

US Army Corps
of Engineers
Baltimore District

CONSTRUCTION SPECIFICATIONS

MAINTENANCE DREDGING

**WICOMICO RIVER,
WICOMICO AND SOMERSET COUNTIES ,
MARYLAND**

INVITATION NO. **W912DR-04-B-0008**

DATE: **FEB 25, 2004**

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SECTION 1 - SPECIAL CLAUSES

1. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK: The Contractor shall be required to commence work under this contract within 15 calendar days after the date of receipt by him/her of Notice to Proceed, to prosecute said work diligently and to complete the entire work ready for use not later than 210 calendar days after the date of receipt by him of notice to proceed. All dredging shall be completed within 210 days of Notice to Proceed. Due to environmental concerns, dredging in the upper river is permitted between July 1 and February 15, and dredging in the lower river is permitted between October 1 and February 15. If an extension of time is granted to complete the remaining work during the next succeeding environmentally acceptable dredging period as noted above, additional mobilization and demobilization as a result of time extensions granted under this contract shall be the responsibility of the Contractor. Liquidated damages will not be charged during the environmental constraint period of February 16 through June 30 for the upper river and February 16 through September 30 for the lower river. Should the total quantity of material to be paid for and actually removed under the contract exceed the limit established in the Special Contract Requirement VARIATIONS IN ESTIMATED QUANTITY, additional time will be allowed at the rate of one calendar day for each 2,000 cubic yards in excess of the established limit. The time stated for completion shall include final clean-up of the premises. The Contractor's attention is called to Technical Provisions, paragraph 5.3.1 CONTROL OF DISPOSAL AREA EFFLUENT and paragraph 14. SEDIMENT CONTROL.

2. ESTIMATED QUANTITIES: The project Base Bid estimated quantities of material necessary to be removed from within the specified limits, as shown on the contract drawings exclusive of allowable overdepth, to complete the work is 65,927 cubic yards place measurement. The maximum amount of allowable overdepth dredging is estimated to be 61,684 cubic yards place measurement. The project Optional Bid quantities of material to be removed from Sta. 131+900 to 128+500, as shown on the contract drawings exclusive of allowable overdepth, to complete the work is 24,284 cubic yards place measurement. The maximum amount of allowable overdepth dredging is estimated to be 15,280 cubic yards place measurement.

Channel Stationing	Required Dredging (CY)	Allowable Overdepth (CY)	Total Quantity (CY)	Designated Placement Site
BASE BID				
63+700 - 65+500	7,803	10,310	18,113	Mt. Vernon
45+400 - 50+300	2,564	8,216	10,780	Mt. Vernon
41+500 - 43+700	2,712	3,860	6,572	Mt. Vernon
Mount Vernon Total			35,465	
150+200 - 158+000	22,749	20,273	43,022	Sharps Point
131+900 - 137+700	30,098	19,026	49,124	Sharps Point
Sharps Point Total			92,146	
OPTION 1				
128+500 - 131+900	24,284	15,280	39,564	Sharps Point - Cell 4

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3. PHYSICAL DATA: Information and data furnished or referred to below are furnished for information only and it is expressly understood that the Government will not be responsible for any interpretation or conclusion drawn therefore by the Contractor.

(a) The indications of physical conditions indicated on the contract drawings and in the specifications are the result of site investigations by surveys and/or probing. Records of previous dredging of the existing Federal channel indicate that the material to be removed by maintenance dredging consists principally of debris, silt, gravel, shell, sand, clay and combinations thereof. This project has previously been maintained at a required depth of 14 feet plus 1 foot of overdepth.

(b) Weather Conditions: Complete weather records and reports may be obtained from the U.S. Weather Bureau. The Contractor shall satisfy himself as to the hazards likely to arise from weather conditions during the dredging period. The site of work is exposed, and suspension of work may at times be necessary during extreme storm periods. Tidal currents may have an adverse effect on dredging operations. The mean range tide is 3.0 foot, with greater fluctuations occurring during high winds and storm periods.

(c) Transportation Facilities: The Contractor shall make his own investigation of transportation facilities in the vicinity of the work.

(d) Conditions of Channel: The best information available as to the present conditions of the Federal channel in Wicomico River is shown on the contract drawings. The Contractor shall coordinate with the local utility companies for locations of under water utility cables which will obstruct dredging operation. The Contractor shall report any possible obstructions to the Contracting Officer for instruction prior to starting work.

(e) Channel Traffic: Channel traffic consists of commercial vessels, commercial seafood boats, recreational craft, etc. and may cause minor delays to the dredging operations.

(f) Obstruction of Channel: The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor shall be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessels to such an extent as may be necessary to afford a safe practicable passage. Upon completion of the work the Contractor shall promptly remove his plant, including ranges, buoys, piles, and other marks placed by him under the contract in navigable waters or on shore.

(g) Navigation Aids: The Contractor shall not relocate or move any aids to navigation that have been established by the U.S. Coast Guard. If it becomes necessary to have any aid to navigation moved by the contractor in order to complete dredging operations under this contract, the Contractor shall notify the Commander AON, Fifth U.S. Coast Guard District, Office of Aids to Navigation, Portsmouth, Virginia 23705, ATTN: Mr. John Walters (757) 398-6360, in writing with a copy to the Contracting Officer or his authorized representative not less than 30 days prior to such need for movement. The Contractor shall notify the U.S. Coast Guard of the approximate time the navigation aid may be relocated to its original position.

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(h) Laying of Submerged Pipe Lines and Obstruction of Channel: Should it become necessary in the performance of this contract to use a submerged pipeline across a navigable channel the Contractor shall notify the Contracting Officer in writing to be received in the District Office at least 15 working days prior to the desired closure date. This notification shall furnish the following:

(1) Location (Channel Centerline Stationing) and depth (over the top of the pipeline) at which the submerged line will be placed.

(2) The desired length of time the channel is to be closed.

(3) The date and hour placement or removal will commence.

(4) The date and hour of anticipated completion.

(i) Notice To Mariners: Should the Contractor, during dredging operations, encounter any objects on the channel bottom which could be a hazard to navigation, he shall immediately notify the Contracting Officer or his authorized representative as to the location of said object and any other pertinent information necessary for the Contracting Officer or his authorized representative to put out a Notice to Mariners.

(j) Bridge-to-Bridge Radio Communication:

The Contractor is required to monitor both channels 13 and 16.

Channel 13: The master, operator, or designated pilot of the vessel must maintain a listening watch on the designated bridge-to-bridge frequency while underway on the navigable waters of the United States. The designated frequency is VHF-FM Channel 13. The person maintaining the watch also must be able to communicate in English.

Channel 16: In addition to the Channel 13 watch, vessels must keep a continuous watch on VHF-FM Channel 16 (International Distress and Calling Channel) while underway, except when transmitting or receiving traffic on other VHF-FM channels (e.g., vessels may switch to other channels to pass traffic, listen to weather reports, etc.) or when participating in and monitoring a VTS channel. While not required to have a VHF-FM radio onboard (Voluntary Ship Stations), vessels not subject to the bridge-to-bridge regulations must maintain a watch on Channel 16 whenever the radio, if onboard, is operating (i.e., energized) and is not being used to communicate on other channels.

(k) Notification of the Coast Guard: Prior to commencement of work on this contract, the Contractor shall notify the Commander, Fifth U.S. Coast Guard District of his intended operations to dredge and request that it be published in the Local Notice to Mariners. This notification must be given in sufficient time so that it appears in the Notice to Mariners at least one week prior to the commencement of this dredging operation.

(l) Shellfish Areas: Shellfish areas exist in the vicinity of the area to be dredged in the lower river. Dredging operations shall be conducted in such a manner as to avoid possible damage to these grounds. The Contractor is advised to exercise caution in his dredging and any other operations attendant with dredging (such as the construction of trestles; the movement and anchoring of barges, vessels, or other equipment; the placing or moving of anchors, and leaking pipelines) to prevent damage to all oyster grounds.

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4. LAYOUT OF WORK: CENABEN 1984 APR

4.1 The Contractor shall be responsible for the layout of his work. The Government will furnish the channel centerline coordinates and bearings at the beginning point, at each point where the channel changes direction, and at the ending point; and the channel toe coordinates and bearings of both sides of the channel at the beginning point, at each point where the channel changes direction, and at the ending point. The Government will furnish the coordinates and the monument descriptions of the existing horizontal and vertical control within the project area. The Contractor shall be responsible, by utilizing this data, to dredge within the dredging prisms that are shown on the contract drawings. The Contractor shall maintain, preserve, repair or replace, at his own expense, any gages or location markers that are lost, damaged or destroyed for any reason subsequent to their initial establishment by the Contracting Officer until authorized to remove them. The Contractor may, at his option, establish offset stakes, back-up stakes, and gages to be utilized in re-establishing any baseline, ranges and gages that are lost, damaged or destroyed. The contract completion time will not be increased due to work delays that result from the failure of the Contractor to maintain, repair or replace the Government established baselines, ranges and gages.

