November 29, 2022

Chesapeake Bay Environmental Center
C/o Judy Wink
600 Discovery Lane
Grasonville, Maryland 21638
(410) 924-8633
jwink@BayRestoration.org

Re: Agency Interest Number: 97703
Tracking Number: 202160043
Tidal Authorization Number: 22-WQC-0009

Dear Judy Wink:

Your project did not qualify for approval under the Maryland State Programmatic General Permit (MDSPGP); therefore, a separate review and issuance of the federal permit will be required by the U.S. Army Corps of Engineers. The federal permit is not attached.

Additionally, your project required a Wetlands License to be approved and issued by the Maryland Board of Public Works (BPW). The Wetlands License will be sent to you by BPW's Wetlands Administrator.

A project that does not qualify for approval under the MDSPGP requires an individual Water Quality Certification (WQC) to be issued by the Maryland Department of the Environment, which is attached. Please take a moment to read and review your WQC to ensure that you understand the limits of the authorized work and all of the general and special conditions.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please contact Mary Phipps-Dickerson at Mary.Phipps-Dickerson@maryland.gov or (443) 509-0797 with any questions.

Sincerely,

Tammy K. Roberson
Chief
Tidal Wetlands Division

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WATER QUALITY CERTIFICATION

22-WQC-0009

EFFECTIVE DATE:	**November 29, 2022**
CERTIFICATION HOLDER:	**Chesapeake Bay Environmental Center**
ADDRESS:	**Attn: Judy Wink** **600 Discovery Lane** **Grasonville, MD 21638**
PROJECT LOCATION:	**600 Discovery Lane** **Grasonville, MD 21638**

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH § 9-313 THROUGH § 9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER AND SCIENCE ADMINISTRATION HAS DETERMINED THAT THE REGULATED ACTIVITIES DESCRIBED IN THE REQUEST FOR CERTIFICATION FOR THE PROPOSED CHESAPEAKE BAY ENVIRONMENTAL CENTER, COASTAL RESILIENCY PROJECT AND AS DESCRIBED IN THE ATTACHED PLAN SHEETS DATED NOVEMBER 1, 2022 AND ANY SUBSEQUENT MODIFICATIONS APPROVED BY THE DEPARTMENT WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS. THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

PROJECT DESCRIPTION

1. Construct five breakwaters with Breakwater A at 36-foot long by 26.9-foot wide within a maximum of 36.0 feet channelward of the mean high water line, Breakwater B at 63.8-foot long by 21.7-foot wide within a maximum of 63.7 feet channelward of the mean high water line, Breakwater C at 394.2-foot long by 33.1-foot wide within a maximum of 394.2 feet channelward of the mean high water line, Breakwater D at an irregularly shaped 370.2-foot long by 32.9-foot wide within a maximum of 203.5 feet channelward of the mean high water line, Breakwater E at 163.2-foot long by 30.9-foot wide within a maximum of 44.1 feet channelward of the mean high water line, and; Breakwater F at 39.1-foot long by 22.9-foot long and within a maximum of 39.1 feet channelward of the mean high water line.
2. Construct marsh edging in four areas with Area A being 72.2-foot long by 16.7-foot wide all within a maximum of 16.7 feet channelward of the mean high water line, Area B at 243.3-foot

long by 18.2-foot wide all within a maximum of 25.2 feet channelward of the mean high water line, Area C at 179.9-foot long by 18.8-foot wide all within a maximum of 23.0 feet channelward of the mean high water line, and Area D at 135.6-foot long by 16.6-foot wide all within a maximum of 21.9 feet channelward of the mean high water line;

3. Create five areas of marsh habitat with Area 1 consisting of filling and grading 341 cubic yards of sand and planting 0.15 acres with marsh vegetation and extending a maximum of 63.7 feet channelward of the mean high water line, Area 2 consisting of filling and grading 7,618 cubic yards of sand and planting 2.38 acres with marsh vegetation and extending a maximum of 123.1 feet channelward of the mean high water line, Area 3 consisting of filling and grading 3,472 cubic yards of sand and planting 1.05 acres with marsh vegetation and extending a maximum of 93.5 feet channelward of the mean high water line, Area 4 consisting of filling and grading 938 cubic yards of sand and planting 0.38 acres with marsh vegetation all within a maximum of 82.3 feet channelward of the mean high water line, and Area 5 consisting of filling and grading 483 cubic yards of sand and planting 0.13 acres with marsh vegetation and extending a maximum of 77.1 feet channelward of the mean high water line.
4. Thin layer placement of dredged material is to be constructed in five areas with Marsh Thin Layer Zone 1 consisting of placing and grading 3,227 cubic yards of sand within 0.50 acres and planting marsh vegetation, Marsh Thin Layer Zone 2 consisting of placing and grading 17,908 cubic yards of sand within 3.70 acres and planting with marsh vegetation, Marsh Thin Layer Zone 3 consisting placing and grading 9,051 cubic yards of sand within 1.87 acres and planting with marsh vegetation, Marsh Thin Layer Zone 4 consisting of placing and grading 31,315 cubic yards of sand within 6.47 acres and planting marsh vegetation, Marsh Thin Layer Zone 5 consisting of placing and grading 10,551 cubic yards of sand within 2.18 acres and planting marsh vegetation, for a total of 72,051 cubic yards of material to be placed within 14.72 acres. Straw bales will be placed around the perimeter of these sites and staked in place.
5. Construct five areas of marsh by filling and grading 3,646 cubic yards of sand and planting 1.13 acres with marsh vegetation in Marsh Creation Zone 1 all within a maximum of 63.7 feet channelward of the mean high water line, filling and grading 903 cubic yards of sand and planting 0.28 acres with marsh vegetation in Marsh Creation Zone 2 all within a maximum of 50 feet channelward of the mean high water line, filling and grading 1,065 cubic yards of sand and planting 0.33 acres with marsh vegetation in Marsh Creation Zone 3 all within a maximum of 50 feet channelward of the mean high water line, filling and grading 2,033 cubic yards of sand and planting 0.63 acres with marsh vegetation in Marsh Creation Zone 4 all within a maximum of 50 feet channelward of the mean high water line, and filling and grading 807 cubic yards of sand and planting 0.25 acres with marsh vegetation in Marsh Creation Zone 5 all within a maximum of 50 feet channelward of the mean high water line.
6. Emplace 794.5 Cubic Yards of reef balls within 0.16 acres at Reef Ball Area A all within a maximum of 190.6 feet channelward of the mean high water line, emplace 1,110 cubic yards of reef balls within 0.20 acres at Reef Ball Area B, all within a maximum of 204.2 feet channelward of the mean high water line, emplace 308 cubic yards of reef balls within 0.08 acres at Reef Ball Area C all within a maximum of 151.6 feet channelward of the mean high water line, emplace 365 cubic yards of reef balls within 0.09 acres at Reef Ball Area D all within a maximum of 155.3 feet channelward of the mean high water line.
7. Replace an existing culvert below the existing road with a 24-inch diameter by 50-foot long culvert and at an elevation 1 foot lower than the existing pipe invert.

COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION: The Maryland Department of the Environment has determined that the proposed activities comply with, and will be conducted in a manner consistent with the State's Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended.

GENERAL CONDITIONS

1. This Certification does not obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.

2. All additional authorizations or approvals, including self-certifying General Permits issued by the Department, shall be obtained and all conditions shall be completed in compliance with such authorizations.

3. The proposed project shall be constructed in accordance with the approved final plan by approved by the Department, or, if Department approval is not required, the plan approved by the U.S. Army Corps of Engineers; and its approved revisions.

4. All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.

5. This Certification does not authorize any injury to private property, any invasion of rights, or any infringement of federal, state, or local laws or regulations.

6. Authorized representatives of the Department shall be provided access to the site of authorized activities during normal business hours to conduct inspections and evaluations of the operations and records necessary to assure compliance with this Certification.

7. Authorized work under this Certification shall be performed in accordance with the required Soil Erosion and Sediment Control Plan as approved by the Maryland Department of the Environment.

8. No stockpiles of any material shall be placed in Waters of the U.S. or state or private tidal wetlands.

9. Temporary construction trailers or structures, staging areas and stockpiles shall not be located within tidal wetlands, nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.

10. This Certification is valid for the project identified herein and the associated U.S. Army Corps of Engineers authorization NAB-2021-60043 (CBEC/Coastal Resiliency) until such time that it expires or is not administratively extended.

SPECIAL CONDITIONS

1. All water quality-related performance standards and conditions required by the Department in any state issued authorization for activities in tidal wetlands, nontidal waterways, their 100-year floodplains, nontidal wetland buffers, or nontidal wetland expanded buffers to ensure that any discharges will not result in a failure to comply with water quality standards in COMAR 26.08.02. or other water quality requirements of state law or regulation shall be met.

2. All Critical Area requirements shall be followed and all necessary authorizations from the Critical Area Commission ("Commission") shall be obtained. This Certificate does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. "Disturbance" in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from the Commission in the form of a Buffer Management Plan

3. All work performed under this Water Quality Certificate shall be conducted by a marine contractor licensed by the Marine Contractors Licensing Board (MCLB) in accordance with Title 17 of the Environment Article of Annotated Code of Maryland. Licensing by MCLB shall occur prior to the beginning of construction activities. A list of licensed marine contractors may be obtained by contacting the MCLB at 410-537- 3249, by e-mail at MDE.MCLB@maryland.gov or by accessing the Maryland Department of the Environment, Environmental Boards webpage.

4. The Certificate Holder shall not perform any fill activities from April 15th through October 15th of any year due to submerged aquatic vegetation restrictions. The Certificate Holder shall ensure that, if reef ball placement occurs during the SAV growing season, no work will be conducted within 100 yards of SAV beds delineated in the last five (5) years. Placement of stone/reef ball fill within 500 yards of SAV during the growing season should be avoided to the extent practicable.

5. The Certificate Holder shall not perform any construction in the area of "Breakwater C" from November 15th through March 1st of any year to protect wintering waterfowl.

6. The Certificate Holder shall not pump water from the waterway for the purposes of reslurrying dredge material or other fill material for placement on the marsh during the period June 1st through September 30th of any year to minimize impacts to oysters.

7. Activities involved in the restoration of the Site shall follow enforceable state policies and related to fish passage, protection and management of submerged aquatic vegetation, protection of oyster bars, protection of shellfish aquaculture leases, prohibition of genetically modified organisms, and control of nonnative aquatic organisms.

8. The Certificate Holder shall accept the terms of the attached marsh maintenance plan by signing and returning the standard plan to the Water and Science Administration, Tidal Wetlands Division prior to commencement of any work authorized under this Water Quality Certification. If the Certificate Holder wishes to propose an alternative marsh maintenance plan, the alternative plan must be submitted to and approved by the Tidal Wetlands Division, Water and Science Administration, prior to commencement of any work authorized under this Water Quality Certification. Any alternative plan must provide assurances of success that are at least equivalent to those of the standard plan, in terms of the extent of native marsh plant coverage, elimination of invasive species and timeframe for plant establishment.

9. The Certificate Holder shall construct the marsh establishment area in accordance with the following conditions:
    1. The Certificate Holder shall perform grain size analysis prior to placement of material. Clean substrate fill material, defined as no more than 10% of which shall pass through a standard number 100 sieve, may be placed along the shoreline. Material that does not met this specification must be located within areas with containment.
    2. The marsh establishment area shall be planted within one year following completion of any filling operation.
    3. The marsh establishment project shall be maintained as a wetland, with non-nuisance species'

aerial coverage of at least 85% for three consecutive years. If 85% coverage is not attained, the reasons for failure shall be determined, corrective measures shall be taken, and the area shall be replanted.

4. If the fill is graded hydraulically, the Certificate Holder shall use a turbidity curtain around the perimeter of the instream work.
5. If the existing bank is to be cleared or graded:
    a. The Certificate Holder shall perform all work under and in accordance with an approved Soil Erosion and Sediment Control Plan from the applicable sediment and erosion control agency; and
    b. The Certificate Holder shall perform all work under and in accordance with the Critical Area requirements of the local jurisdiction in the form of an approved Buffer Management Plan.

10. The dredged material shall be sampled in accordance with the MDE's "Innovative Reuse and Beneficial Use of Dredged Material Guidance Document" and subsequent versions. Results of these samples shall be provided to MDE. Dredge material that does not meet the criteria of the Innovative Reuse and Beneficial Use of Dredged Material Guidance Document shall not be used for this project.

11. The Certificate Holder shall ensure that cobble amendments are free from debris such as asphalt and rebar.

12. The Certificate Holder shall inspect straw bales daily throughout active placement operations to ensure structural integrity. For six (6) months following placement, these straw bale containment structures should be inspected daily during placement and until vegetative cover is established to ensure their integrity and that material is not liberated from the marsh platform. Any failures shall be addressed, and sediment escapement shall be documented in project report(s).

13. An inadvertent breach response plan to outline actions to be taken in the event of a breach shall be developed. The plan shall be provided to the Maryland Department of the Environment and approved prior to commencement of any dredged material placement activities authorized by this Certificate.

14. The Certificate Holder shall place dredged material no deeper than 6 inches on the vegetated marsh, to maximize successful recovery of existing tidal marsh vegetation and minimize risk of invasive species colonization. Final elevations shall be no higher than the mean high water line to avoid conversion of tidal marsh to uplands.

15. A detailed plan for monitoring water quality parameters associated with construction of the restoration site shall be submitted to the Maryland Department of the Environment, Tidal Wetlands Division, prior to project commencement. Written approval of the monitoring plan from the Tidal Wetlands Division shall be received prior to project commencement.

16. Dredged material pipelines shall be installed, marked, and maintained in accordance with all U.S. Coast Guard requirements for navigational safety. Dredge material pipelines and associated equipment shall be removed as soon as practicable, upon completion of activities authorized under this Water Quality Certificate.

17. Monitoring of the turbidity in the surface water resulting from any discharge or fill placement shall be conducted. Levels may not exceed 150 Nephelometer Turbidity Units (NTU) at any time or 50 NTU as a monthly average outside the "mixing zone" as established in the monitoring plan. A turbidity curtain shall be deployed in the event that turbidity readings exceed the identified thresholds.

18. A plan for the pipeline route used for transport of dredged material to placement site(s) from barges or from a hydraulic dredging operation shall be developed to show that the pipeline avoids sensitive aquatic habitats, minimizes the potential for inadvertent escape of dredged or fill material, and includes a spill response plan.

19. After any period of pipeline operations, all disturbed areas shall be restored and replanted with the same or similar native vegetation that occupies that elevation. These areas shall be monitored for a period of at least three years to ensure successful establishment of native vegetation.

20. When unloading dredged material, the dredger shall have a person at the discharge point of the DMP in constant radio communication. If a problem is incurred, the placement of dredged material shall be immediately shut down until the reason for the problem can be ascertained and rectified.

21. Monitoring reports shall be submitted annually for five consecutive years. The reports shall include the extent of native marsh plant coverage, elimination of invasive species and timeframe for plant establishment, and include photographs for the first five growing seasons. In order to document the success of the project in terms of the extent of native marsh plant coverage, photographs shall be taken from at least two directions, as necessary to fully depict the wetlands.

22. The Certificate Holder shall develop and submit an Adaptive Management Plan with coordination with interested agencies including MDE, DNR, United States Army Corps of Engineers, Environmental Protection Agency, National Marine Fisheries Service, US Fish and Wildlife Service and other state and federal agencies that request to participate. The Certificate Holder shall implement the Adaptive Management Plan approved by the participating agencies which will identify triggers for corrective action, if necessary, including a Phragmites Control plan. The Adaptive Management Plan shall be submitted and approved by the Water and Science Administration, Tidal Wetlands Division prior to commencement of any work authorized under this Water Quality Certificate.

23. Prior to the initiation of work authorized under this Water Quality Certificate, a SAV Monitoring Plan shall be provided to the Water and Science Administration, Tidal Wetlands Division, to assess the local SAV habitat identified as benefitting from the project and determine the project's effect on SAV acreage and function. The SAV monitoring plan will receive final concurrence from the Maryland Department of the Environment, Tidal Wetlands Division, prior to project commencement. Reference sites outside the potential zone of effects should also be monitored to help differentiate between construction effects and any regional changes that may affect SAV survival. The rolling 5-year composite of aerial data provided by VIMS shall be used to establish presence of SAV within the area.

24. Annual monitoring of the entire project site shall be conducted, and an annual report shall be submitted to the Water and Science Administration, Tidal Wetlands Division during construction and for a period of 5 years after completion of the project in accordance with the approved SAV Monitoring Plan to determine if there are SAV losses or degradation of SAV resulting from the restoration project which require adaptive management. If it is determined that any component of the project adversely affects SAV habitat, adaptive management shall be implemented in accordance with the Adaptive Management Plans approved by the Water and Science Administration, Tidal Wetlands Division.

25. Coordination shall be conducted with the Water and Science Administration, Tidal Wetlands Division, to identify potential dredging projects as a source of thin layer placement material.

CITATIONS AND STATEMENTS OF NECESSITY

1) General Authorities; Need for Other Permits and Authorizations

a. General Conditions 1,2; Special Condition 2

Statement of Necessity for Condition: The condition is necessary to ensure that water quality standards are met under unique circumstances for discharges which may otherwise qualify under the certified Nationwide Permits and to maintain designated uses of waters.

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10G(3); COMAR 26.23.02.06; COMAR 26.17.01; COMAR 26.23. COMAR 26.24

b. General Condition 3

Statement of Necessity for Condition: The condition is necessary to ensure that water quality standards are met under unique circumstances for discharges which may otherwise qualify under the terms of the federal authorization and to maintain designated uses of waters.

Citation: COMAR 26.08.02.01E(2)

c. General Condition 5

Statement of Necessity for Condition: The condition is necessary to clarify the scope of this certification to ensure compliance with water quality regulations, without limiting restrictions through other requirements.

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.23.02.06; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

d. General Condition 10

Statement of Necessity for Condition: This condition is necessary to qualify the period of applicability of the terms and conditions of this Certification to be protective of Maryland water quality standards.

Citations: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; 40 C.F.R. 121, 15 C.F.R. 930, Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env.

Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.23.02.06; COMAR 26.24

2) Unauthorized or Inadvertent Discharges - General Conditions 4, 7- 9; Special Conditions 11, 13, 18

Statement of Necessity for Condition: Fill or construction material within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards. Unauthorized discharges may enter regulated waters as result of activity or structural failure. A plan to address inadvertent discharges will prevent or address further violations of water quality standards and failure of water to meet designated uses., including uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

Citation COMAR 26.08.02.02B(1)d; COMAR 26.08.02.02B(3); COMAR 26.08.02.03B(1) and B(2); 26.08.02.01B(2); 26.08.02.02B(1); COMAR 26.08.02.03B(1)-B(2); COMAR 26.23; COMAR 26.24; COMAR 26.17.04

3) Inspections and Compliance - General Condition 6; Special Condition 20

Statement of Necessity for Condition: Conditions of certification involve precise actions to comply with water quality standards. Site inspection may be necessary to ensure that limits, methods, and other requirements are met to ensure that water quality standards are met, and designated uses are maintained. These conditions are necessary to ensure that the activity was conducted, and project completed according to terms of the authorization/certification, while allowing for review of in-field modifications which may have resulted in discharges to ensure that water quality standards were met. Designated uses include support of estuarine and marine aquatic life and shellfish harvesting and for growth and propagation of fish, other aquatic life, and wildlife

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. §1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03B(1)(b); COMAR 26.08.02.03B(2); COMAR 26.23.02.06; COMAR 26.23; COMAR 26.24; COMAR 26.17.04

4) Erosion and Sediment Control – General Conditions 1, 2, 7, Special Condition 9

Statement of Necessity for Condition: Erosion and sediment control plans are necessary to ensure that sediment discharges from construction activities will not enter waters of the United States. Sediment discharges from earth disturbance or discharges at erosive rates within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance

Citation: Env. Article, Title 4, Subtitle 1 COMAR 26.17.01; 26.08.02.03B(1)-B(2)

5) Performance Standards for Water Quality - Special Condition 1, 25

Statement of Necessity for Condition: This condition is necessary to ensure that discharges will be conducted in a manner which does not violate water quality criteria nor interfere with designated uses.

Citation: COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2);

6) Licensed Marine Contractor - Special Condition 3

Statement of Necessity: Expertise for conducting certain activities is required to ensure that there is no violation of water quality standards nor interference with designated uses.
This condition is necessary to ensure that discharges will be conducted in a manner which does not violate water quality criteria nor interfere with designated uses.

Citation: COMAR 26.08.02.02B(2)- B(4); COMAR 26.08 02.03B(2)(d) – (e); COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2); COMAR 23.02.04.04

7) Submerged Aquatic Vegetation – Special Condition 4

Statement of Necessity: SAV are a critical habitat for many aquatic species. Limitations on loss will sustain habitat for a variety of aquatic species, including anadromous fish and threatened or endangered species. Water quality regulations state minimum thresholds for SAV in tidal waterways. In addition to direct loss, turbidity created by construction or ongoing operation must be limited for support of aquatic life and meet water quality standards. Unmitigated loss of SAV may result in failure to meet SAV extents which are part of water quality standards, as well as designated use class for support of estuarine and marine aquatic life and shellfish harvesting.

Citations: COMAR 26.08.02.03-3C(9); COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2)

8) Waterfowl Staging – Special Condition 5

A time of year restriction is necessary to allow for wintering waterfowl to move from breeding areas to seasonally use suitable winter habitat. Breeding and wintering habitat are both essential to support waterfowl populations. Breeding habitat would not sustain waterfowl during winter. Disturbance during the closure period would interfere directly or indirectly with designated uses.

Citations: COMAR 26.08.02.02.B(3); COMAR 26.08.02.02.B(1)(d); COMAR 26.08.02.03.B(1)(b); COMAR 26.08.02.03.B(2)(e); COMAR 26.24

9) Restriction for Conducting Activities – Special Condition 6

Statement of Necessity for Condition: The time of year restriction is necessary to maintain the designated use- support of estuarine and marine aquatic life and shellfish harvesting.

Citation: COMAR: 26.08.02.02B(1)(d); 26.08.02.02B(3); COMAR 26.08.02.02-1

10) Nuisance and Non-Native Species; SAV, Fish passage; Protection of Oyster Bars and Shellfish Leases – Special Condition 7

Statement of Necessity for Condition: Nuisance or non-native species may spread and disrupt and dislodge native species from their habitat, leading to declines in distribution, density, growth and propagation. SAV are a critical habitat for many aquatic species. Limitations on loss will sustain habitat for a variety of aquatic species, including anadromous fish and threatened or endangered species. Water quality regulations state minimum thresholds for SAV in tidal waterways. In addition to direct loss, turbidity created by construction or ongoing operation must be limited for support of aquatic life and meet water quality standards.

Oyster bar creation supports/expands designated use for growth and propagation of oyster bars in Support of designated uses for growth and propagation of fish, other aquatic life, and wildlife and the designated use for support of estuarine and marine aquatic life and shellfish harvesting.

The conditions are necessary to allow for continued oyster harvesting and propagation; and maintain and not interfere the designated use- support of estuarine and marine aquatic life and shellfish harvesting.

The conditions ensure that discharges will not result in failure to support designated uses for marine and estuarine aquatic life and submerged aquatic vegetation; and growth, propagation of fish, other aquatic life, and wildlife, and shellfish harvesting.

Citation: COMAR 26.08.02.02-1; COMAR 26.08.02.02B(1)(d); COMAR 26.08.02.03B; COMAR 26.08.02.03-3C; COMAR 26.08.02.02B(2)-B(4); COMAR 26.08 02.03B(2)(d) – (e); COMAR 26.08.02.03-3C; COMAR 26.08.02.02-1

11) Marsh Establishment, Maintenance, and Mitigation - Special Conditions 8, 9, 14, 19

Statement of Necessity for Condition: Tidal wetlands provide essential habitat, water quality, food, and movement corridors for wildlife, and support of estuarine and marine aquatic life and shellfish harvesting. Successful establishment is necessary to prevent discharges which interfere with designated uses, including growth and propagation of fish, other aquatic life, and wildlife through loss of stream channel habitat and wetlands. Required establishment, re-establishment, or enhancement and loss limits will maintain the designated use.

Citations: COMAR 26.08.02.02B(3); COMAR 26.08.02.03B(3) and B(4); COMAR 26.24.

12) Monitoring - Special Conditions 10,12,15,17, 19, 21-24

Statement of Necessity: Activities which result or may result in a discharge to regulated waters, including replacement of wetland/water resources as an offset/mitigation may require monitoring to ensure that water quality standards are met, and designated uses are maintained, and to determine if remedial measures are needed to restore compliance with water quality standards if they are not met as a result of the discharge. The condition is necessary to ensure that dredged material does not increase turbidity in violation of general and numeric water quality standards and interfere with designated uses and to ensure that offsets to regulated waters are successfully implemented.

Citation: COMAR 26.08.02.03-3A(5); COMAR 26.08.02.03-3(C(5); COMAR 26.08.02.01B(2); COMAR 26.08.02.02B(1) COMAR 26.08.02.02B(3); COMAR 26.08.02.03B; COMAR 26.08.02.02B(1); 26.08.02.03B(1)(b); 26.08.02.03B(2)(e); 26.08.02; 26.08.01.02A; 26.08.02.09A;

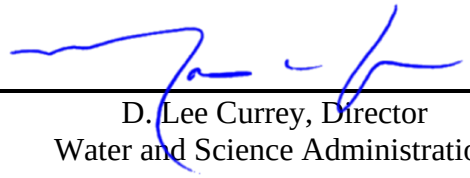
26.08.02.02B(1)(d); COMAR 26.24; 26.08.02.03-3C(9)(a); COMAR 26.08.02.03B(2); COMAR 26.08.02.02B(1)(d)

13) Navigational Safety - Special Condition 16

Statement of Necessity for Condition: The condition is necessary to ensure that the discharge does not interfere with designated uses for water contact recreation and fishing nor create a nuisance.

Citation: COMAR 26.08.02.01B(1) and B(2); COMAR 26.08.02.03B(1)(a); COMAR 26.08.02.03B(2)(d)

CERTIFICATION APPROVED



11/30/2022

D. Lee Currey, Director
Water and Science Administration

Date

Tracking Number: 202260549
Agency Interest Number: 97703

Effective Date: November 29, 2022

Enclosure: Plan Sheets dated November 1, 2022

cc: WSA Inspection & Compliance Program
Army Corps of Engineers

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

VICINITY MAP

SHEET 1 OF 73

N W E S

0 800' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM

NOTES:

1. EXISTING TOPOGRAPHY IS BASED ON A FIELD RUN TOPOGRAPHIC AND BATHYMETRIC SURVEY PERFORMED BY SUSTAINABLE SCIENCE, LLC IN AUGUST AND SEPTEMBER OF 2020.
   1.1. SURVEY PERFORMED IN NAD83 MD STATE PLANE HORIZONTAL AND NAVD88 VERTICAL DATUMS
   1.2. SURVEY ADJUSTED BY -0.084' TO ASSIGN MEAN LOW WATER TO 0.0'.
2. TOTAL LIMIT OF DISTURBANCE (LOD): 25.30 ACRES
   2.1. PORTION OF LOD BELOW MEAN LOW WATER: 12.32 ACRES
   2.2. PORTION OF LOD BETWEEN MEAN LOW WATER AND MEAN HIGH WATER: 9.64 ACRES
   2.3. PORTION OF LOD ABOVE MEAN HIGH WATER: 3.34 ACRES
3. TOTAL MATERIAL REQUIRED FOR PROPOSED DESIGN: 17,872 CY
   3.1. SAND / COBBLE BEACH MIX PORTION: 11,185 CY
   3.2. BREAKWATER & OYSTER REEF STONE: 6,687 CY

LEGEND

- LOD — LOD — LIMIT OF DISTURBANCE
- MLW — MLW — MEAN LOW WATER
- MHW — MHW — MEAN HIGH WATER
- EXISTING ROAD
- EXISTING MARSH
- 64 — EXISTING MINOR CONTOUR
- 65 — EXISTING MAJOR CONTOUR
- 59 — PROPOSED MAJOR CONTOUR
- **60** — PROPOSED MAJOR CONTOUR
- MARSH THIN LAYERING AND DUNE CREATION
- THIN LAYERING MARSH CREATION
- PROPOSED BREAKWATER
- PROPOSED NAVIGATIONAL HAZARD SIGN
- PROPOSED SAND AND COBBLE BEACH MIX
- 2016 - 2020 SUBMERGED AQUATIC VEGETATION (SAV) COMPOSITE MAP

22-WQC-0009 and 21-WL-0034
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AI-97703
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Datum	Value (ft.)	Description
MHHW	1.27	Mean Higher-High Water
MHW	1.02	Mean High Water
MTL	0.51	Mean Tide Level
MSL	0.53	Mean Sea Level
DTL	0.53	Mean Diurnal Tide Level
MLW	0.00	Mean Low Water
MLLW	-0.21	Mean Lower-Low Water

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

LEGEND & NOTES
SHEET 2 OF 73

N W E S
0 50' Feet

CHES BAY ENV CENTER
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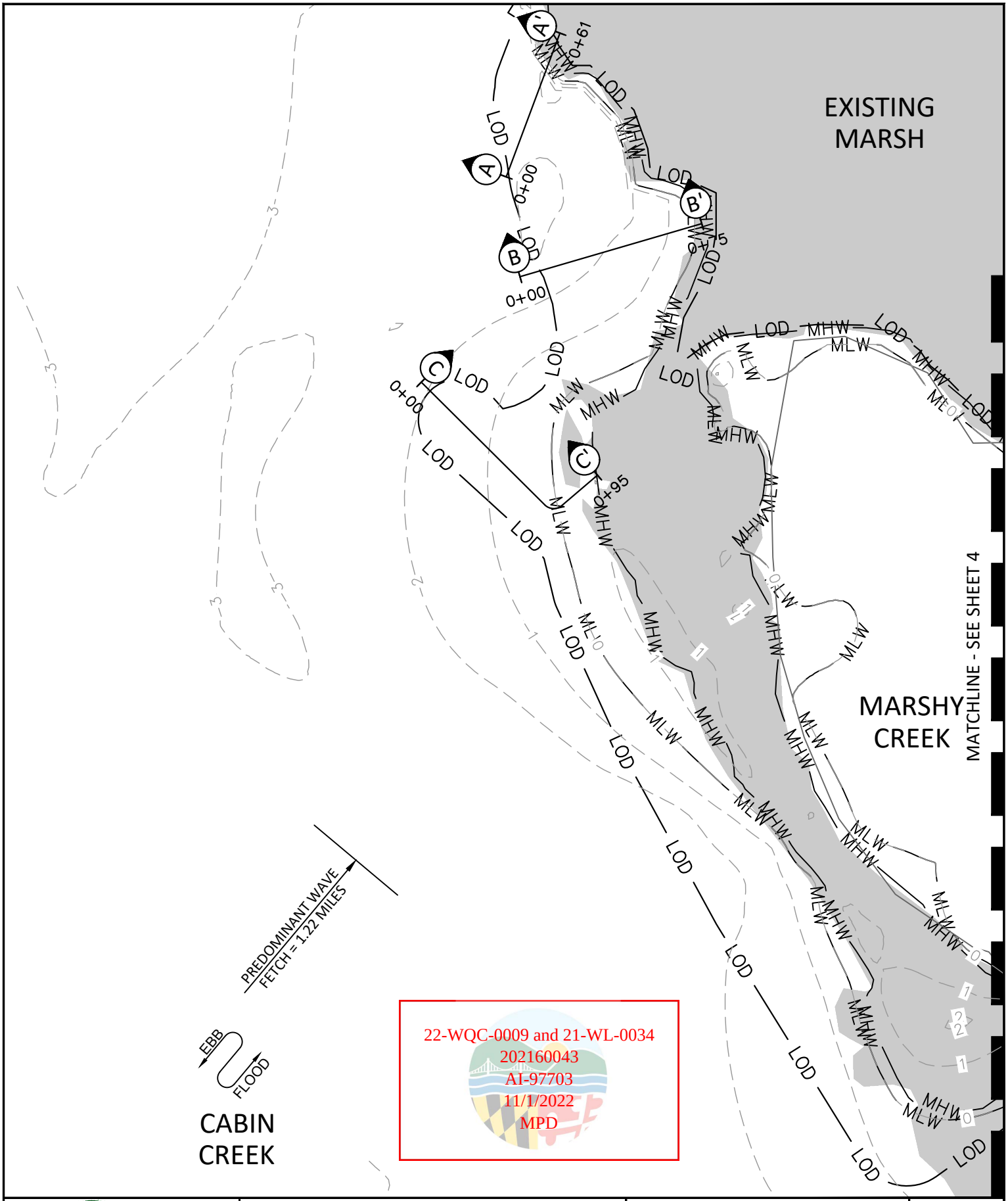

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 3 OF 73

N W E S

0 50' Feet

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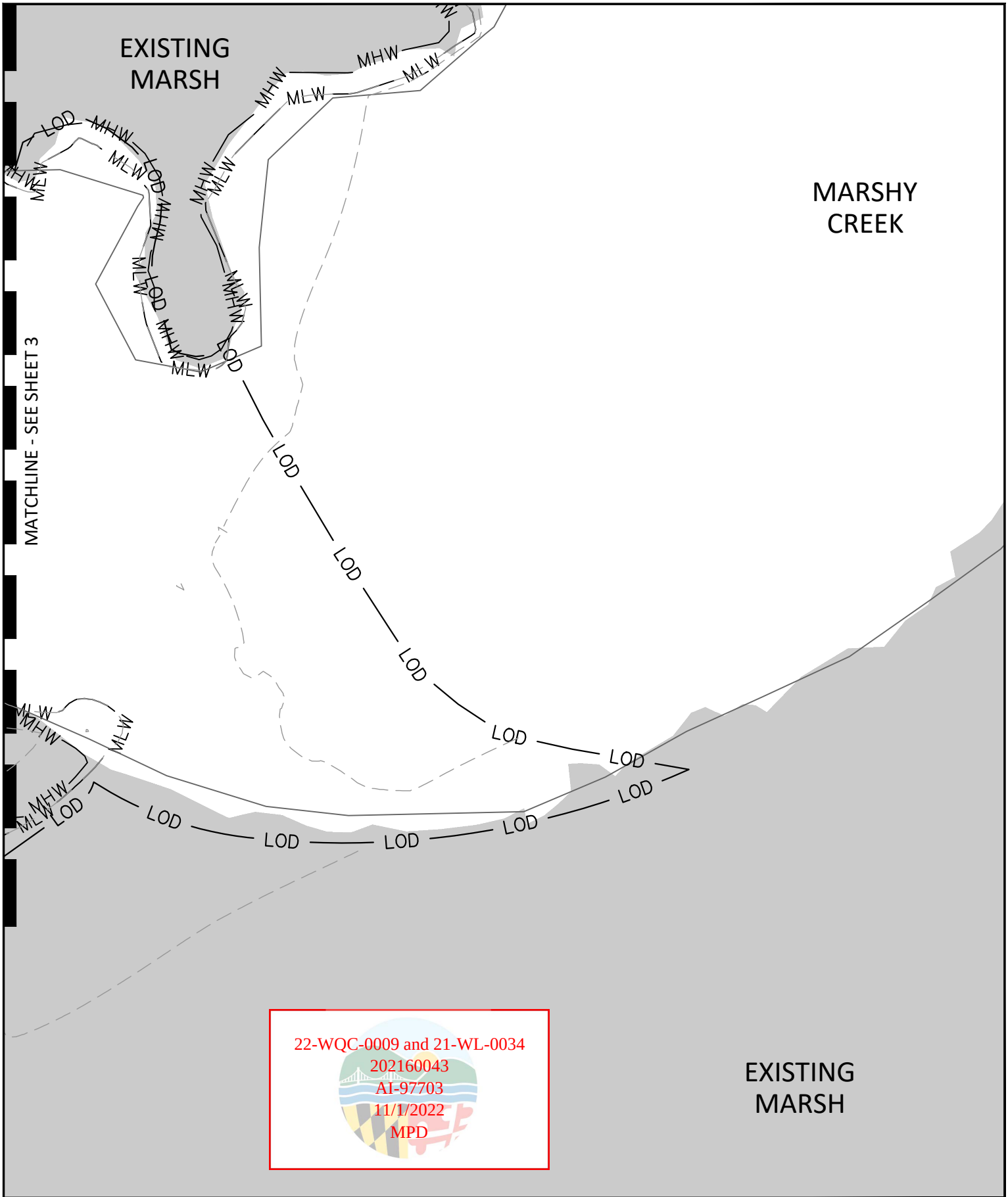

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
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EXISTING CONDITIONS

