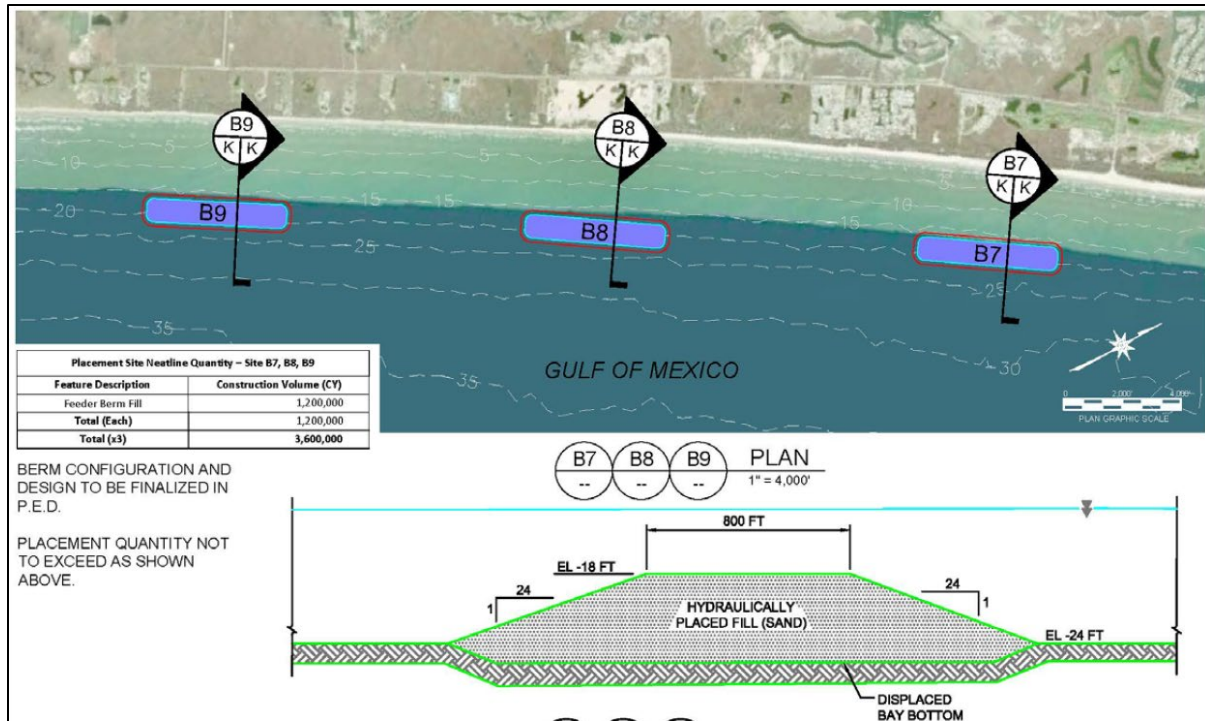


Figure 4. Mustang Island Proposed Nearshore Feeder Berms (AECOM, 2019)

Nearshore geotechnical data at the proposed feeder berm locations are not available, therefore geotechnical foundation properties are unknown. However, Williams et al. (2005) and Knezek (1997) report that median grain sizes for Mustang Island along the beach to nearshore profile consist of fine sand, and TxSed (Texas General Land Office, 2021) reports surficial sediments within the nearshore at Mustang Island and San José Island consist of over 90% sand fractions. If it is assumed that a fine sand condition is the representative geotechnical condition at the nearshore feeder berms proposed to be located offshore of Mustang Island and San José Island, then an additional assumption can be made that bottom displacement beneath the feeder berms will be minimal. Based on this assumption and the latest nearshore bathymetry, the following volumetric capacity for the nearshore feeder berms are 1.8 mcy offshore of San José Island and 1.4 mcy offshore of Mustang Island.

Figure 5 displays the profile of the typical feeder berm cross-sectional geometry when overlaid on the latest nearshore bathymetry at San José Island and Mustang Island, with the seaward toe of the berms located at the 24-ft depth contour. Because of the reduction in the cross-sectional area of the berm geometry, these capacities are much less than the proposed in-situ volume of dredged sediments to be placed in the nearshore.

Table 14 shows the comparison of the proposed in-situ volume to be placed in the nearshore versus capacity of the nearshore feeder berms.