4.2 The Contractor shall give the Contracting Officer or his authorized representative adequate advance notice of the commencement of work in order to assure the timely completion of the before dredging survey and the establishment of necessary dredging layouts. The notice shall be furnished at least 15 days prior to mobilization of the dredge plant to the work site. It is understood that the survey made in response to this notice will constitute the before dredging survey and any subsequent surveys occasioned through Contractor delays may be charged against the Contractor at a rate of \$1,200.00 per day. If the Contractor fails to provide adequate advance notice, the Contracting Officer will not be responsible for any delays in the commencement of work caused by incomplete dredging layouts.

4.3 Datum and Bench Marks: The plane of reference MLLW (NOS), mean lower low water as established by National Ocean Survey, shall be used in these specifications for dredging operations.

4.4 Horizontal Control: Horizontal control data will be provided to the Contractor on request. This request should be made to the Hydrographic Survey Section, Navigation Branch, point of contact Steve Golder at (410) 962-6031 or the alternate is Scott Bunting at (410) 962-6063.

5. SIGNAL LIGHTS:

5.1 The Contractor shall display lights and conduct his operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65-feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-Inland (Comdtinst M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable. (DAEN-PRP-1984 JUL)

5.2 Marking of Floating Dredge Pipeline: The Contractor shall mark and

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maintain the floating dredge pipeline in accordance with U.S. Coast Guard navigation rules, inland - NX5-88.15. As a minimum the Contractor shall mark the pipeline with amber lights visible on all points of the horizon for 2 miles on a clear night. The lights shall flash at 50-70 times per minute and be placed between 1 and 3.5 meters above the water. Spacing shall be sufficient to clearly show the pipeline length and course. Where the pipeline crosses a navigable channel spacing shall be every 10 meters. Two red lights, visible on all points of the horizon, shall be displayed at each end of the floating pipeline. They shall be arranged vertically 1 meter apart with the lower light at the same elevation as the amber lights.

6. ACCOMMODATIONS AND MEALS FOR INSPECTORS: (1965 APR OCE)

6.1 Omit

6.2 If the Contractor maintains on this work establishment for the subsistence of his own employees, he shall, when required, furnish to inspectors employed on the work and to all Government agents who may visit the work on official business, meals of a quality satisfactory to the Contracting Officer. The meals furnished will be paid for by the Government at a rate of \$3.50 per person for each meal.

7. CONTRACTOR QUALITY CONTROL: Contractor Quality Control is the means by which the Contractor verifies that his construction/dredging complies with the requirements of the contract specifications. Contractor Quality Control shall be adequate to cover all construction/dredging operations including both onsite and offsite fabrication and will be keyed to the proposed construction/dredging sequence.

7.1 General: The Contractor shall provide and maintain an effective quality control program that complies with the Special Contract Requirement INSPECTION OF CONSTRUCTION. The Contractor's Quality Control Program through inspection, testing, equipment/system operation, and reporting shall demonstrate and document the extent of compliance of all work with the standards and quality established by the contract documents. Inspection and test reports shall make reference to specific drawing and/or specification requirements and shall state inspection/test procedures with both expected and actual results.

The burden-of-proof of contract compliance is placed on the Contractor and not assumed by the Government. The Contractor's Quality Control will not be accepted without question.

7.2 Quality Control Plan: Within 7 calendar days after receipt of Notice to Proceed the Contractor shall furnish his Quality Control Plan and three copies thereof to the Contracting Officer or his authorized representative for review and approval. The plan shall cover in detail each feature of the project including dredging and disposal operations. Copies of the Quality Control Plan shall be made available on the dredge and at the disposal area. The Quality Control Plan the Contractor proposes to implement shall identify the personnel, procedures, instructions, records, and forms, and as a minimum, shall include:

(a) A description of the quality management organization.

(b) The number, classifications, qualifications, duties, responsibilities and authorities of personnel. A copy of the letter signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the system manager, shall be furnished.

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(c) Procedures for processing reports, samples and other submittals.

(d) Quality control activities to be performed, including those of subcontractors.

(e) Compliance inspections recorded on the Daily Quality Control Report and the Dredging Report, a sample of which is shown at the end of these specifications.

Construction or dredging will be permitted to begin only after approval of the Quality Control Plan, or approval of that portion of the plan applicable to the particular feature of work to be started.

As an additional measure to the implementation of the Quality Control Plan, the Contractor shall meet with representatives of the Contracting Officer as soon as practicable after receipt of Notice to Proceed and before start of construction or dredging to discuss the Contractor's quality control system. The meeting shall develop a mutual understanding relative to details of his Quality Control Program including the forms for recording the quality control operations; control activities, testing, administration of the system for both onsite and offsite, and the interrelationship of Contractor and Government control and surveillance. Minutes of the meeting shall be prepared, signed by both the Contractor and the Contracting Officer or his authorized representative and shall become a part of the contract file. There may also be occasions when subsequent conferences will be called to reconfirm understandings.

7.2.1 Notification of Changes: After approval of the Quality Control Plan, the Contractor shall notify the Contracting Officer or his authorized representative in writing of any proposed change.

7.2.2 Work Deficiencies: The Contractor shall not build upon or conceal any work containing uncorrected defects. If deficiencies indicate that the Contractor's quality control system is not adequate or does not produce the desired results, corrective actions in both the quality control system and the work shall be taken by the Contractor. If the Contractor does not promptly make the necessary corrections, the Contracting Officer may issue an order stopping all or any part of the work until satisfactory corrective action has been taken. Payment for deficient work will be withheld until work as been satisfactorily corrected or other action is taken pursuant to the Special Contract Requirement INSPECTION OF CONSTRUCTION.

If the above does not obtain effective improvement in the Contractor's quality control system, the Contracting Officer or his authorized representative may direct changes be made in the quality control system and/or organization, including but not limited to the removal and replacement of unsatisfactory quality control representatives at any level or the addition of quality control personnel or services. Any additional cost to the Government for providing quality control services that are not satisfactorily performed by the Contractor, will be deducted from payment due the Contractor.

If recurring deficiencies in an item or items indicate that the quality control system is not adequate, such corrective actions shall be taken as directed by the Contracting Officer or his authorized representative.

7.3 Quality Control Organization:

7.3.1 System Manager: The Contractor shall identify an individual

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within his organization at the site of the work, who shall be responsible for overall management and have the authority to act in all Contractor quality control matters for the Contractor.

7.3.2 Personnel: A staff shall be maintained under the direction of the system manager to perform all quality control activities. The actual strength of the staff during any specific work period may vary to cover work phase needs, shifts, and rates of dredging. At least one full-time Contractor quality control person fully alert and awake shall be present on the disposal area at all times pumping operations are in progress. The personnel of this staff shall be fully qualified by experience and technically trained to perform their assigned responsibilities.

7.4 Control: The Contractor's quality control system shall include at least the following three phases of control and management for definable features of work:

(a) Preparatory: Twenty-four hours in advance of beginning any definable features of work, the Contractor's quality control manager shall review with the Government inspector(s) the applicable provisions of the specifications and Quality Control Plan and confirm the methods to assure compliance.

(b) Initial: This phase of control must be accomplished at the time of arrival of disposal area and dredging personnel on site to accomplish a definable feature of work and at any time new workmen or crews arrive for assignment to the work. The Contractor's control system must permit the transfer of information on quality requirements specified in this contract to each workman before he starts, demonstration from each workman that he can provide the specified quality of work, and motivate him to continue. It is also during this phase that control testing to prove the adequacy of the Contractor's control procedures shall be initiated and verified. The Contracting Officer or his authorized representative shall be notified at least 24 hours in advance of each initial activity.

(c) Follow-up: The follow-up phase shall be performed continuously to verify that control procedures are providing an end product which complied with contract requirements. Adjustments to control procedures may be required based upon the results of this phase and compliance inspections.

7.5 Completion: At the completion of the work, the Contractor's quality control representative shall conduct a joint completion review with the Government inspector(s). During this review the work shall be examined, quality control shall be reviewed, and a list shall be developed of work not properly completed or not conforming to plans and specifications. This list shall be included in the quality control documentation with an estimated date for correction of each deficiency. The Contractor shall make sure that deficiencies have been corrected prior to the specified completion date. Payment will be withheld for defective or deficient features until they are satisfactorily corrected except as otherwise provided in the Special Contract Requirement INSPECTION OF CONSTRUCTION.