SHEET 4 OF 73

N W E S

0 50' Feet

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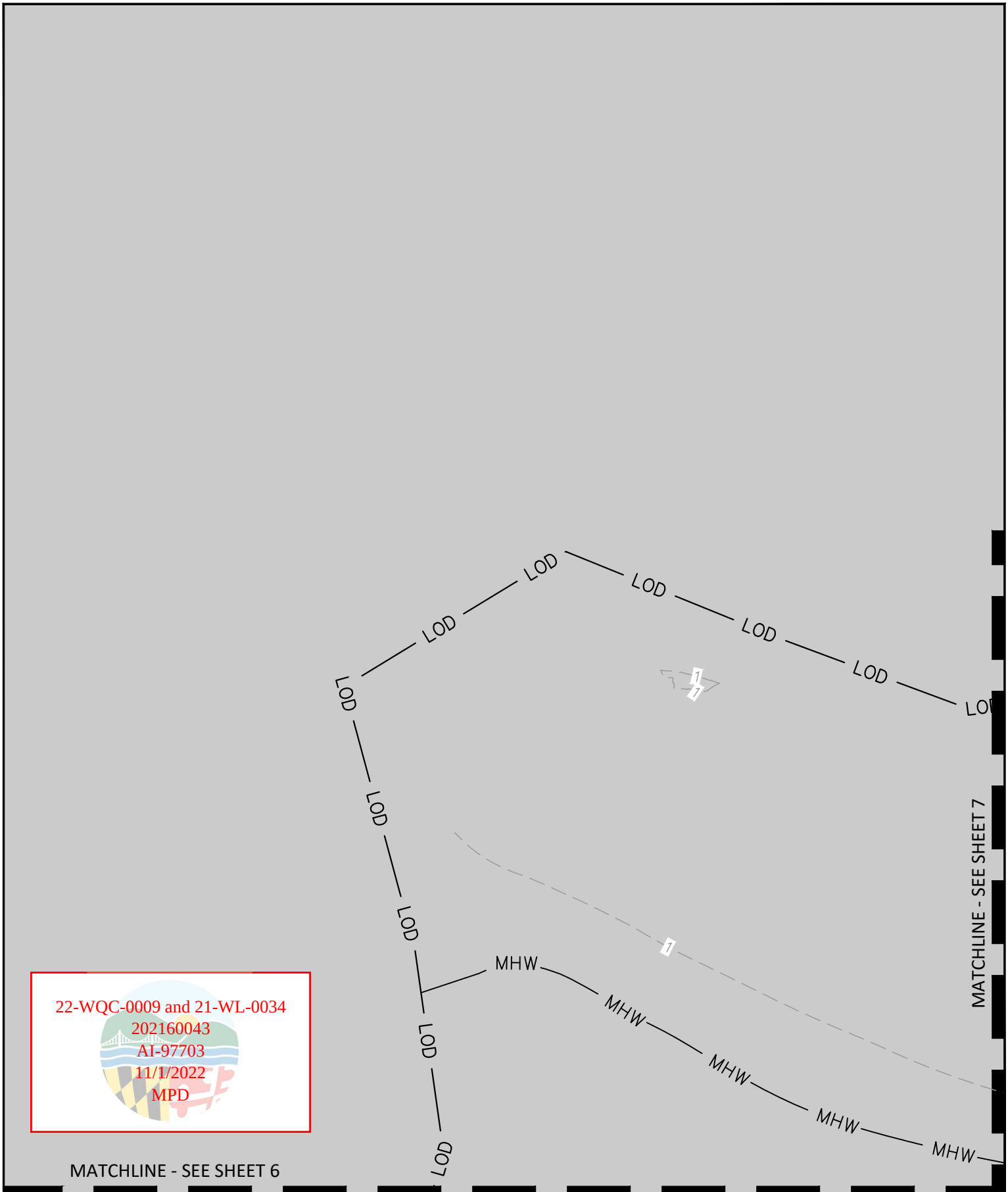

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11/1/2022
MPD

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ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 5 OF 73

N W E S

0 50' Feet

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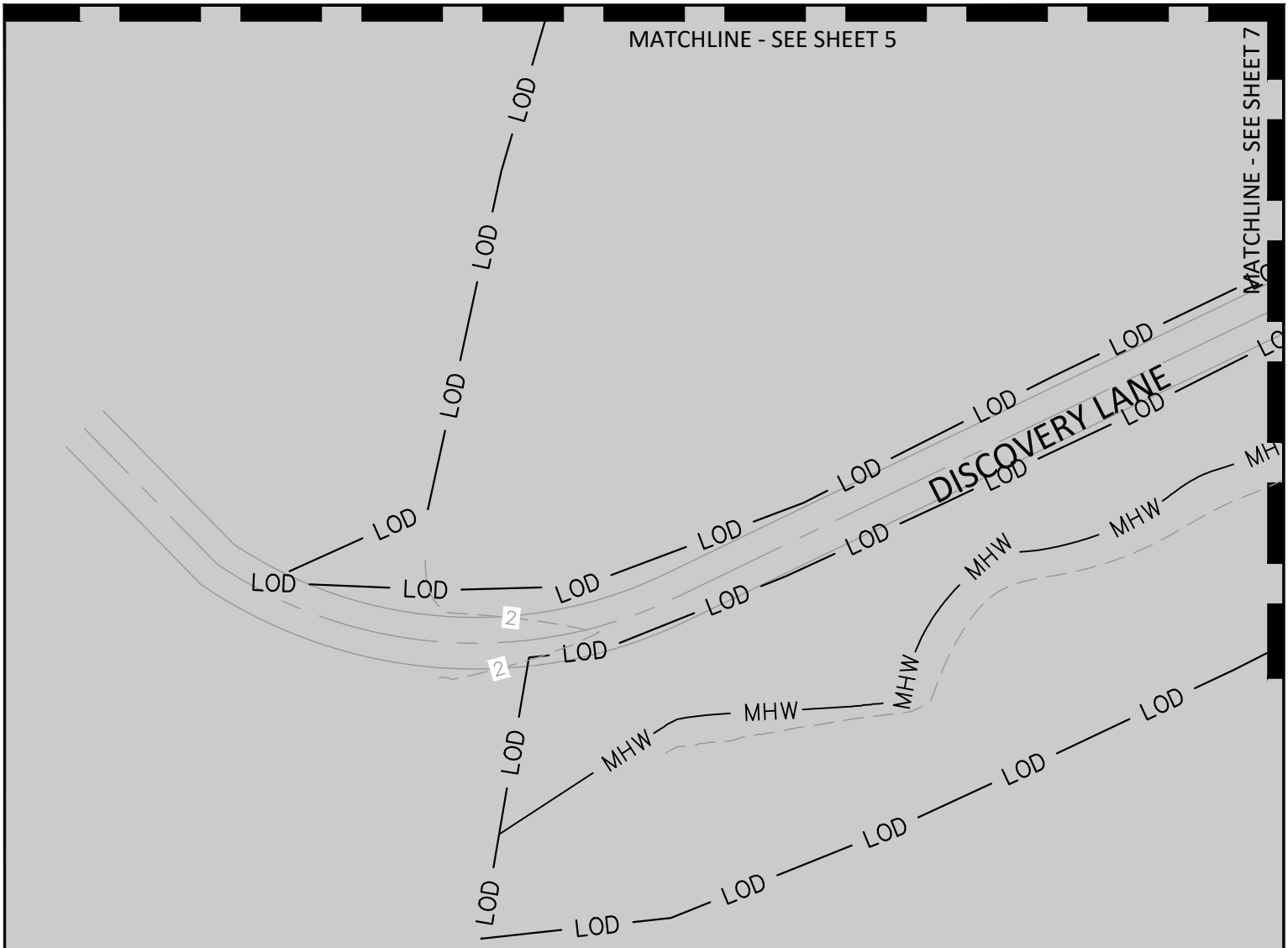

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EXISTING CONDITIONS

SHEET 6 OF 73

N W E S

0 50' Feet

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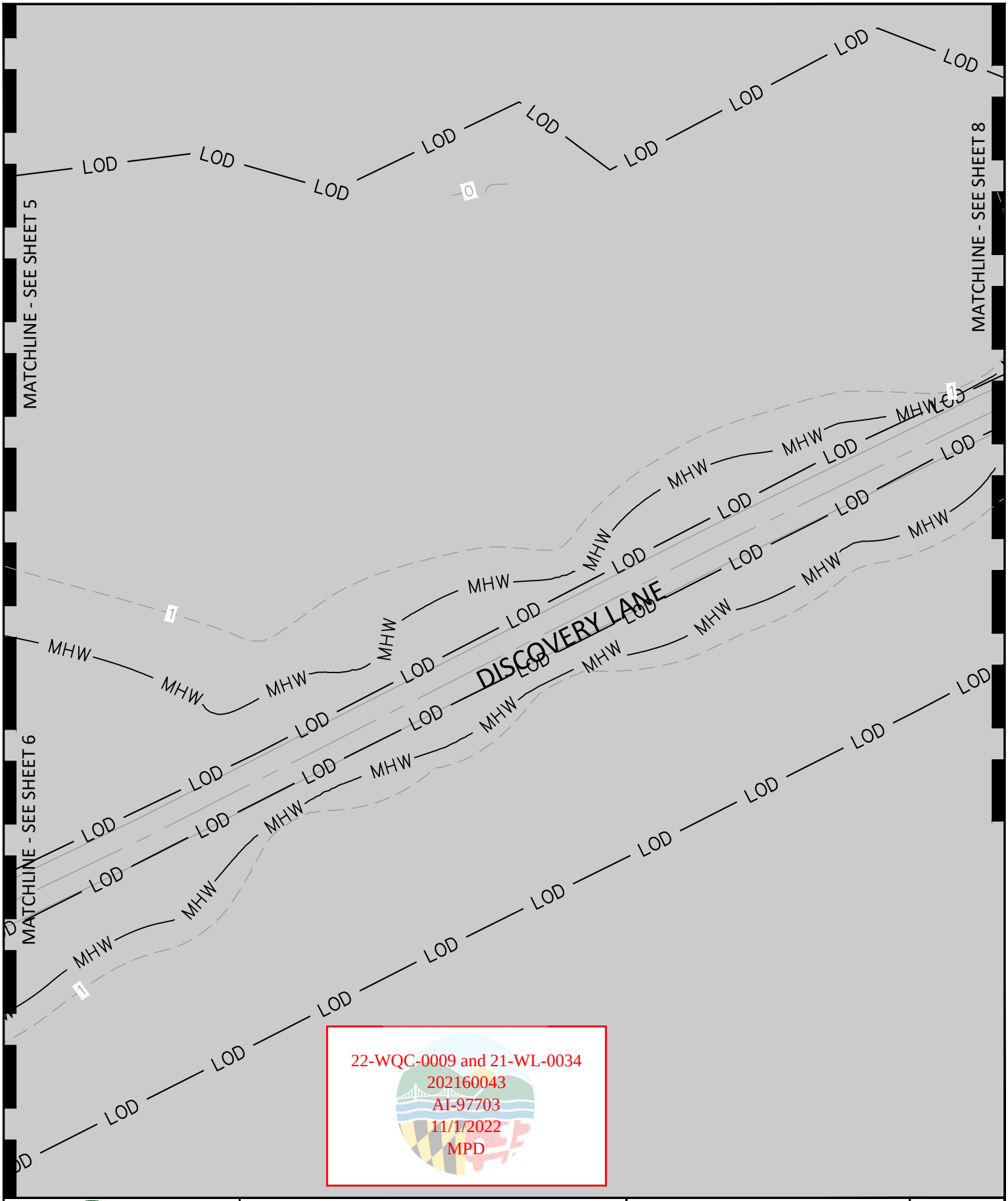

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EXISTING CONDITIONS

SHEET 7 OF 73

N W E S

0 50' Feet

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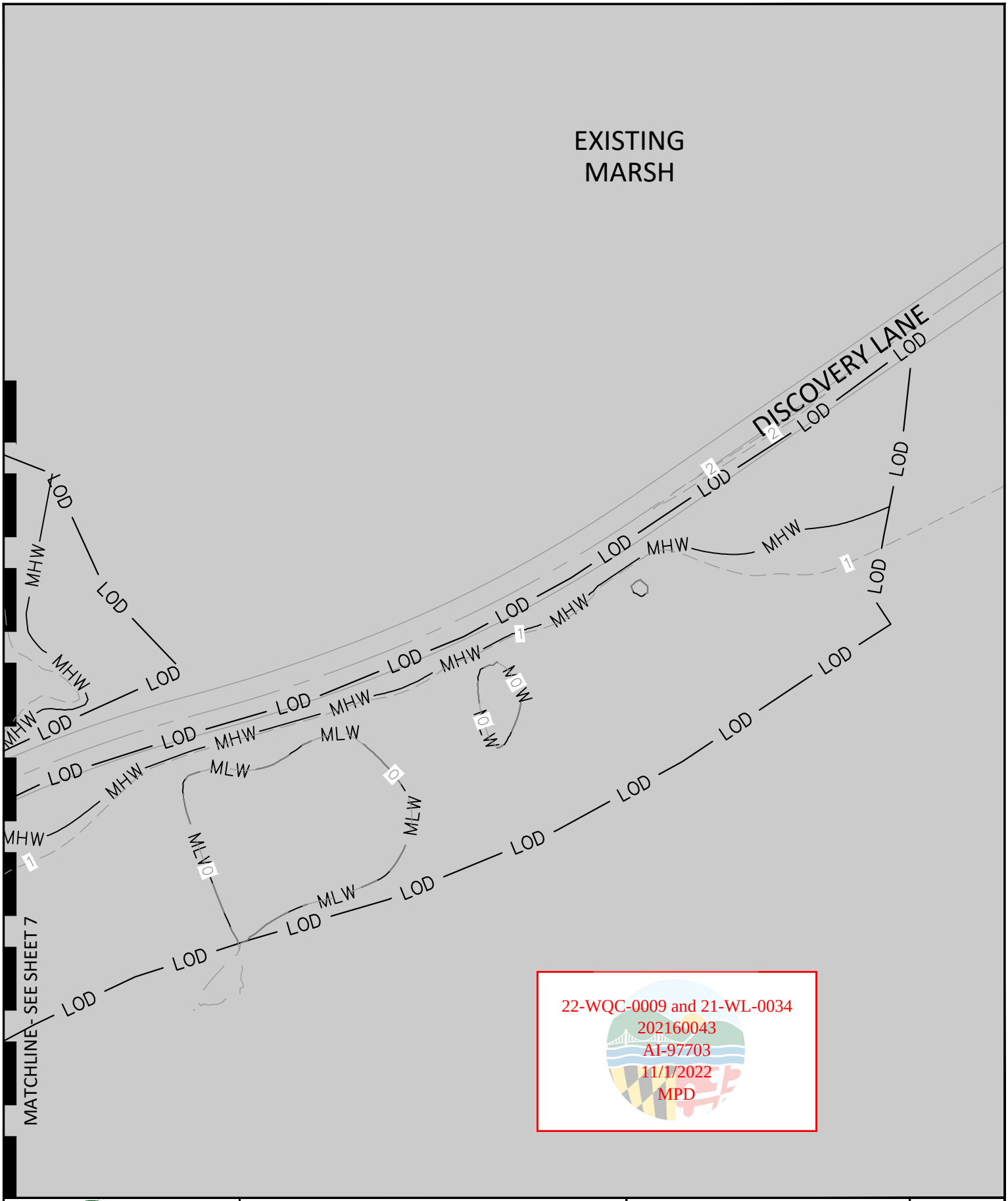

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EXISTING CONDITIONS

SHEET 8 OF 73

N W E S

0 50' Feet

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EXISTING CONDITIONS

SHEET 9 OF 73

N W E S

0 50' Feet

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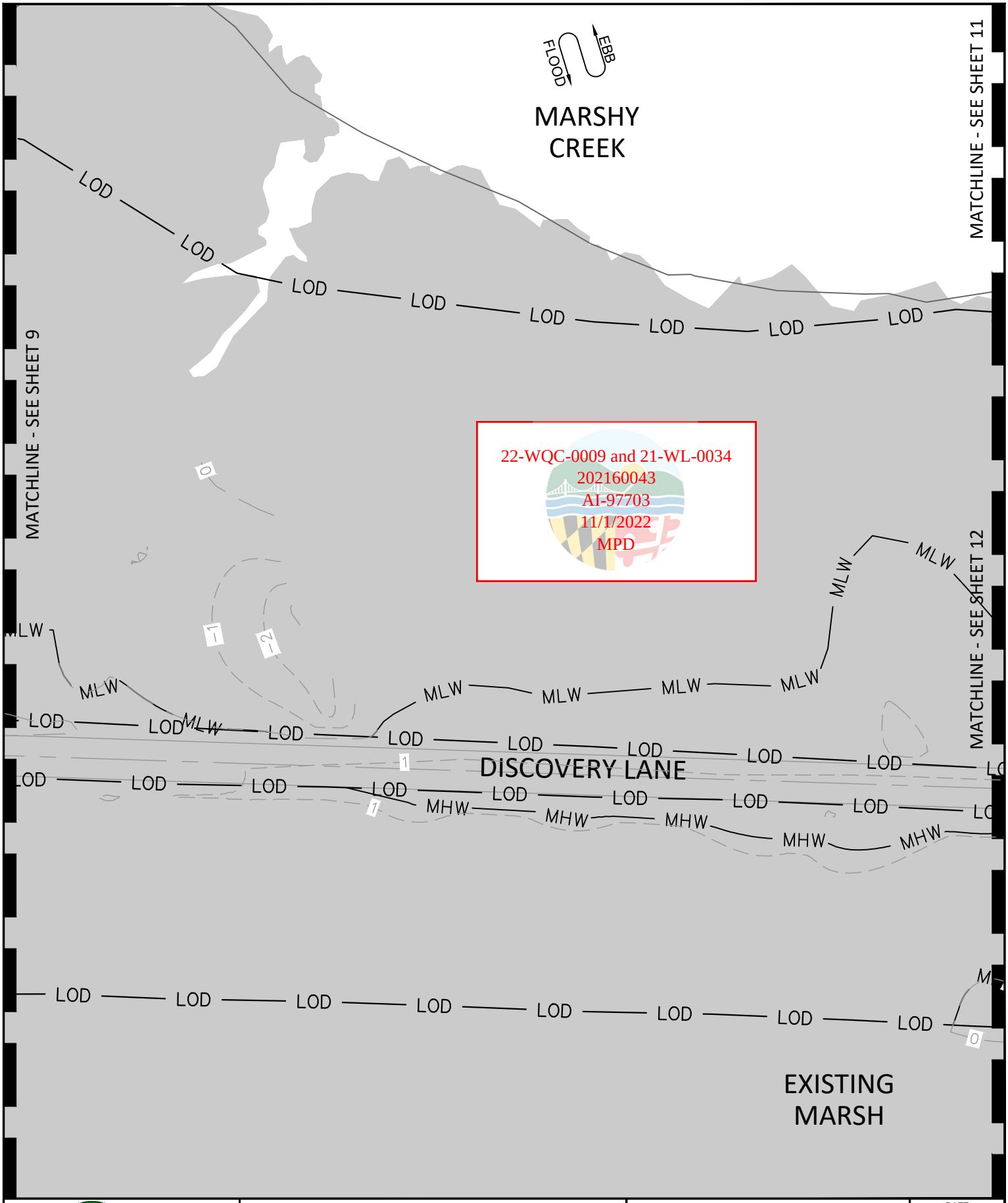

SUSTAINABLE SCIENCE, LLC
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410 S. SECOND STREET
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EXISTING CONDITIONS

SHEET 10 OF 73

N S W E

0 50' Feet

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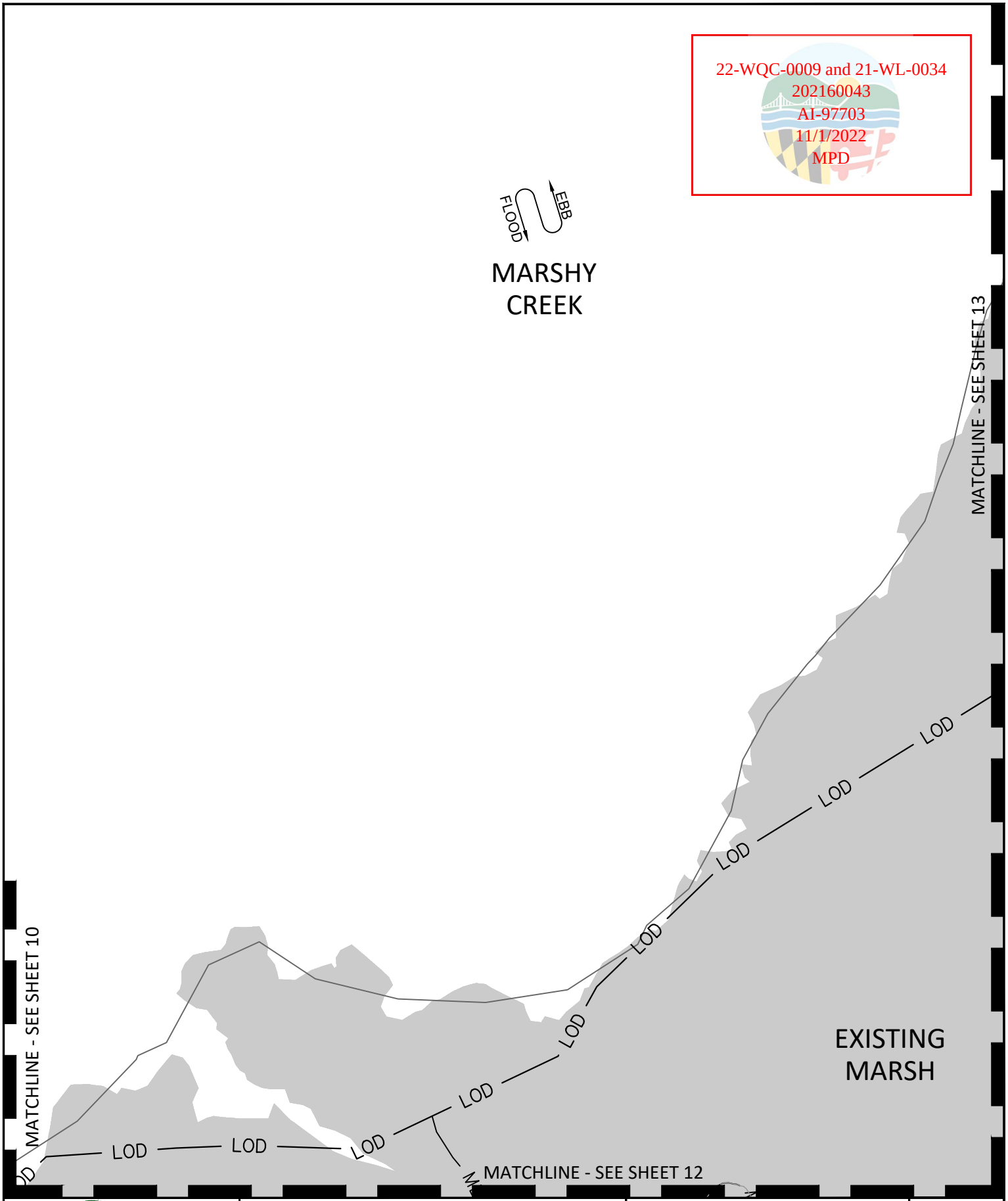

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ENGINEERING SERVICES
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EXISTING CONDITIONS

SHEET 11 OF 73

N W E S

0 50' Feet

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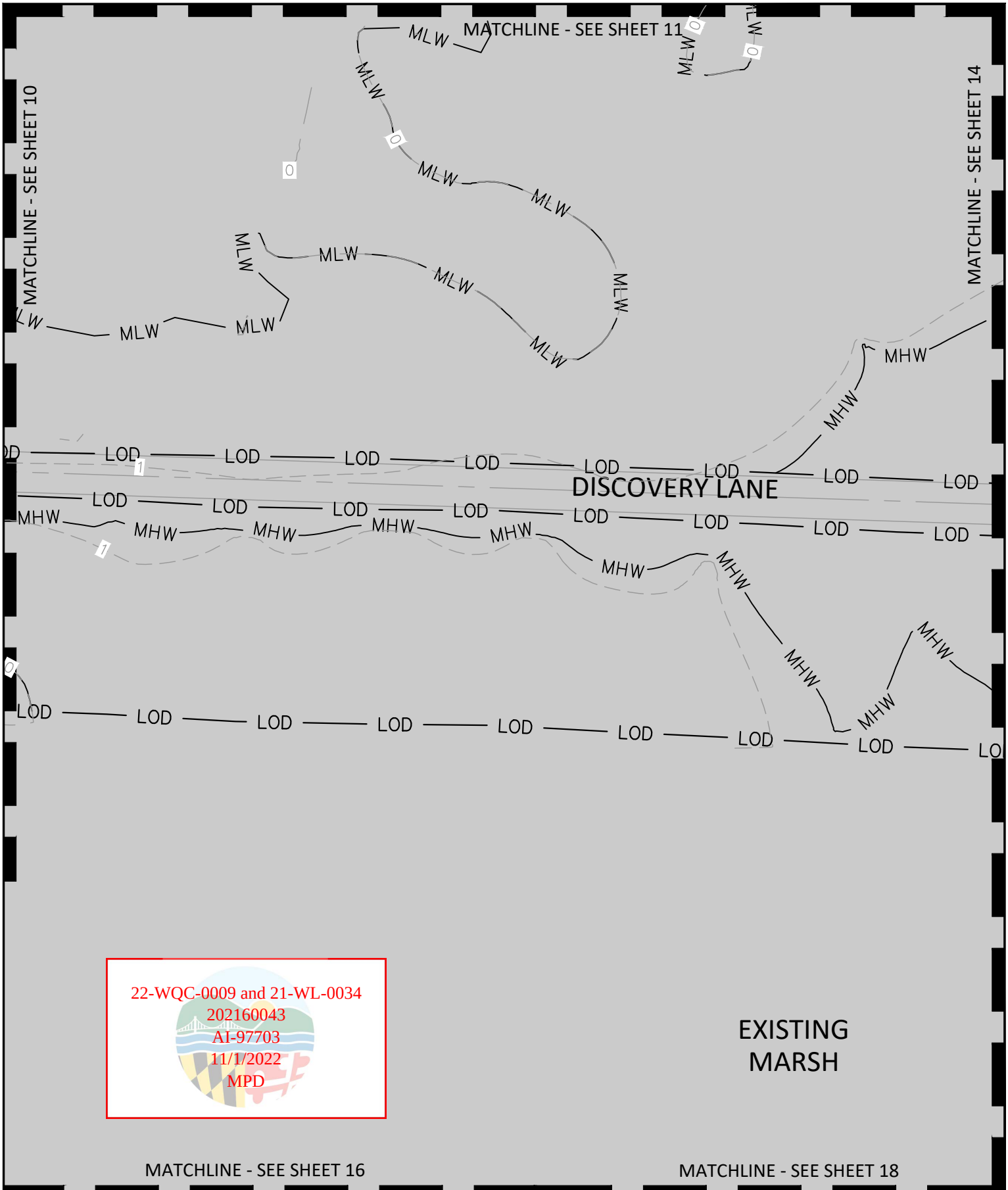

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EXISTING CONDITIONS

SHEET 12 OF 73

N W E S

0 50' Feet

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EXISTING CONDITIONS

SHEET 13 OF 73

N W E S

0 50' Feet

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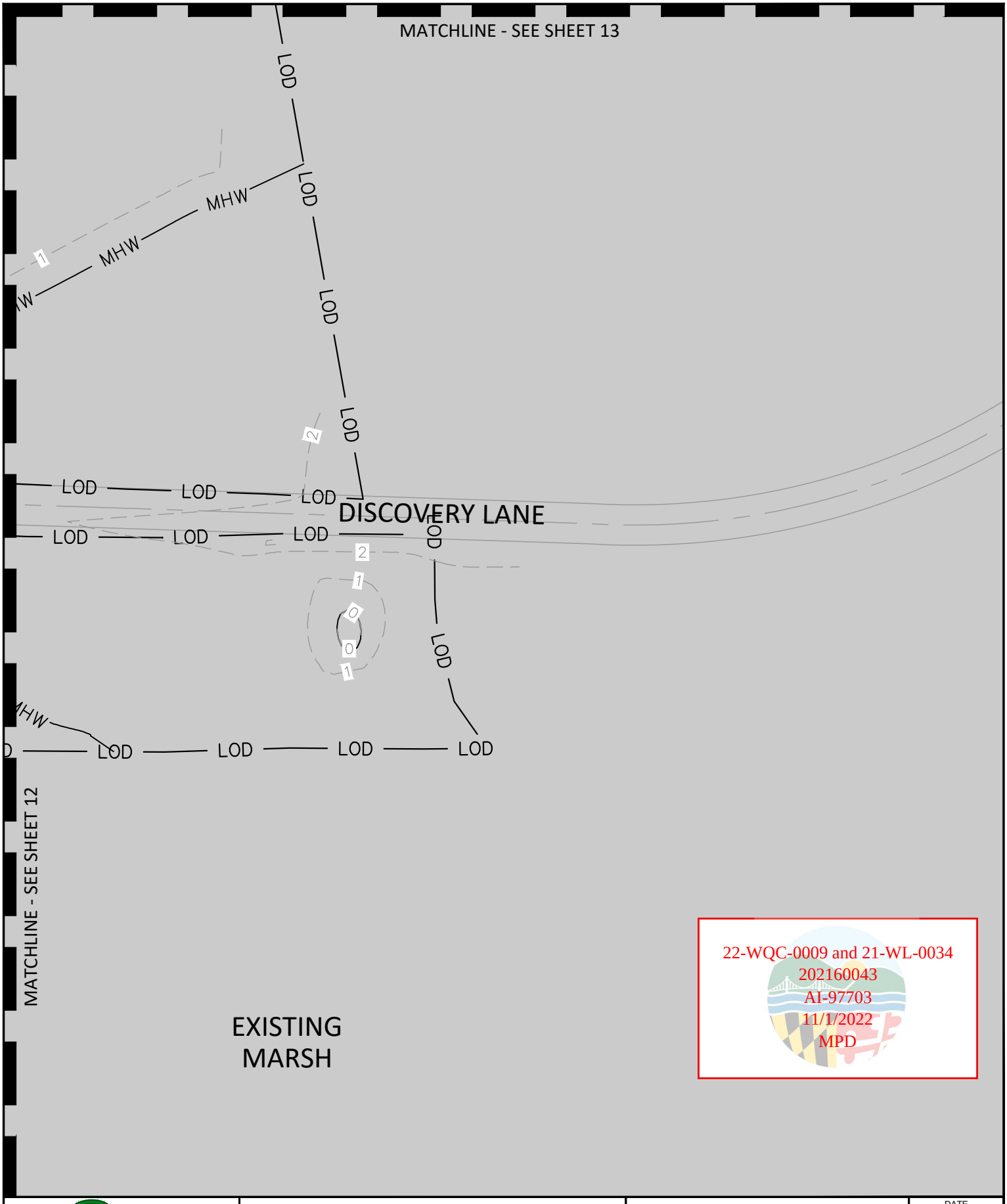

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EXISTING CONDITIONS

SHEET 14 OF 73

0 50' Feet

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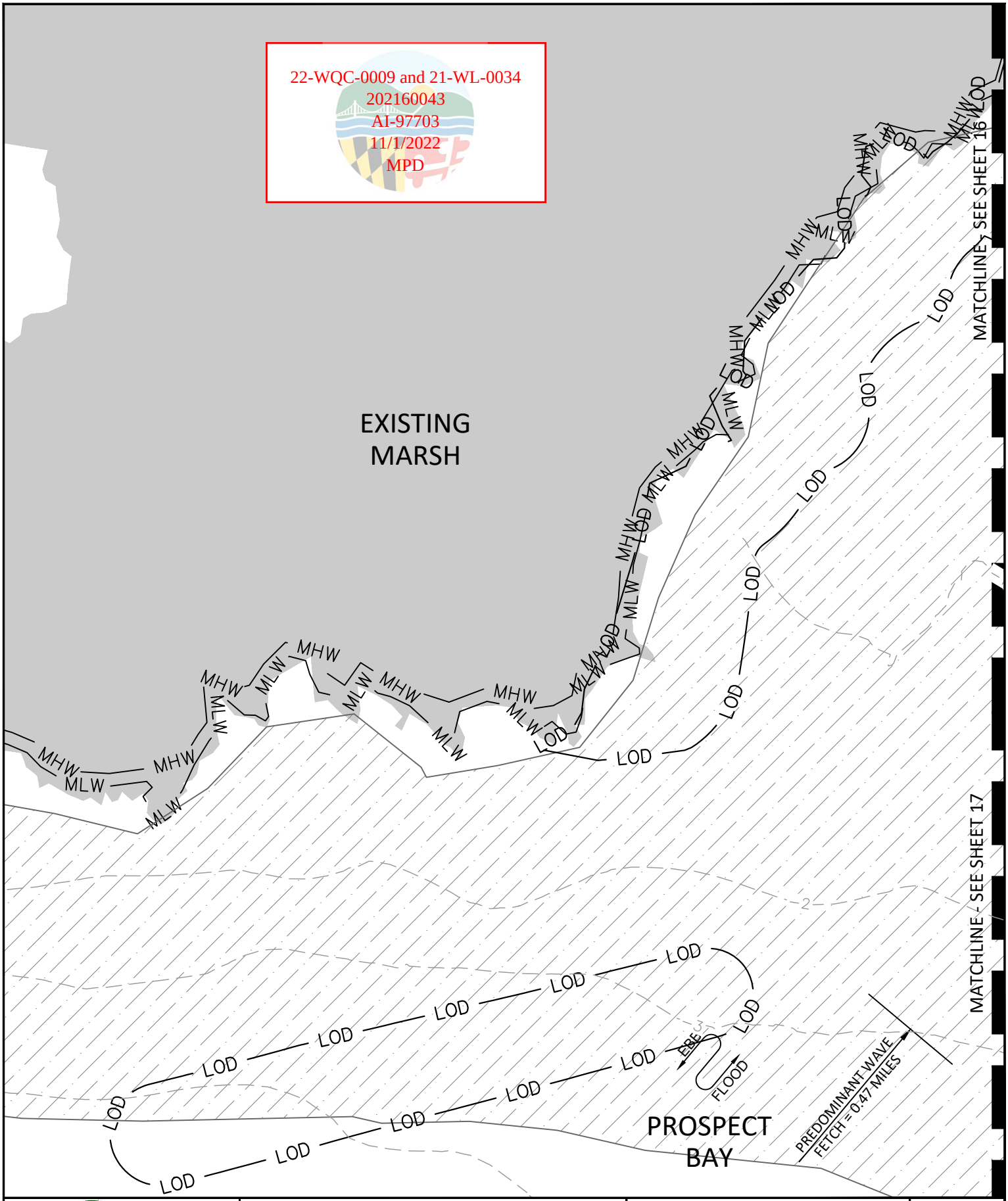

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
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EXISTING CONDITIONS

SHEET 15 OF 73

N W E S

0 50' Feet

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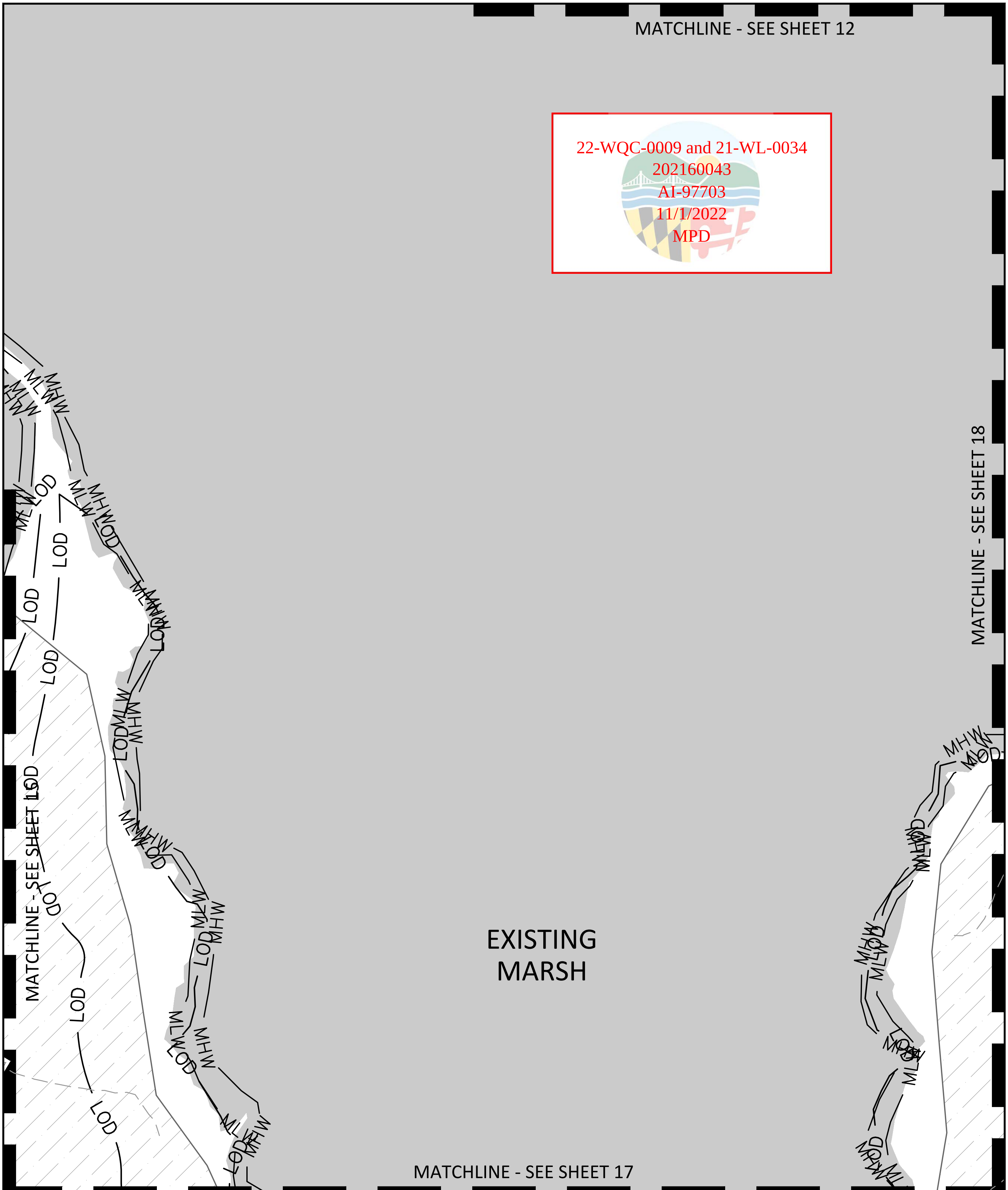