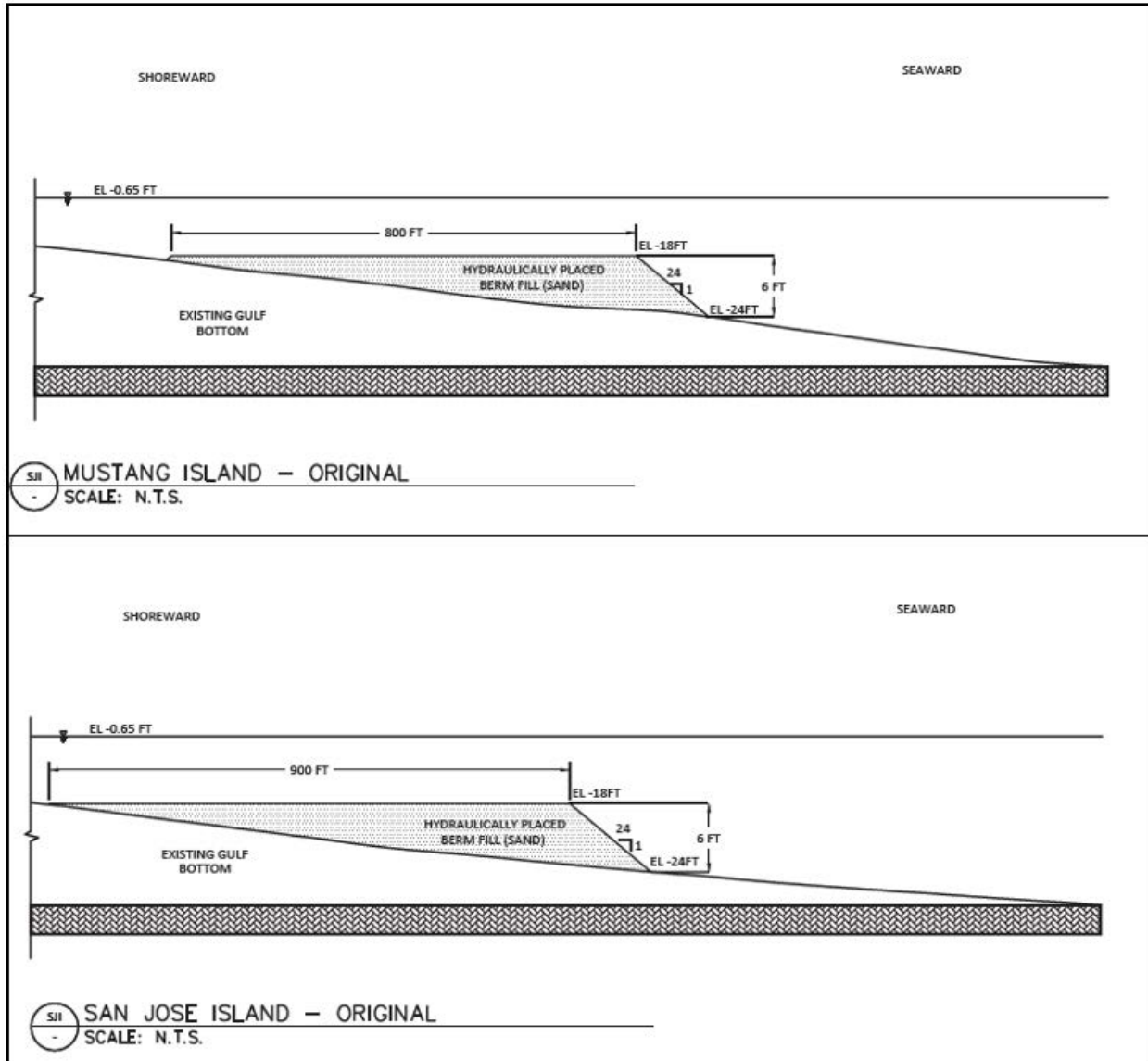


Figure 5. San José Island and Mustang Islands Nearshore Feeder Berm Bathymetry Overlay Profiles at the -24-ft Depth Contour (Elevations are Referenced to NAVD88)

Table 14
Nearshore Feeder Berms – Planned In-Situ Volume Placement vs. Actual Capacity

Nearshore Feeder Berm Location	In-Situ CDP Dredged Material Volume to be Placed	Nearshore Feeder Berm Capacity
San José Island	4.5 mcy	1.8 mcy
Mustang Island	3.6 mcy	1.4 mcy

ALTERNATIVE FEEDER BERM CONFIGURATIONS

In order to capture the total volume of in-situ CDP dredged material planned for placement within the nearshore feeder berms at San José and Mustang Islands, the lateral extent of the feeder berms and the

bottom depth locations will require modifying, if the original typical cross-sectional templates for the berms are to remain fixed.

Additionally, the total volume of the placed sediments will need to account for bulking. The bulk volume is obtained by multiplying the in-situ volume by a bulking factor. The bulking factor (B) is computed from the following equation (Herbich, 1992):

$$B = (w_c G_s + 100) / (w_i G_s + 100)$$

where,

w_c = water content within the loaded barge

w_i = water content in-situ

G_s = specific gravity of solids

PCCA (2018) concluded the in-situ water content (w_i) of the CCSC CDP dredged material averages 35%, and the solids volume concentration within the disposal scow is anticipated to be 60% ($w_c = 40\%$). Assuming the specific gravity of fine sand is 2.67, the bulking factor will equal 1.07. Therefore, the total bulk volume of dredged material to be placed within the nearshore feeder berms at San José Island and Mustang Island are 4.81 mcy and 3.85 mcy, respectively.