7.6 Quality Control Records:

7.6.1 The Contractor shall maintain current records, on an appropriate approved form, of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall include factual evidence that the required activities or tests have been performed, including but not limited to the following:

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- (a) Type and number of control activities and compliance inspections.
- (b) Results of control activities or inspections.
- (c) Nature of defects, causes for rejection, etc.
- (d) Proposed remedial action.
- (e) Corrective actions taken.

7.6.2 These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the contract. The Contractor shall submit legible, daily quality control reports to the Government inspector on the day following the report period. The records shall cover development of the disposal area(s), related piping, and dredging performed during the time period for which the records are furnished. These records shall be verified by person so designated by the Contractor. Failure to follow these procedures will be considered a breach of the Quality Control Program and portions of the progress payment may be withheld until it is demonstrated by the Contractor that the construction activities covered by the delinquent reports meet the requirements of the plans and specifications.

7.7 Measurement and Payment: No separate measurement and payment will be made for the work performed in Contractor Quality Control, specified herein, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.

8. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (EFARS 52.0231.5000 (OCT 1995))

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable conditions owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual costs data for each piece of equipment or groups of similar serial and services for which the government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs can not be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP1110-1-8 Construction Equipment Ownership and Operating Expenses Schedule, Region East. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d) (ii) and Far 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under

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common control that has an established proactive of leasing the same or similar equipment to unaffiliated leasees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet. CENAB-CT/SEP 95 (EFARS 52.231-5000)

9. SAFETY:

9.1 General: The Contractor shall comply with the Contract Clause ACCIDENT PREVENTION. EM 385-1-1, November 2003, subject: Safety and Health Requirements Manual, is a part of these specifications.

9.1.1: The Contractor shall comply with the provisions of EM 385-1-1. If the Contractor is a currently accepted participant in the Dredging Contractors of America (DCA)/United States Army Corps of Engineers (USACE) Dredging Safety Management Program (DSMP), as determined by the DCA/USACE Joint Committee, and holds a current valid Certificate of Compliance for both the Contractor Program and the Dredge(s) to be used to perform the work required under this contract, the Contractor may, in lieu of the submission of an Accident Prevention Plan (APP),

(1) make available for review, upon request, the Contractor's current Safety Management System (SMS) documentation,

(2) submit to the Contracting Officer the current valid Company Certificate of Compliance for its SMS,

(3) submit the current dredge(s) Certificate of Compliance based on third party audit, and

(4) submit for review and acceptance, site-specific addenda to the SMS as specified in the solicitation.

9.2 Accident Prevention Program: Within 7 calendar days after receipt of Notice to Proceed the Contractor shall furnish his Accident Prevention Program and three copies thereof to the Contracting Officer or his authorized representative for review and approval. The program shall be prepared in the following format:

(a) Administrative Plan

(b) Job Hazard Analysis

(c) A copy of company policy statement of accident prevention and any other guidance statements normally provided new employees.

(d) When marine plant and equipment are in use the Contractor shall assure that oil transfer operations to or from his plant comply with all Federal, State, county, and Municipal laws, codes and regulations. Particular attention is invited to 33 CFR Subchapter 0, POLLUTION. The Contractor shall incorporate in his accident prevention program, submitted in compliance with Contract Clause ACCIDENT PREVENTION, sufficient information to demonstrate that all fuel transfers will be made in accordance with 33 CFR 156 and any other applicable laws, codes and regulations. (CENABEN 1984 APR)

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(e) The Contractor shall not commence physical work at the project site until the program has been approved by the Contracting Officer or his authorized representative. As an additional measure to implementation of the Accident Prevention Program, the Contractor shall meet with representatives of the Contracting Officer as soon as practicable after receipt of Notice to Proceed and before start of work to discuss and develop a mutual understanding relative to administration of the overall safety program. Minutes of the meeting shall be prepared, signed by the Contractor and the Contracting Officer or his authorized representative. At the Contracting Officer's discretion, the Contractor may submit his Job Hazard Analysis only for the phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. EM 385-1-1, Section 1.

9.3 Accident Investigation and Reporting: Accidents shall be investigated by immediate supervisor of the employee(s) involved and reported to the Contracting Officer or the Government inspector within one working day after the accident. Paragraph 01.D, EM 385-1-1.

(a) The Contractor shall insure that all accidents which involve loss of life, occupational disease of the employee, injury incapacitating any person for normal work beyond the day of injury, or damage to property, materials, supplies, or equipment, of \$1,000.00 or more, and which relate to the dredge, any attendant plant, the dredge working area, or the disposal area, shall be recorded, investigated, and reported to the Contracting Officer or his authorized representative.

(b) Each accident shall be verbally reported to the Government inspector at the earliest practicable time, but within 24 hours. Each accident involving loss of life or traumatic injury to any person shall be reported to the Government inspector verbally, telephonically, or by radio immediately.

(c) The Contractor shall promptly investigate each accident and submit a written, signed report on ENG Form 3394 to the Government inspector within 48 hours.

(d) A factual record of each accident shall be entered in the Contractor's official daily log book.

9.4 Daily Inspections: The Contractor shall institute a daily inspection program to assure all safety requirements are being fulfilled. Reports of daily inspections shall be maintained in the Contractor's official daily log book. The reports shall be records of the daily inspections and resulting actions. Each report shall include, as a minimum, the following:

(a) Phase(s) of construction underway during the inspection.

(b) Locations of areas inspections were made.

(c) Results of inspection, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

9.5 Means of Escape for Personnel Quartered or Working on Floating Plant: Two means of escape shall be provided for assembly, sleeping, and messing areas on floating plants. For areas involving 10 or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where 9 or fewer persons are involved, one of the means of escape may be a window (minimum dimensions 24-inch by 36-inch) which leads to

a different exit route. EM 385-1-1, Section 19.

9.6 Emergency Alarms and Signals:

9.6.1 Alarms. Emergency alarms shall be installed and maintained on all floating plant requiring a crew where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. The alarm system shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical-system failure.

9.6.2 Signals:

(a) Fire Alarm Signals: The general fire alarm signal shall be in accordance with paragraph 97.13-15b of the Coast Guard Rules and Regulations for Cargo and Miscellaneous Vessels, Subchapter I, 1 Sep 77 (CG 257)

(b) Abandon Ship Signals: The signal for abandon ship shall be in accordance with paragraph 97.13-15c of referenced cited in (a) above.

(c) Man-Overboard Signal: Hail and pass the word to the bridge. All personnel and vessels capable of rendering assistance shall respond.

9.7 Mooring Lines: Eye loops on mooring lines shall be equipped with brackets or handling ropes to protect the hands of deckhands.

10. FUEL USAGE: The Contractor shall furnish the Contracting Officer a report, to be received on or before the last day of the calendar month, listing the totals of fuels consumed by the dredging plant and supporting vessels. The report shall list the quantities of different fuels separately. The report shall cover the period from the 25th of the preceding month to the 25th of the current month. This information may be included in the Contractor's Daily Report of Operations.

11. ENVIRONMENTAL LITIGATION: (1974 NOV OCE)

(a) If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the Contract Clause SUSPENSION OF WORK. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

(b) The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

12. WORK AT NIGHT: For night operations the Contractor shall provide and maintain, at his expense, two light towers equipped with a 3 KW generator

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(minimum) at the dredged material placement site. Each light tower shall have metal halide bulbs (1000 watt) or equivalent, capable of giving off a minimum of 200,000 lumens. No work will be permitted after dusk without the aid of both light towers.

13. RADIO COMMUNICATIONS: At all times pumping operations are in progress, the Contractor is responsible and required to provide any and all equipment necessary to maintain 24-hour oral communication between the dredge operator, Quality Control System Manager, and the Corps of Engineers' inspector on site. For this purpose, the Contractor shall provide and maintain at his expense a marine band walkie-talkie radio for use by the Government inspector(s). The Contractor is responsible for any and all circumstances not conforming to the plans and specifications resulting from the inadequate operation of the equipment.

14. PROGRESS SCHEDULING AND REPORTING: (JUN 1975) In accordance with the Contract Clauses, the Contractor, shall within 5 days or as otherwise determined by the Contracting Officer, after date of commencement of work, submit for approval a practicable progress schedule showing the manner in which he intends to prosecute the work. ENG Form 2454 ("Construction Progress Chart") will be furnished upon request for use in preparing this schedule. If a Contractor form is used, the same information as shown in the ENG Form 2454 shall be provided. Preparation and updating of the schedule shall be as follows:

14.1 Preparation: The progress schedule shall be prepared in the form of time-scaled summary network diagram graphically indicating the sequence proposed to accomplish each work activity or operation, and appropriate interdependencies between the various activities. The chart shall show the starting and completion dates of all activities on a linear horizontal time scale beginning with the dates of Notice to Proceed and indicating calendar days to completion. Each activity in the construction shall be represented by an arrow and shall have a beginning and ending node (event). The entire project shall have only one beginning node and one ending node. The arrangement of arrows shall be such that they flow from the left to right. Each arrow representing an activity shall be annotated to show the activity description, duration and cost. The Contractor shall indicate on the chart the important work activities that are critical to the timely overall completion of the project. Key dates for important features or portions of work features are milestone dates and shall be so indicated on the chart. Based on this chart, the Contractor shall prepare an earnings-time curve (S Curve) showing the rate of progress in terms of money and percent completion. Schedule progress may not include the value of materials or equipment delivered to the job site but not yet incorporated into the work. This schedule shall be the medium through which the timeliness of the Contractor's construction effort is appraised.