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 16 OF 73

N E S W

0 50' Feet

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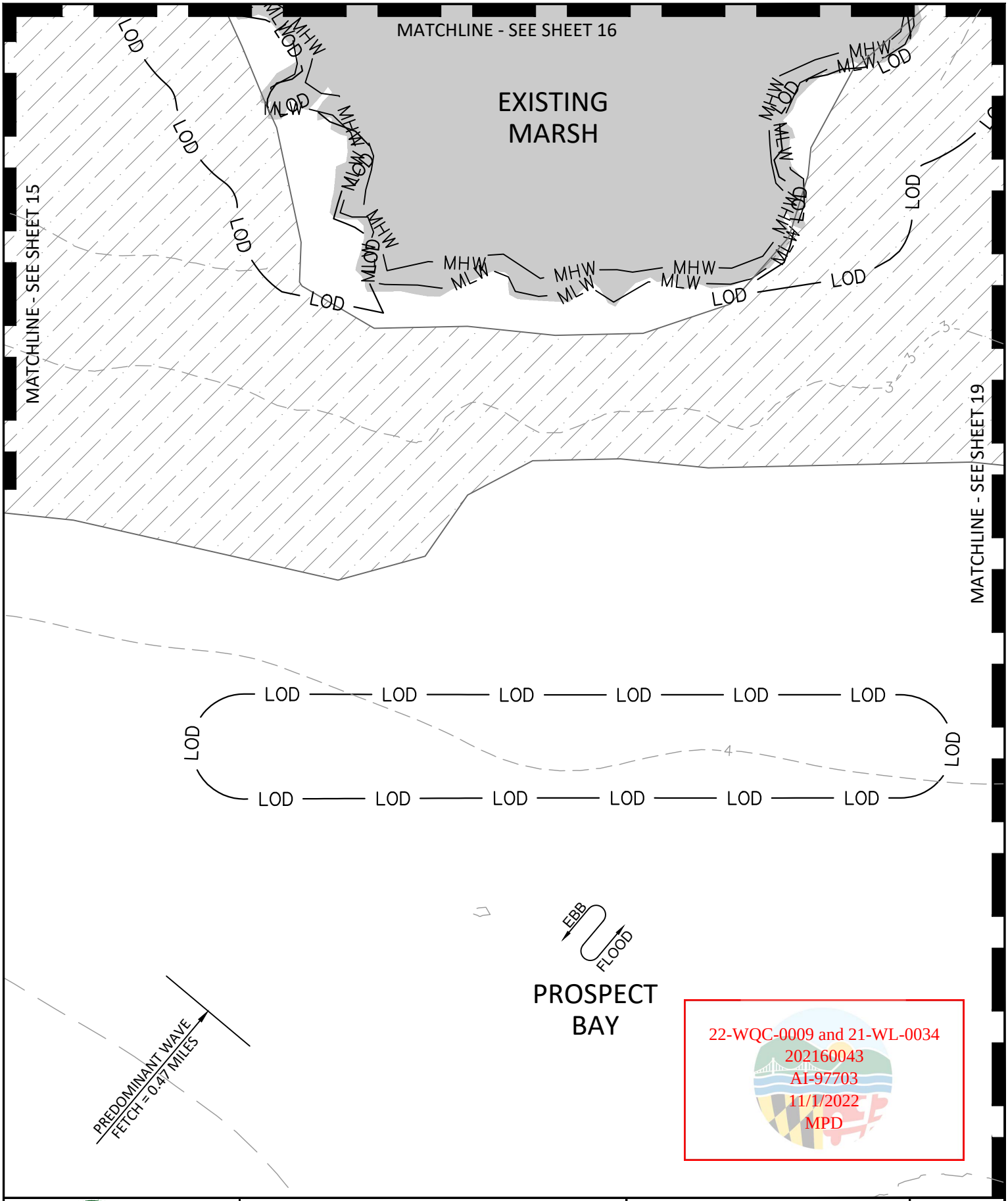

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EXISTING CONDITIONS

SHEET 17 OF 73

N W E S

0 50' Feet

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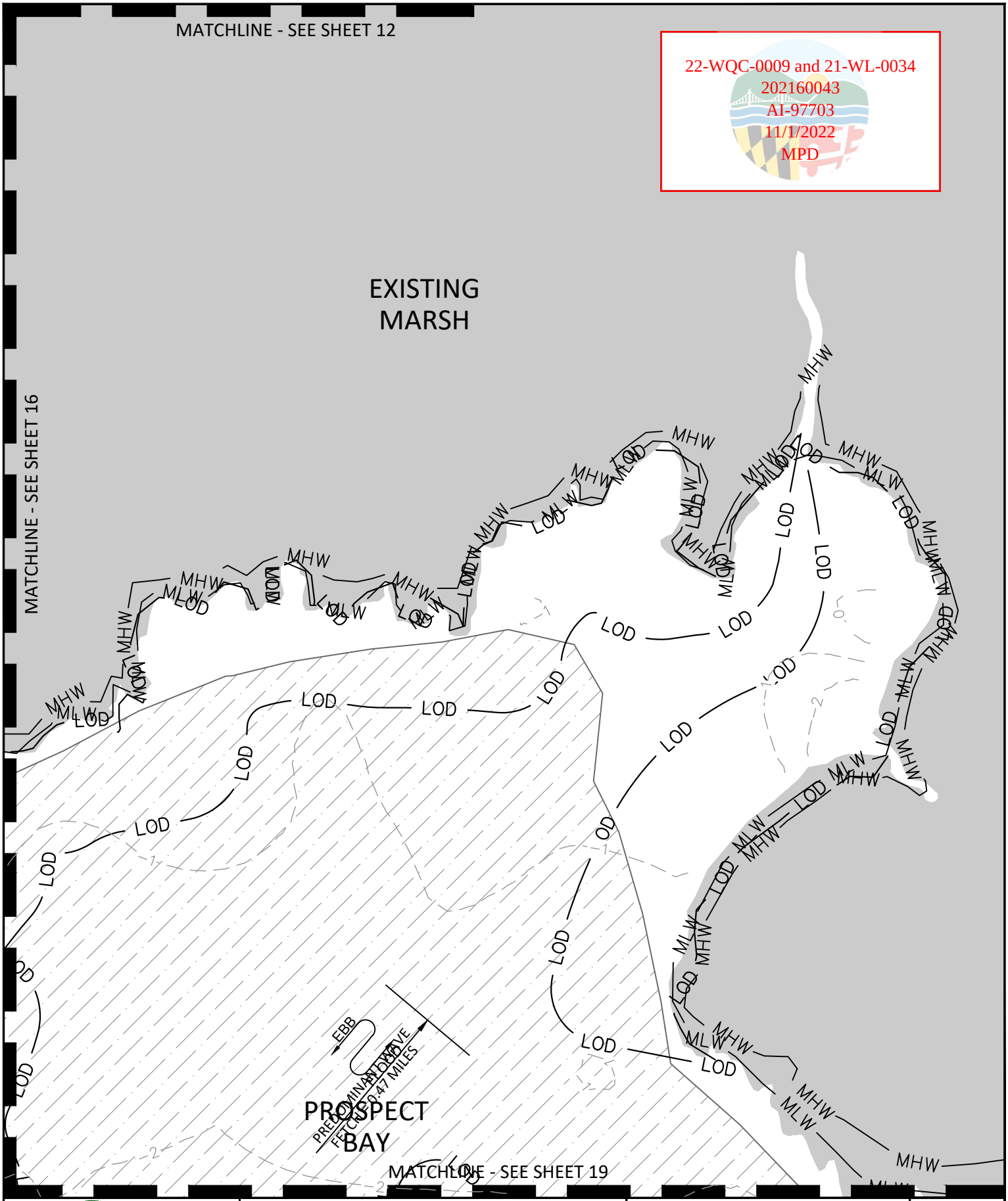

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DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 18 OF 73

N W E S

0 50' Feet

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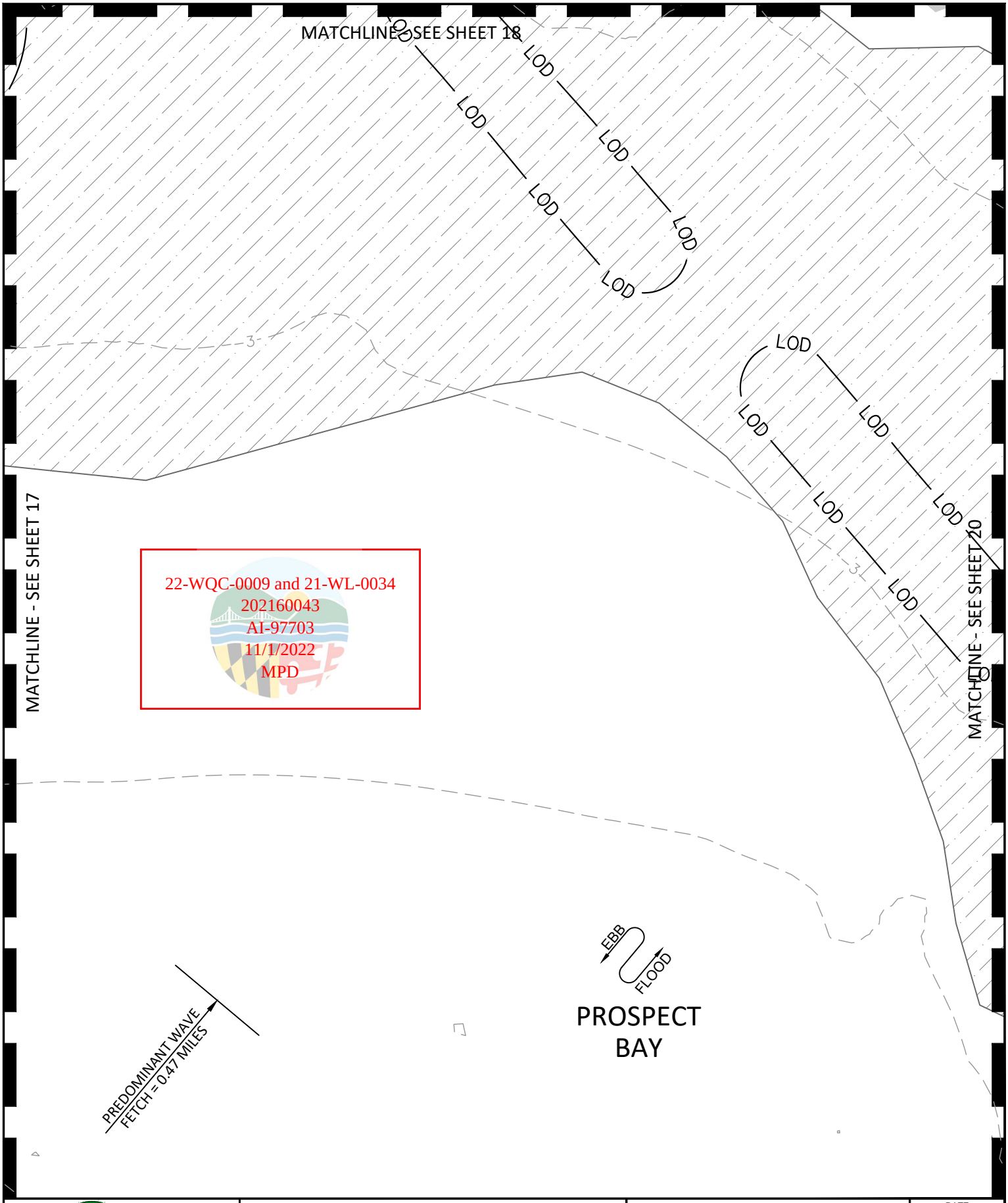

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 19 OF 73

N W E S

0 50' Feet

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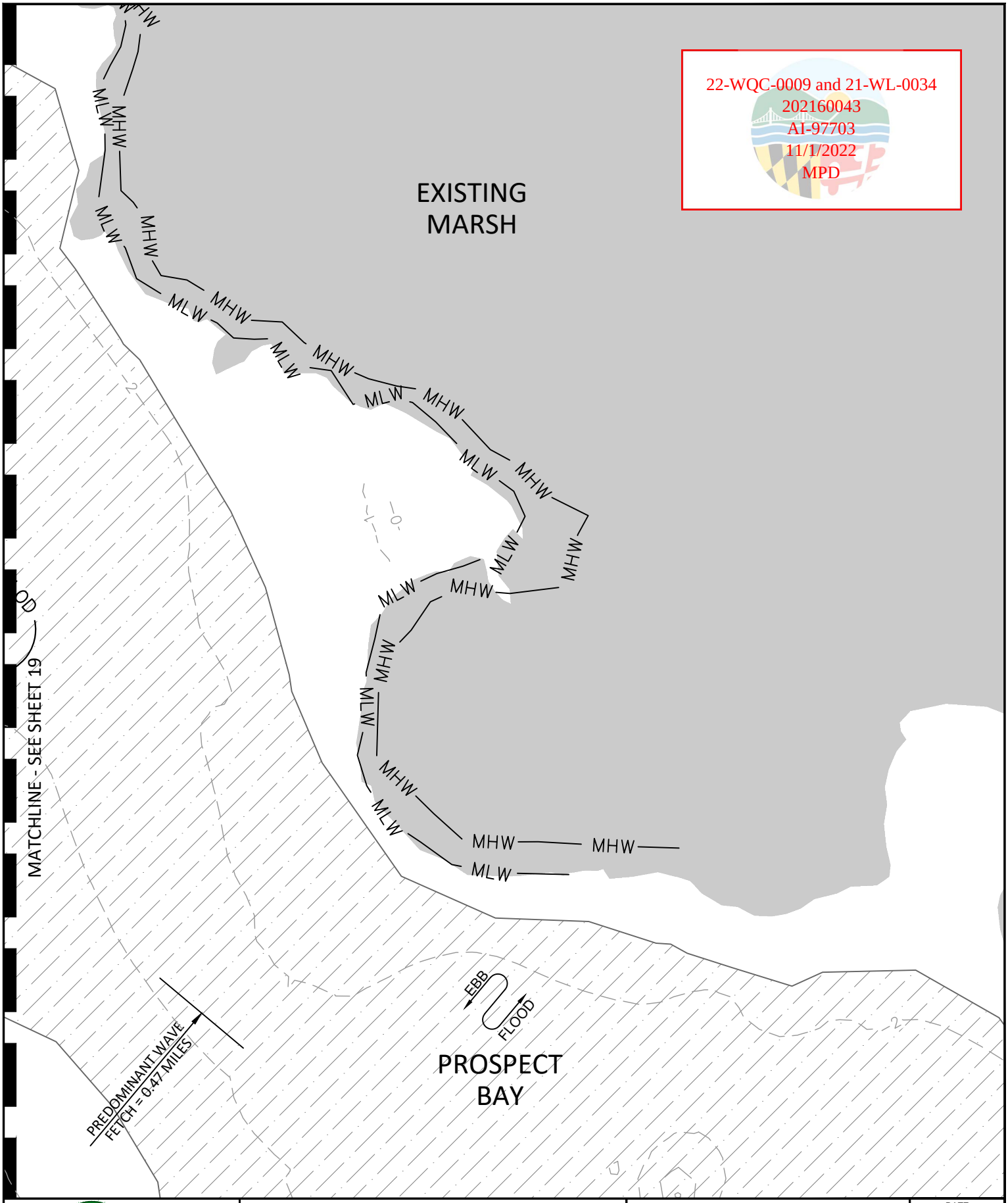

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 20 OF 73

N W E S

0 50' Feet

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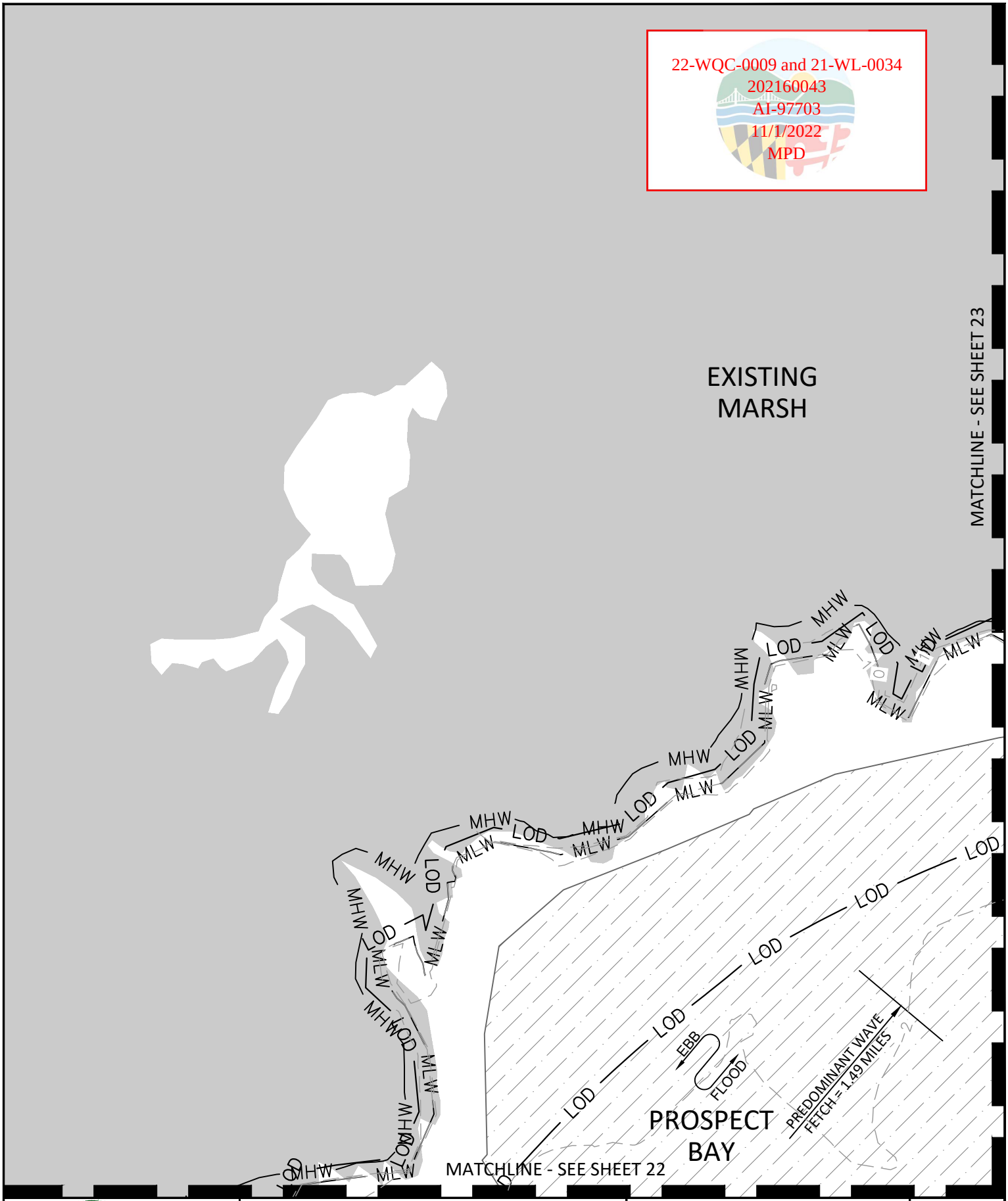

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410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 21 OF 73

N W E S

0 50' Feet

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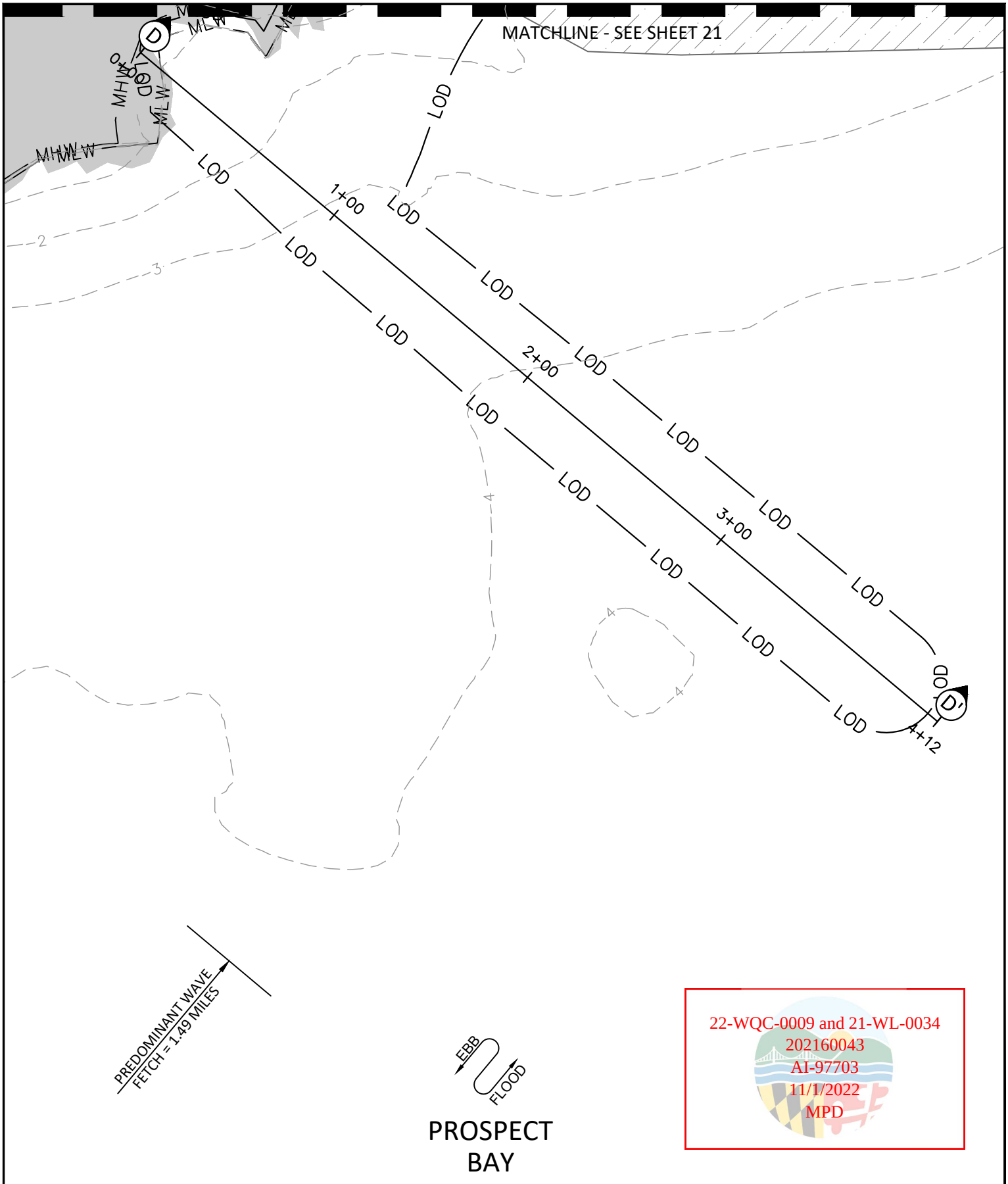

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EXISTING CONDITIONS

SHEET 22 OF 73

N W E S

0 50' Feet

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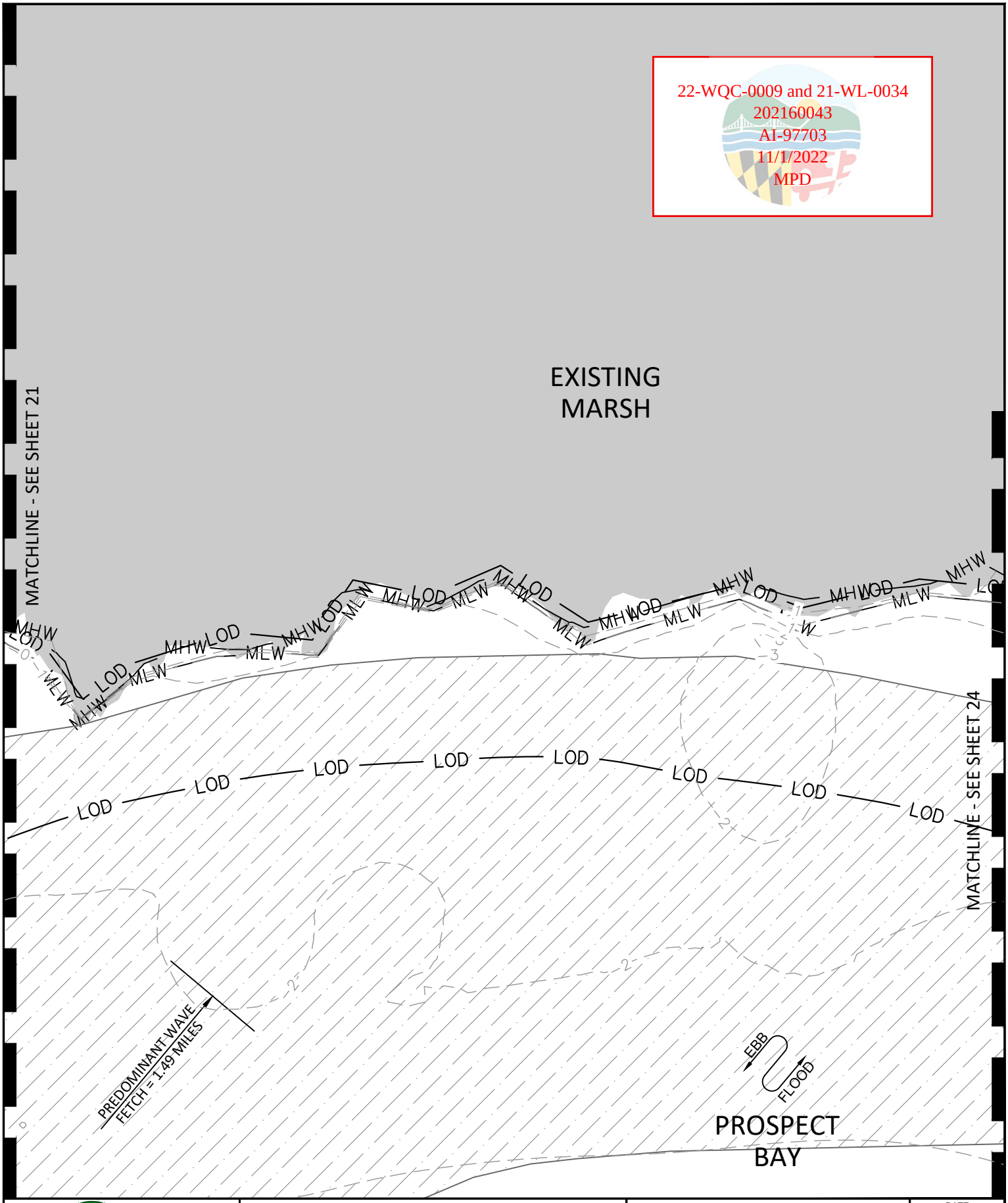

SUSTAINABLE SCIENCE, LLC
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EXISTING CONDITIONS

SHEET 23 OF 73

N W E S

0 50' Feet

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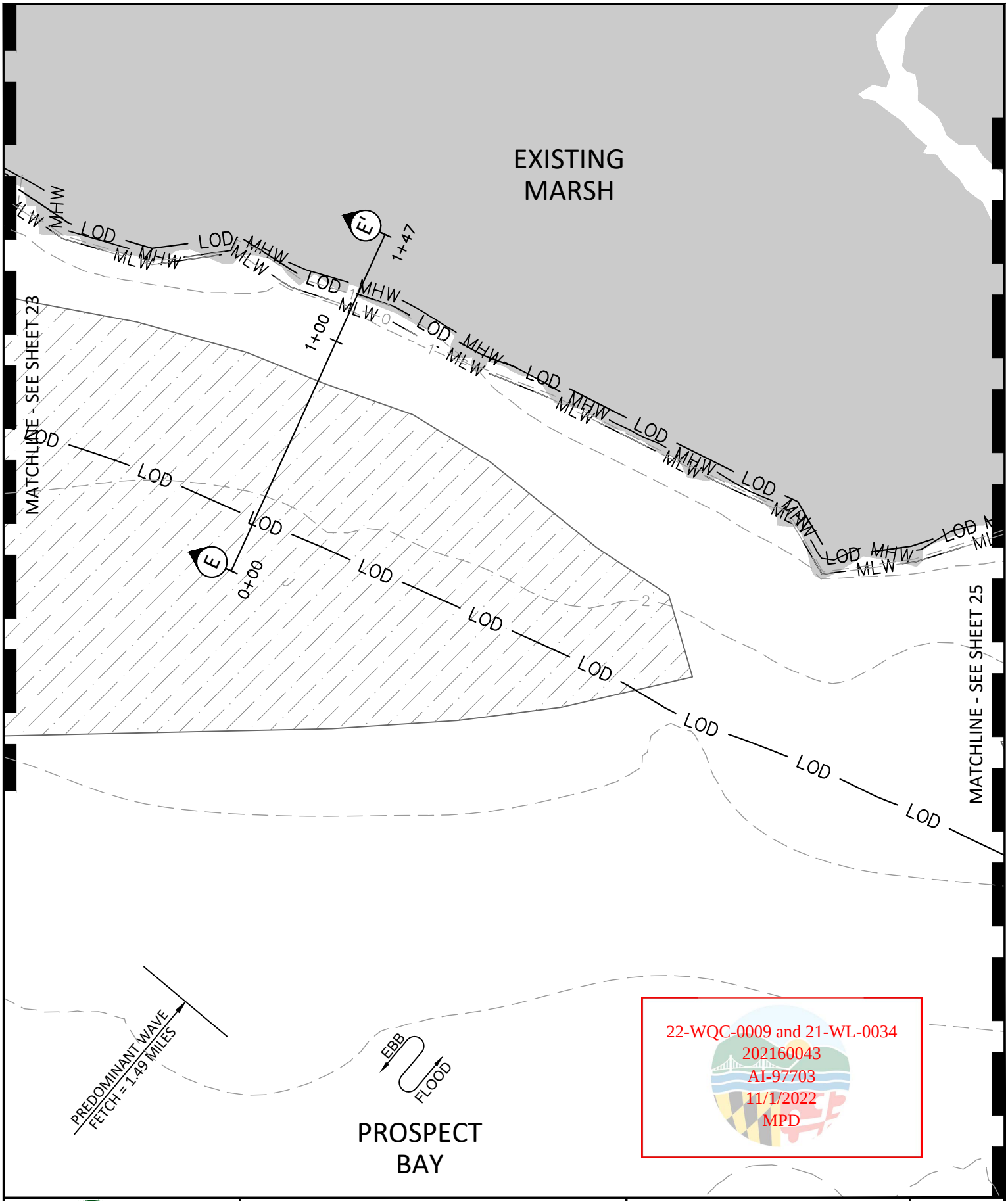

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EXISTING CONDITIONS

SHEET 24 OF 73

N W E S

0 50' Feet

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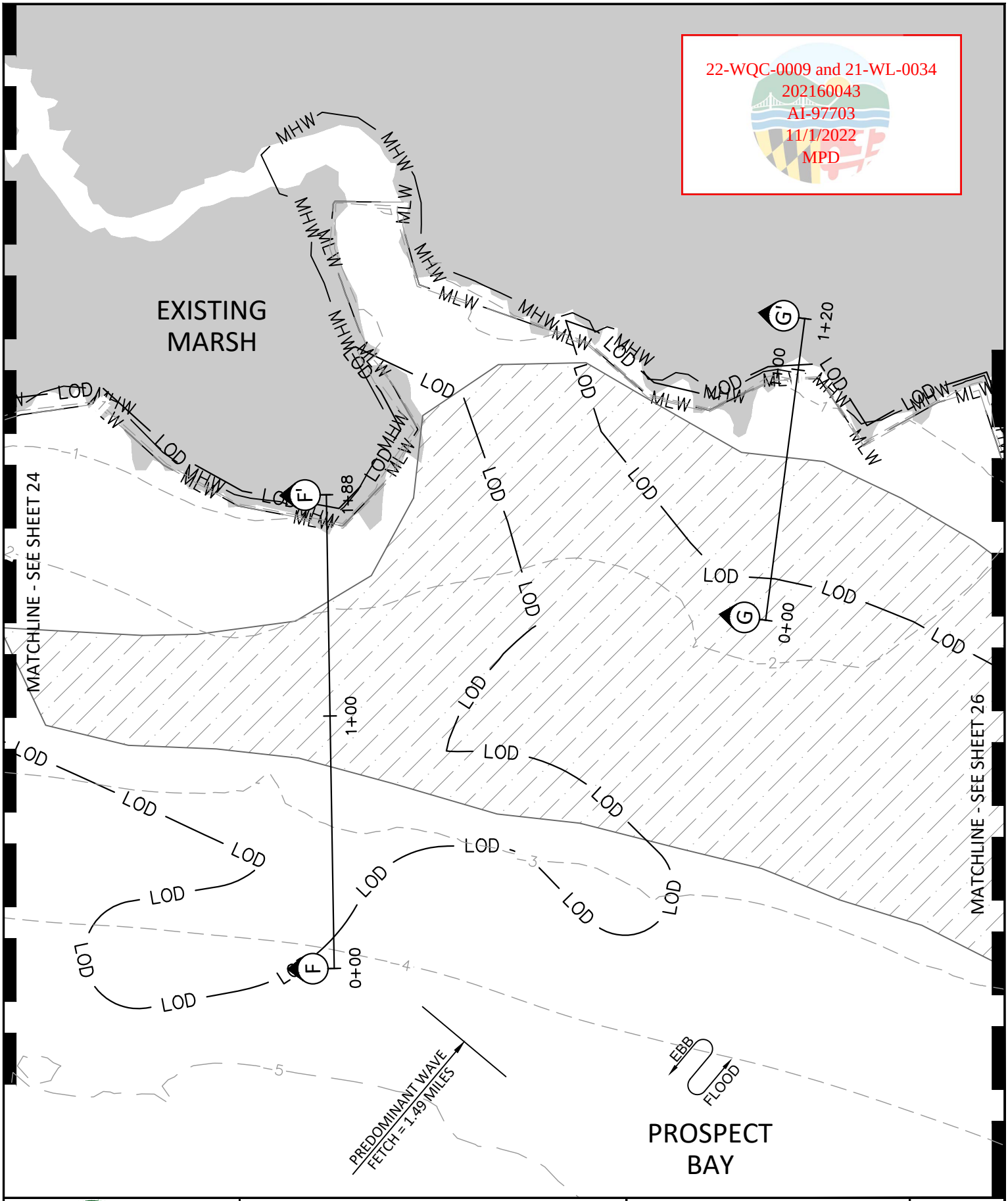

SUSTAINABLE SCIENCE, LLC
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410 S. SECOND STREET
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EXISTING CONDITIONS

SHEET 25 OF 73

N W E S

0 50' Feet

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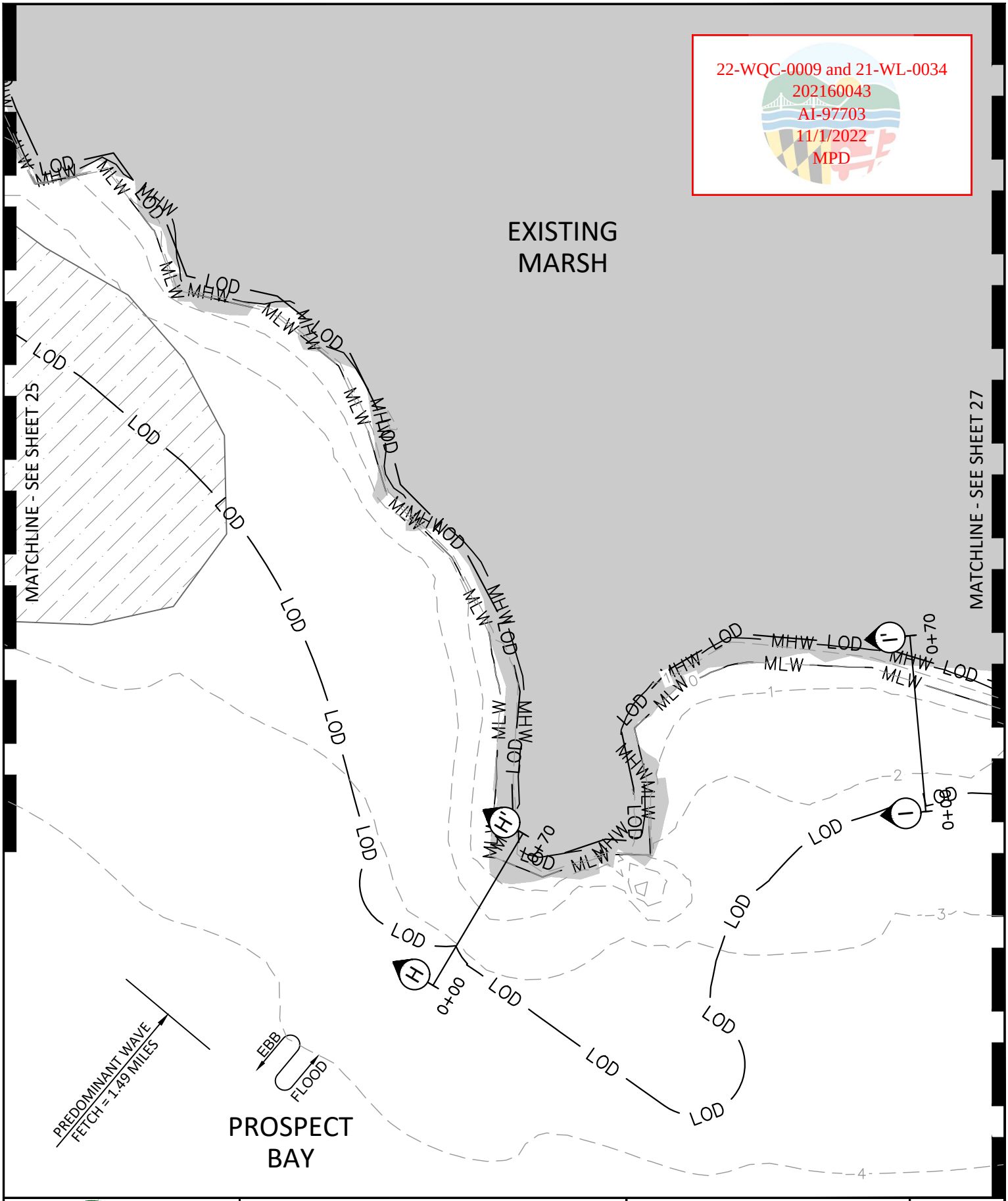