An alternative to achieve the required nearshore feeder berm volumetric capacities at San José Island and Mustang Island is to elongate each feeder berm and increase the depth of the offshore toe of the feeder berms, while for the most part keeping cross-sectional berm geometries fixed.

At San José Island, the offshore toe depth of the feeder berms would be located at the –31-ft elevation contour with feeder berms elongated to between 5,046 ft and 6,004 ft. Feeder berm B1 would require increasing the berm height from 6-ft to 7-ft. B2 to B6 would not require a change in berm height.

At Mustang Island, the offshore toe depth of the feeder berms would be located at the –28-ft elevation contour with feeder berms elongated to 10,088 ft. Nearshore feeder berms B7 to B9 would not require a change in berm height.

AECOM (2019) considered effects of wave focusing of nearshore berm designs and reported a berm length of at least 2.5 times the average wave length would most likely avoid wave focusing effects. For the 2011 wave time series representative year at WIS 73040, the average wave lengths at the 28-ft and 31-ft depths are 150.66 ft and 155.44 ft, respectively. The alternative berm lengths far exceed the 2.5 times the average wave length, therefore wave focusing is not expected to be induced.

The resulting alternative configuration attributes for each nearshore feeder berm are listed in Table 15 (San José Island) and Table 16 (Mustang Island) with the plan views shown in Figure 6 (San José Island) and Figure 7 (Mustang Island). Profile views of the typical cross-sections for the alternative configurations overlayed on the latest bathymetry are shown in Figure 8.

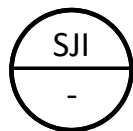
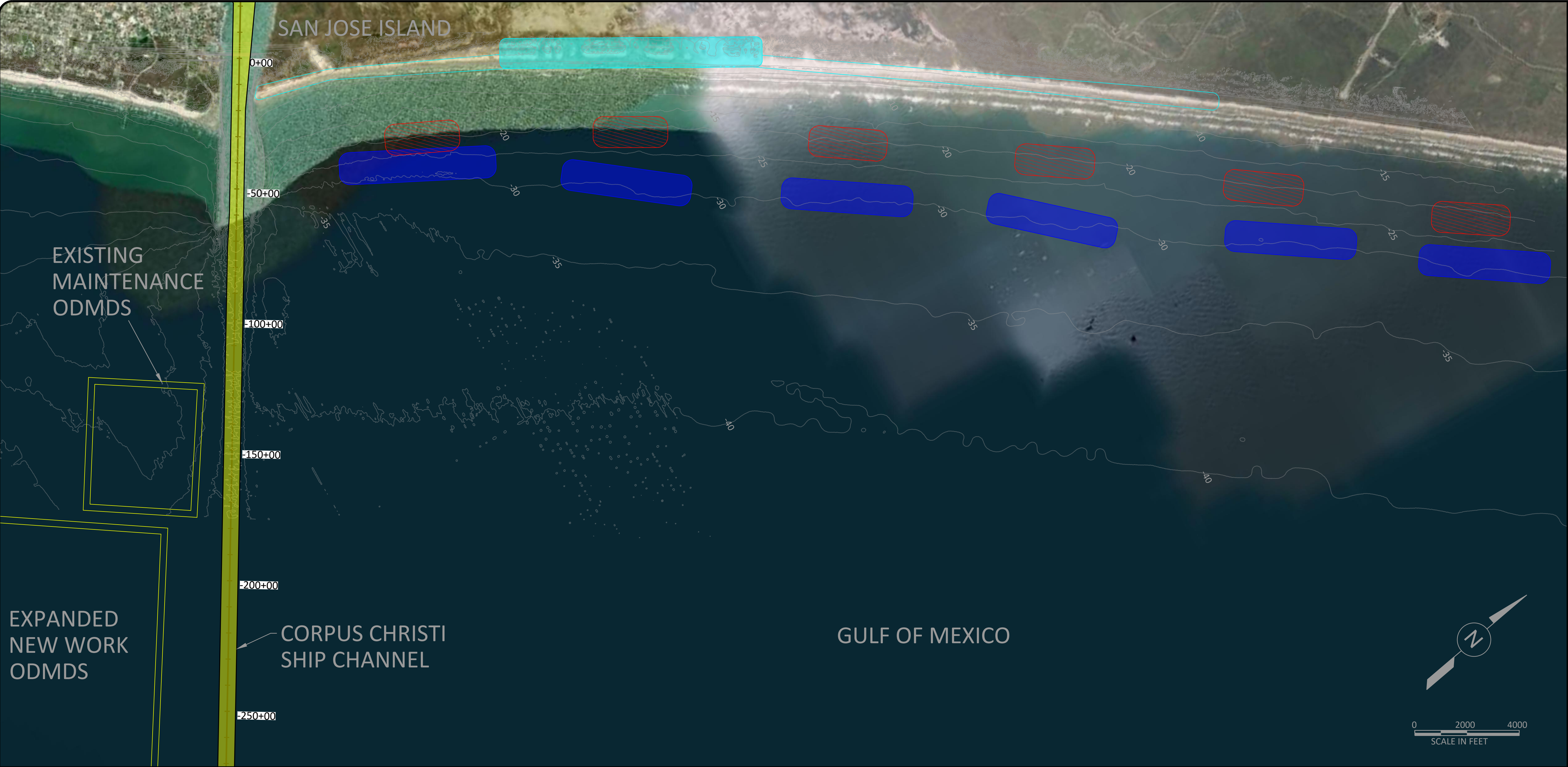
Table 15
Dimensions and Capacity for Nearshore Feeder Berm Alternative Sections at San José Island