14.2 Updating: The Contractor shall update the schedule by entering actual progress thereon at monthly intervals. The status of activities completed or partially completed as of the end of each period shall be shown, as well as the percentage of work completed. In computing actual progress, the value of material and equipment on site but not incorporated into the work may not be considered. When changes are authorized that result in contract time extensions, the Contractor shall submit a modified chart for approval by the Contracting Officer. The Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS with reference to overtime, extra shifts, etc., may be invoked when the Contractor fails to start or complete work activities or portions of same by the date indicated on the approved progress chart, or when it is apparent to the Contracting Officer from the Contractor's actual progress that these

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dates will not be met. (CENABCO-E)

15. CONTINUITY OF WORK: No payment will be made for work done in any area designated by the Contracting Officer until the full depth required under the contract is secured in the whole of such area, unless prevented by ledge rock, nor will payment be made for excavation in any area not adjacent to and in prolongation of areas where full depth has been secured except by decision of the contracting officer. Should any such nonadjacent area be excavated to full depth during the operations carried on under the contract, payment for all work therein may be deferred until the required depth has been made in the area intervening. The Contractor may be required to suspend dredging at any time when for any reason the gages or ranges cannot be seen or properly followed.

16. MISPLACED MATERIAL: Should the Contractor during the progress of the work, lose, dump, throw overboard, sink, or misplace any material, plant machinery, or appliance, which in the opinion of the Contracting Officer may be dangerous to or obstruct navigation, the Contractor shall recover and remove the same with the utmost dispatch. The Contractor shall give immediate notice, with description and location of such obstructions, to the Contracting Officer or inspector, and when required shall mark or buoy such obstructions until the same are removed. Should he refuse, neglect, or delay compliance with the above requirements, such obstructions may be removed by the Contracting Officer, and the cost of such removal may be deducted from any money due or to become due to the Contractor, or may be recovered under his bond. The liability of the Contractor of the removal of a vessel wrecked or sunk without fault or negligence shall be limited to that provided in Section 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et seq.).

17. INSPECTION: The Government inspector(s) will direct the maintenance of the gauges, ranges, location marks and limit marks in proper order and position; but the presence of the Government inspector(s) shall not relieve the Contractor of responsibility for the proper execution of the work in accordance with the specifications. The Contractor shall be required:

(a) To furnish, on the request of the Contracting Officer, any Government inspector, or authorized representative, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work. However, the Contractor will not be required to furnish such facilities for the surveys prescribed in the Special Clause FINAL EXAMINATION AND ACCEPTANCE.

(b) To furnish, on the request of the Contracting Officer, any Government inspector, or authorized representative, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant, and to and from the disposal site.

(c) Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

18. FINAL EXAMINATION AND ACCEPTANCE:

(a) As soon as practicable after the completion of the entire work or any section thereof (if the work is divided into sections) as in the opinion of the Contracting Officer or his authorized representative will not be

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subject to damage by further operations under the contract, such work will be thoroughly examined at the cost and expense of the Government by sounding or by sweeping, or both, as determined by the Contracting Officer or his authorized representative. Should any shoals, lumps, or other lack of contract depth be disclosed by this examination the Contractor shall be required to remove same by dragging the bottom or by dredging at the contract rate for dredging, but if the bottom is soft and the shoal areas are small and form no material obstruction to navigation, the removal of such shoal may be waived by the discretion of the Contracting Officer or his authorized representative. The Contractor or his authorized representative will be notified when soundings and/or sweepings are to be made, and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted finally. Should more than two sounding or sweeping operations by the Government over an area be necessary by reason of work for the removal of shoals disclosed at a prior sounding or sweeping, the cost of such third and any subsequent sounding or sweeping operations will be charged against the Contractor at the rate of \$1,200.00 per day for each day in which the Government plant is engaged in sounding or sweeping and/ or is enroute to or from the site or held at or near the said site for such operations.

(b) Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud, or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

19. SHOALING:

19.1 If, before the contract is completed, shoaling occurs in any section previously accepted, including shoaling in the finished channel, because of the natural lowering of the side slopes, redredging at contract price, within the limit of available funds, may be done if agreeable to both the Contractor and the Contracting Officer.

19.2 If before dredging survey indicates shoaling in the channel immediately adjacent to the channel to be dredged, the Contractor shall be required to dredge the additional shoaling at the contract unit price if directed by the Contracting Officer.

20. ENVIRONMENTAL PROTECTION:

20.1 General: The Contractor shall furnish all labor, materials and equipment, to perform all work required for the prevention of environmental pollution during, and as the result of, construction/dredging operations under this contract except for those measures set forth in the technical Provisions of these specifications. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; or affect other species of importance to man. The control of environmental pollution requires consideration of air, water, and land.

20.2 Applicable Regulations: The Contractor and his subcontractors in the performance of this contract, shall comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement in effect on the date of this solicitation, as well as the specific requirements stated elsewhere in the contract specifications.

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20.3 Notification: The Contracting Officer or his authorized representative will notify the Contractor of any noncompliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer or his authorized representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of time lost due to any such stop order shall be made subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

20.4 Subcontractors: Compliance with the provisions for environmental protection by subcontractors shall be the responsibility of the Contractor.

20.5 Protection of Water Resources: The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acid construction wastes, or other harmful materials. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in streams through or adjacent to the project area. The Contractor shall take special positive protective measures to prevent spillage of potential pollutant materials such as fuel, emulsion materials, chemicals etc., from storage containers or equipment into public waters. Such positive protective measures may include, but not limited to the following:

- (a) A berm enclosure of sufficient capacity to contain such materials.
- (b) Security measures to prevent acts of vandalism which could result in spillage of such materials (fences, guards, etc.).
- (c) Storage of such materials in an area where the terrain would preclude leakage into public waters.
- (d) Utilization of secure Government storage areas if the Contracting Officer indicates such space is available. No storage past immediate needs (2 days) without the consent of the Contracting Officer or his authorized representative.

20.6 Burning: Burning shall be in compliance with Federal, State, and local laws. The Contractor shall be responsible for obtaining all required burning permit approvals.

20.7 Dust Control: The Contractor shall maintain all work areas free from dust which would contribute to air pollution. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, where used, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

20.8 Protection of Land Resources:

20.8.1 General: It is intended that land resources within the project boundaries and outside the limits of the permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans and specifications or to be cleared for other operations. The following

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additional requirements are intended to supplement and clarify the requirements of the CONTRACT CLAUSES.

20.8.2 Protection of Trees Retained:

(a) The Contractor shall be responsible for the protection of the tops, trunks, and roots of all existing trees that are to be retained on the site. Protection shall be maintained until all work in the vicinity has been completed and shall not be removed without the consent of the Contracting Officer or the authorized representative of the contracting officer. If the Contracting Officer or his authorized representative finds that the protective devices are insufficient, additional protection devices shall be installed.

(b) Heavy equipment, vehicular traffic, or stockpiling of any materials shall not be permitted within the drip line of trees to be retained.

(c) No toxic materials shall be stored within 100 feet from the drip line of trees to be retained.

(d) Except for areas shown on the contract drawings to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without special authority. Existing nearby trees shall not be used for anchorage unless specifically authorized by the Contracting Officer or his authorized representative. Where such special emergency use is permitted, the Contractor or his authorized representative shall first adequately protect the trunk with a sufficient thickness of burlap over which softwood cleats shall be tied.

(e) No protective devices, signs, utility boxes or other objects shall be nailed to trees to be retained on the site.

20.9 Restoration of Landscape Damage: Any tree or other landscape feature scarred or damaged by the Contractor's operations shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer or his authorized representative will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of. All scars made on trees, designated on the plans to remain, and all cuts for the removal of limbs larger than 1 inch in diameter shall be coated as soon as possible with an approved tree-wound dressing. All trimmings or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Contracting Officer or his authorized representative, shall be immediately removed and replaced with a nursery-grown tree of the same species. Replacement trees shall measure no less than 2 inches in diameter at 6 inches above the ground level.

20.10 Location of Storage and Service Facilities: The location on Government property of the Contractor's storage and service facilities, required temporarily in the performance of the work, shall be upon cleared portions of the jobsite or areas to be cleared. The preservation of the landscape shall be an imperative consideration in the selection of all sites.