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EXISTING CONDITIONS

SHEET 26 OF 73

N W E S

0 50' Feet

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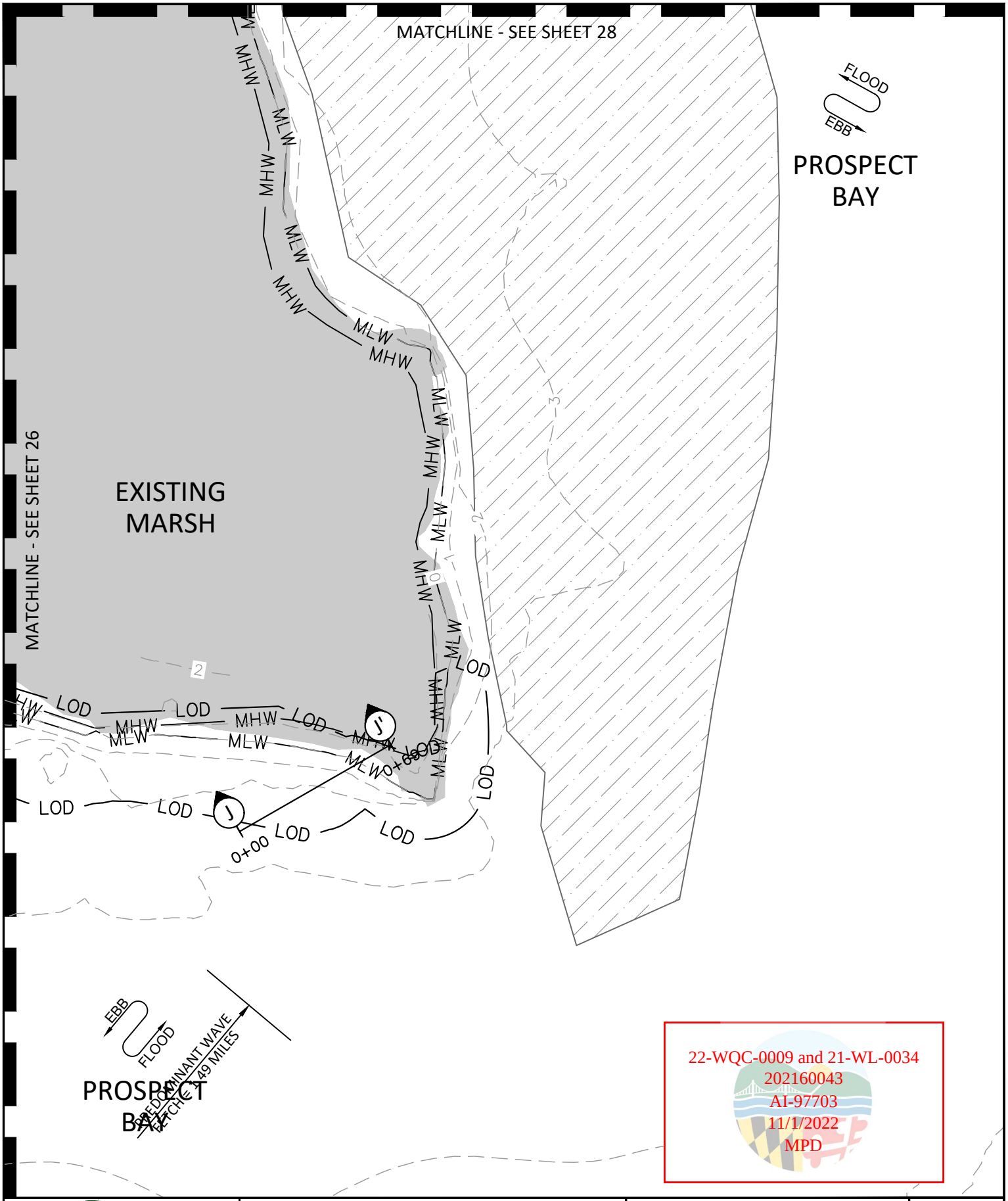
DRAWN BY	SAM
CHECKED BY	FAM



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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 27 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
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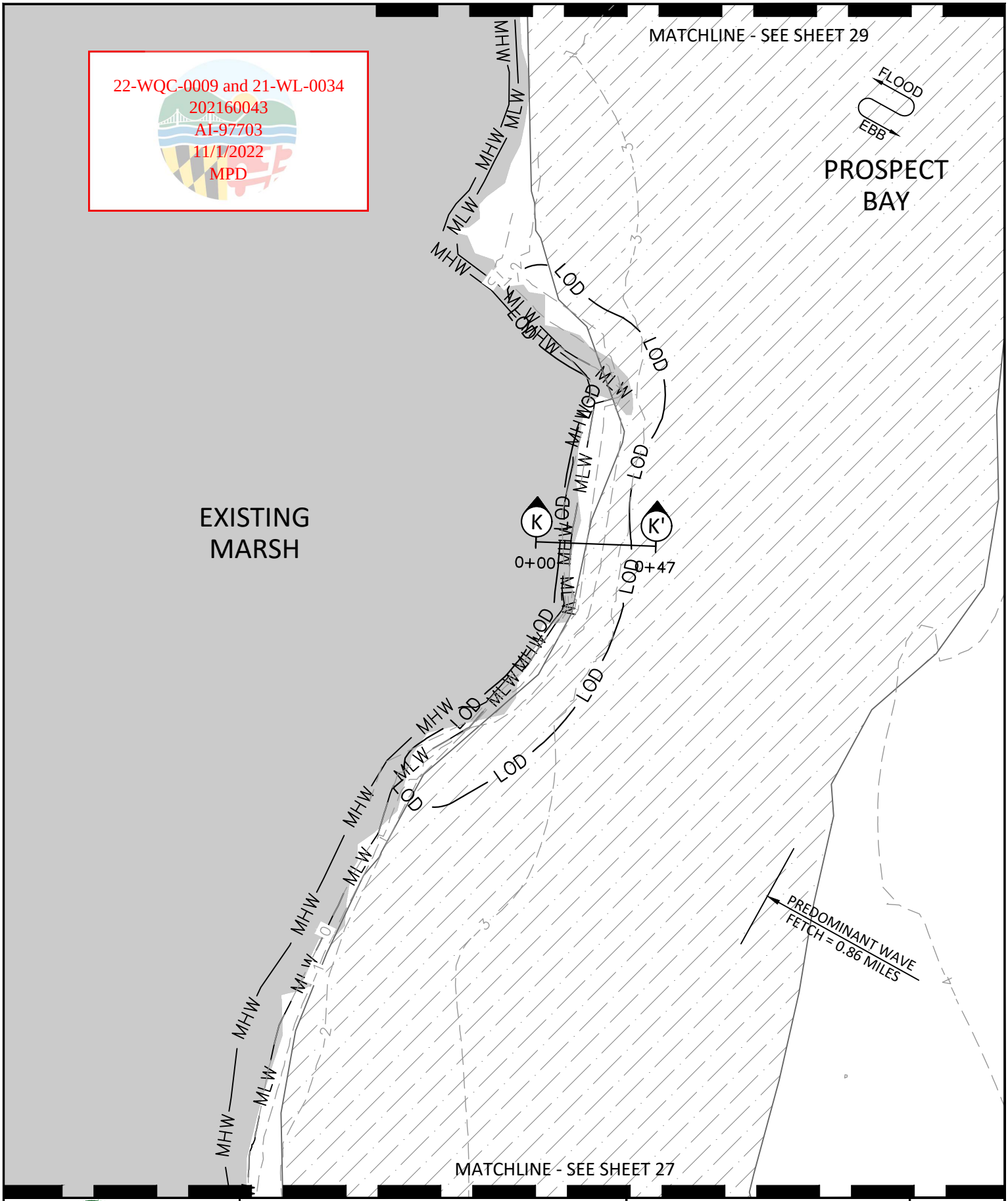

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 28 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

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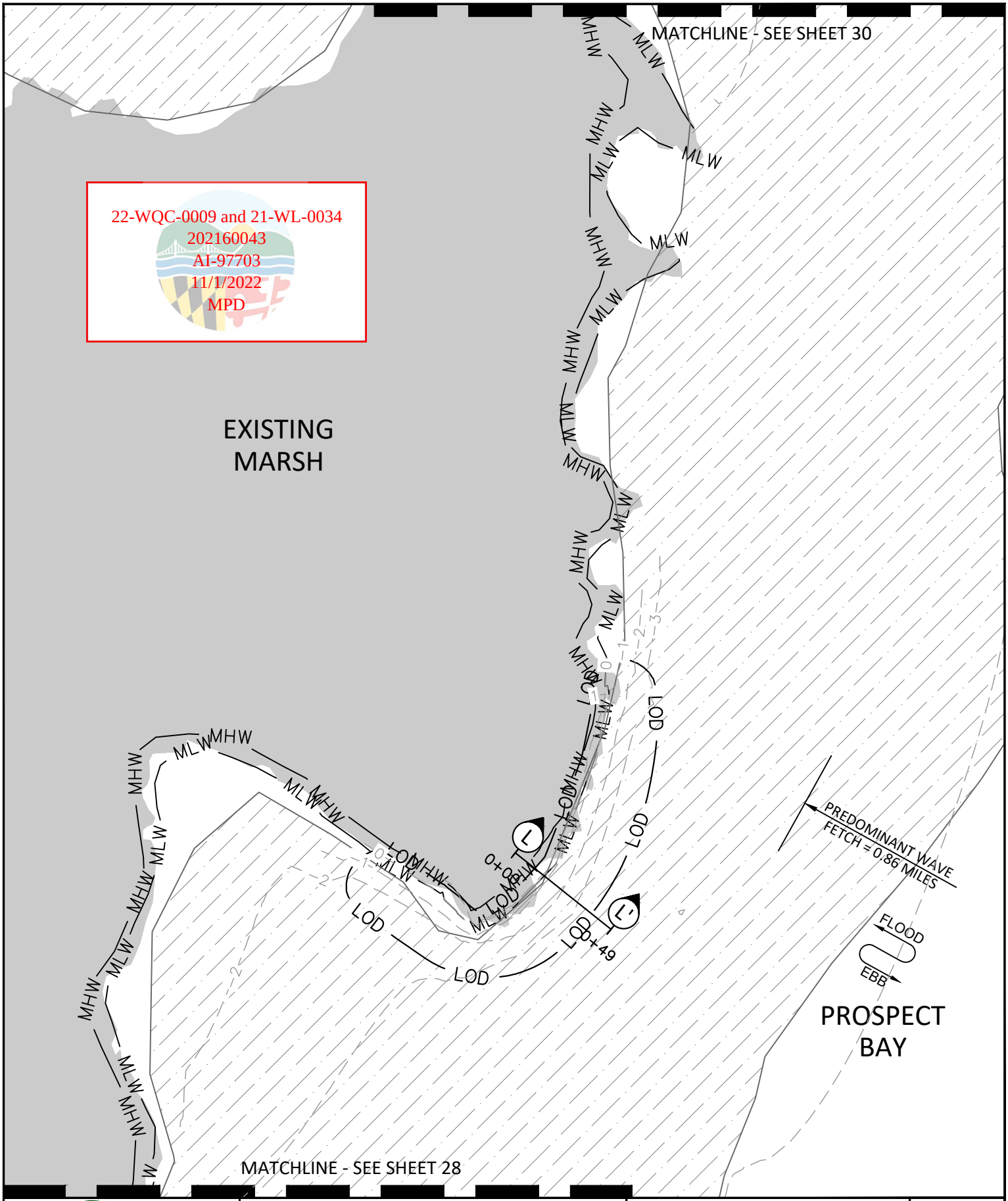

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 29 OF 73

N S W E

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

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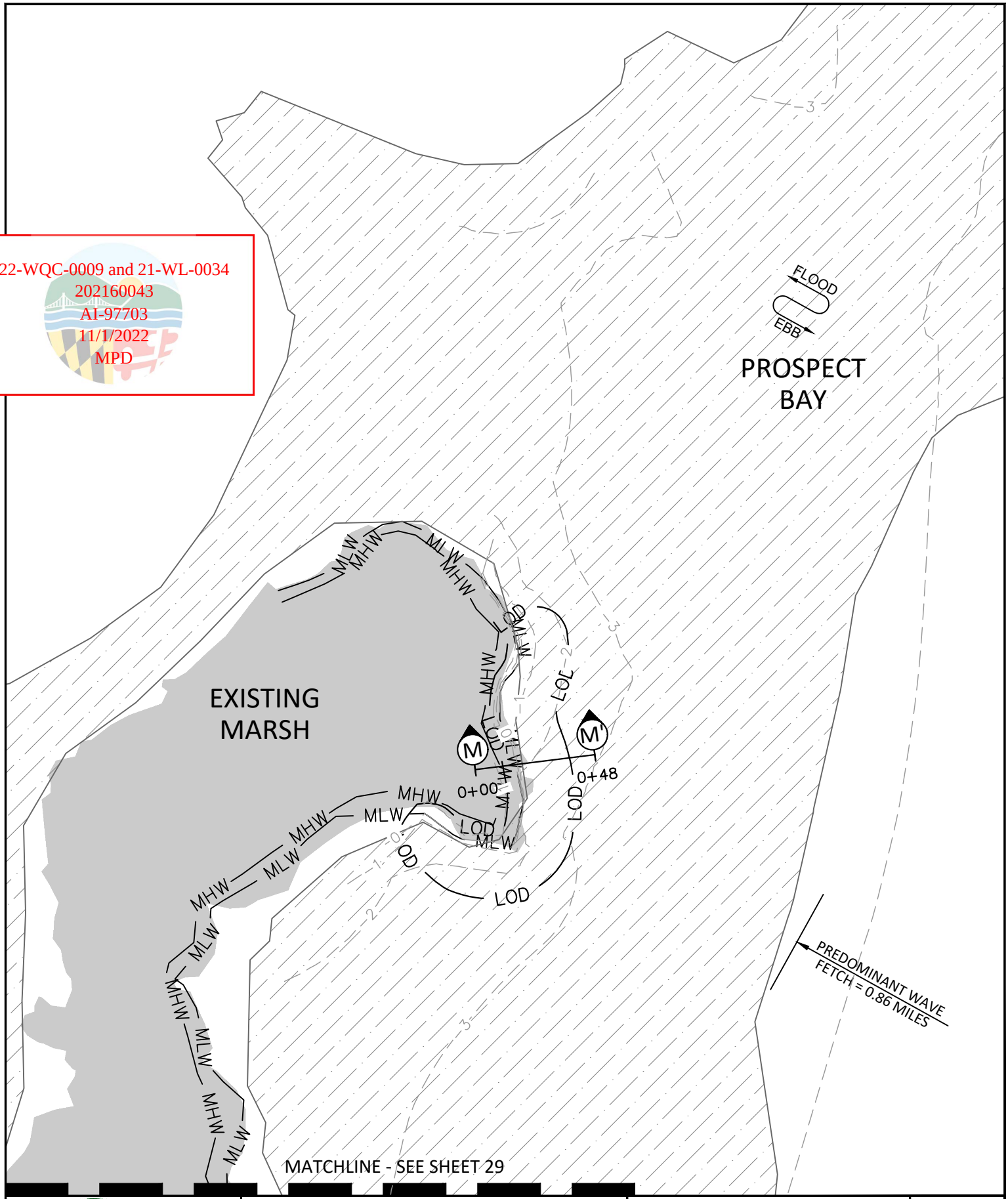

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

EXISTING CONDITIONS

SHEET 30 OF 73

N W E S

0 50' Feet

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TIDAL WATERS JPA PLAN
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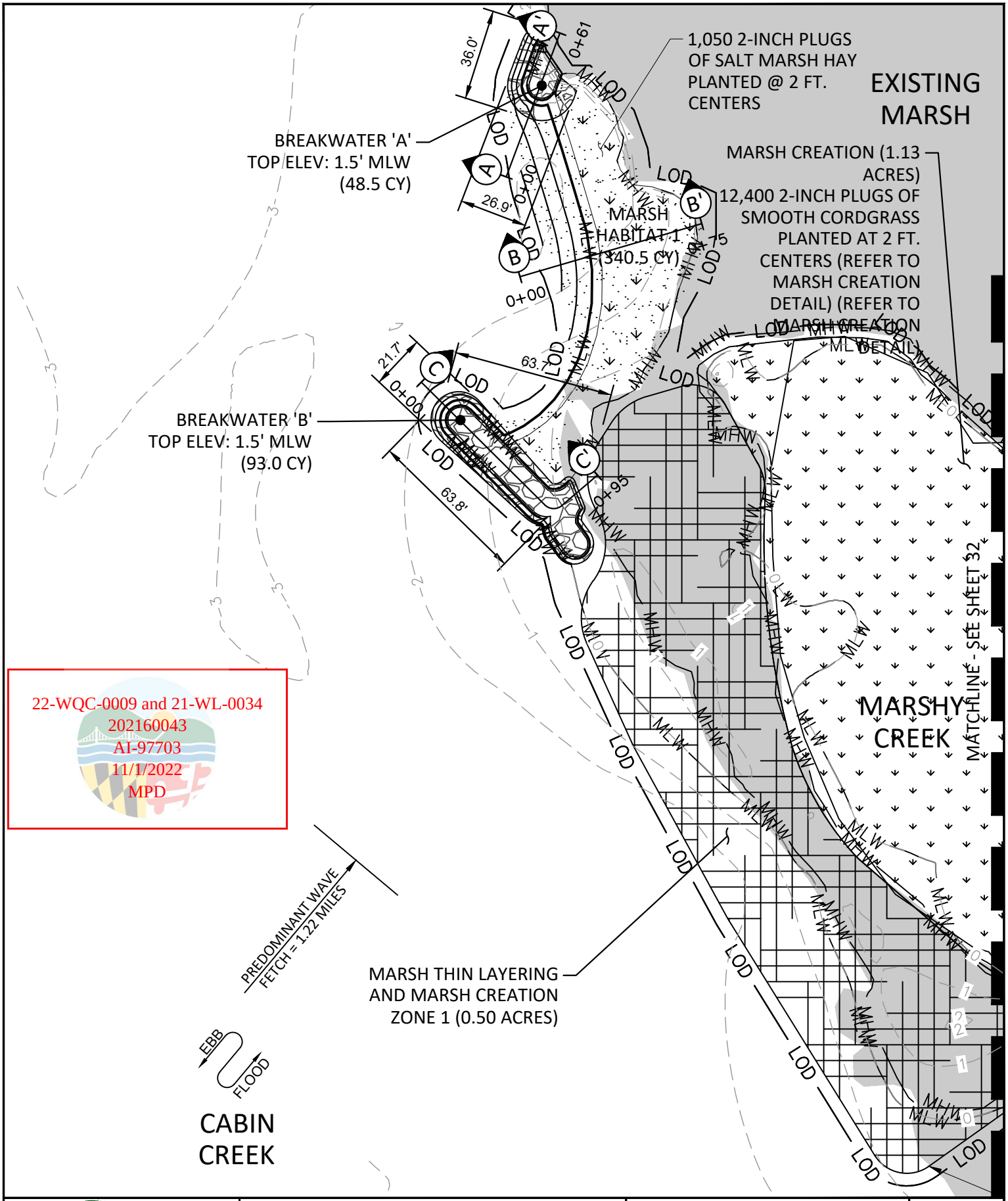

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ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 31 OF 73

N W E S

0 50' Feet

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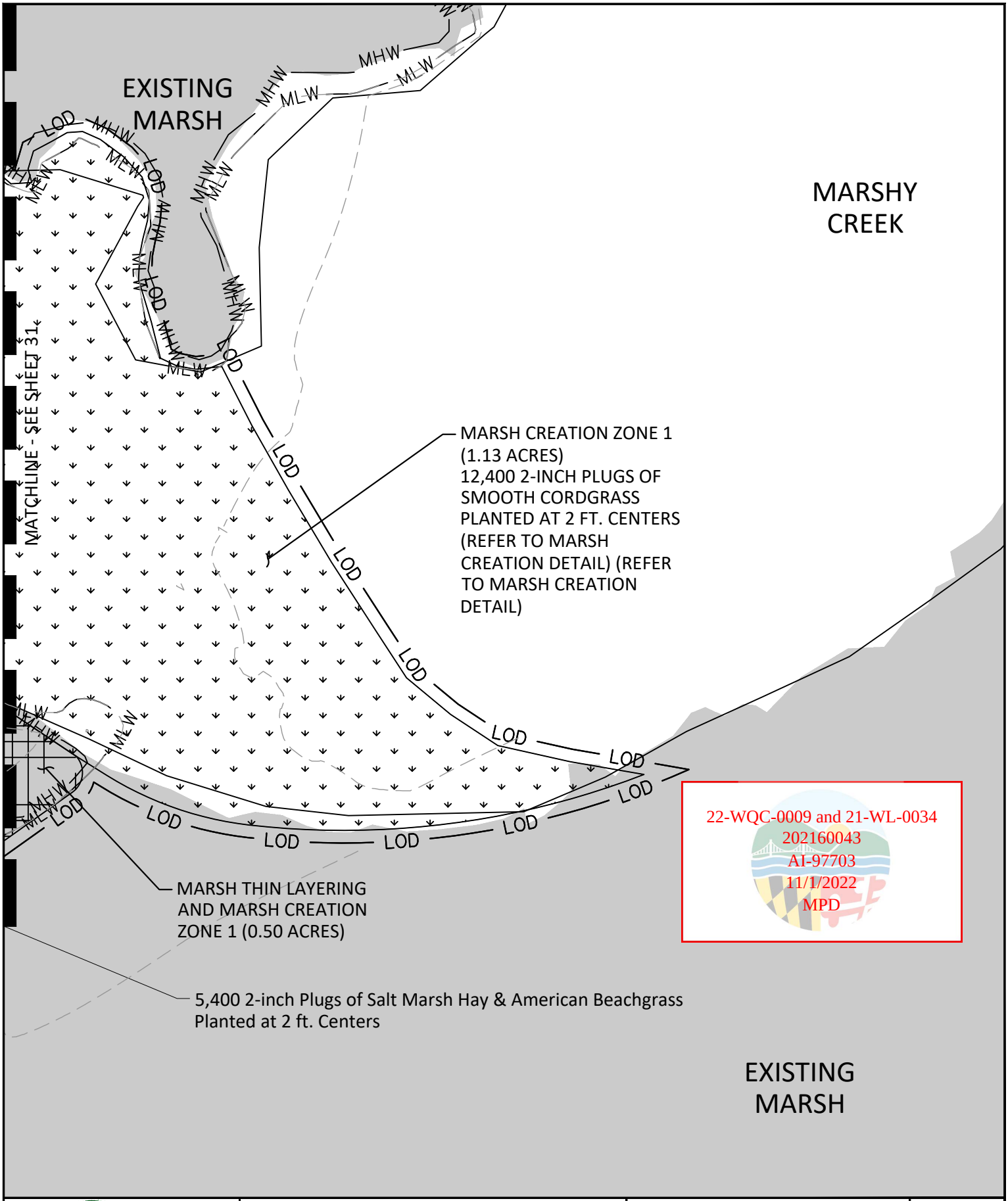

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 32 OF 73

N W E S

0 50' Feet

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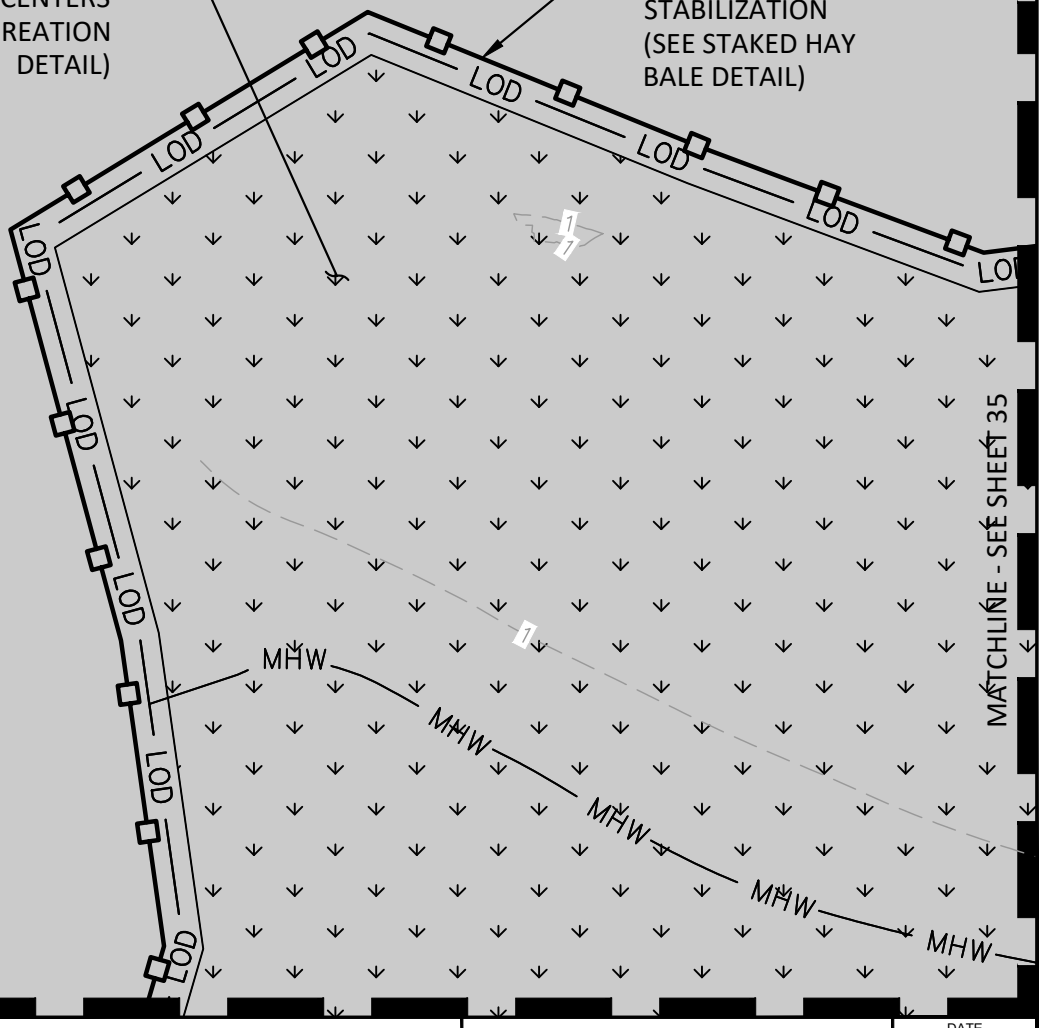
EXISTING
MARSH

THIN LAYERING MARSH CREATION ZONE 2 (3.70 ACRES) 40,300 2-INCH PLUGS OF SMOOTH CORDGRASS & SALT MARSH HAY PLANTED AT 2 FT. CENTERS (REFER TO MARSH CREATION DETAIL)

STAKED HAY BALE PERIMETER STABILIZATION (SEE STAKED HAY BALE DETAIL)



PROPOSED CONDITIONS

SHEET 33 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE 7/9/2021
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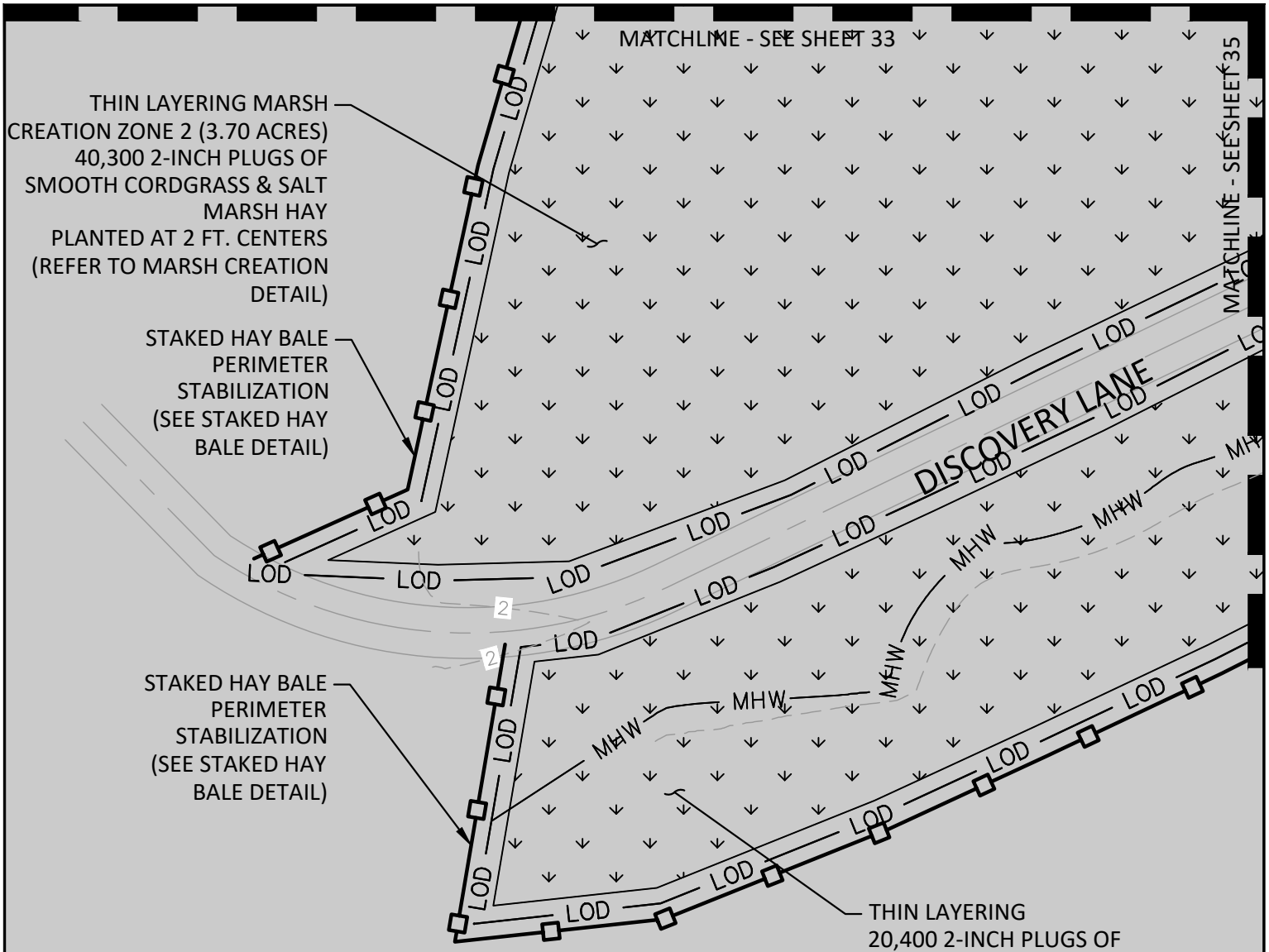
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629



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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
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PROPOSED CONDITIONS

SHEET 34 OF 73

N W E S

0 50' Feet

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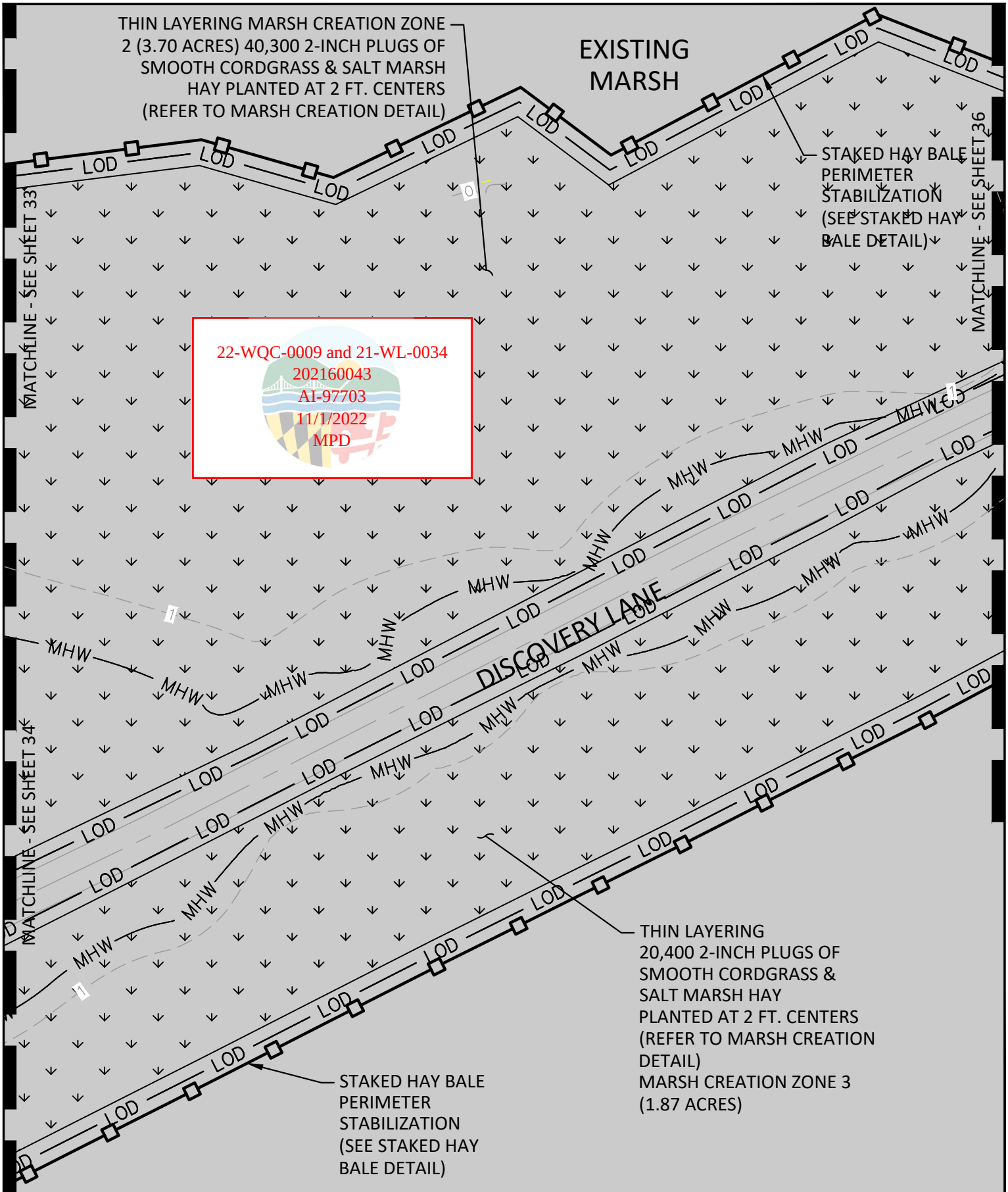

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 35 OF 73

N W E S

0 50' Feet

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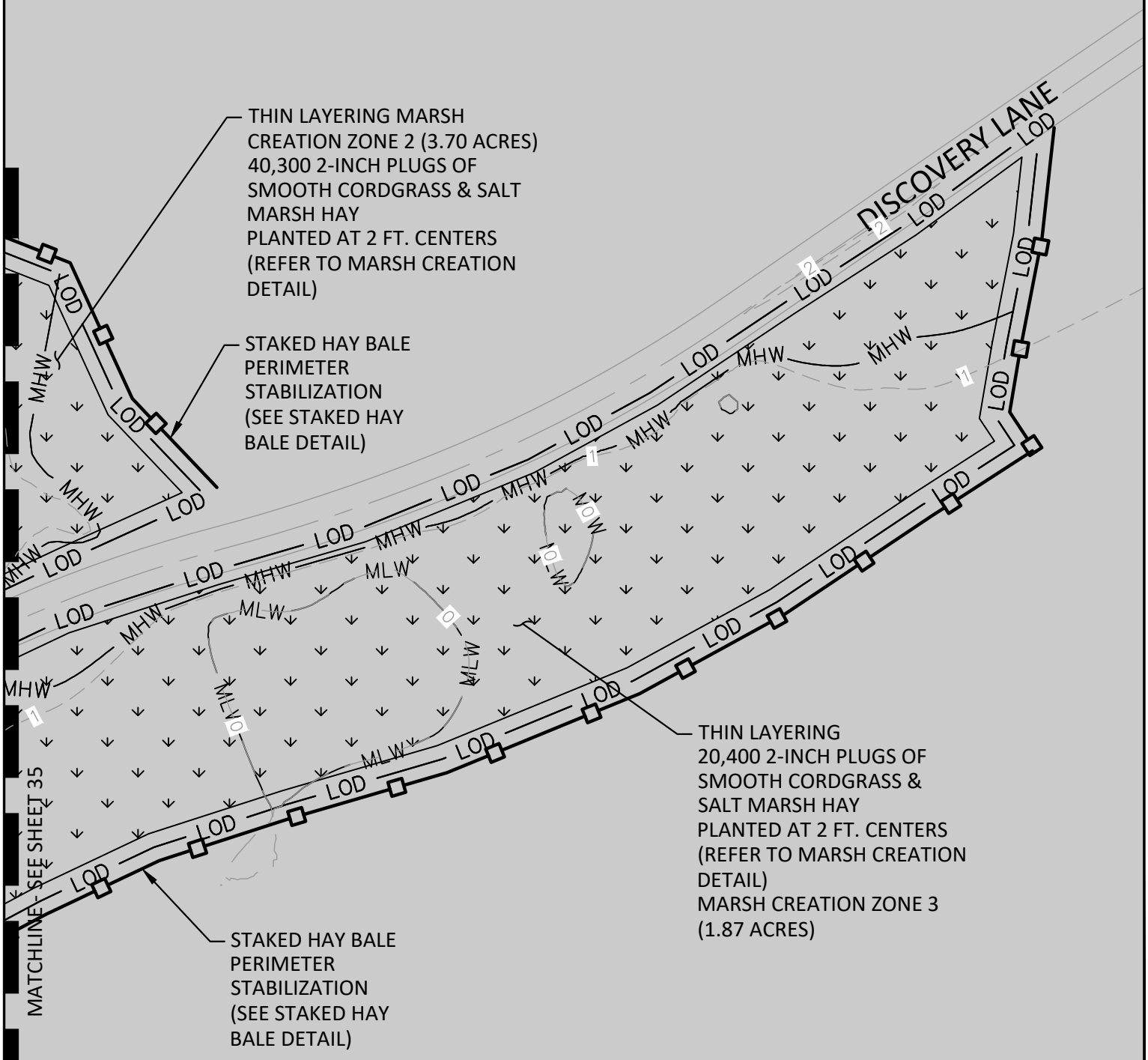
EXISTING
MARSH



SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 36 OF 73

N W E S

0 50' Feet

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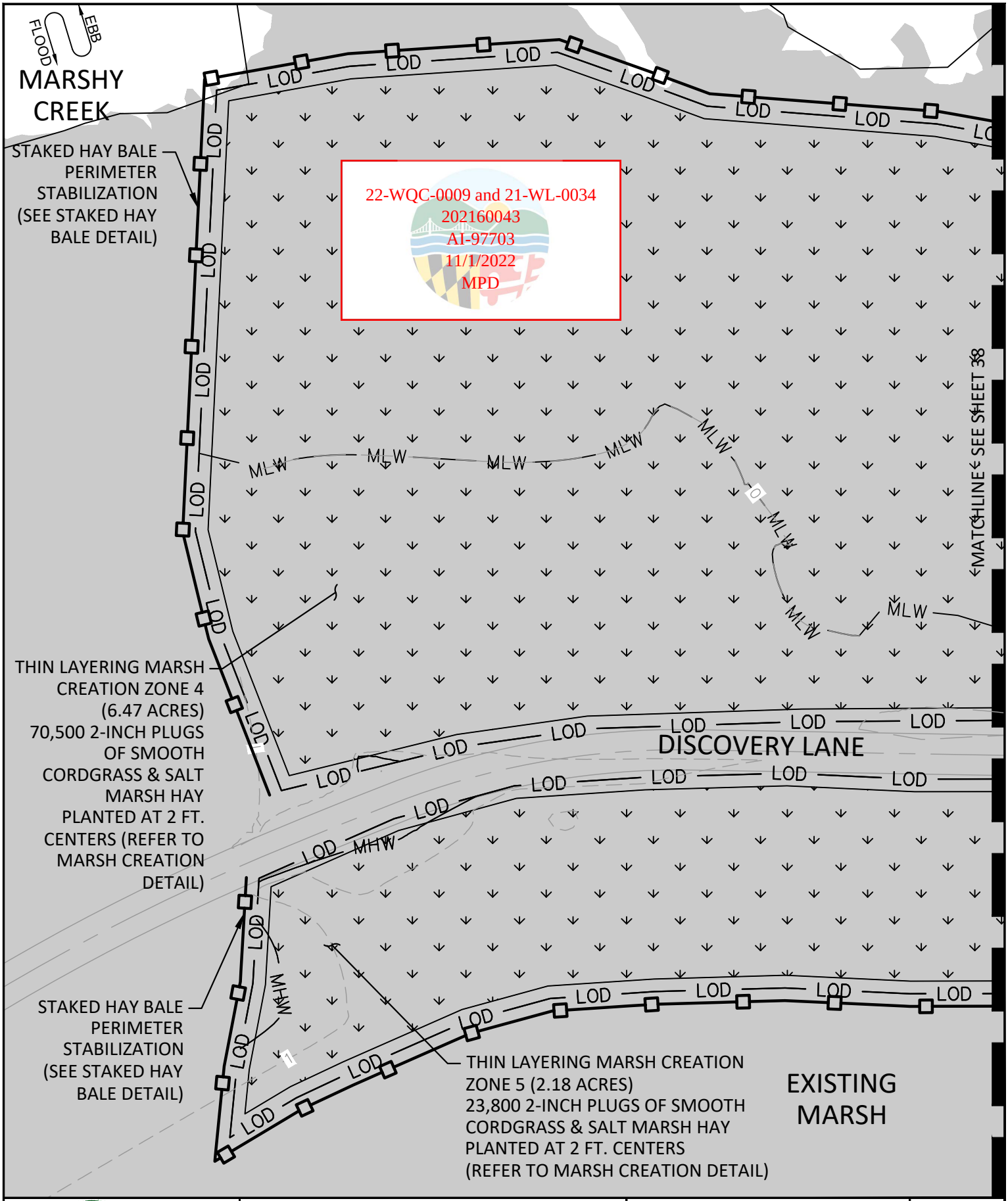

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 37 OF 73

N W E S

0 50' Feet

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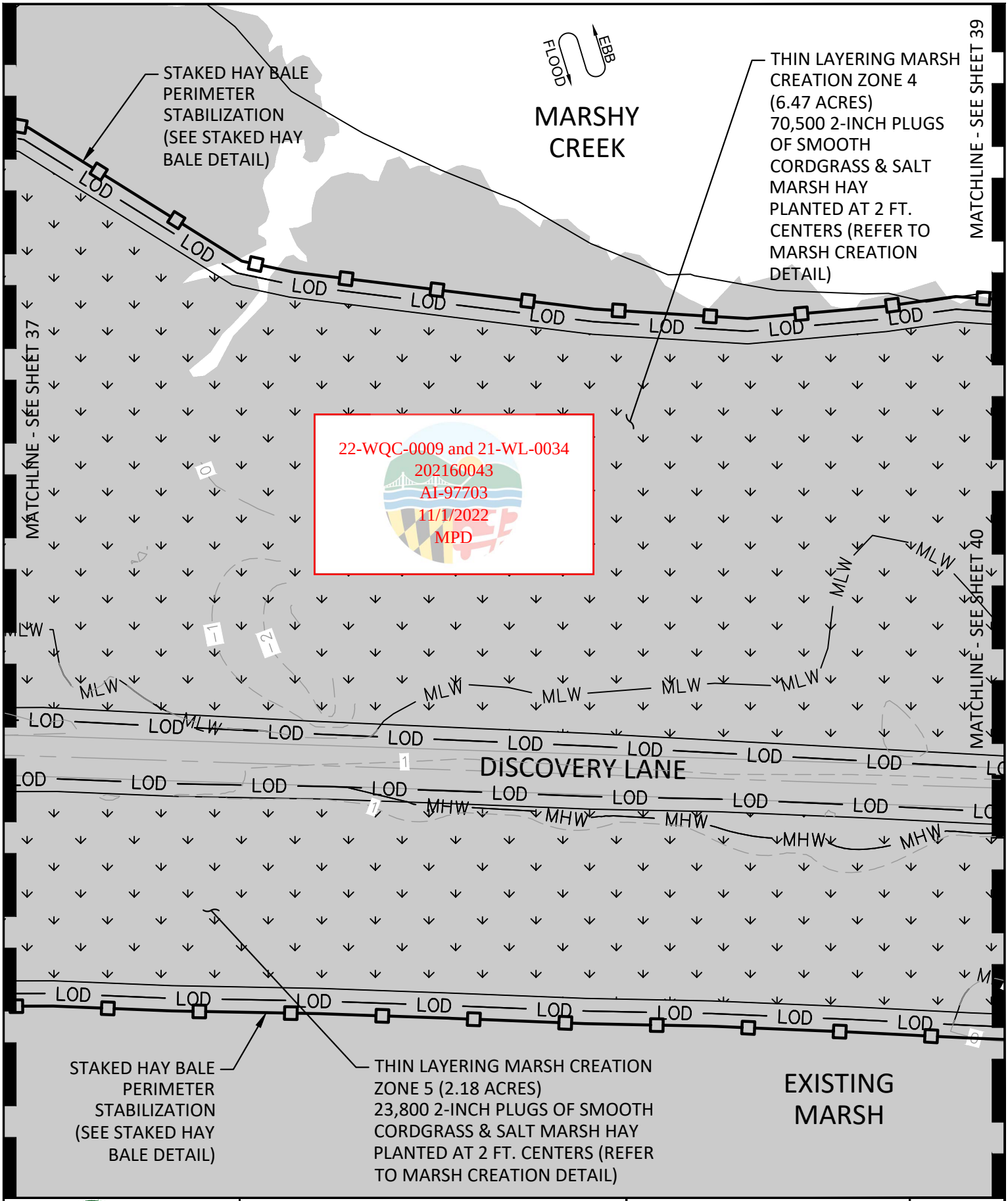

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ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 38 OF 73

N W E S

0 50' Feet

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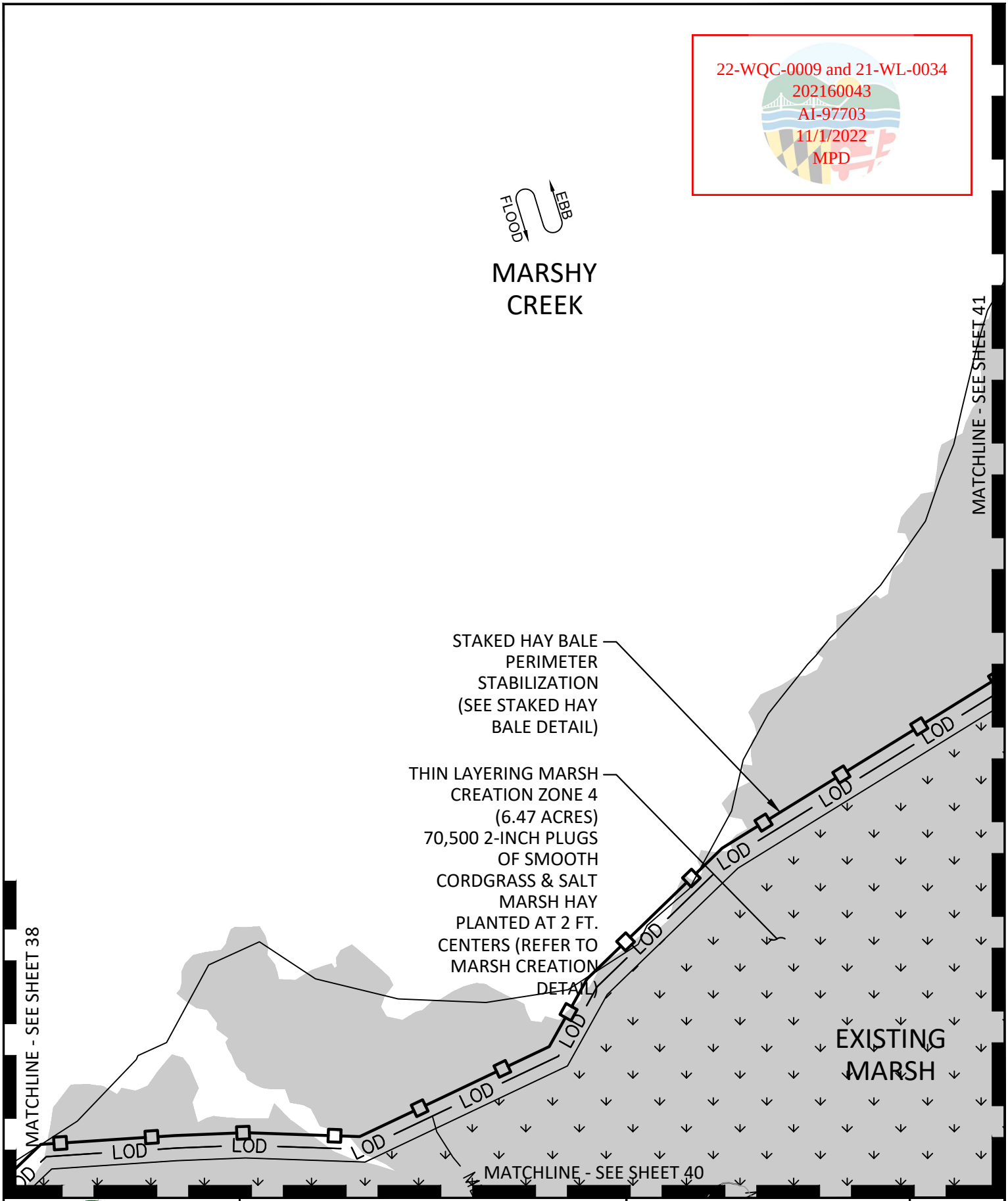

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ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 39 OF 73

N W E S

0 50' Feet

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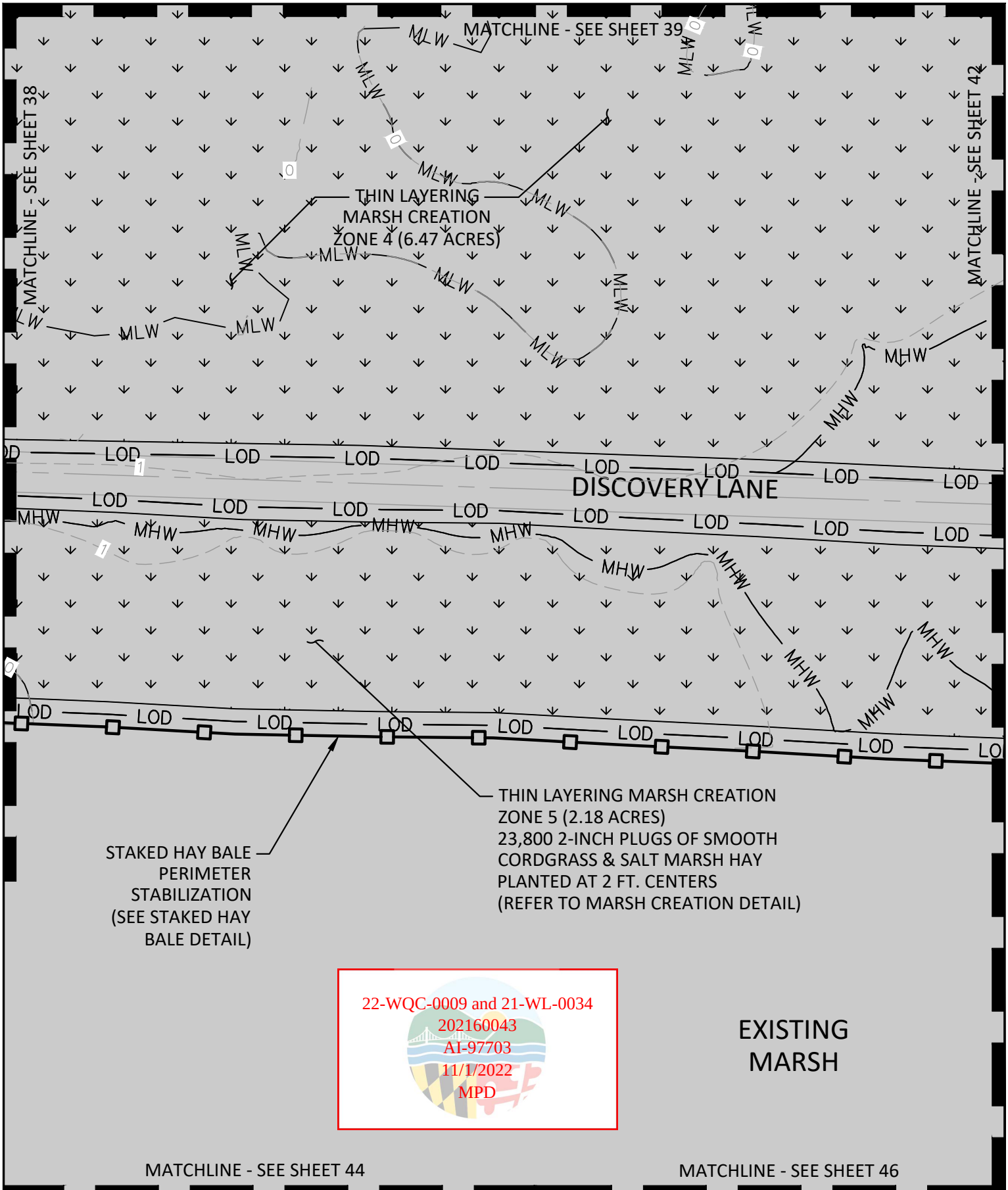

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PROPOSED CONDITIONS

SHEET 40 OF 73

N W E S

0 50' Feet

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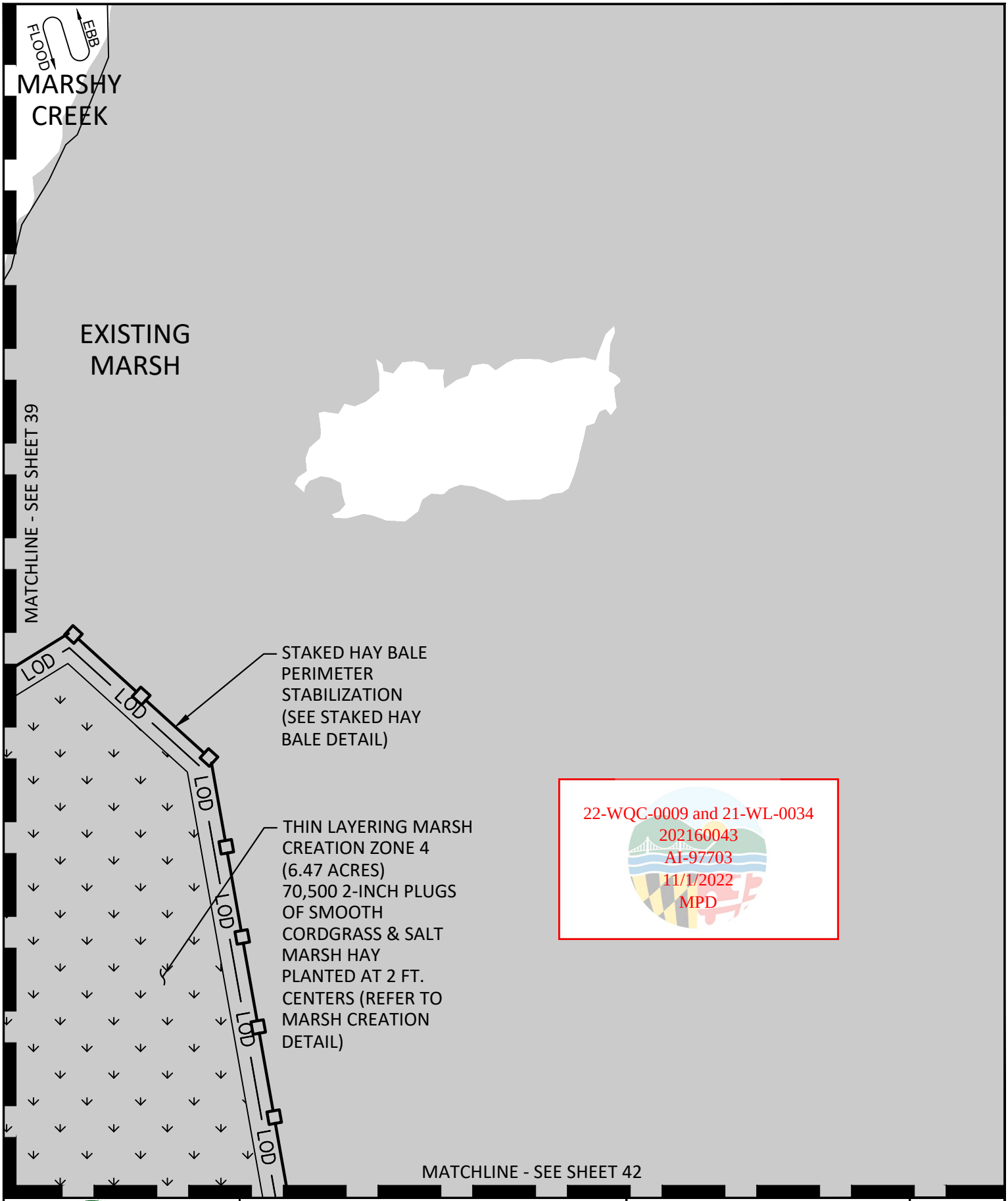

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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 41 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
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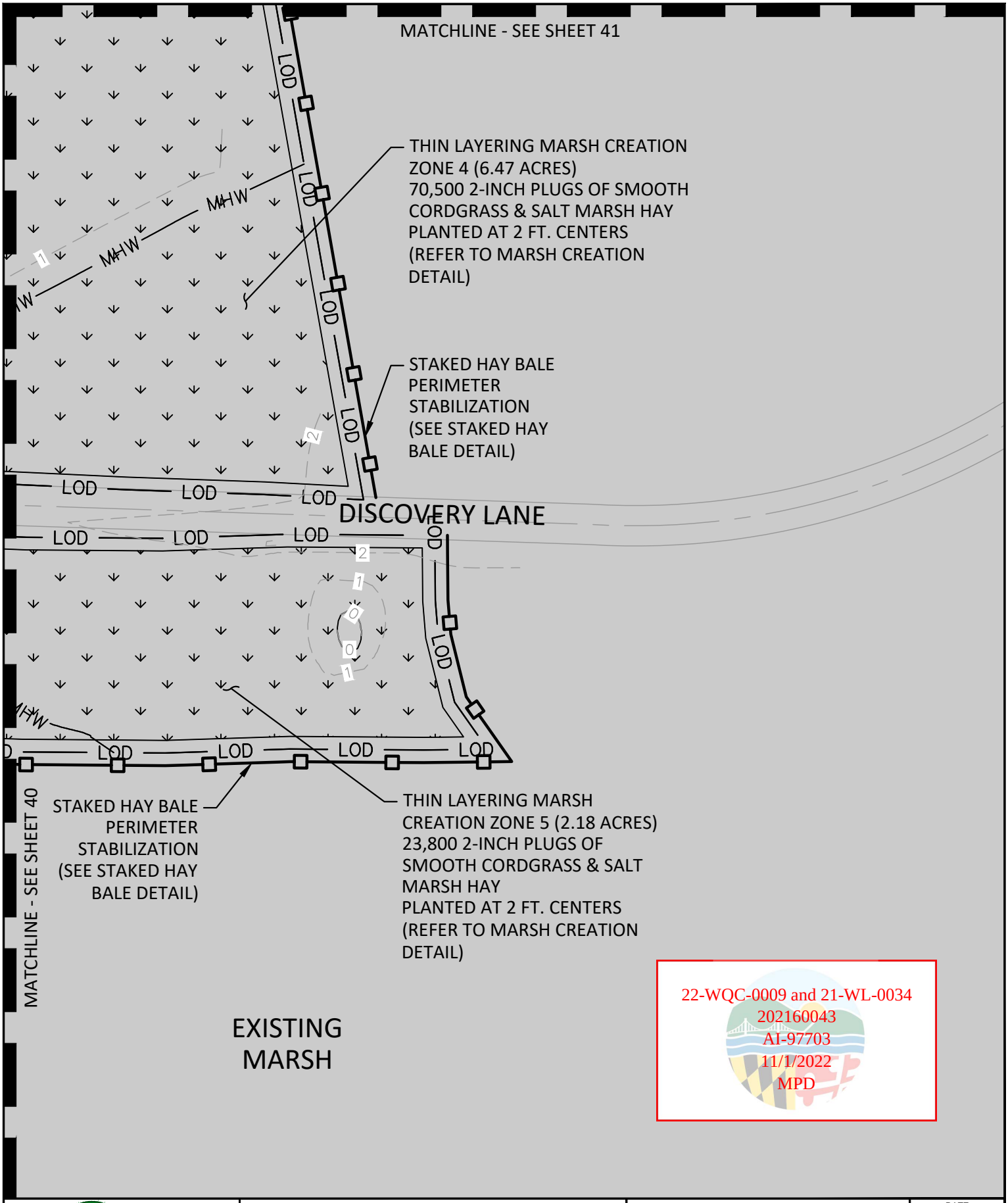

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MPD

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 42 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
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DATE	7/9/2021
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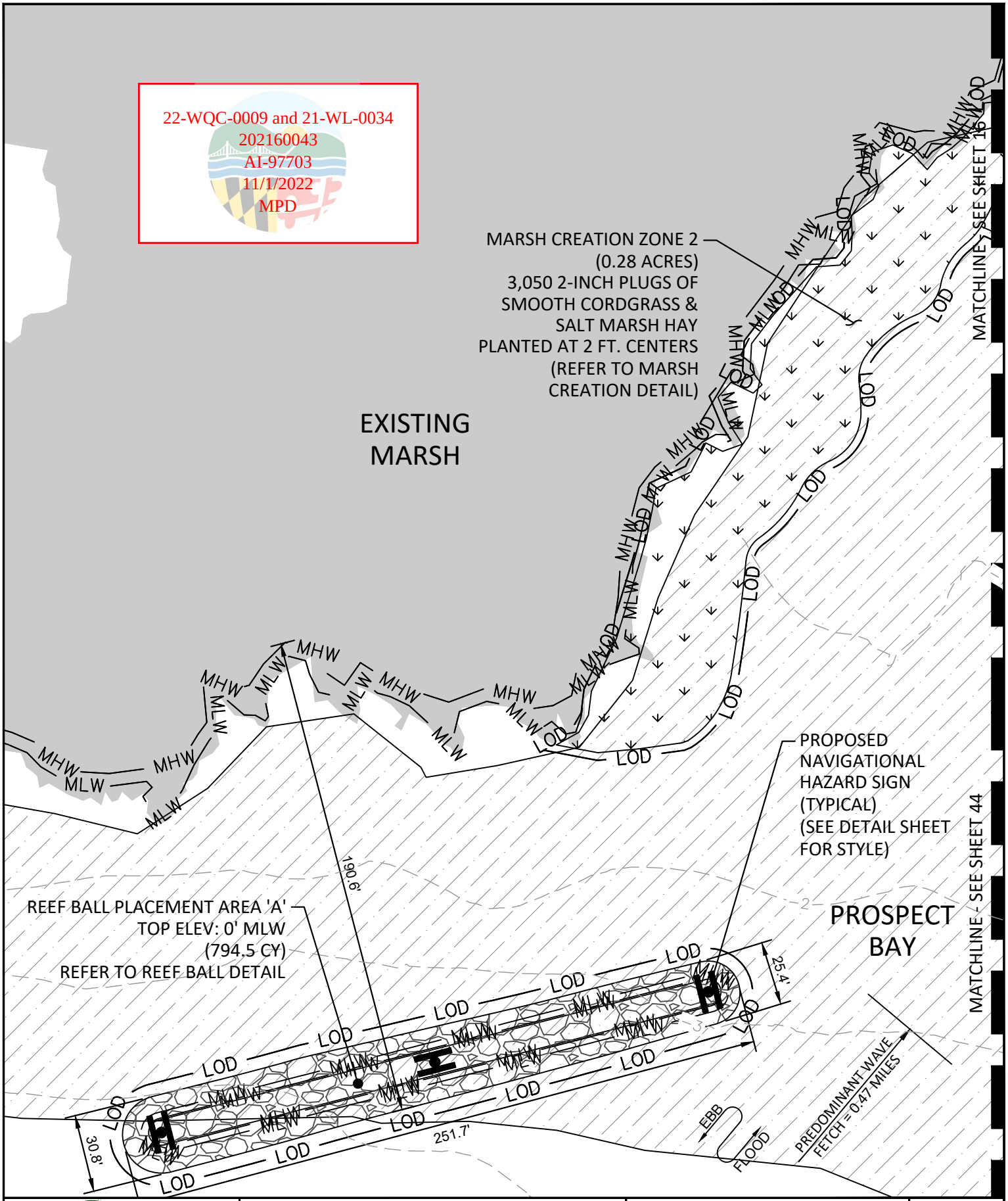

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 43 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
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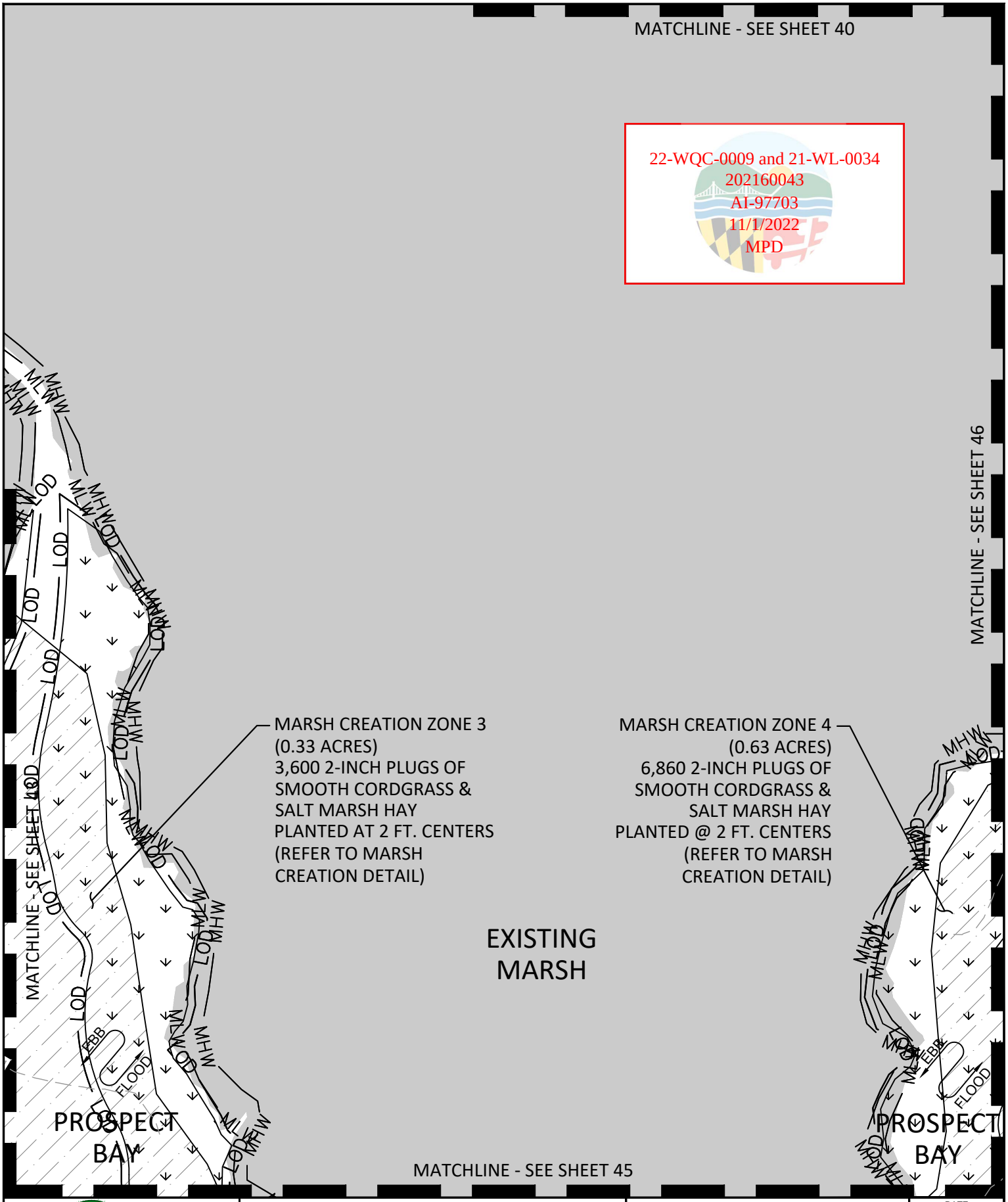

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 44 OF 73

N W E S

0 50' Feet

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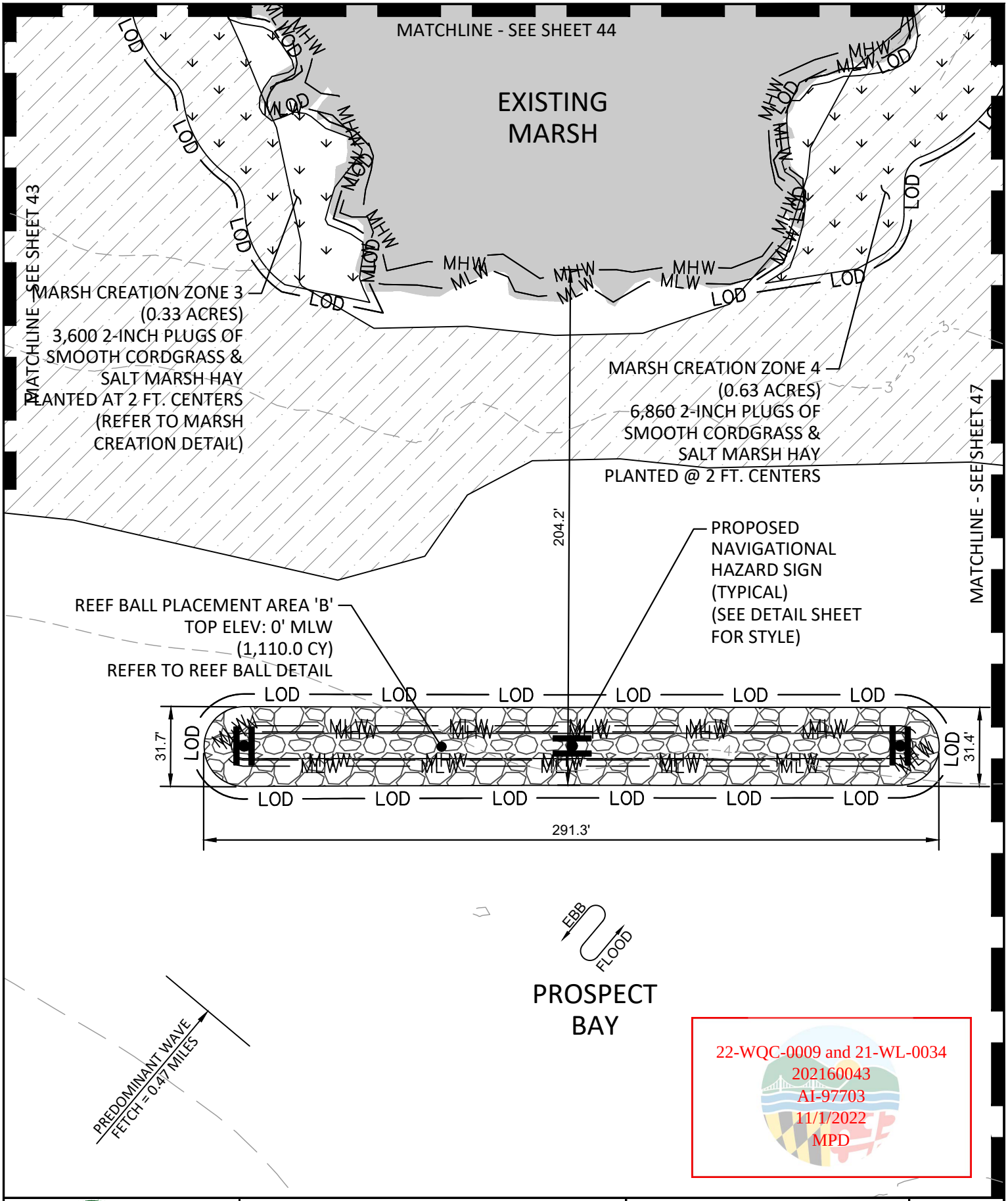

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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
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PROPOSED CONDITIONS

SHEET 45 OF 73

N W E S

0 50' Feet

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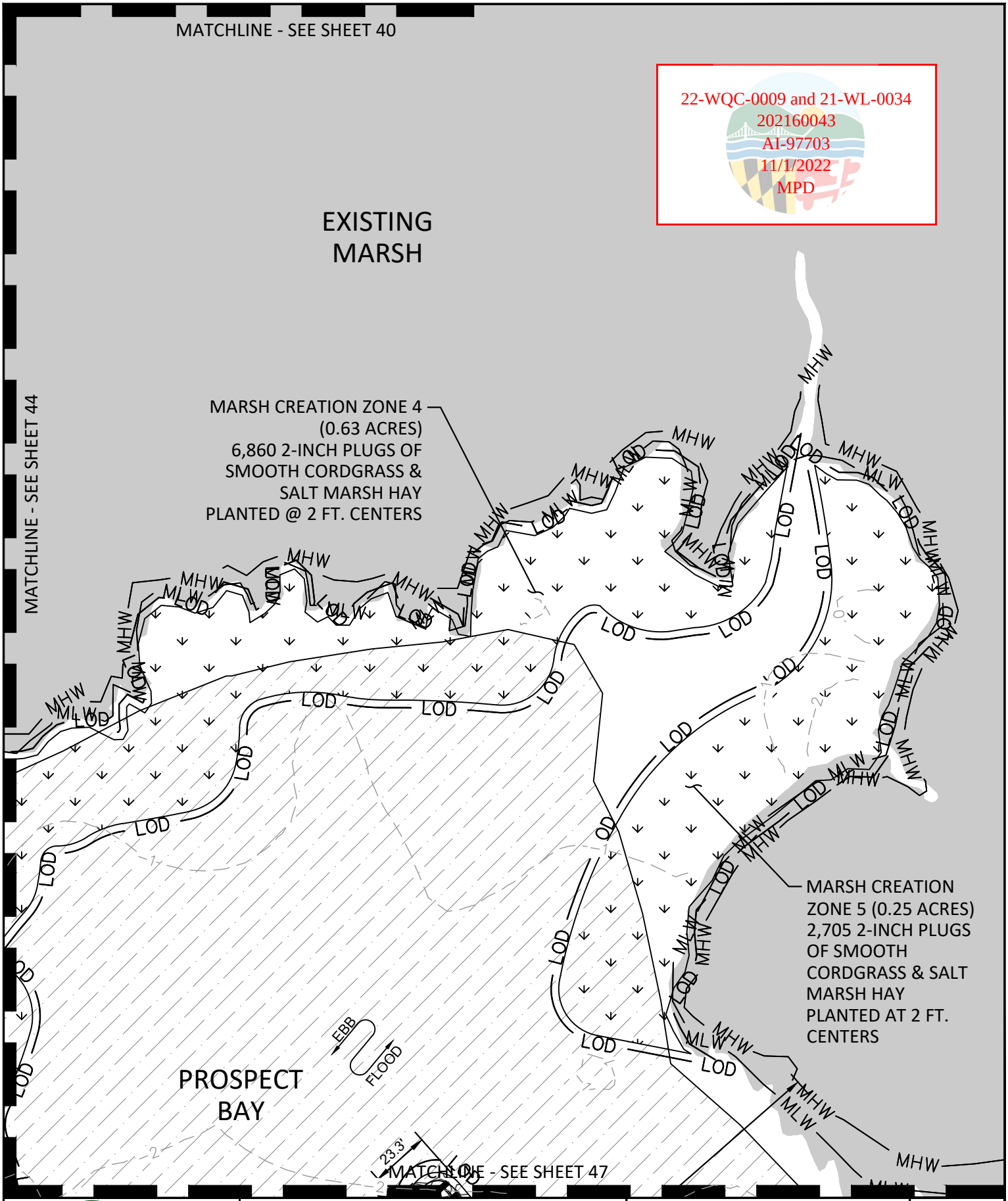