Feeder Berm Features (San José Island)	B1	B2	B3	B4	B5	B6
Bottom Elevation (Offshore Toe)	-31 ft	-31 ft	-31 ft	-31 ft	-31 ft	-31 ft
Crest Elevation	-24 ft	-25 ft	-25 ft	-25 ft	-25 ft	-25 ft
Berm Height	7 ft	6 ft	6 ft	6 ft	6 ft	6 ft
Crest Width	900 ft	900 ft	900 ft	900 ft	900 ft	900 ft
Bottom Width	1,188 ft	1,188 ft	1,188 ft	1,188 ft	1,188 ft	1,188 ft
Berm Length	6,004 ft	5,010 ft	5,046 ft	5,051 ft	5,046 ft	5,046 ft
Side Slopes	1V:24H	1V:24H	1V:24H	1V:24H	1V:24H	1V:24H
Bottom Displacement	No	No	No	No	No	No
Wave Focusing	No	No	No	No	No	No
Capacity	704,853 cy	799,768 cy	852,531 cy	891,612 cy	841,743 cy	791,844 cy
Total Capacity vs. Required Capacity	4,882,351 cy vs. 4,810,000 cy (bulked)					

Table 16
Dimensions and Capacity for Nearshore Feeder Berm Alternative Sections at Mustang Island

Feeder Berm Features (Mustang Island)	B7	B8	B9
Bottom Elevation (Offshore Toe)	-28 ft	-28 ft	-28 ft
Crest Elevation	-22 ft	-22 ft	-22 ft
Berm Height	6 ft	6 ft	6 ft
Crest Width	800 ft	800 ft	800 ft
Bottom Width	1,088 ft	1,088 ft	1,088 ft
Berm Length	10,088 ft	10,088 ft	10,088 ft
Side Slopes	1V:24H	1V:24H	1V:24H
Bottom Displacement	No	No	No
Wave Focusing	No	No	No
Capacity	1,641,918 cy	1,367,938 cy	1,109,521 cy
Total Capacity vs. Required Capacity	4,119,377 cy vs. 3,850,000 cy (bulked)		

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PLAN VIEW
SCALE: 1"=2000'

LEGEND

- SAN JOSE ISLAND
- ORIGINAL NEARSHORE FEEDER BERM CONFIGURATION
- MODIFICATION 1 NEARSHORE FEEDER BERM CONFIGURATION
- EXISTING BATHYMETRIC CONTOURS (FT)

SAN JOSE ISLAND NEARSHORE FEEDER BERM VOLUME	
FEATURE DESCRIPTION	CAPACITY VOLUME (CY)
Original	1,837,885
Modification 1	4,882,352

GENERAL NOTES

- BASE MAPPING SHOWN IS MICROSOFT IMAGERY RETRIEVED FROM AUTOCAD IN AUGUST 2021.
- BATHYMETRY SHOWN IS FROM NOAA NCEI CUDEM - $\frac{1}{9}$ ARC-SECOND RESOLUTION BATHYMETRIC-TOPOGRAPHIC TILES
- HORIZONTAL COORDINATE SYSTEM IS NAD83 TEXAS STATE PLANE, SOUTH ZONE, US FOOT.
- VERTICAL DATUM IS REFERENCED TO MEAN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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PORT OF CORPUS CHRISTI AUTHORITY
CORPUS CHRISTI SHIP CHANNEL
CHANNEL DEEPENING PROJECT