20.11 Temporary Excavation and Embankments: If the Contractor proposes to construct temporary roads, embankments, or excavations for plant and/or work areas, he shall submit a plan for approval prior to scheduled start of such temporary work.

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20.12 Waste Disposal: Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to the work site shall not be permitted. If waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, replaced with suitable fill material, compacted and planted as required to reestablish vegetation.

20.13 Toilet Facilities: The Contractor shall provide on-shore toilet facilities, in accordance with paragraph 02.C, EM 385-1-1, at the dredged material disposal site. Dredge plant toilet facilities may not be substituted for on-shore facility requirements.

20.14 Corrective Action: The Contractor shall, upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs of damages by the Contractor unless it was later determined that the Contractor was in compliance.

20.15 Measurement and Payment: No separate measurement and payment will be made for the work performed in Environmental Protection, specified herein, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor and shall be included in the overall cost of the work.

21. SUBCONTRACTS: In accordance with Section 00100, Instructions, Conditions, and Notices to Bidders, NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY, the Contractor shall, within 10 working days following award of any construction subcontract by the Contractor or a Subcontractor, deliver to the Contracting Officer or his authorized representative a completed DD form 1565.

22. CONTRACTOR'S RESPONSIBILITY: (ECI, APP.A) The Contractor shall be responsible that his employees strictly comply with all Federal, State, and municipal laws that may apply to operations under the contract; and it is understood and agreed that the Contractor assumes full responsibility for the safety of his employees, plant, and materials, and for any damage or injury done by or to them from any source or cause, except damage caused to the plant or equipment by acts of the Government, its officers, agents or employees, in which event such damages will be the responsibility of the Government in accordance with applicable Federal laws. For the purpose of this clause, the terms "officers, agents or employees" of the Government shall not include persons who are employed by the Contractor and whose services have been furnished to the Government pursuant to this or any other contract. (See also FAR 52.236-7 and FAR 52.236-13)

22.1 Responsibility For Contractor Plant and Government Property: The Government will not be responsible for the dredge and attendant plant, any Government property aboard the dredge and attendant plant, or any accidental damage thereto during the period of the contract. The Contractor shall release the Government and its officers and agents from all responsibility for damages to dock facilities, submerged and aerial crossings, bridges, moored vessels, or other damages ordinarily covered by fire and marine insurance. (See also FAR 52.236-9)

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22.2 Warranty: The Contractor warrants to the Government the quiet and peaceable use of the aforesaid property, and in case of any disturbance, by suit or otherwise, will defend the same free of charge to the Government in or before the proper State or United States courts.

22.3 Delays: If the Contractor refuses or fails to make delivery of the property within the time specified or any extension thereof, as provided in specifications, or to maintain the property in serviceable condition and diligently and competently to conduct the specified operations, the Government may, by written notice terminate the right of the Contractor to proceed with delivery or with further performance under the contract or such parts or parts thereof affected by the contract or otherwise and the Contractor shall be liable to the Government for any excess cost occasioned thereby.

22.4 Disclaimer: The Contractor shall hold and save harmless the United states, its officers and employees, from all claims that may arise resulting from the Contractor's negligence in connection with the work to be performed under the contract, or from noncompliance by the Contractor with the provisions of the contract, contract drawings, and specifications and/or the instructions of the Contracting Officer or his authorized representative. (See also FAR 52.236-10)

SECTION 2 - TECHNICAL PROVISIONS

1. WORK COVERED BY CONTRACT PRICE:

1.1 Payment Item No. 0001: All costs connected with the mobilization and demobilization of the Contractor's dredging plant and equipment furnished for Wicomico River, Somerset and Wicomico Counties, Maryland as defined below shall be included in the contract lump-sum price for Item No. 0001 as listed in the Unit Price Schedule.

1.1.1 Mobilization shall include all costs for operations accomplished prior to commencement of actual dredging operations, i.e. transfer of dredge, attendant plant, and equipment to site; initial installation of pipe, and disposal area preparation required; and any other work that is necessary in advance of the actual dredging operations.

1.1.2 Demobilization shall include general preparation for transfer of plant to its home base, removal of pipelines, disposal area cleanup, and transfer of plant to its home base.

1.2 Payment Item No. 0002A: The contract price for dike construction at the Mount Vernon placement site shall include all costs in connection with building the dikes to contain the dredged material. This item will also include the cost of the weirs and effluent pipelines. Payment shall be made in accordance with Item No. 0002A "Mt. Vernon" of the Bidding Schedule which shall be full compensation for the work performed.

1.3 Payment Item No. 0002B: The contract price for dike construction on the existing portion of the Sharps Point placement site shall include all costs in connection with building the dikes to contain the dredged material. This item will also include the cost of the weirs and effluent pipelines. Payment shall be made in accordance with Item No. 0002B "Sharps Point" of the Bidding Schedule which shall be full compensation for the work performed.

1.4 Payment Item No. 0003A: The contract price per cubic yard for maintenance dredging the Mount Vernon portion of the channel shall include the costs of removal, and disposal of all material as specified herein or as indicated on the contract drawings exclusive of mobilization and demobilization costs as defined in paragraphs 1.1, 1.1.1, and 1.1.2. Payment shall be made in accordance with Maintenance Dredging Item No. 0003A "Mt. Vernon" of the Unit Price Schedule which shall be full compensation for the work performed.

1.5 Payment Item No. 0003B: The contract price per cubic yard for maintenance dredging the Sharps Point portion of the channel shall include the costs of removal, and disposal of all material as specified herein or as indicated on the contract drawings exclusive of mobilization and demobilization costs as defined in paragraphs 1.1, 1.1.1, and 1.1.2. Payment shall be made in accordance with Maintenance Dredging Item No. 0003B "Sharps Point" of the Unit Price Schedule which shall be full compensation for the work performed.

1.6 Optional Item No. 0004: The contract price per cubic yard for dike construction of the new cell (Cell #4) at the Sharps Point placement site shall include all costs in connection with building the dikes to contain the dredged material. Payment shall be made in accordance with Item No. 0004 "Dike Construction - New Cell at Sharps Point" of the Bidding Schedule which shall be full compensation for the work performed.

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1.7 Optional Item No. 0005: The contract price for the weir box(es) and the effluent pipeline required for the construction of the new cell (Cell #4) at the Sharps Point placement site shall include all costs in connection with their installation. Payment shall be made in accordance with Item No. 0005 "Weir Box/Effluent Pipeline" of the Bidding Schedule which shall be full compensation for the work performed.

1.8 Optional Item No. 0006: The contract price per cubic yard for maintenance dredging the Sharps Point portion of the channel shall include the costs of removal, and disposal of all material as specified herein or as indicated on the contract drawings exclusive of mobilization and demobilization costs as defined in paragraphs 1.1, 1.1.1, and 1.1.2. Payment shall be made in accordance with Item No. 0006 "Maintenance Dredging - Sharps Point" of the Unit Price Schedule which shall be full compensation for the work performed.

2. ORDER OF WORK: The order of dredging for the Mount Vernon portion of the project shall commence at station 65+500 and proceed to station 41+500, and for the Sharps Point portion of the project shall commence at station 158+000 and proceed to station 131+900, unless otherwise approved by the Contracting Officer's Representative. For the portion of the dredging included in Option 1, the order of dredging shall commence at station 131+900 and proceed to station 128+500, unless otherwise approved by the Contracting Officer's Representative.

(a) The dredging consists of furnishing, delivering, and operating one cutterhead, hydraulic, pipeline dredge with attendant plant capable of performing maintenance dredging in Wicomico River, Somerset and Wicomico Counties, Maryland. Dredged material shall be placed in the designated upland placement sites.

(b) The Contractor shall deliver the dredge and attendant plant ready for operation at the project site within 10 calendar days prior to the initiation of dredging. Upon arrival of the dredge and all attendant plant at the project site in Wicomico River, Somerset and Wicomico Counties, Maryland, the Contracting Officer's appointed inspector(s) will inspect the plant to determine whether any deficiencies have occurred subsequent to the time the plant was brought into compliance pursuant to the preaward inspection. The Contractor will be notified of acceptance or rejection of the plant within 24 hours after delivery.

(c) Upon Contractor notification and at least 24 hours prior to the commencement of dredging operations the Contractor and Government inspector(s) shall conduct a joint inspection of the completed disposal area operations. No dredging will be permitted to begin until all deficiencies identified by the Government inspector(s) have been satisfactorily corrected by the Contractor.

(d) No dredging shall be permitted unless the Contractor appointed quality control person is present at the disposal area while pumping operations are in progress.

(e) The dredged material shall be deposited in the disposal area(s) designated on the contract drawings.