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 46 OF 73

N W E S

0 50' Feet

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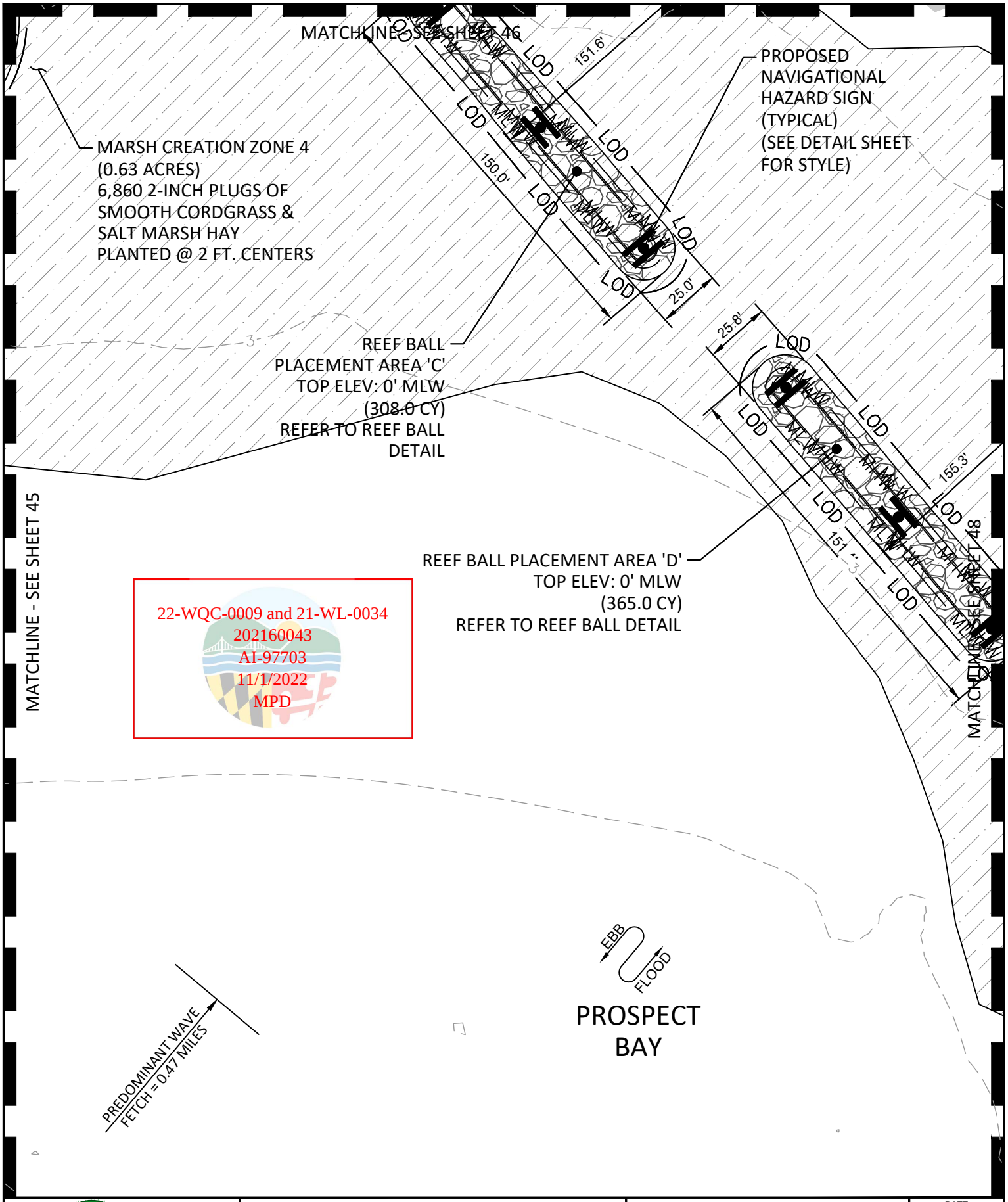

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 47 OF 73

N W E S

0 50' Feet

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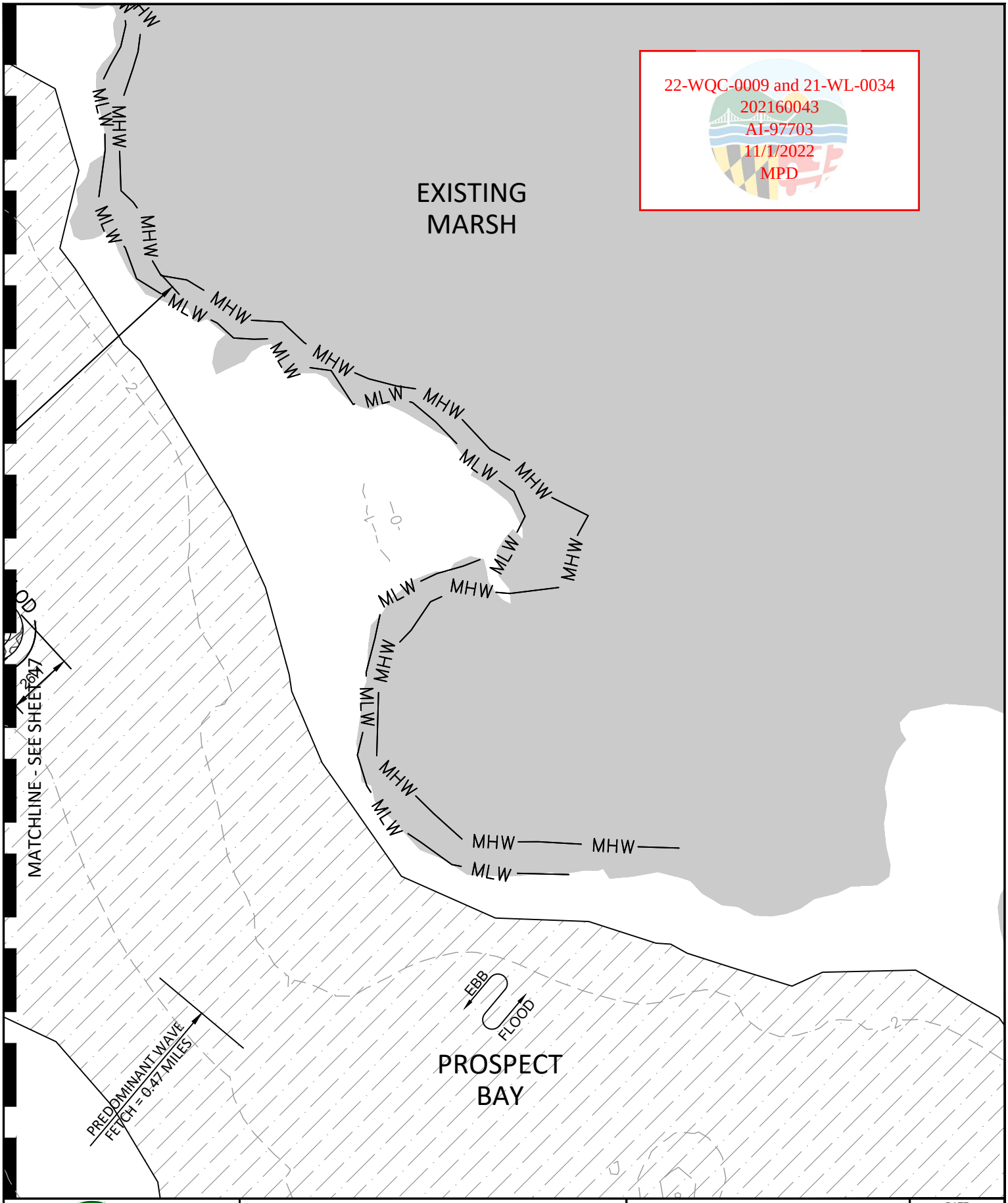

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ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 48 OF 73

N W E S

0 50' Feet

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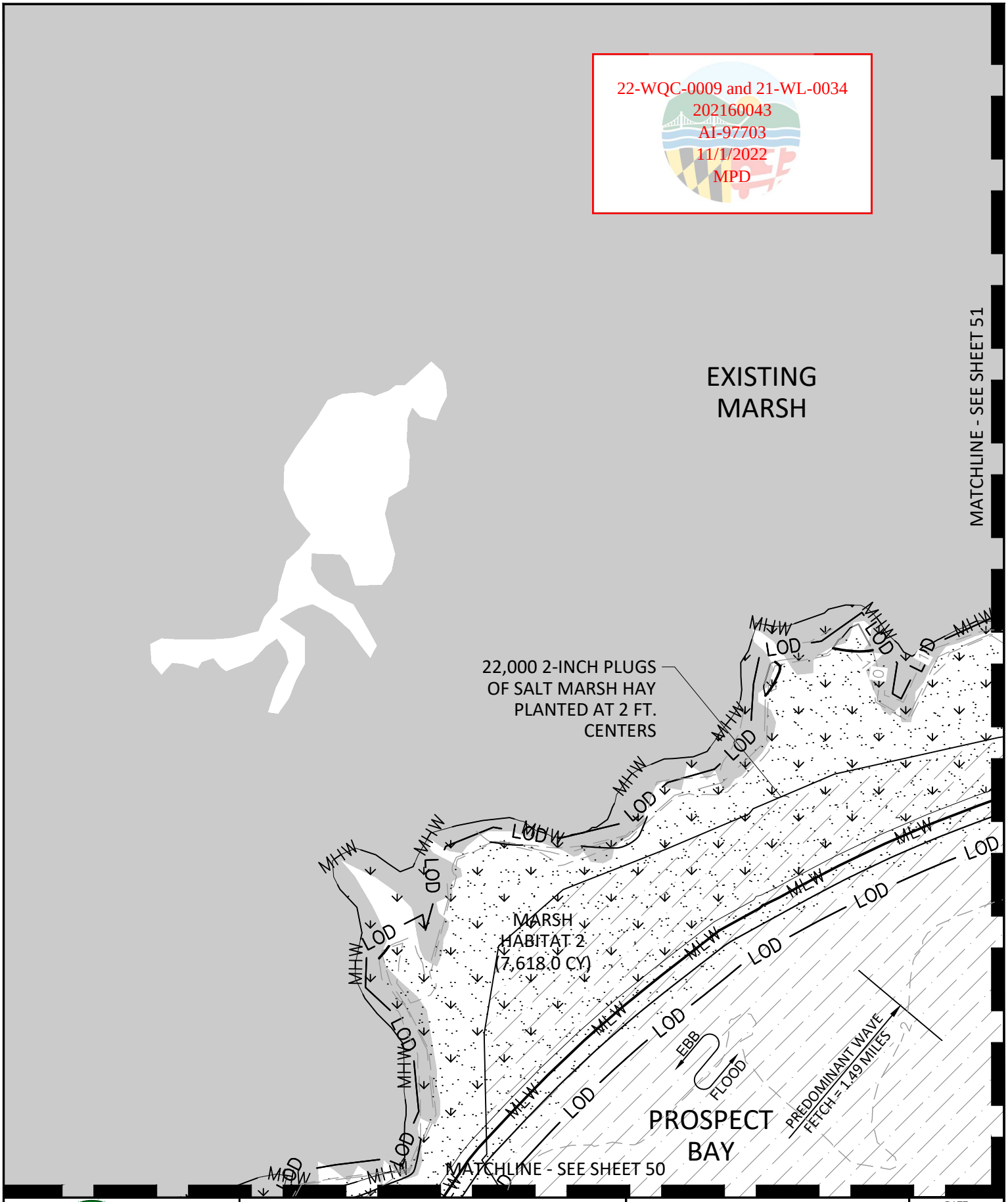

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ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 49 OF 73

N W E S

0 50' Feet

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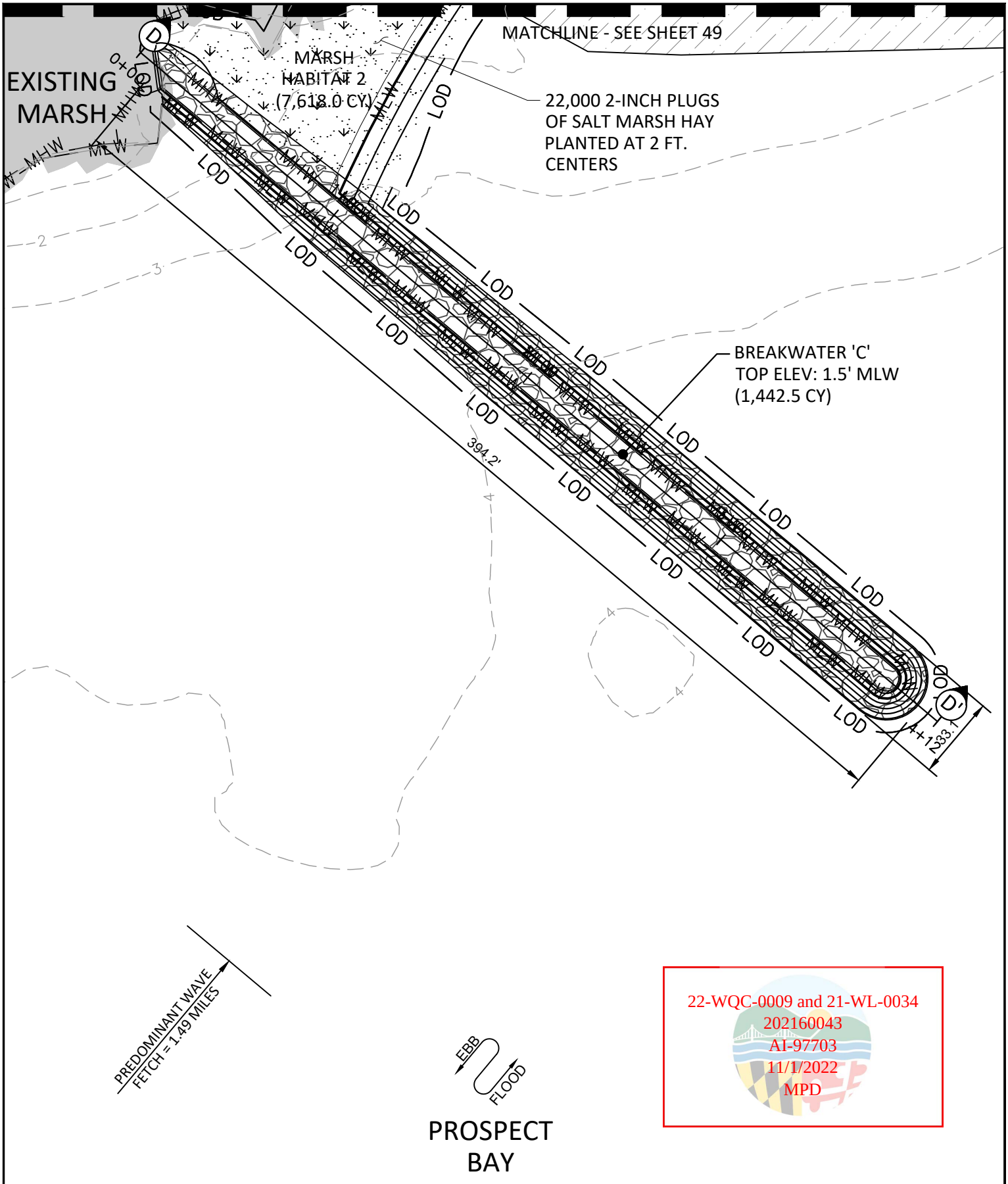

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PROPOSED CONDITIONS

SHEET 50 OF 73

N W E S

0 50' Feet

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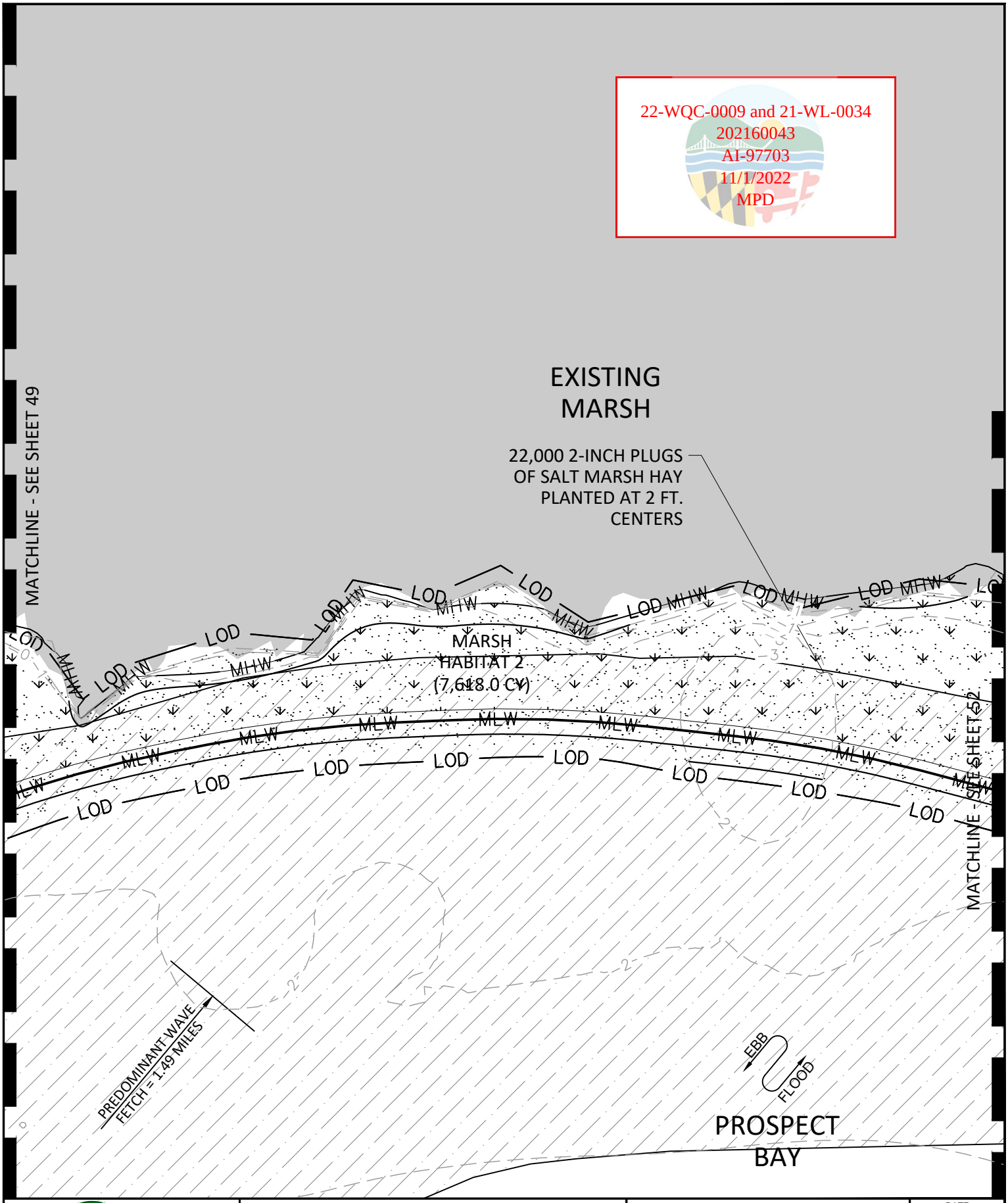

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ENGINEERING SERVICES
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DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 51 OF 73

N W E S

0 50' Feet

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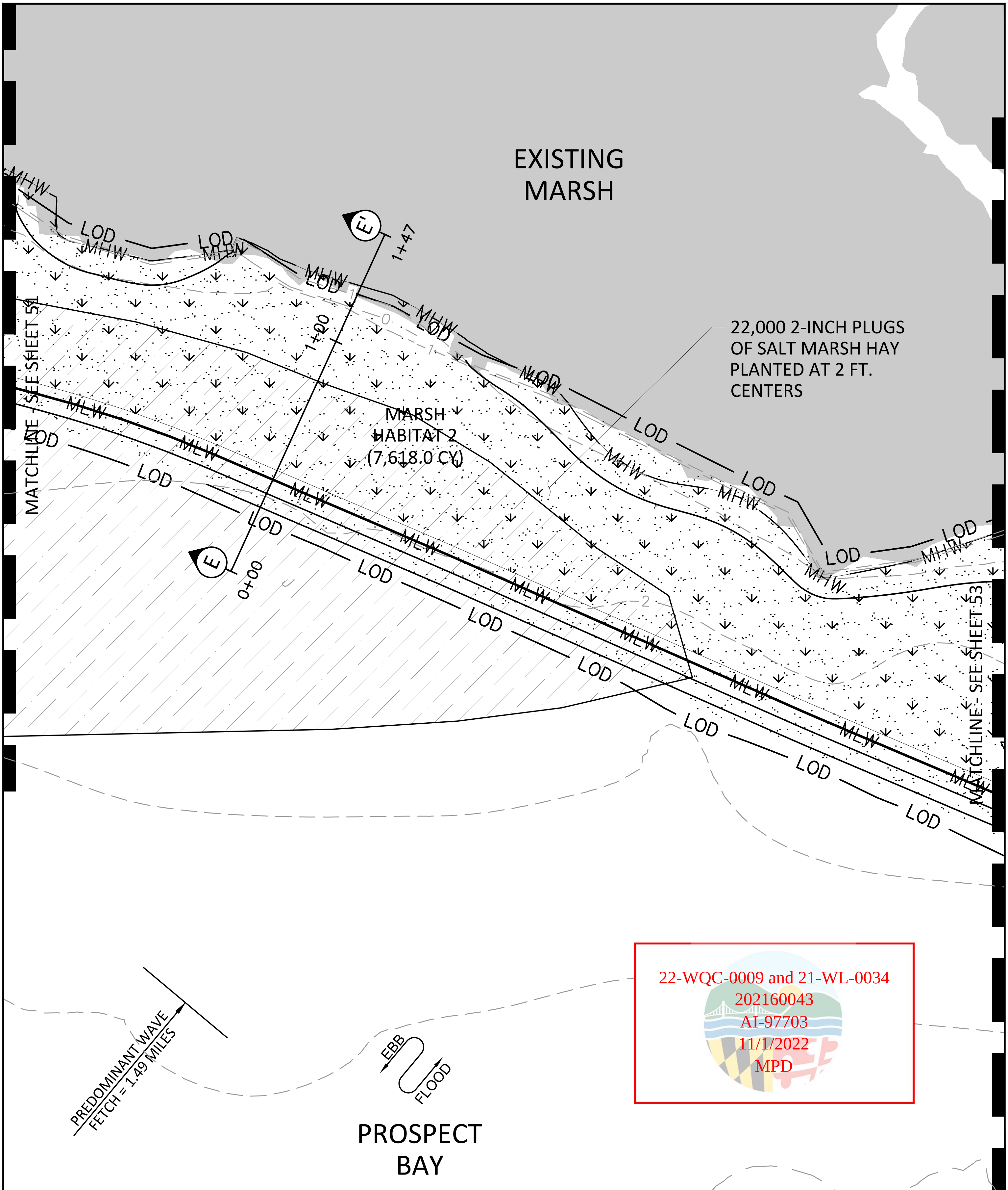

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 52 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
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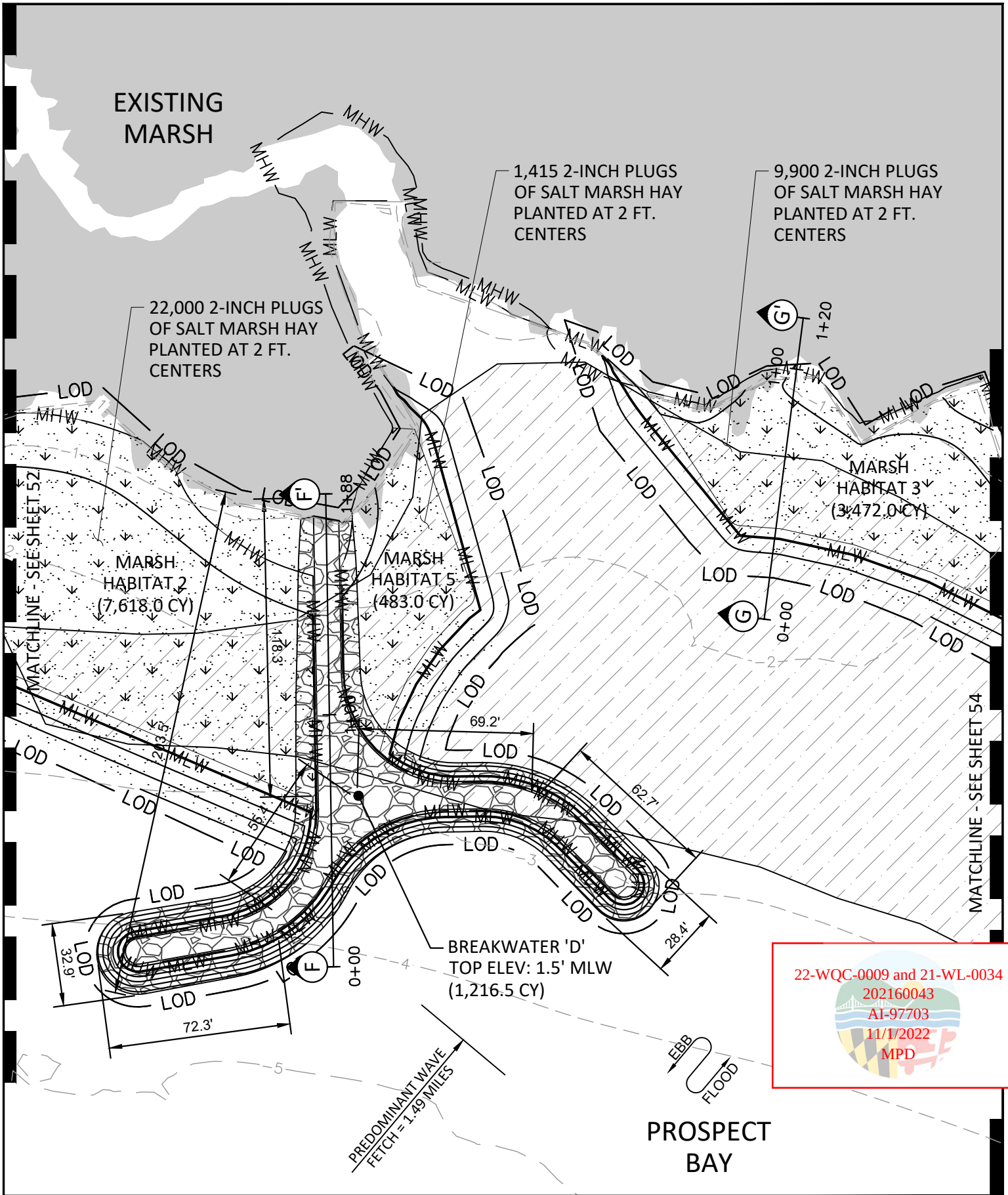

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PROPOSED CONDITIONS

SHEET 53 OF 73

0 50' Feet

CHES BAY ENV CENTER
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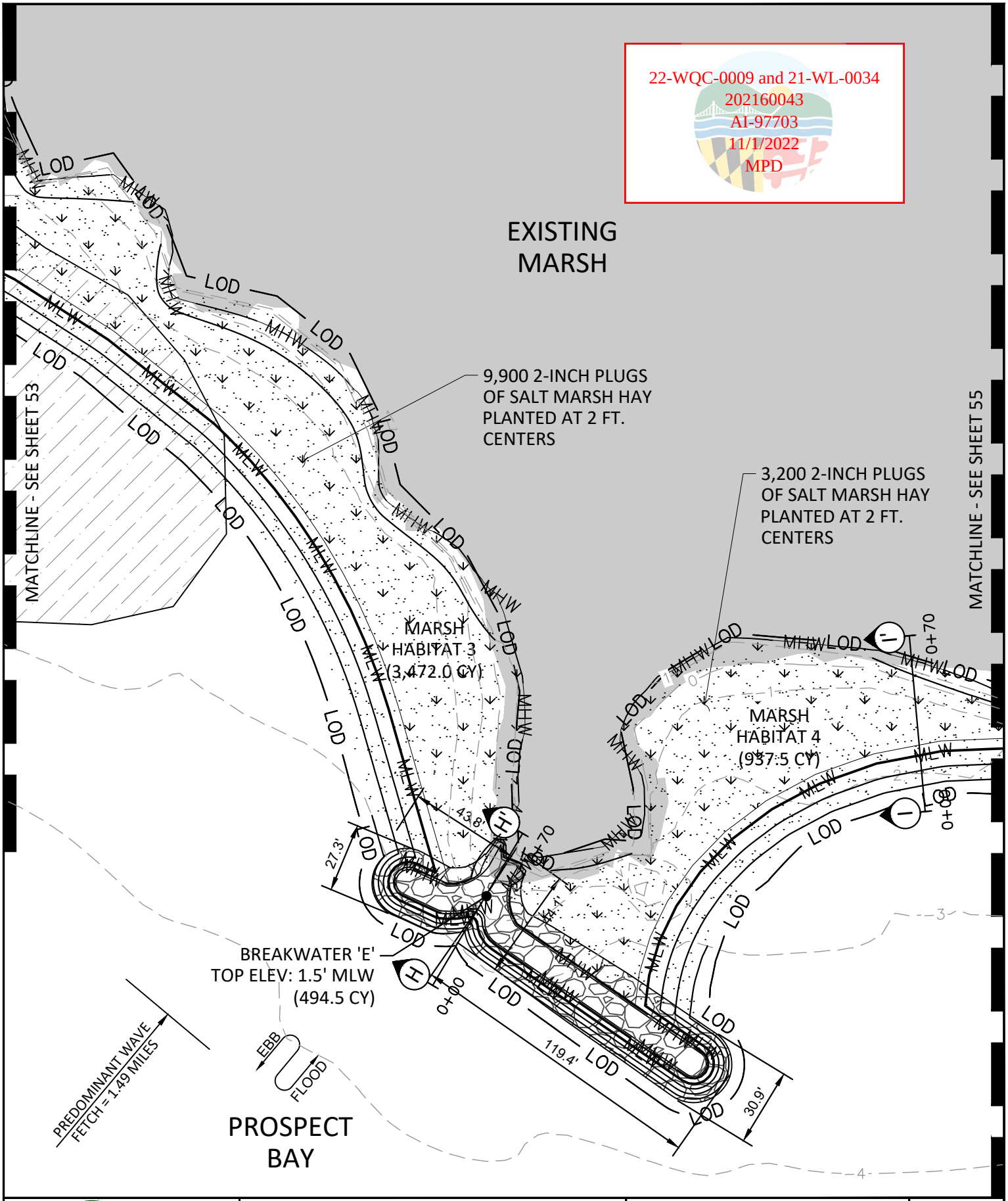
DRAWN BY	SAM
CHECKED BY	FAM



SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

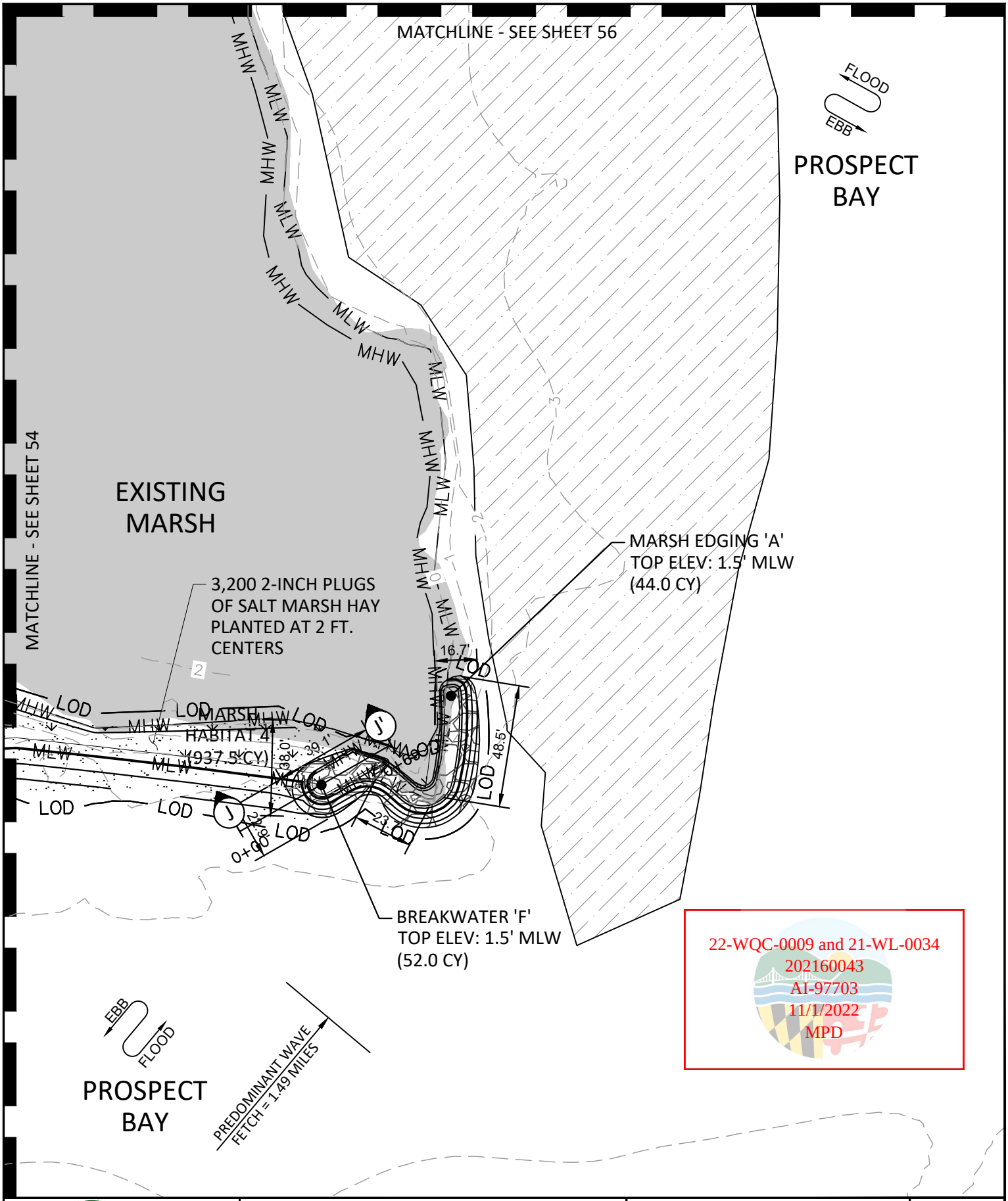
SHEET 54 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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PROPOSED CONDITIONS

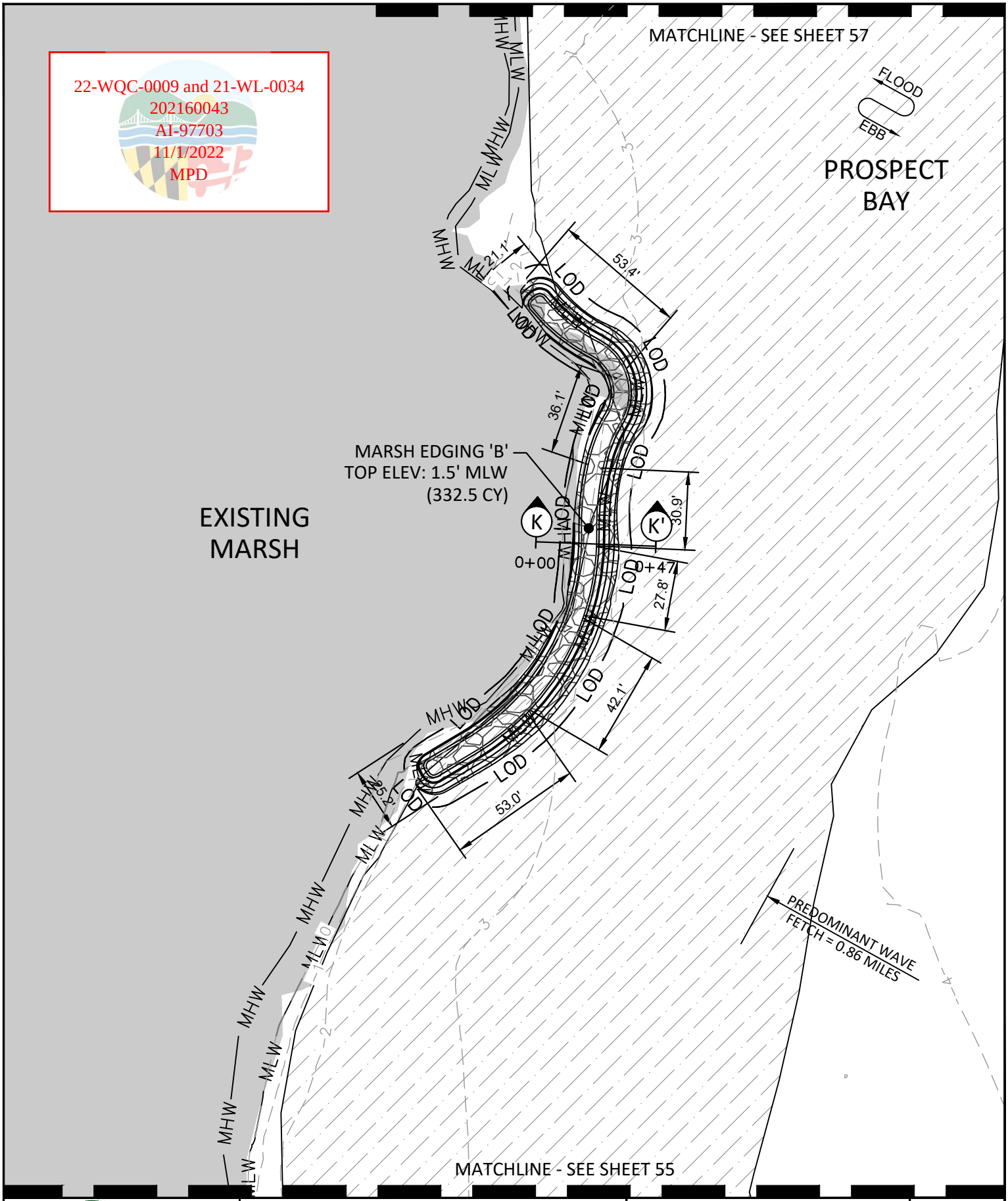
SHEET 55 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