SAN JOSE ISLAND NEARSHORE FEEDER
BERM BENEFICIAL USE SITE

F&N JOB NO.
PCA20166
DATE
OCTOBER 2021

DESIGNED
DRAWN
REVISED
CHECKED

FILE NAME
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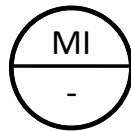
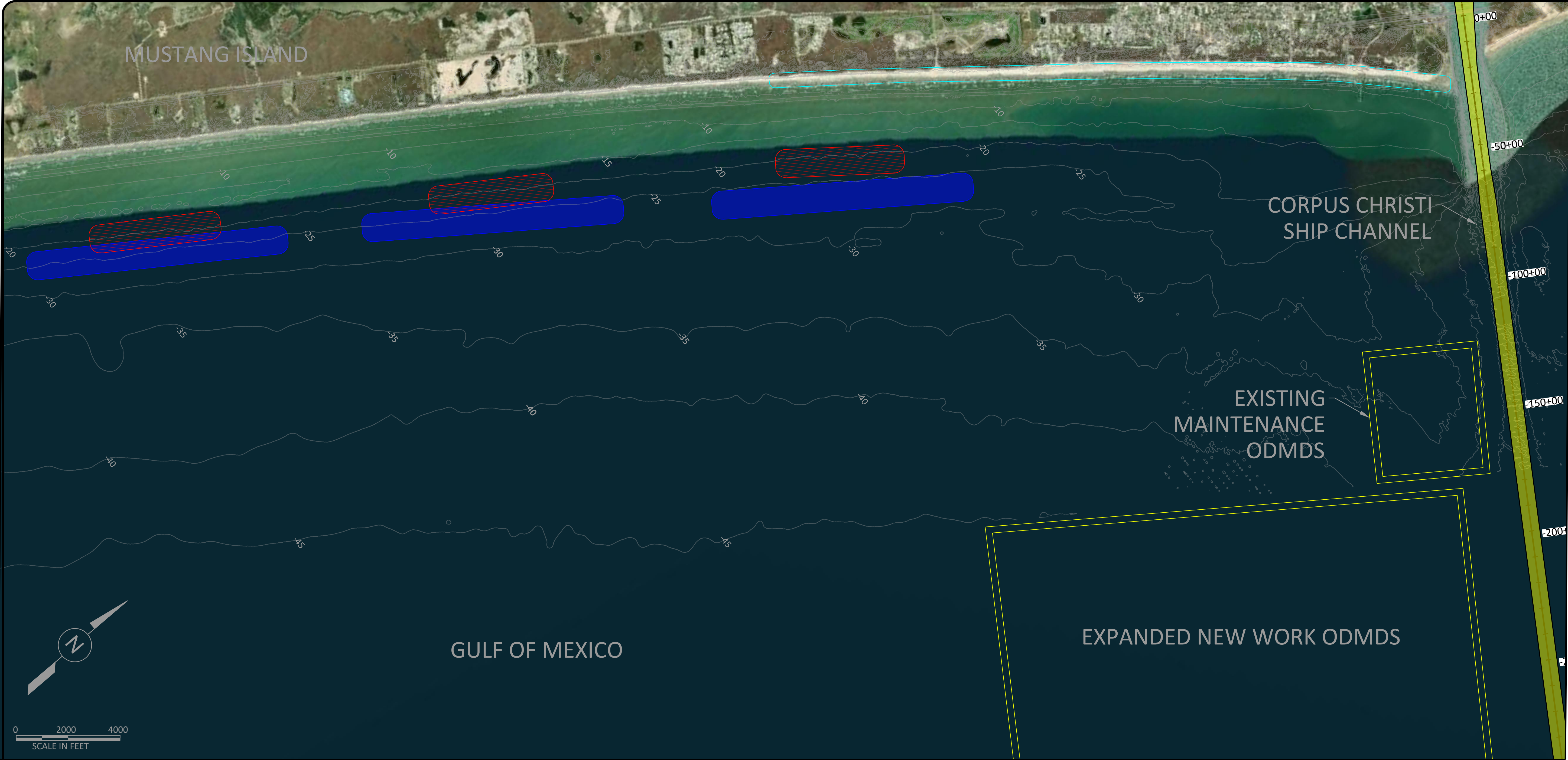
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PLAN VIEW
SCALE: 1"=2000'

LEGEND

- MUSTANG ISLAND
- ORIGINAL NEARSHORE FEEDER BERM CONFIGURATION
- MODIFICATION 1 NEARSHORE FEEDER BERM CONFIGURATION
- EXISTING BATHYMETRIC CONTOURS (FT)

MUSTANG ISLAND NEARSHORE FEEDER BERM VOLUME	
FEATURE DESCRIPTION	CAPACITY VOLUME (CY)
ORIGINAL	1,368,236
Modification 1	4,119,377

GENERAL NOTES

- BASE MAPPING SHOWN IS MICROSOFT IMAGERY RETRIEVED FROM AUTOCAD IN AUGUST 2021.
- BATHYMETRY SHOWN IS FROM NOAA NCEI CUDEM - $\frac{1}{3}$ ARC-SECOND RESOLUTION BATHYMETRIC-TOPOGRAPHIC TILES
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CHANNEL DEEPENING PROJECT