3. PLANT: Plant and equipment employed on the work shall be in satisfactory operating condition and capable of safely and efficiently performing the work under exposed environmental conditions and as set forth in

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the specification and shall be subject to inspection by the Contracting Officer at all times. Pipeline for hydraulic machines shall be kept in good conditions at all times, any leaks or breaks along their length shall be promptly and properly repaired. No reduction in the capacity of the plant employed on the work shall be made except by written permission of the Contracting Officer. The measure of the "Capacity of Plant" shall be its actual performance on the work to which these specifications apply. All floating pipelines used as accessways shall be equipped with walkways and guardrail conforming to paragraph 19.B.05 of Corps of Engineers Manual EM 385-1-1.

4. CHARACTER OF MATERIALS: The maintenance material to be removed to restore the depth within the limits shown on the contract drawings, is that composing the shoaling that has occurred since the channel was last dredged. The existing channel has previously been dredged at a required depth of 14 feet plus 1 foot overdepth. It is believed that the material to be removed will consist principally of shell, clay, sand, silt, mud, gravel, debris, trash and combinations thereof. Minor variations in the subsurface materials are to be expected and, if encountered, shall not be considered as being materially different within the purview of the Contract Clause DIFFERING SITE CONDITIONS. Bidders are expected to examine the site of the work, and decide for themselves the character of the materials.

5. DISPOSAL OF EXCAVATED MATERIAL:

5.1 The Contractor shall use the designated Government-furnished disposal areas. Within 7 days after receipt of Notice to Proceed, the Contractor shall furnish his plan for the dredging and disposal operations to the Contracting Officer for review and approval. This plan shall include a description of all proposed dredging, transporting, and rehandling equipment to be utilized in performance of the contract work, and shall also include disposal area layout plans indicating the locations of the dredged material discharge pipeline and the type and locations of the lights to be utilized for night operations. Dredging will not be permitted to commence until this plan is approved by the Contracting Officer or his authorized representative.

5.2 The Contractor must confine the retention dikes and dredged material within the designated contract disposal site areas. All dikes needed for confining the dredged material, with necessary weir boxes, shall be provided and maintained by the Contractor, and the cost thereof included in the contract price. The Contractor shall be responsible for any damage arising from the fact that the material or the carrier water (effluent) has been permitted to run off the dredged material disposal area(s). The flow of effluent into the channel shall be regulated to such extent as to prevent erosion or the return of dredged material to the channel. The Contractor shall provide adequate drainage for all back areas by keeping drains and water courses open for this purpose. The Contractor shall also be responsible for providing and maintaining adequate ramps over the dredge pipeline where it is necessary to cross roads and streets, and to provide adequate lighting and safeguards for such ramps. When necessary to cross private property to get to the disposal area(s) with roads or pipelines, the Contractor shall obtain permission from the owners of the property before proceeding to cross. The upland disposal areas shall be left in a draining condition without significant ponding of water.

5.3 Effluent:

5.3.1 Control of Disposal Area Effluent: The Contractor shall employ the full length of weir crest at all times. The Contractor shall be required

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to raise the elevation of the weir crest or to stop pumping into the disposal area and permit the fill to settle whenever the density of samples, taken as provided hereinafter, of the mixture of suspended materials and water discharge over the weir is greater than 0.4 grams per liter Total Suspended Solids (TSS) or 300 Nephelometric Turbidity Units (NTU). The Contractor shall furnish and install sufficient weir boards to control the elevation of the dredged material under the contract, and the weir boards so installed shall be left in place upon completion of all work under the contract.

5.3.2 Discharge of Disposal Area Effluent: In order to localize the effect of increased turbidity, diked disposal site effluent shall be discharged as near to the area being dredged as is practical. Effluent from the diked disposal site shall be discharged directly to open water. The effluent shall be not discharged to any wetland areas. The effluent is to be carried by pipeline over such wetland areas as marshes or wooded swamps in order to prevent sediment accumulation in these environmentally sensitive areas. Any accumulation on sediment on wetlands shall be considered as misplaced excavated material.

5.4 Disposal Weir Box: It shall be the responsibility of the Contractor to design, construct, and maintain a weir box or boxes of sufficient size and capacity to take care of the effluent from the disposal area, and to prevent any material from escaping through the weir box or boxes in accordance with standard tests outlined herein. It is the intent of these specifications that the escape of material from the disposal area be held to an absolute practicable minimum. Pipes from the weir box or boxes through the dike shall be of adequate size and number to carry the effluent water. Pipe weirs shall not be permitted. Minimum weir box requirements are as follows:

(a) For dredges 8 inches to 12 inches, one (1) 16-foot crest weir box; and for dredges 14 inches to 18 inches, one (1) 28-foot crest weir box or two (2) 14-foot crest weir boxes.

(b) An effluent level board shall be installed on the side of the weir box. It shall be graduated in one-tenth of a foot intervals beginning with a datum level of zero feet at the elevation of the bottom of the weir box discharge pipe. The graduations shall continue to 1-foot above the highest point on the dike. Each foot shall be clearly marked and visible from the dike.

(c) A walkway and safety railing shall be installed to the weir box.

(d) Weir box(es) shall be constructed and installed outside the limits of the dike toe and effluent pipes shall extend beyond the dike toe to open water as specified in paragraph 5.3.2.

(e) Suitable screen shall be installed around the weir box(es) in order to stop debris entering into the weir box(es).

5.5 Misplaced Excavated Material: Any material that is deposited elsewhere than in places designated or approved by the Contracting Officer or his authorized representative will not be paid for and the Contractor may be required to remove such misplaced material and deposit it where directed at his expense. Misplaced excavated material may constitute a violation of applicable Federal, State, and Local statutes and the Contractor shall be liable for any civil and/or criminal penalties imposed by these statutes. A copy of the State of Maryland, Water Quality Certification is included as part of these specifications.

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6.0 GOVERNMENT FURNISHED PLACEMENT AREA:

6.1 The material excavated shall be transported, deposited, and retained in the Contractor maintained, existing diked dredged material disposal sites designated as "Mt. Vernon Placement Site" and "Sharps Point Placement Site" on the contract drawings.

6.2 The Contractor shall be responsible for preparing the existing diked disposal areas and maintaining the integrity of the disposal area retention dikes which must confine the dredged material throughout the life of the contract. At no time will dredge pipes be permitted to enter the disposal areas through the dike and/or shall encroachment upon the area retention dikes be permitted. Freeboard shall be measured as the distance between material and water and the crest elevation of the confining dike.

6.3 In the event any leaks occur in the dredge pipeline line, the Contractor shall immediately discontinue dredging operations until such leaks in the line, or breaks are remedied at the Contractor's expense. The Contractor shall also, at his expense, recover and remove any material misplaced by such leaks, or breaks.

6.4 Restoration of Landscape Damage. Any tree, grassed area or other landscape scarred or damaged by the Contractor's equipment shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer shall determine the methods of restoration to be used.

7. DISPOSAL DIKE CONSTRUCTION

7.1. GENERAL: The Contractor will be responsible for the construction and integrity of diked disposal areas and confining dikes which must confine the dredged material throughout the life of the contract. The dike shall be constructed at the location shown on the drawings or as otherwise directed or approved by the Contracting Officer. There are 2 disposal sites for this project - the Mt. Vernon Disposal Site and the Sharps Point Disposal Site.

7.1.1. Mt. Vernon Disposal Site: As shown on the contract drawings, there is an existing dike embankment around the perimeter of this site with one cross dike. Also at 2 locations there are existing stone stability/filter blankets to control through seepage which was observed during the initial disposal of dredged material at the site. The height of the dike varies from 9 to 12-feet around the perimeter and having a crest elevation of 13.0 feet. The Contractor shall raise the existing dike (approximately 2 feet) to elevation of 15.0 feet. In addition, a portion of the dike at the northwest corner has been removed, which the contractor shall rebuild with embankment fill obtained from an off-site borrow source. Because of the constraints of the site, the dikes shall be raised on the interior slope of the containment area using dredged material obtained from the interior of the site. The contractor shall investigate the existing outlet (weir) structure and determine the appropriate modifications that are needed in order to use the structure for this project.

7.1.2. Sharps Point Disposal Site: As shown on the contract drawings, there are several disposal cells at this site. For this contract, disposal Cell 3 shall be raised approximately 2 feet. The height of the dike around the perimeter of Cell 3 varies from 8 to 12-feet. Cell 3 is divided into an upper and lower cell. The upper cell, 3A, and a lower cell, 3B, have crest elevations of 42 and 36 feet, respectively. The dikes around Cell 3 shall be raised on the interior slope of the containment area. Existing dredged

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material from within the interior of any of the existing cells shall be used to raise the dikes of Cell 3. In addition, a new cell "4" shall be created by constructing a dike around its perimeter and divided into sub-cells by constructing cross dikes to maximize volumetric capacity of Cell 4. The contractor shall investigate the existing weir structures for Cell 3 and determine the appropriate modifications that are needed in order to use these structures for this project. New outlet (weir) structures shall be required for Cell 4, which shall be designed and constructed by the Contractor.