PROPOSED CONDITIONS

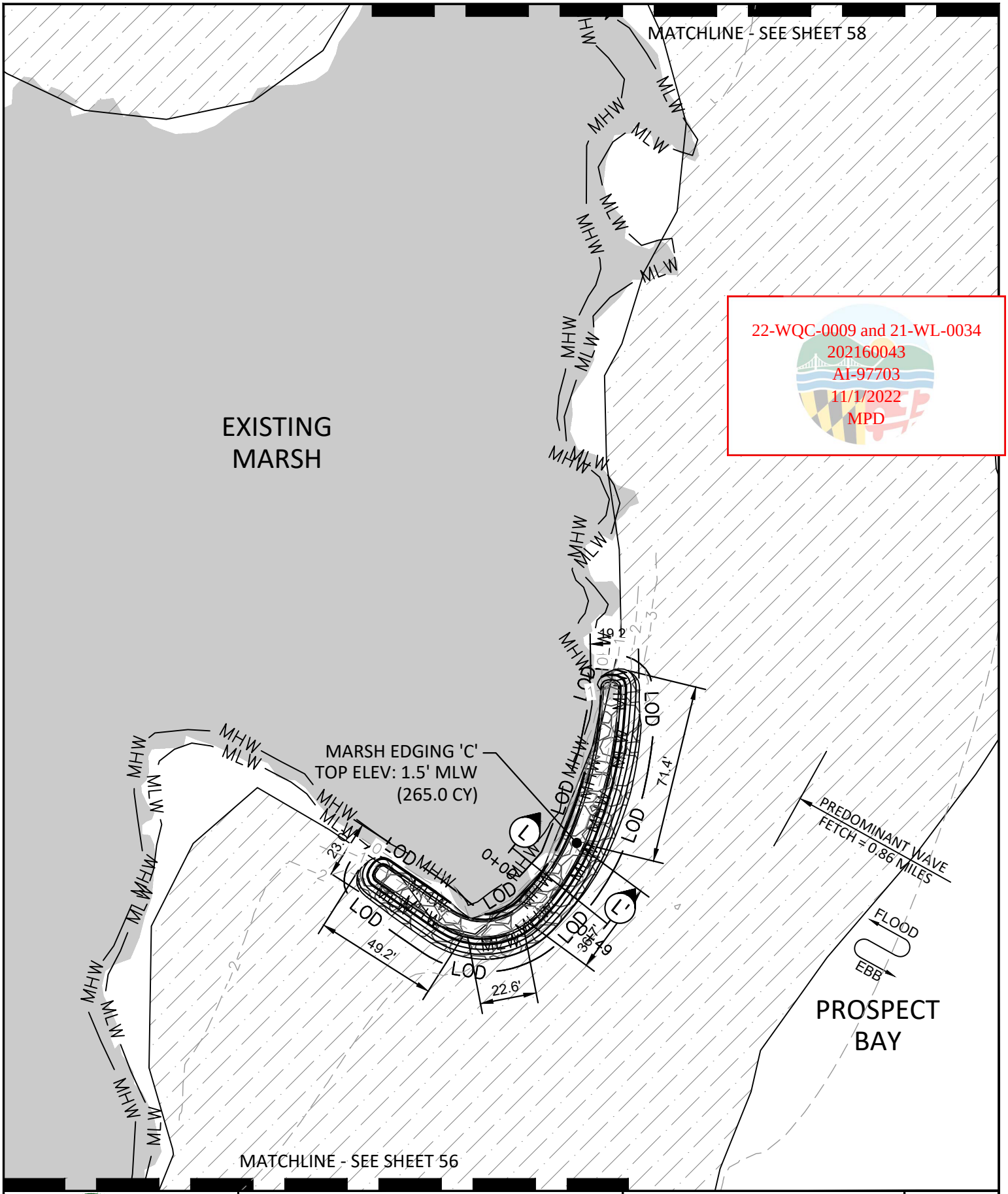
SHEET 56 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



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ENGINEERING SERVICES
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DENTON, MARYLAND 21629

PROPOSED CONDITIONS

SHEET 57 OF 73

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
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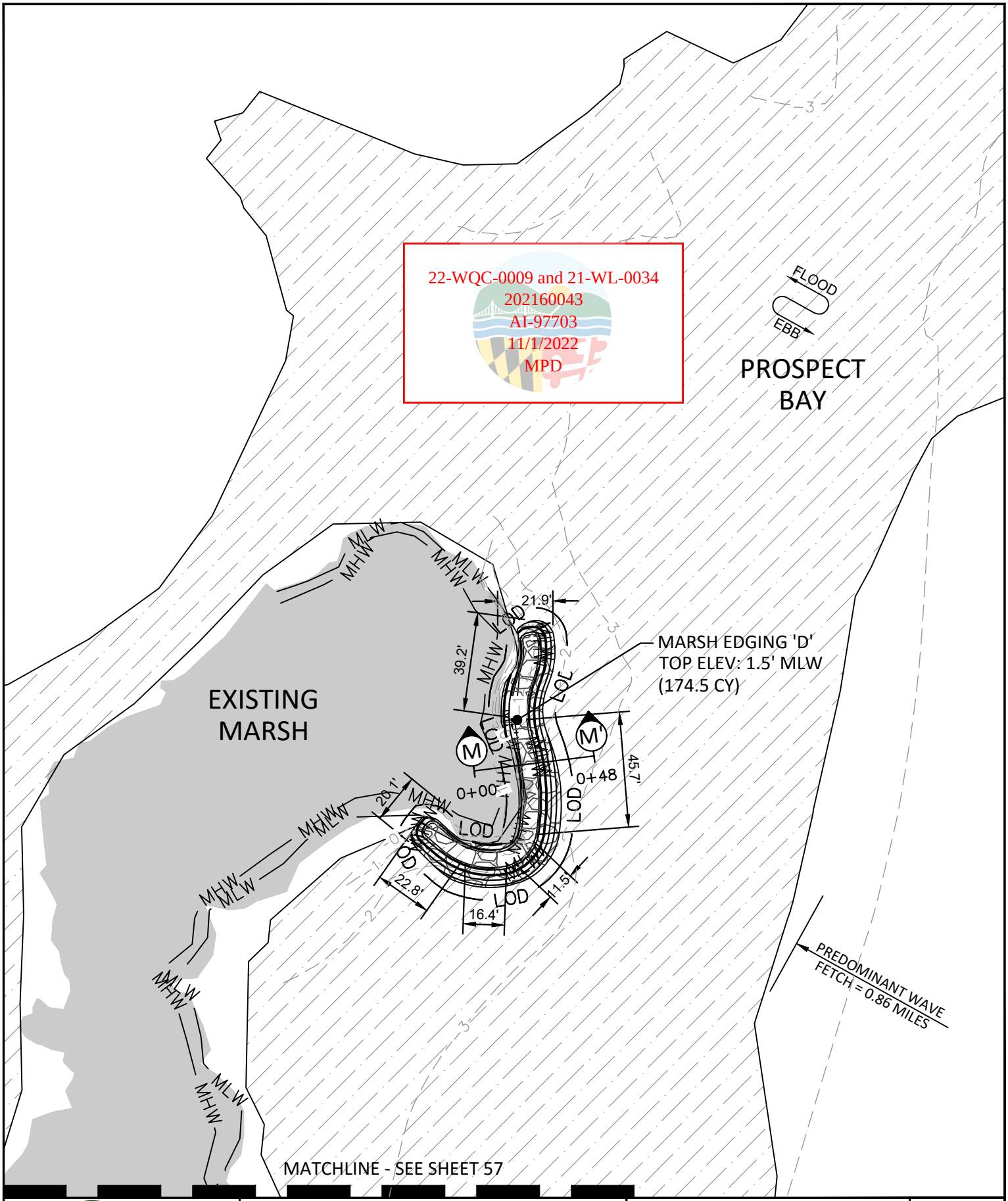
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



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ENGINEERING SERVICES
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PROPOSED CONDITIONS

SHEET 58 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
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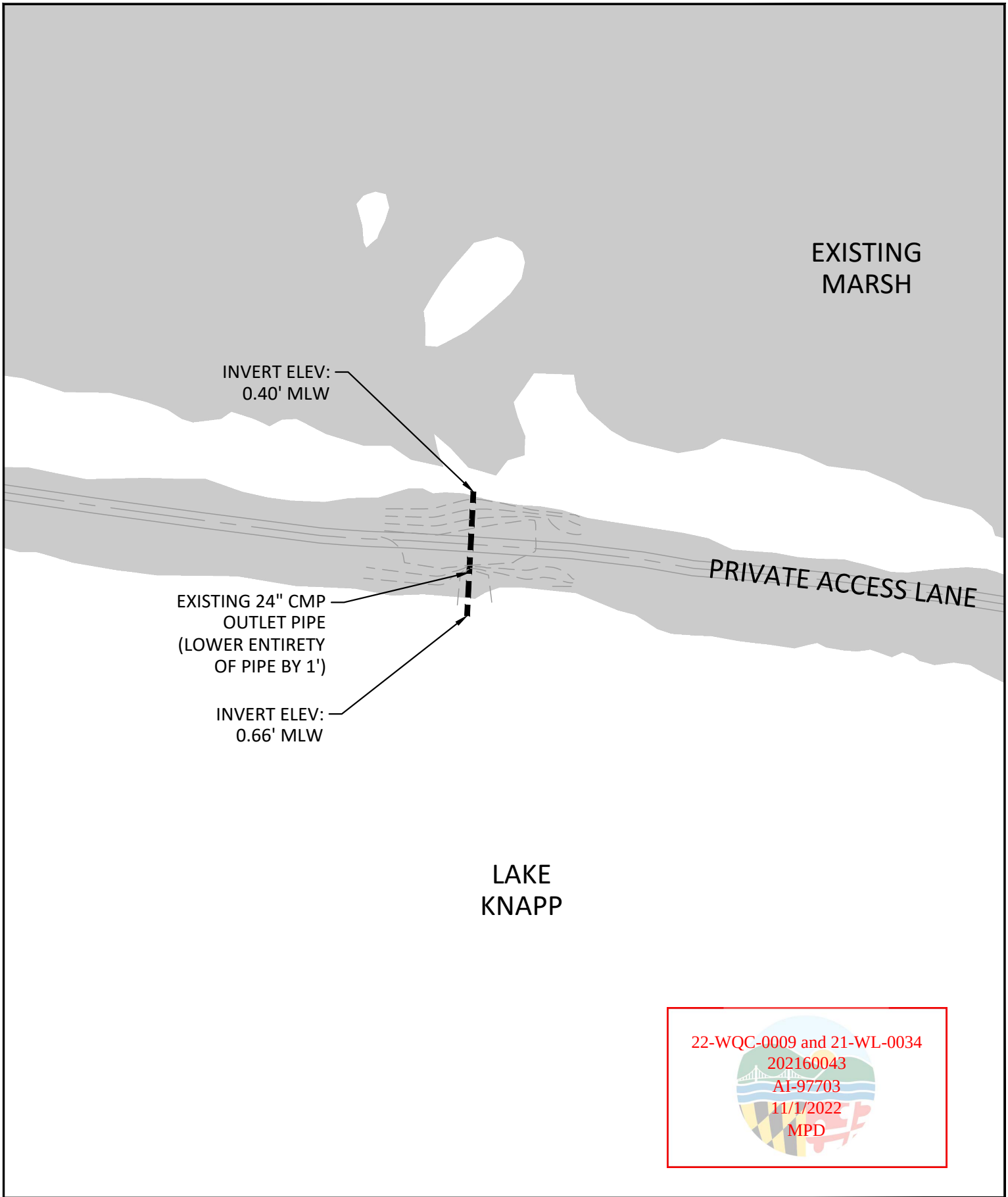
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



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LAKE KNAPP OUTLET

SHEET 59 OF 73

N W E S

0 50' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
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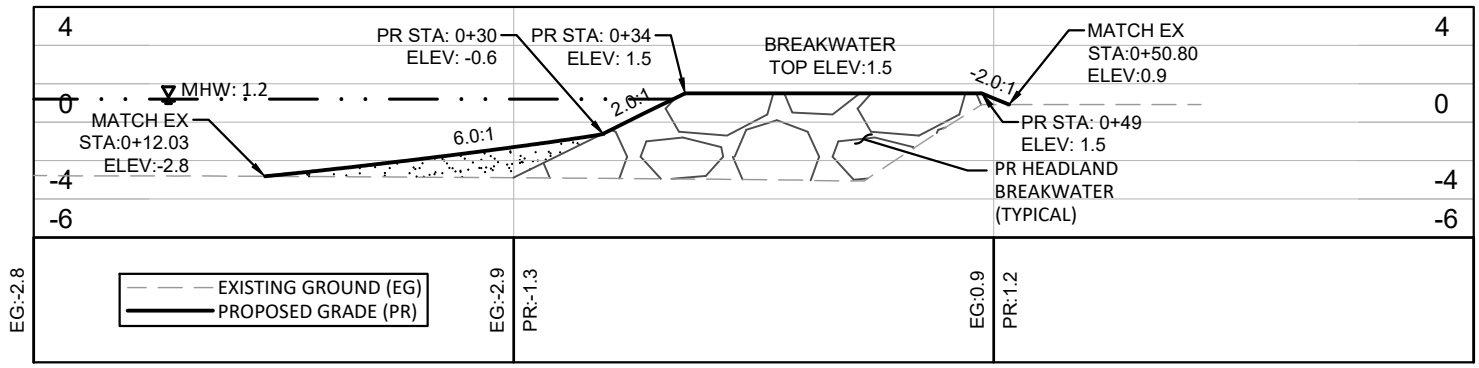
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



SECTION A-A'

SCALE: 1" = 10' H
1" = 10' V

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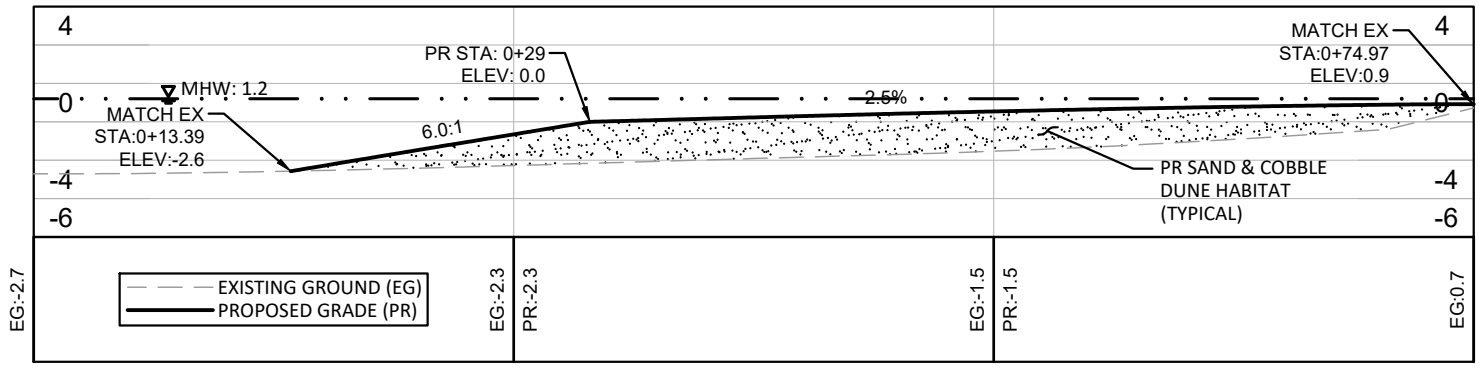
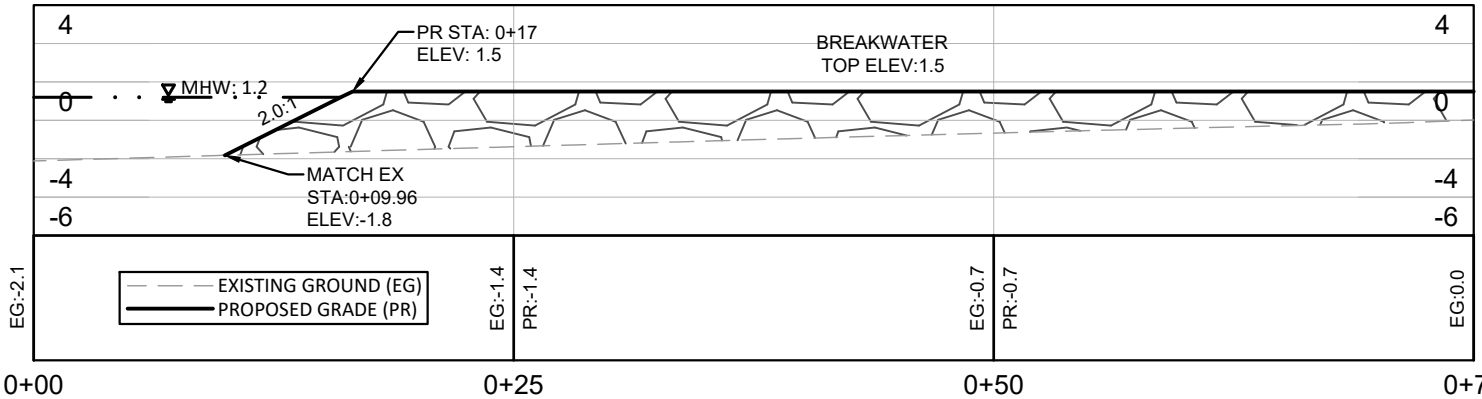


SECTION B-B'

SCALE: 1" = 10' H
1" = 10' V



SECTION C-C'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
2. SALT MARSH HAY TO BE PLANTED IN ALL DUNE HABITAT AREAS ABOVE MHW (REFER TO DUNE HABITAT DETAIL)

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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CROSS SECTIONS

SHEET 60 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
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MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
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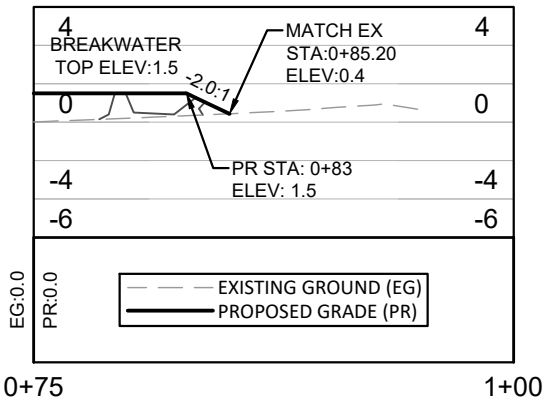
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



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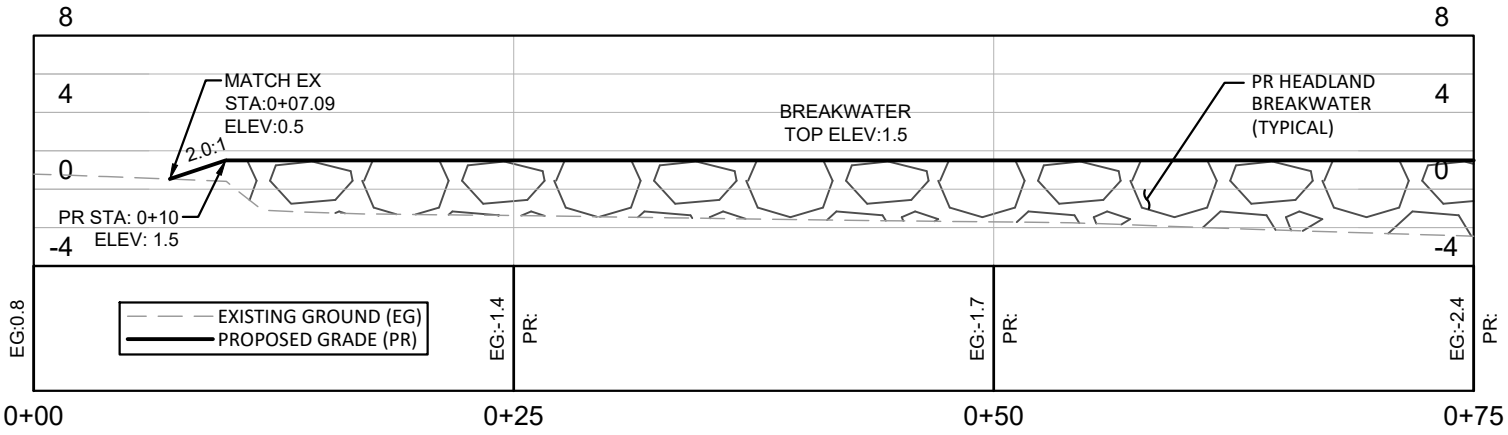
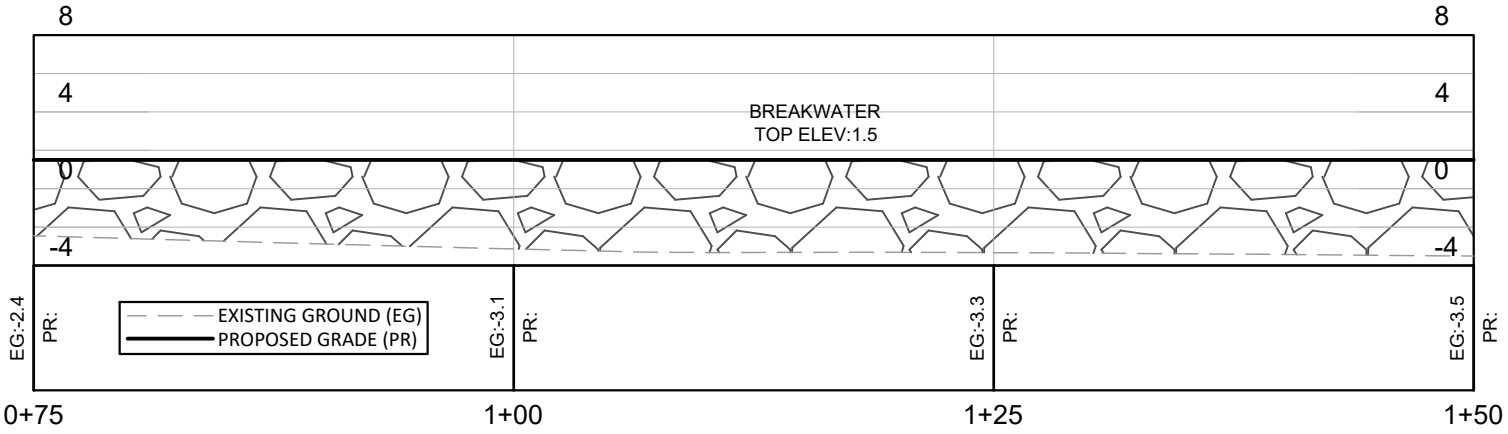
SECTION C-C'

SCALE: 1" = 10' H
1" = 10' V



SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V



SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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CROSS SECTIONS

SHEET 61 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
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PREPARED FOR
MD DEPT OF THE ENVIRONMENT

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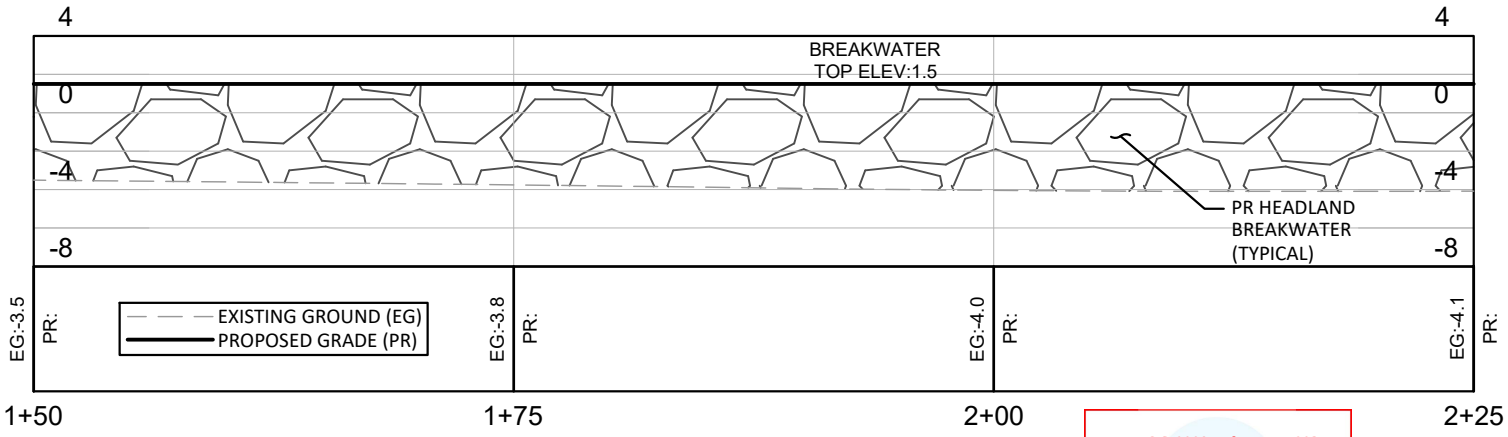

SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V

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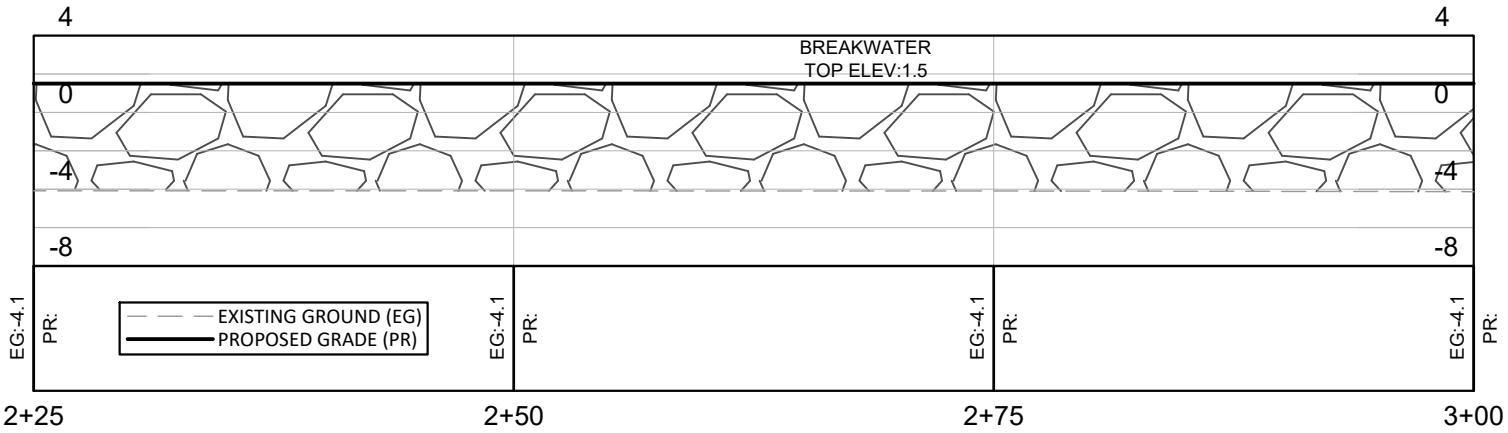
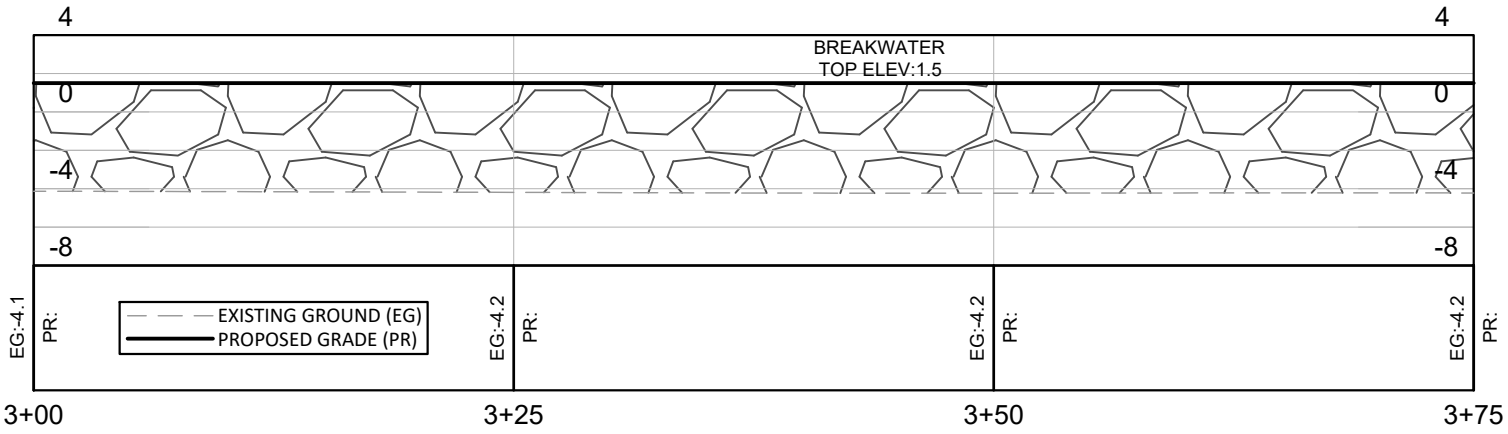
MPD



SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V



SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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CROSS SECTIONS

SHEET 62 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

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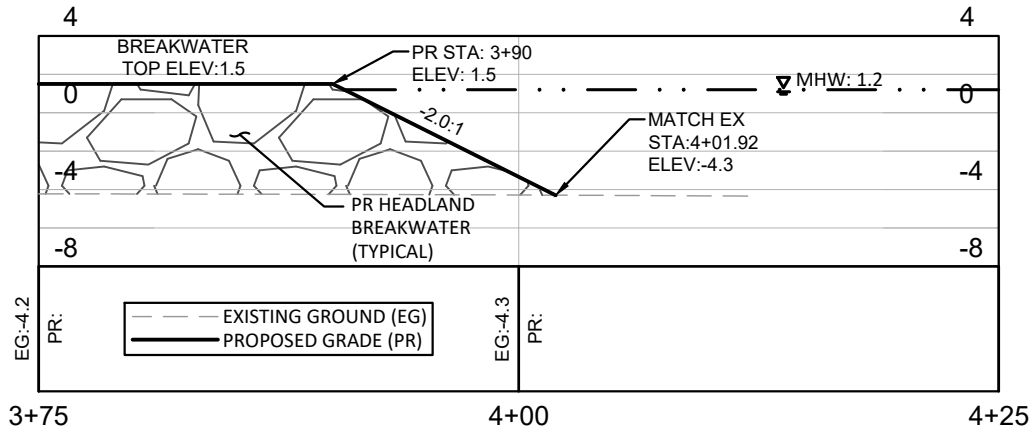

SECTION D-D'

SCALE: 1" = 10' H
1" = 10' V

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202160043
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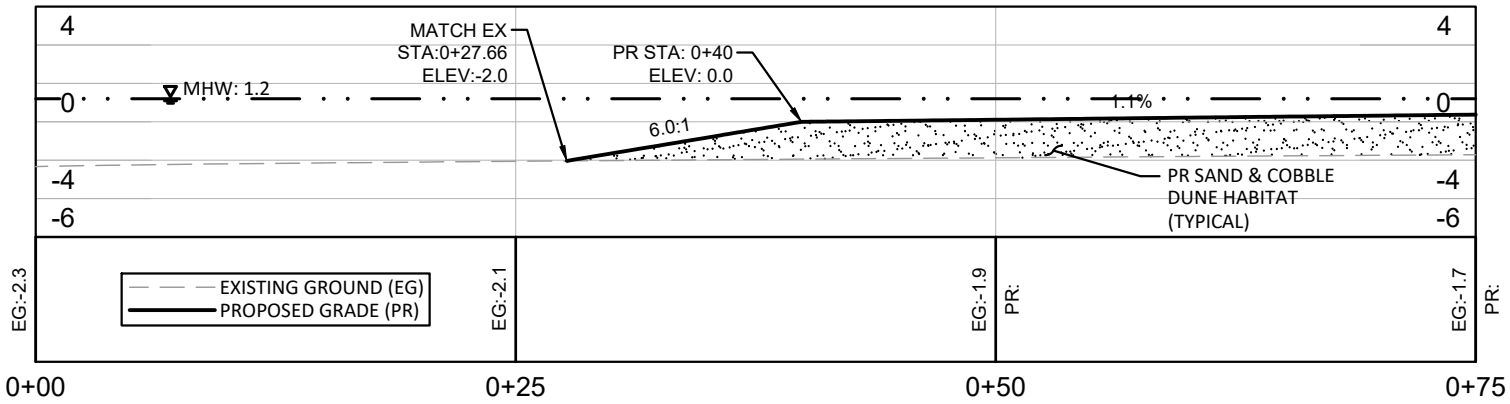
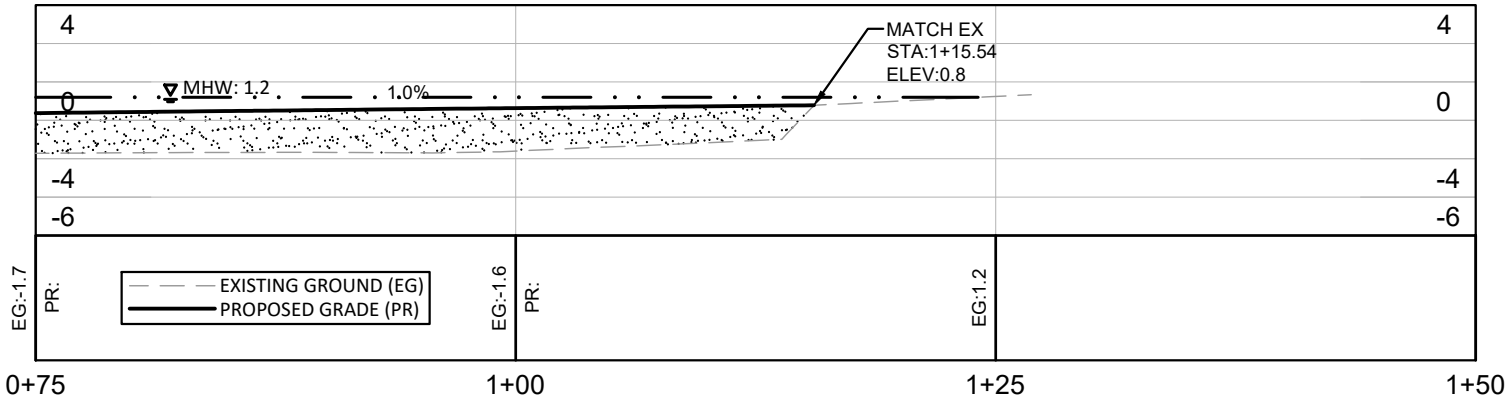
MPD



SECTION E-E'

SCALE: 1" = 10' H
1" = 10' V



SECTION E-E'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
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SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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CROSS SECTIONS

SHEET 63 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
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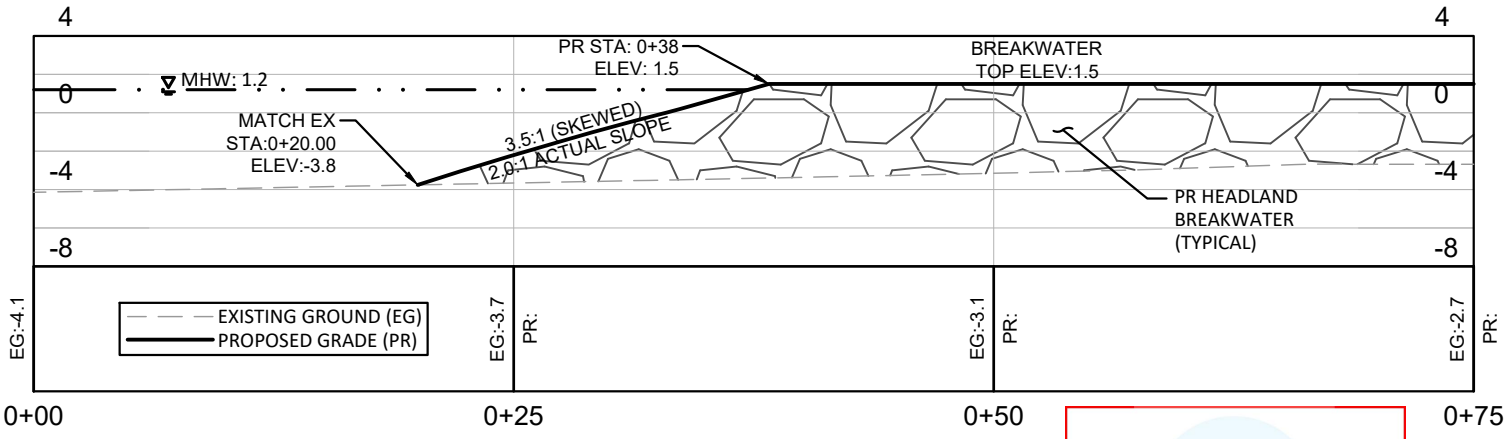