MUSTANG ISLAND NEARSHORE FEEDER
BERM BENEFICIAL USE SITE

NO.	ISSUE	BY	DATE	F&N JOB NO.
				PCA20166
				DATE: OCTOBER 2021
				DESIGNED
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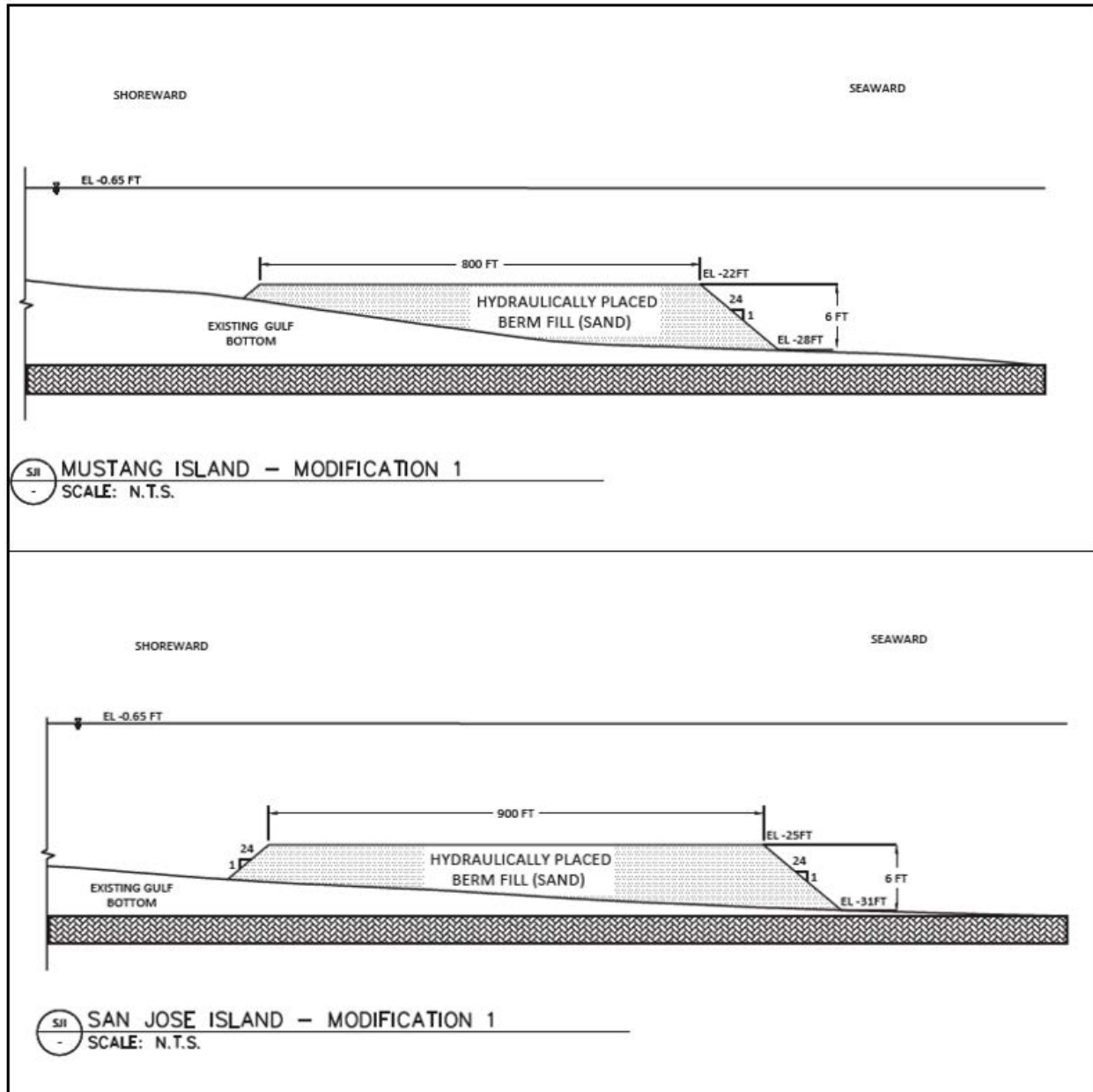


Figure 8. San José Island and Mustang Islands Nearshore Feeder Berm Bathymetry Overlay Profiles at the Alternative Depth Contours (Elevations are Referenced to NAVD88)

Attachment B shows the comparative nearshore feeder berm profile differences at San José Island and Mustang Island between the originally proposed berm depth (at 24-ft) and the alternative berm depths (at 28- and 31-ft).

BERM CONFIGURATION OPTIONS

The AECOM (2019) proposed locating the nearshore feeder berms with the offshore berm toe at the 24-ft elevation contour to accommodate 4.5 mcy of in-situ dredged material within the nearshore of San José Island and 3.6 mcy of in-situ dredged material within the nearshore of Mustang Island. Based on volumetric calculations of the AECOM (2019) proposed nearshore berm configurations, there is not sufficient capacity to receive the in-situ dredged material volumes planned for the nearshore feeder berms at San José and Mustang Islands.