7.1.3. At no time will dredge pipes be permitted to enter a disposal area through the dike. Under no circumstances shall the operating freeboard be less than 2 feet at any time. Since Sharps Point Cell-4 is a new dike, the operating freeboard for Cell 4 shall not be less than 4 feet at any time. Freeboard shall be defined as the measurement between the elevation of the retained dredged slurry and the crest elevation of the confining dike. Subsurface explorations have been performed at the sites by the Government. Subsurface exploration plans and typical dike sections are provided in the contract drawings. Logs and laboratory test data are included in Attachment-3.

7.2 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

7.2.1 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO):

- M 288 (2000) Geotextile Used for Highway Applications
- M 294 (2002) Corrugated Polyethylene Pipe, 300- to 1200-mm Diameter

7.2.2 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) PUBLICATIONS

- D 422 (1963; R 1998) Particle-Size Analysis of Soils
- D 698 (1991; R 1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cf, (600 kN-m/m³))
- D 854 (1998) Specific Gravity of Soils
- D 2216 (1998) Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- D 2487 (1989) Classification of Soils for Engineering Purposes
- D 2922 (1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- D 3017 (1996) Moisture Content of Soil and Soil-Aggregate in place by Nuclear Methods (Shallow Depth)
- D 4318 (1998) Test Method for Liquid Limit, Plastic Limit, and Plasticity Index for Soils
- D 4718 (1987; R 1994) Correction of Unit Weight and Water Content for Soil Containing Oversize Particles

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7.2.3. Maryland Department of Transportation, State Highway Administration, Standard Specifications for Construction and Materials, January 2001

7.3. STRIPPING AND EXCAVATION: The dike foundation and borrow area shall be stripped of all trees, vegetation, and organic material. Portions of the existing dikes which will have contact with new embankment construction shall be stripped of all trees and vegetation. As much as possible, the existing exterior dike slopes shall not be disturbed, except for necessary repairs as directed by the Contracting Officer and as specified below. Stripped vegetation or other organic material or earth containing organic material in quantities considered excessive by the Contracting Officer are not suitable for use in the dike embankment and may be spoiled inside the diked area. No material shall be excavated within 20 feet of the inside or outside toe of the dike, except for required removal of stripped vegetation or other organic material. The excavated slopes in the interior of the borrow area shall be no steeper than 1.5 horizontal on 1 vertical.

7.4 DRAINAGE AND DEWATERING: Fill placement operations shall be performed so that all fills and areas receiving fill will be continually and effectively drained. Water shall not be permitted to accumulate on the fills. No fill shall be placed in water. The Contractor is responsible for draining or dewatering the existing cells, all excavations, and areas to receive fills to the extent and by the means necessary to allow for proper placement of dike embankment fills.

7.5. DIKE CONSTRUCTION:

7.5.1 GENERAL: No fill shall be placed on any part of the existing embankment and the foundations for the new embankments until such areas have been inspected and given final approval by the Contracting Officer. The dikes shall be constructed of material excavated from within the interior of the dike confining area as directed or approved by the Contracting Officer. The dike shall be constructed from suitable materials free of frozen material on a nonfrozen surface. At both the Mt. Vernon and Sharps Point Sites, the borrow material to raise the dike embankments will be obtained from the interior of the existing confining cells; this borrow material consists of highly saturated dredged materials, which will require a significant amount of drying before it can be placed and compacted in the dike fill. Efforts to dry back the material to within a suitable moisture content range will require considerable time and planning. The Contractor shall submit for review, a "Borrow Material Drying Plan" which describes the methods and procedures that will be used to dry the borrow material to within the specified moisture content limits for placement and compaction. The moisture content prior to compaction shall be as uniform as practicable throughout any one layer of fill material. Typical dike details of the raised and new dikes are shown on Subsurface Exploration Plans. Steeper side slopes than those indicated herein are not permitted.

7.5.2 TESTING:

(a) PRE-CONSTRUCTION TESTING: Prior to any fill placement for the raised dike and new dike embankments, the Contractor shall perform test pits in order to obtain soil samples from the interior of each cell or area where borrow materials will be obtained for dike construction. Laboratory compaction test shall be run to determine moisture-density curves for each type of fill material obtained from the borrow areas for use in the embankment. In this manner, moisture-density curves of each type of soil used in the fill will be available for reference in determining the optimum moisture and maximum density of materials, which shall be used to control the

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moisture and density of the embankment fill. At least one laboratory compaction test shall be performed for each type of material used in the fill. Compaction tests shall be performed in accordance with ASTM D 698, and, if necessary, corrected for oversize particles in accordance with ASTM D 4718. Classification testing will accompany each laboratory compaction test and shall consist of Atterberg limits, grain size determination (sieve and hydrometer analyses), moisture content, and specific gravity determination. These tests are described in ASTM D 4318, ASTM D 422, ASTM D 2216, and ASTM D 854, respectively. Results of these tests shall be submitted to the Contracting Officer prior to the placement of fill.

(b) TESTING DURING CONSTRUCTION: During construction of the dike embankments, moisture content tests shall be made on samples taken from the dike fill materials. Moisture content determinations shall be performed in accordance with ASTM D 2216. Additional moisture content testing shall be performed with the field density testing as described below. For dike fill materials, moisture content determination on the in-place material shall be performed at the rate of 1 test per 2500 square yards per lift. The Contractor shall perform field density tests in accordance with ASTM D 2922 to insure placement of materials are within the limits of moisture contents specified. When using the methods described in ASTM D 2922, the moisture content shall be determined in accordance with ASTM D 3017. Field density testing on the in-place material shall be performed at the rate of 1 test per 1500 cubic yards of fill. The Contractor shall furnish to the Contracting Officer the exact location of each soil sample and field density test, which shall include the station, offset from centerline of the dike, and approximate elevation. Results of all tests shall be furnished to the Contracting Officer within 24 hour after sampling. The Contractor shall use the testing data to adequately control moisture content of the fill materials in order to facilitate proper compaction of the fill.

7.5.3. PLACEMENT AND COMPACTION: A track dozer shall be used to compact the dike fill materials. The Contractor shall select the appropriate type and size of track dozer for the compaction of the fill. Manufacturer's specifications for the dozer compactor shall be submitted to the Contracting Officer. In confined areas, where space prohibits the use of dozer compactor, hand operated power or vibratory tampers shall be used to compact the various dike fills. Placement of fill material in the dike shall be made in lifts not to exceed 8 inches in uncompacted thickness. Each lift of the dike fill material shall be compacted by not less than four (4) complete coverages by the dozer. In confined areas, the fill material shall be compacted with at least four (4) complete coverage with a hand operated power or vibratory plate tamper and as many additional coverages as necessary to achieve the same density obtained with the track dozer.

7.5.4. MT. VERNON DISPOSAL SITE: As stated above this disposal area was previously used as a dredge disposal containment site. Typical dike details showing the general configuration and slopes for the raised dike and new dike are shown on the Subsurface Exploration Plans.

(a) DIKE RAISING: The Contractor shall utilize the existing dikes as part of the dike structure by adding embankment on the interior side. The raised dikes shall be constructed to elevation 15.0 feet. The interior and exterior side slopes of the raised embankment shall be no steeper than 3 horizontal on 1 vertical, and these slopes shall be maintained at all times during the construction of the dikes. All confining and cross dikes shall have a minimum crest width of 8 feet and shall have a crest elevation as specified herein and as shown on the drawings. Placement and compaction requirements are specified in paragraph 7.5.3. As stated above, the borrow

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material to raise the dike embankments consists of highly saturated dredged materials obtained from the interior of the existing confining dike. In order to facilitate proper compaction of the borrow fill, the moisture content of the borrow material must be dried back to a moisture content not greater than 20 points above the laboratory optimum moisture content in accordance with the requirements of ASTM D 698. The moisture content of the borrow fill material shall be below the maximum limit (optimum moisture content% + 20%) prior to compacting the fill in any lift. If, in the opinion of the Contracting Officer or as indicated by the field testing results, the material is too wet to facilitate the proper compaction, it shall be removed from the fill and replaced or dried out by any method approved by the Contracting Officer.