SECTION F-F'

SCALE: 1" = 10' H
1" = 10' V

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202160043
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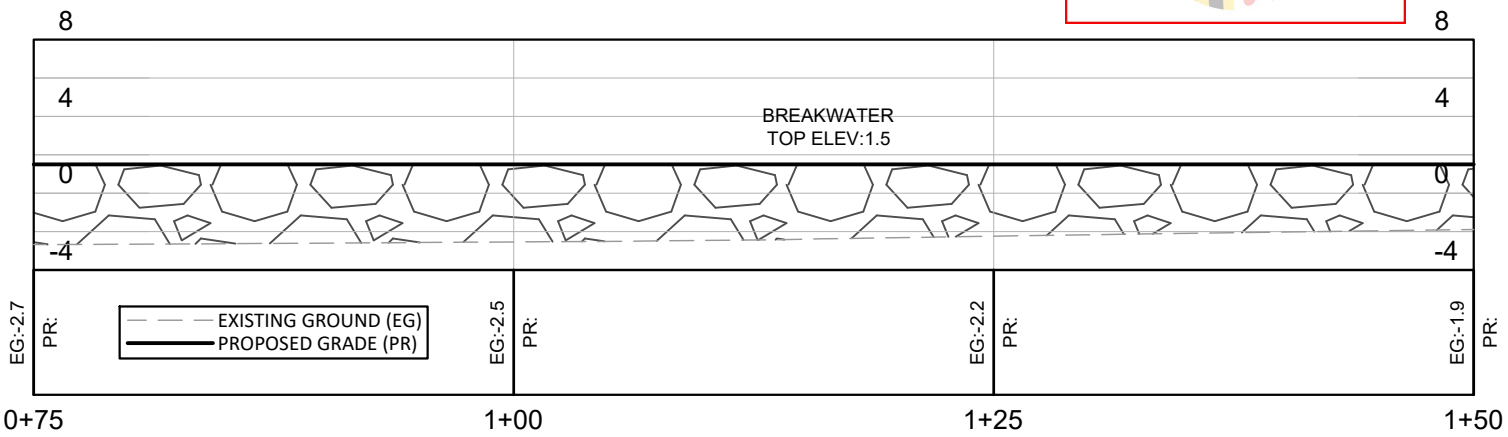
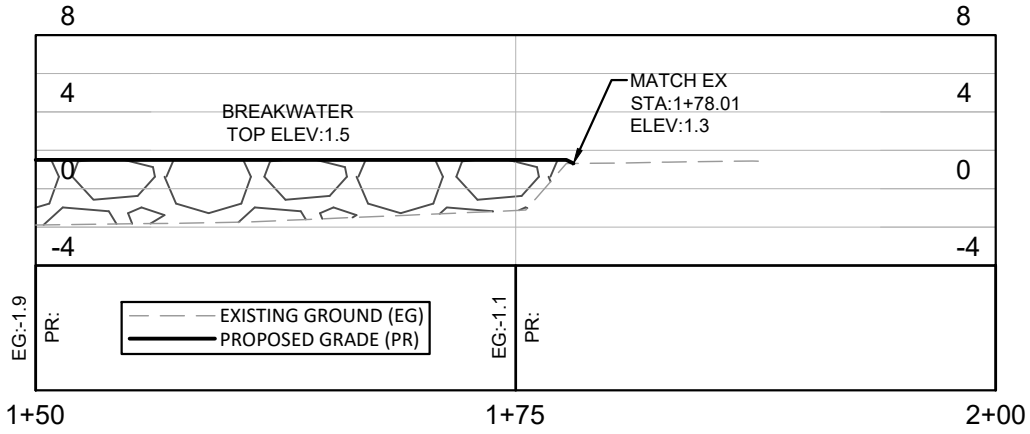
MPD



SECTION F-F'

SCALE: 1" = 10' H
1" = 10' V



SECTION F-F'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
2. SALT MARSH HAY TO BE PLANTED IN ALL DUNE HABITAT AREAS ABOVE MHW (REFER TO DUNE HABITAT DETAIL)

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
410 S. SECOND STREET
DENTON, MARYLAND 21629

CROSS SECTIONS

SHEET 64 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
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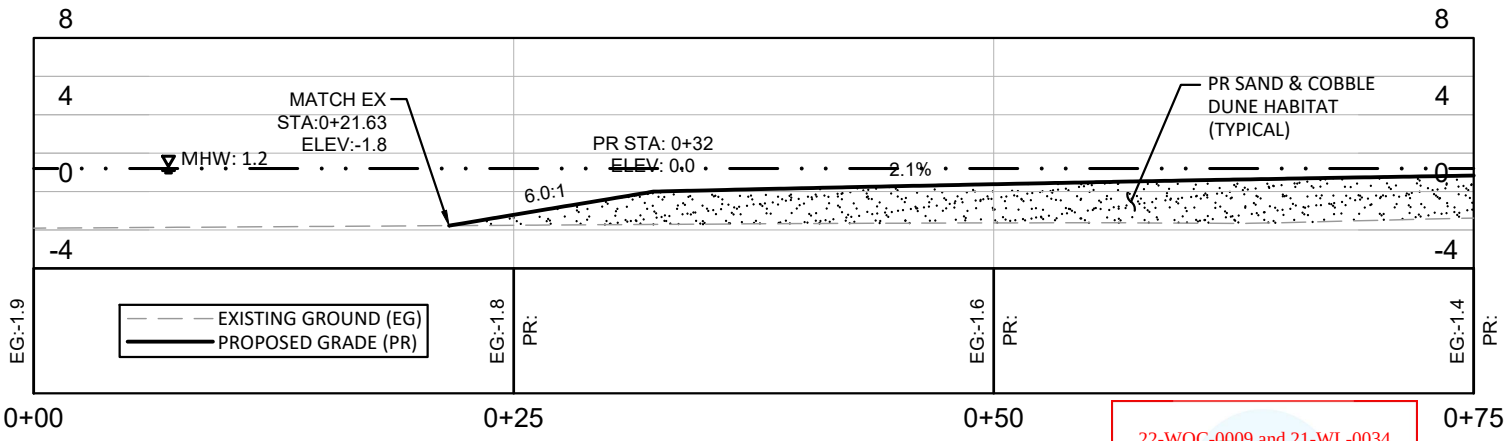

SECTION G-G'

SCALE: 1" = 10' H
1" = 10' V

22-WQC-0009 and 21-WL-0034
202160043
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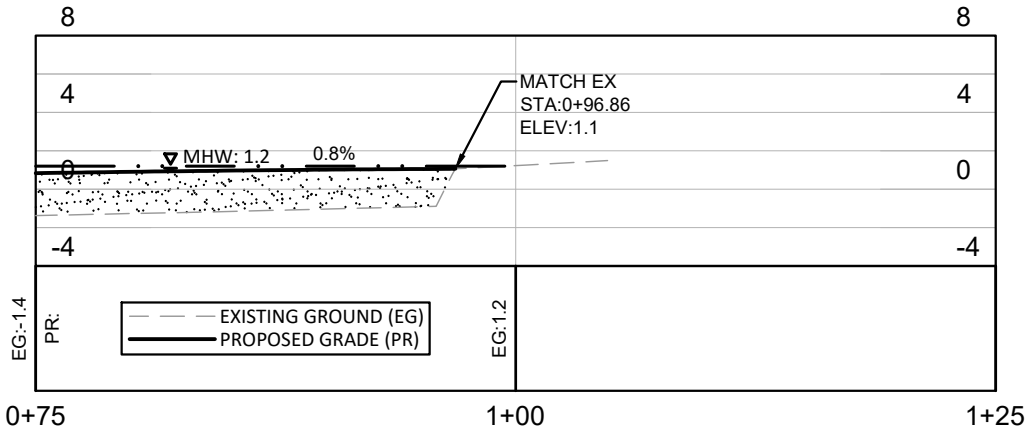
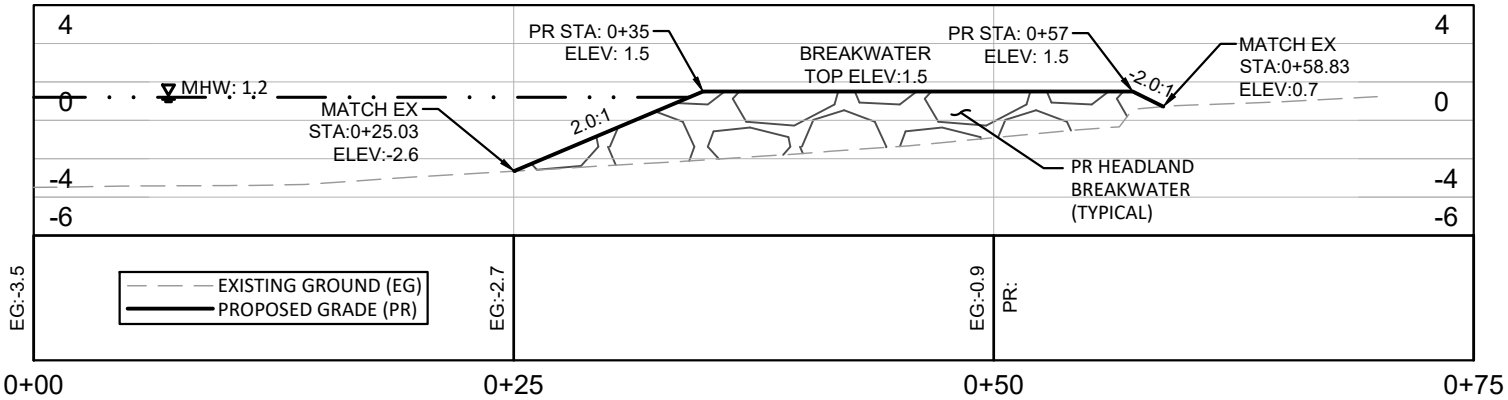
11/1/2022
MPD



SECTION G-G'

SCALE: 1" = 10' H
1" = 10' V



SECTION H-H'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
2. SALT MARSH HAY TO BE PLANTED IN ALL DUNE HABITAT AREAS ABOVE MHW (REFER TO DUNE HABITAT DETAIL)

SUSTAINABLE SCIENCE, LLC
ENGINEERING SERVICES
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CROSS SECTIONS

SHEET 65 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
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DATE	7/9/2021
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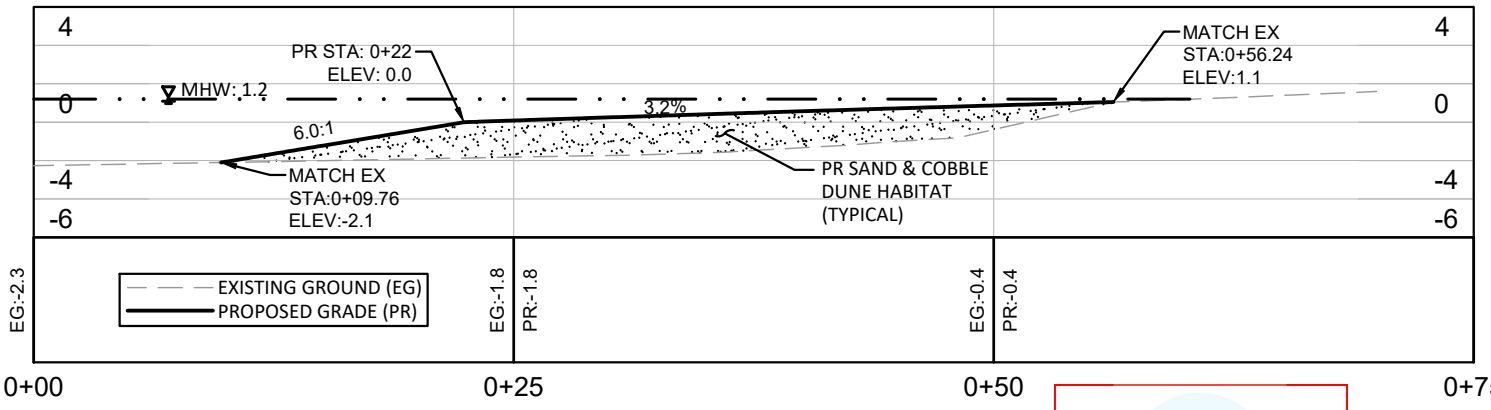
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



SECTION I-I'

SCALE: 1" = 10' H
1" = 10' V

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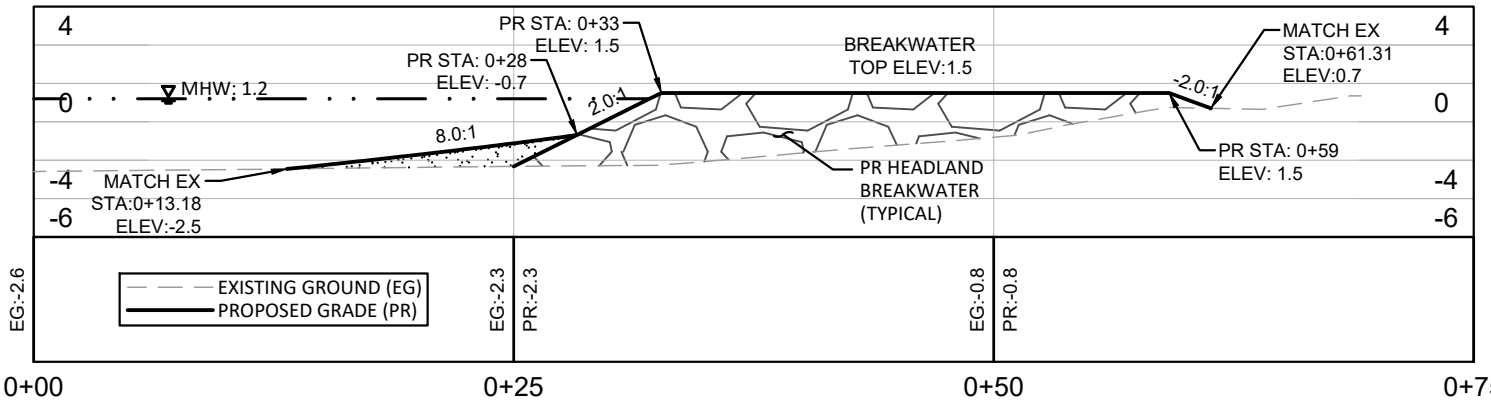
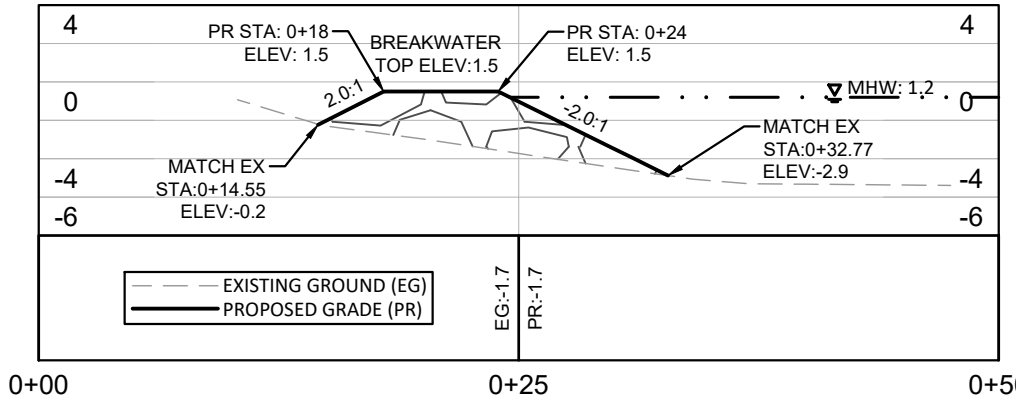


SECTION J-J'

SCALE: 1" = 10' H
1" = 10' V



SECTION K-K'

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
2. SALT MARSH HAY TO BE PLANTED IN ALL DUNE HABITAT AREAS ABOVE MHW (REFER TO DUNE HABITAT DETAIL)

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CROSS SECTIONS

SHEET 66 OF 73

N W E S

0 10' Feet

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DATE	7/9/2021
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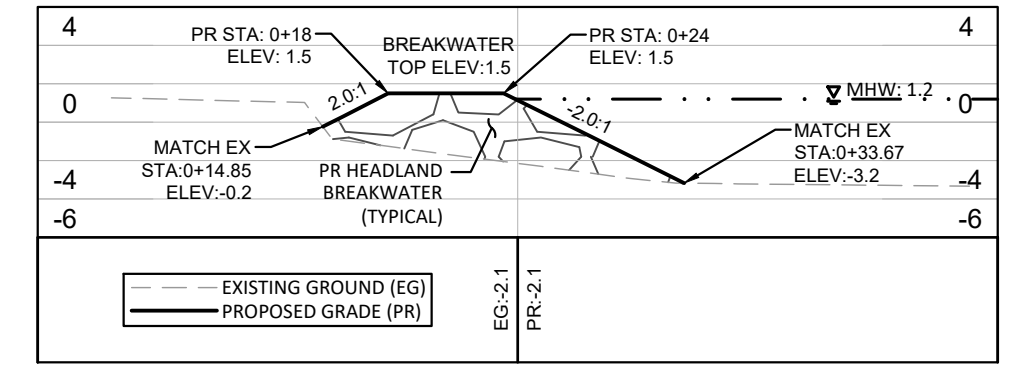
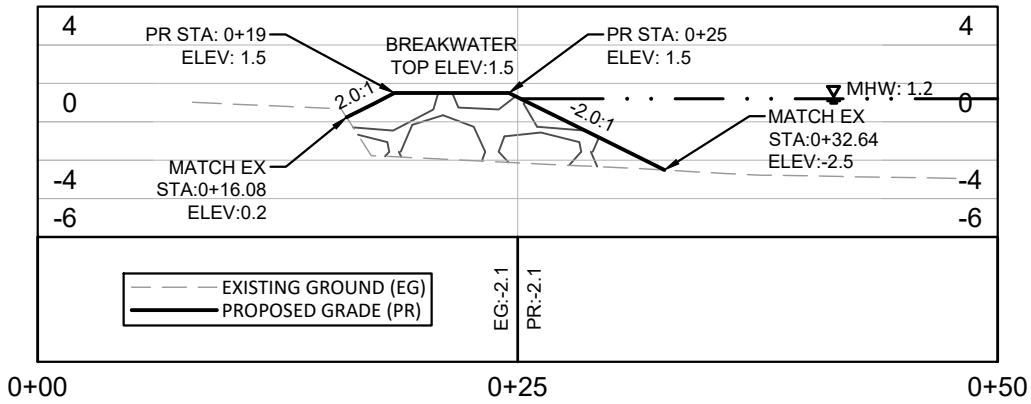
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM



SECTION L-L'

SCALE: 1" = 10' H
1" = 10' V



SECTION M-M'

SCALE: 1" = 10' H
1" = 10' V

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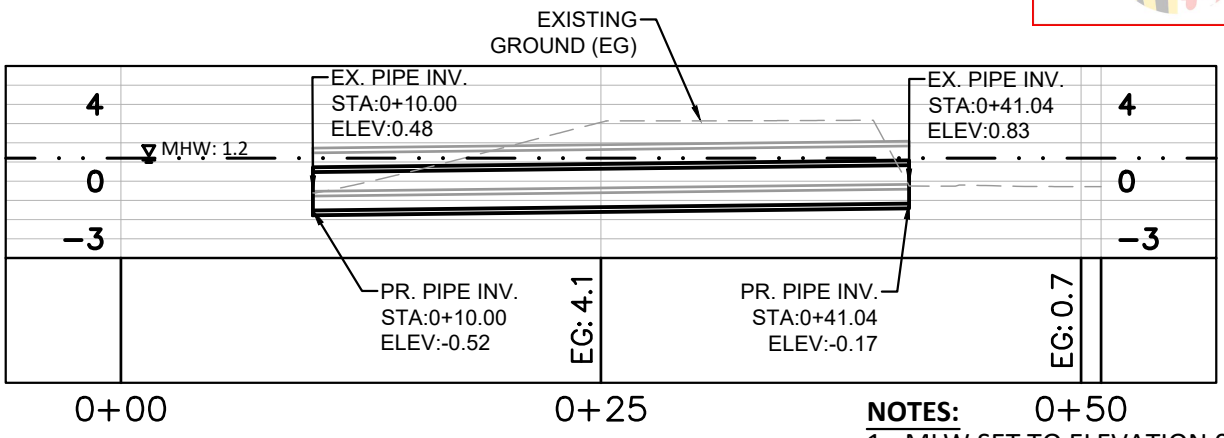

CULVERT PROFILE

SCALE: 1" = 10' H
1" = 10' V

NOTES:

1. MLW SET TO ELEVATION 0.0'
2. SALT MARSH HAY TO BE PLANTED IN ALL DUNE HABITAT AREAS ABOVE MHW (REFER TO DUNE HABITAT DETAIL)

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ENGINEERING SERVICES
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DENTON, MARYLAND 21629

CROSS SECTIONS

SHEET 67 OF 73

N W E S

0 10' Feet

CHES BAY ENV CENTER
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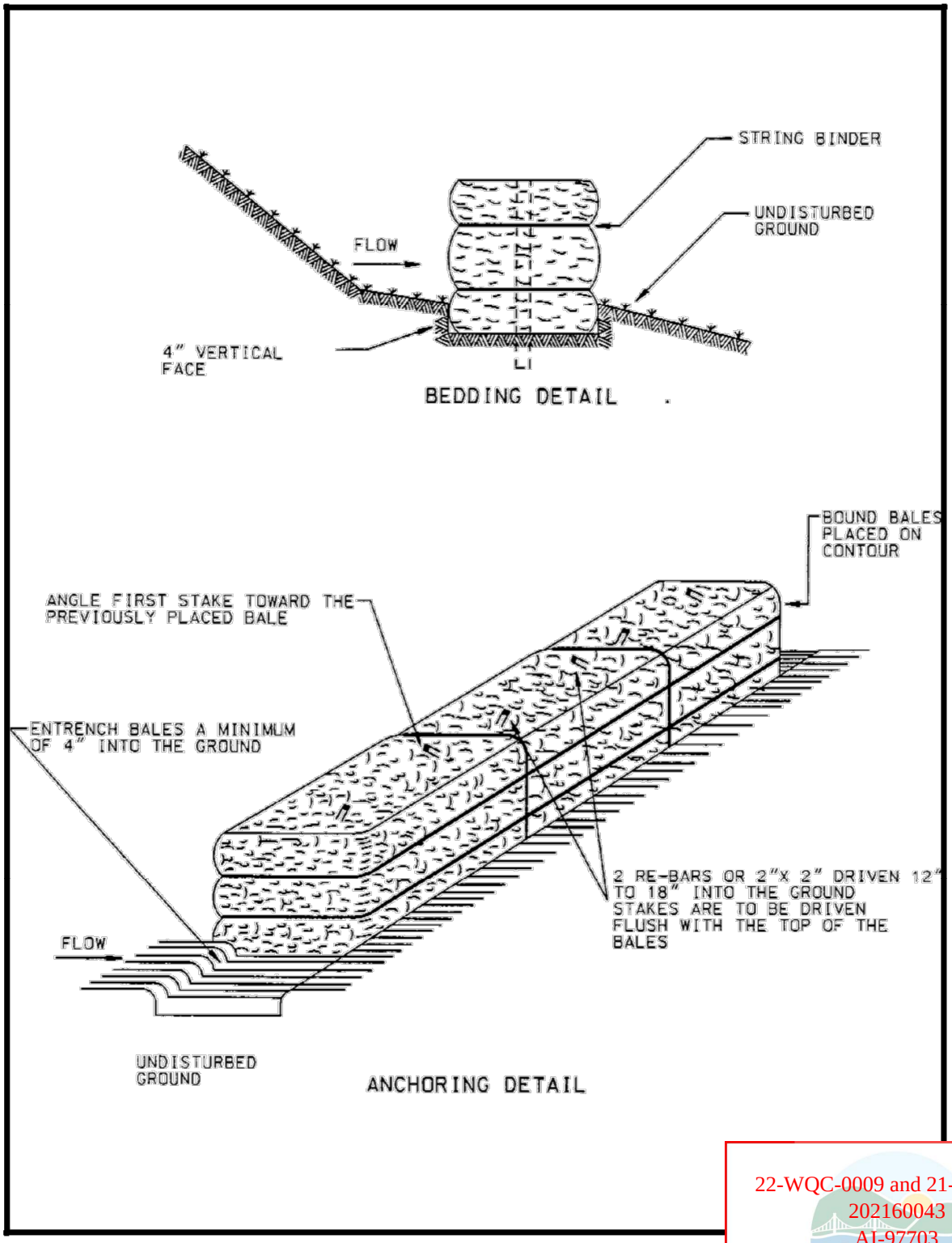

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SUSTAINABLE SCIENCE, LLC
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STAKED HAY BALE DETAIL

NOT TO SCALE

CHES BAY ENV CENTER
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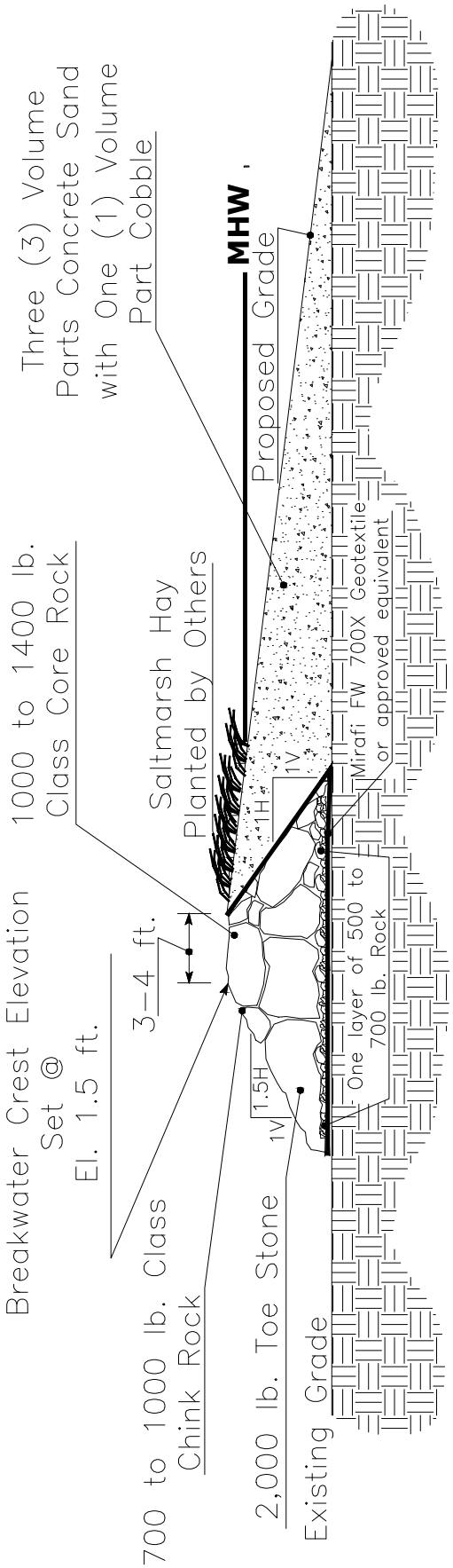

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DUNE HABITAT DETAIL

NOT TO SCALE

SHEET 69 OF 73

CHES BAY ENV CENTER
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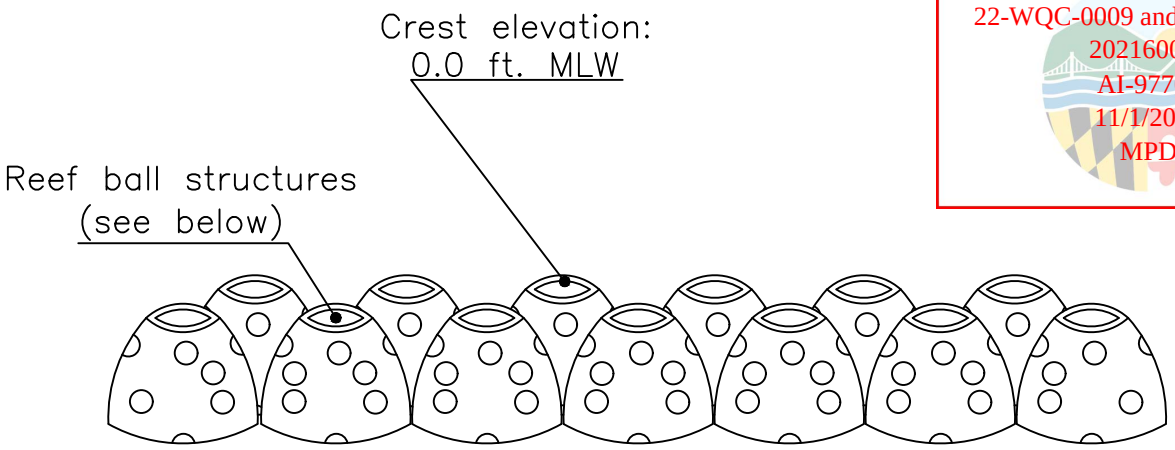
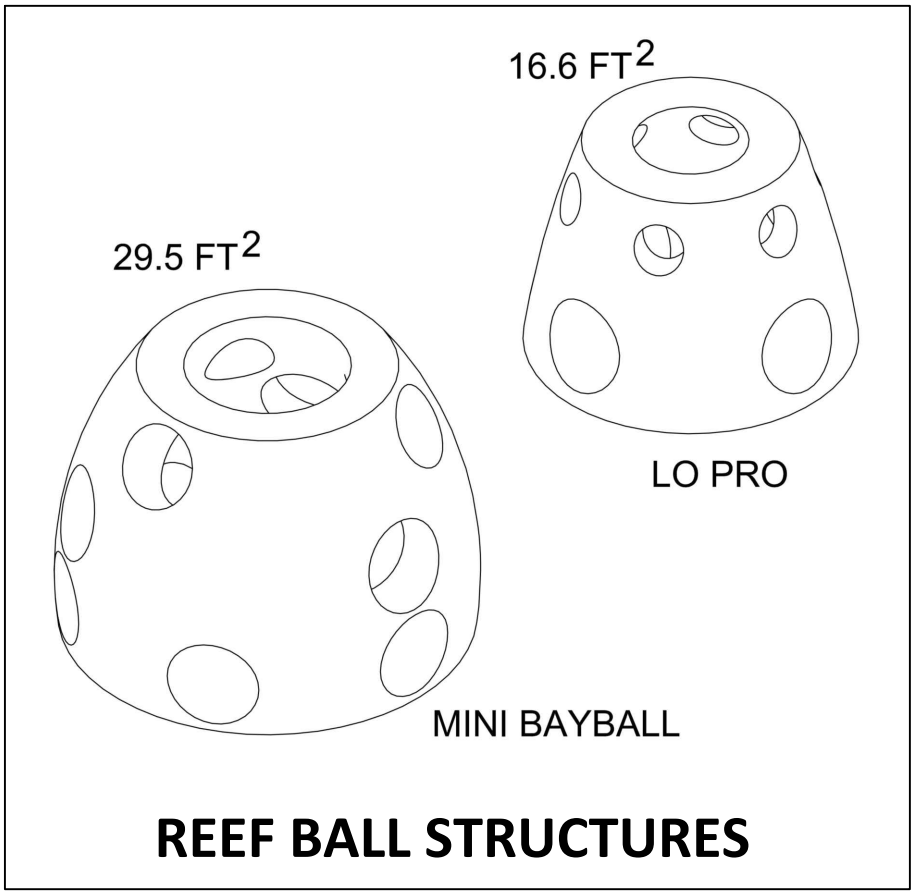
11/1/2022
MPD



REEF BALL TYPICAL SECTION

Not to Scale



REEF BALL STRUCTURES

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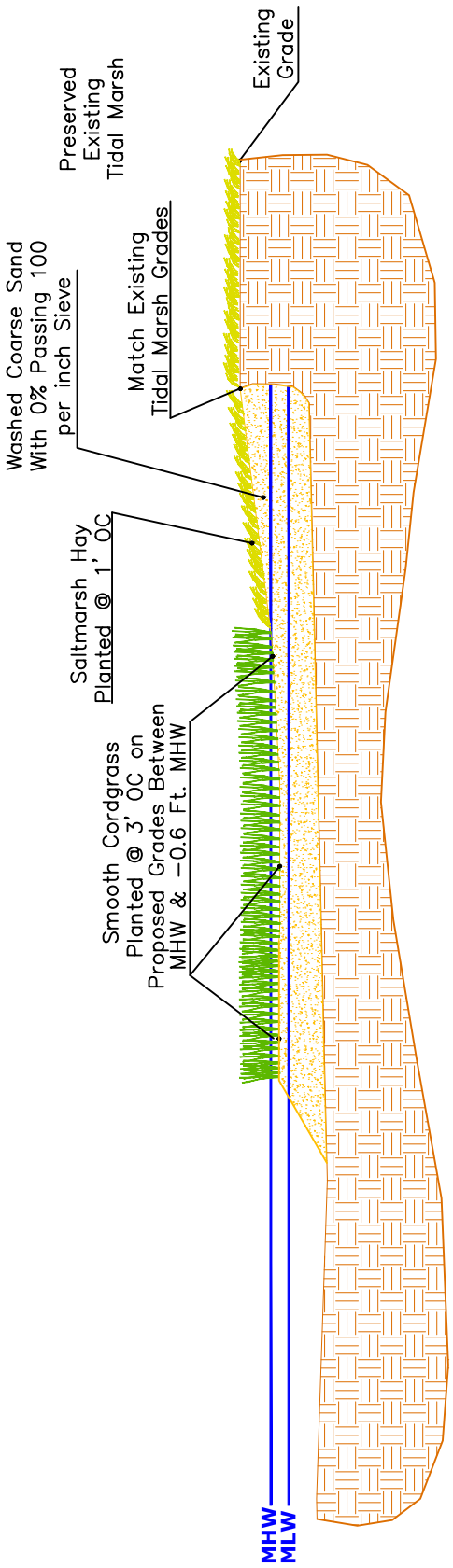
REEF BALL DETAIL
NOT TO SCALE
SHEET 70 OF 73

CHES BAY ENV CENTER
TIDAL WATERS JPA PLAN
PREPARED FOR
MD DEPT OF THE ENVIRONMENT

DATE	7/9/2021
SS PROJECT #	20004
SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM

22-WQC-0009 and 21-WL-0034
202160043
AI-97703
11/1/2022
MPD



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MARSH CREATION DETAIL

NOT TO SCALE

SHEET 71 OF 73

CHES BAY ENV CENTER
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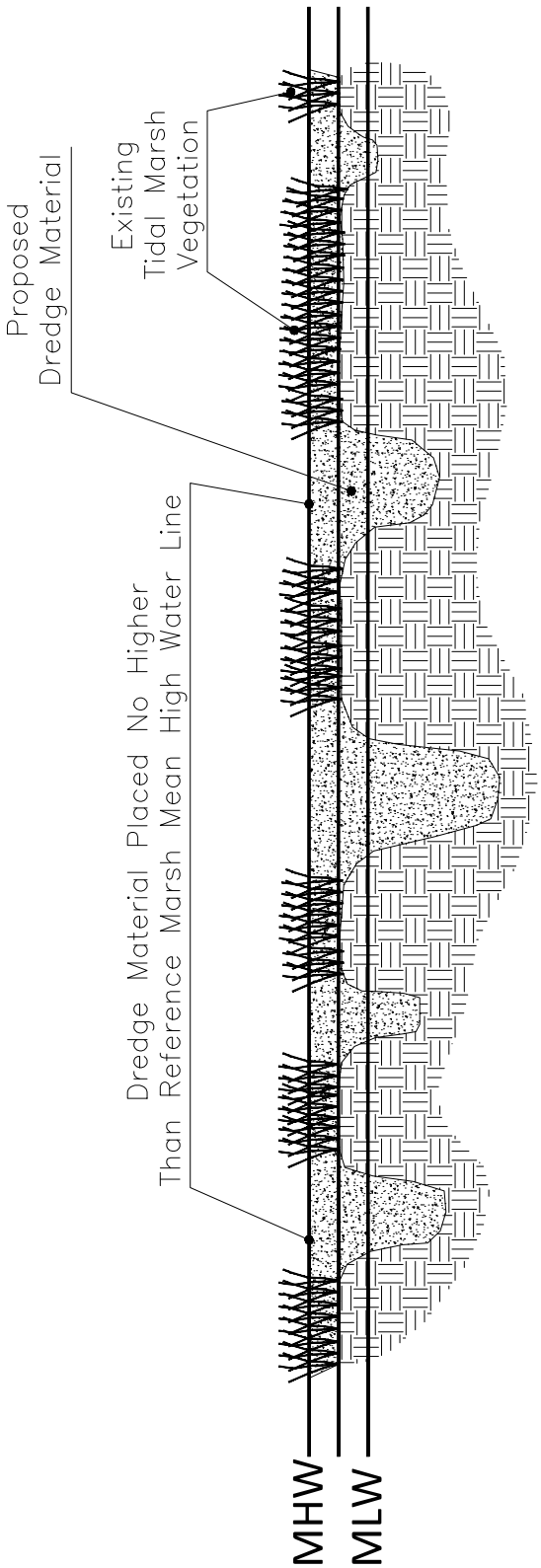

NOTES:

1) Target placement final elevations to be determined at the time of placement by elevation surveying nearby reference marsh systems to determine tidal marsh mean high water elevation. Final elevations shall not on average exceed this height.
2) Fine grained dredge materials to be contained by straw bale containment as detailed in permit plan set.
3) Coarse grained soils with less than ten percent (10%) passing the 100 openings per inch sieve can be placed without containment.

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THIN LAYERING DETAIL

NOT TO SCALE

SHEET 72 OF 73

CHES BAY ENV CENTER
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NAVIGATION HAZARD DETAIL

NOT TO SCALE

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SCALE	AS SHOWN
DESIGNED BY	SAM
DRAWN BY	SAM
CHECKED BY	FAM