To achieve the necessary capacity to receive the planned in-situ dredge material volumes requires the nearshore feeder berms be modified to be located in slightly deeper waters and laterally elongated, if the cross-sectional berm geometries are to remain fixed.

For the San José Island nearshore feeder berms the elevation of the berms' offshore toe will need to be located at the -31-ft bathymetric contour, and for the Mustang Island nearshore feeder berms the elevation of the berms' offshore toe will need to be located at the -28-ft bathymetric contour.

Based on the depth of closure analyses and the application of the Sediment Mobility Tool, as reported in this memorandum, it is expected that nearshore feeder berms consisting of a 0.13 mm median sediment grain size will be active at the 34-ft depth contour and shallower (Table 8), and that the percentage of onshore migration of sediments will be 70% or greater in water depths at 24-ft and deeper (Tables 11 and 12).

From the results of the analyses as reported in this memorandum, two options are presented to proceed forward with nearshore feeder berm configurations offshore of San José Island and Mustang Island:

1. Original Configurations: Proceed with the original nearshore feeder berm typical cross-sectional geometries, lateral extents, and depths as reported in AECOM (2019). For this option, the total volume of in-situ dredged material to be placed within the feeder berms will need to be reduced from a total 8.1 mcy to 3.0 mcy. The 3.0 mcy of in-situ material equates to a total in-place volume of 3.2 mcy due to slight bulking. The excess in-situ dredged material volume of 5.1 mcy would need to be reallocated to another placement area, such as the Corpus Christi Expanded New Work ODMDs and/or the San José Island washed out areas.
2. Modified Configurations: Proceed with the original nearshore feeder berm typical cross-sectional geometries as reported in AECOM (2019), with the exception of the B1 nearshore feeder berm. The B1 berm height would need to be raised from 6-ft to 7-ft. Modify the lateral extents and berm offshore toe depths as listed in Tables 15 and 16. Total in-situ dredged material volume that could be received based on these modifications is 8.1 mcy, which equates to a total in-place volume 8.66 mcy due to slight bulking.

REFERENCES

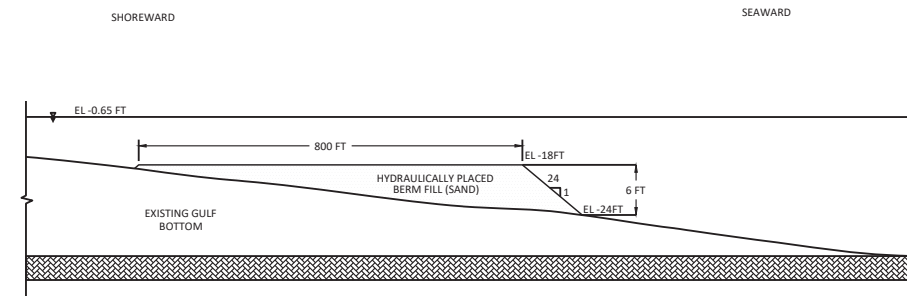
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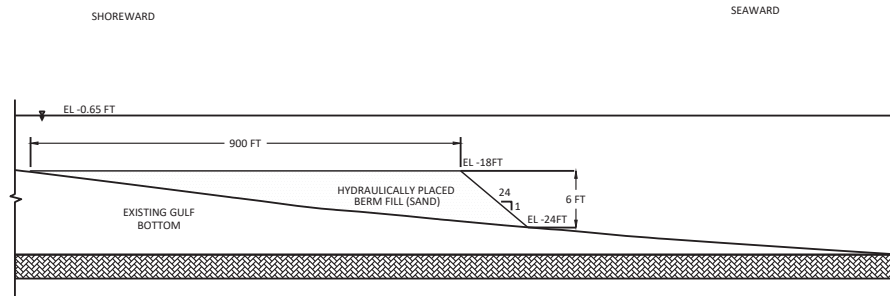
ATTACHMENT A
WENTWORTH GRAIN SIZE CHART

PHI - mm CONVERSION $\phi = \log_2 (d \text{ in mm})$ $1\mu m = 0.001mm$			Fractional mm and Decimal inches	SIZE TERMS (after Wentworth, 1922)	SIEVE SIZES	Intermediate diameters of natural grains equivalent to sieve size	Number of grains per mg		Settling Velocity (Quartz, 20°C)		Threshold Velocity for traction cm/sec	
Φ	mm			ASTM No. (U.S. Standard)	Tyler Mesh No.		Quartz spheres	Natural sand	Spheres (Gibbs, 1971) cm/sec	Crushed	(Nevin, 1946)	(modified from Hjulstrom, 1939)
-8	256	10.1"	BOULDERS ($\geq -8\phi$) COBBLES									
-7	128	5.04"										
-6	64.0	2.52"										
-5	32.0	1.26"	PEBBLES	very coarse	2 1/2" 2.12"	2"						
-4	16.0	0.63"		coarse	1 1/2" 1.18"	1 1/2"						
-3	8.00	0.32"		medium	1 1/4" 1.06"	1.05"						
-2	4.00	0.16"		fine	3/4" .75"	.742"						
-1	2.00	0.08"		Granules	5/8" .625"	.525"						
0	1.00	1		very fine	5/16" .3125"	.371"						
1	.500	1/2		very coarse	4 .375"	3						
2	.250	1/4		coarse	5 .375"	4						
3	.125	1/8		medium	6 .250"	5						
4	.062	1/16		fine	7 .1875"	6						
5	.031	1/32	SAND	very fine	8 .125"	8						
6	.016	1/64		coarse	10 .075"	10						
7	.008	1/128		medium	12 .0625"	12						
8	.004	1/256		fine	14 .0469"	14						
9	.002	1/512		very fine	16 .0312"	16						
10	.001	1/1024	CLAY	clay	20 .0156"	20						
				silt	25 .0078"	25						

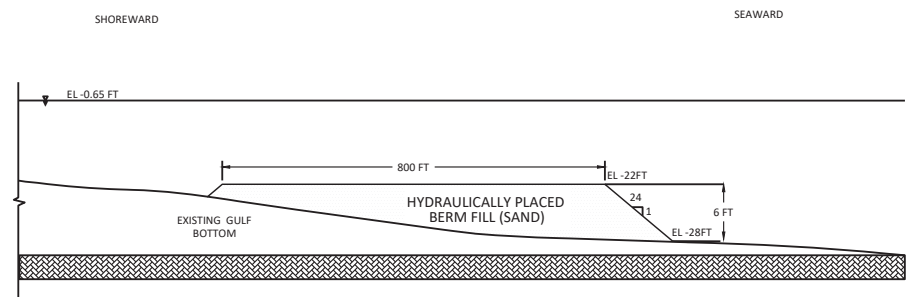
ATTACHMENT B
NEARSHORE FEEDER BERM TYPICAL SECTIONS



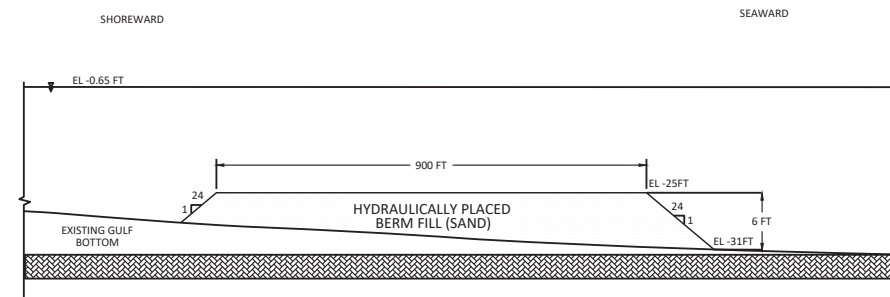
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SCALE: N.T.S.




 SAN JOSE ISLAND - ORIGINAL
 SCALE: N.T.S.



MUSTANG ISLAND - MODIFICATION 1
SCALE: N.T.S.



SII SAN JOSE ISLAND - MODIFICATION 1
- SCALE: N.T.S.

MUSTANG ISLAND NEARSHORE FEEDER BERM VOLUME	
FEATURE DESCRIPTION	CAPACITY VOLUME (CY)
ORIGINAL	1,368,236
Modification 1	4,119,377

SAN JOSE ISLAND NEARSHORE FEEDER BERM VOLUME	
FEATURE DESCRIPTION	CAPACITY VOLUME (CY)
Original	1,837,885
Modification 1	4,882,352

GENERAL NOTES

1. BATHYMETRY SHOWN IS FROM NOAA NCEI CUDEM - $\frac{1}{3}$ ARC-SECOND RESOLUTION BATHYMETRIC-TOPOGRAPHIC TILES
2. HORIZONTAL COORDINATE SYSTEM IS NAD83 TEXAS STATE PLANE, SOUTH ZONE, US FOOT.
3. VERTICAL DATUM IS REFERENCED TO MEAN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. WATER LEVEL IS THE MEAN LOWER LOW WATER LEVEL (MLLW) REFERENCED TO NAVD88 (+0.65 FT NAVD88= 0.0 FT MLLW).

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PORT OF CORPUS CHRISTI AUTHORITY
CORPUS CHRISTI SHIP CHANNEL
CHANNEL DEEPENING PROJECT

NEARSHORE FEEDER BERM TYPICAL SECTIONS

SHEET		NO.		ISSUE		BY		DATE		REVISION NO.	
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										PROJECT TO BEER 2021	
										DESIGNED	
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										FILE NAME	
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on