(b) REBUILDING EXISTING DIKE: A portion of the existing dike at the northwest corner has been removed. The Contractor shall rebuild this section of the dike embankment with borrow material obtained from an off-site borrow source. The off-site borrow material shall consist of similar material that was initially used to construct the existing dike embankment. The off-site borrow material shall consist of silty sand or clayey sand, defined as SM, SC, (SP-SM), (SP-SC), (SW-SM), or (SW-SC) in accordance with ASTM D 2487. The moisture content of the fill material prior to compaction shall be within the limits of 4 percentage points above optimum to 1 percentage point below optimum moisture content as determined by procedures set forth in ASTM D 698. The excavation face of the existing dike shall be cut back (excavated) to a 1.5 horizontal on 1 vertical slope in order to facilitate compaction of the new fill. Placement of material in the reconstructed dike shall be made in lifts not to exceed 8 inches in uncompacted thickness. Placement and compaction requirements are specified in paragraph 7.5.3. Once the missing section of the existing dike embankment has been rebuilt, the dike shall be raised in accordance with the requirements of paragraph 7.5.4.a.

7.5.5. SHARPS POINT DISPOSAL SITE: As stated above this disposal area was previously used as a dredge disposal containment site. The project requires raising the dikes around the Cell 3 and constructing a new dike and creating a new cell "4". Typical dike details which show the general dike configuration and slopes for the raised dike and new dike are shown on the Subsurface Exploration Plan.

(a) CELL 3: The Contractor shall utilize the existing dikes as part of the dike structure by adding embankment on the interior side. The raised dikes around Cells 3A and 3B shall be constructed to elevation 44.0 and 38.0 feet, respectively. The interior and exterior side slopes of the raised embankment shall be no steeper than 3 horizontal on 1 vertical, and these slopes shall be maintained at all times during the construction of the dikes. All confining and cross dikes shall have a minimum crest width of 8 feet and shall have a crest elevation as specified herein and as shown on the drawings. Placement and compaction requirements are specified in paragraph 7.5.3. As already stated, the borrow material to raise the dike embankments consists of highly saturated dredged materials obtained from the interior of the existing confining dike (cells). In order to facilitate proper compaction of the borrow fill, the moisture content of the borrow material must be dried back to a moisture content not greater than 20 percentage points above the laboratory optimum moisture content in accordance with the requirements of ASTM D 698. The moisture content of the borrow fill material shall be below the maximum limit (optimum moisture content% + 20%) prior to compacting the fill in any lift. If, in the opinion of the Contracting Officer or as indicated by the field testing results, the material is too wet to facilitate the proper compaction, it shall be removed from the fill and replaced or dried out by any method approved by the Contracting Officer. In addition, the Contractor may obtain borrow material to raise the dike from the interior of any of the

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existing cells at this site.

(a) CELL 4: The Contractor shall construct new dikes along the boundary of Cell 4 at the locations and to the crest elevations shown on the contract drawings. Material excavated from within Cell 4 shall be used to construct the new dike. The interior side slopes of the new embankment shall be no steeper than 2 horizontal on 1 vertical, and exterior side slopes shall be no steeper than 3 horizontal on 1 vertical. These slopes grades shall be maintained at all times during the construction of the dikes. The moisture content of the fill material prior to compaction shall be within the limits of 4 percentage points above optimum to 1 percentage point below optimum moisture content as determined by procedures set forth in ASTM D 698. The requirements for constructing cross and spur dikes within Cell 4 shall be the same as for the confining dikes. Placement and compaction requirements are specified in paragraph 7.5.3.

7.5.6. DIKE SEDIMENT CONTROL: Stabilization of the completed dike slopes shall be accomplished in accordance with the applicable requirements of the State of Maryland as set forth in paragraph 14, SEDIMENT CONTROL.

7.6. REMEDIAL MEASURES: The contractor shall maintain the following materials at the disposal site, and upon the direction of the Contracting Officer, be able to make any necessary repairs to the dike within 24 hours.

a. 4000 sq. ft. of non-woven or woven geotextile. The geotextile shall have a MARV (minimum average roll values) strength properties meeting the Class 2 Geotextile Survivability requirements in accordance with AASHTO M 288-96. The geotextile shall have MARV hydraulic properties meeting the requirements of AASHTO M 288-96 geotextile criteria for subsurface drainage (filtration) having a minimum permittivity of 1.0 sec^{-1} and having an apparent opening size (AOS) no finer than the US Standard Sieve No. 70 and no coarser than the US Standard Sieve No. 100.

b. 4000 sq. ft. of an impervious plastic liner (min. thickness 10 mil).

c. A list of available local suppliers of sand and gravel that can supply approximately 300 cubic yards of clean sand and gravel within 8 hours notice.

7.7 WEIR BOX INSTALLATION AND DIKE RECONSTRUCTION:

7.7.1. The contractor will be responsible for the design and construction of the weir boxes, outlets, and the excavation and reconstruction of the dike embankment. The weir boxes shall be located outside of the limits of the dike toe, as shown on the drawings. The ends of the effluent discharge pipes shall also extend beyond the dike toe. Embankment material excavated for the weir box installations shall be stockpiled and used for reconstruction of the dike.

Temporary excavation slopes through the existing embankments shall be no steeper than 1.5 horizontal on 1 vertical to facilitate compaction. Placement of material in the reconstructed dike shall be made in lifts not to exceed 8 inches in uncompacted thickness. Each lift shall be compacted by the controlled use of the track dozer as specified in paragraph 7.5.3. Compaction in areas within 3 feet of the discharge pipe shall be accomplished utilizing power tampers, approved by the Contracting Officer, to a density equivalent to that obtained by use of the dozer equipment in the adjacent fill. In areas where power tampers are utilized for compaction, the lift thickness shall not exceed 4 inches. The moisture content of the dike embankment material shall be controlled as required to allow for proper compaction. The contractor shall reconstruct the dike to the original configuration.

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7.7.2. The Contractor shall be responsible for the design and selection of the outlet pipes for the weir structures. New outlet pipes shall be corrugated polyethylene (PE) pipe meeting the requirements as specified in AASHTO M 294. Fittings and couplings shall be manufacturer's standard type and shall conform to the indicated specification. All joints shall be watertight joints meeting the requirements of AASHTO M 294. New outlet pipes shall be designed for the various embankment, hydrostatic, and construction loading conditions.

7.7.3. For the weir box structure that discharges effluent from the lower cell to the discharge channel, an additional seepage control feature around the outlet pipe is required. An 18-inch minimum annular thickness of drainage material shall be provided around the exterior third of the outlet pipe to prevent "piping". The drain material shall consist of clean sand meeting the gradation and quality requirements of fine aggregate-portland cement concrete, as specified in Table 901A and 901B of the Maryland Department of Transportation, State Highway Administration, Standard Specifications for Construction and Materials, October 1993. The fine aggregate in-place shall meet the gradation shown below:

<u>SIEVE SIZE</u> <u>U.S. STANDARD SQUARE MESH</u>	<u>PERCENT BY WEIGHT</u> <u>PASSING INDIVIDUAL SIEVE</u>
3/8 inch	100
No. 4	95-100
No. 16	45-85
No. 50	10-30
No. 100	0-10

The Contractor shall be required to submit, to the Contracting Officer, documentation verifying that the drain material will meet the gradation specified, prior to its delivery to the project site.

8. Pipeline Right of Ways: The pipeline right of ways where shown on the placement site drawings are Government furnished. The pipeline must be weighted down and submerged at all times in and around the area of the docks, to prevent interference with boats. However, the Contractor is not restricted to the right-of-ways shown on the contract drawing(s). In those cases where the Contractor routes a pipeline outside of the Government furnished right-of-way or disposal area property, he shall obtain all easements, permits, and right-of-ways at his own expense. The Influent Line Locations are shown on the upland placement site drawings for each of the two sites.

8.1 Prevention of Landscape Defacement within Government Furnished Pipeline Right-of-Ways. Unless otherwise noted on the contract drawing(s), the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without the authority of the Contracting Officer or his authorized representative. Monuments and markers shall be protected before construction operations commence and until contract completion.

8.2 Restoration of Landscape Damage within Government Furnished Pipeline Rights-of-Ways. Any tree, grassed area or other landscape scarred or damaged by the Contractor's equipment shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer shall determine the methods of restoration to be used.

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9. NONCOMPLIANCE: The Contracting Officer or his authorized representative will notify the Contractor in writing of any noncompliance with the foregoing provisions. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. Within 24 hours after the receipt of such notice, the Contractor shall mail, or personally deliver to the Contracting Officer or his authorized representative, a complete proposal of the prompt correction of the noncompliance. The Contracting Officer or his authorized representative will review the proposal and return it to the Contractor approved, subject to such changes or conditions as he finds necessary to assure correction of noncompliance. Immediately upon receipt of such approval, the Contractor shall begin the corrective work and shall carry it to completion. If the Contractor fails or refuses to submit his proposal or to proceed with the corrective work, the Contracting Officer or his authorized representative may suspend all or any part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such suspension shall be made the subject of a claim for extension of time nor for excess costs or damages by the Contractor. If he so elects, the Contracting Officer or his authorized representative may cause the corrective work to be accomplished by others, in which event the cost thereof shall be chargeable against any monies otherwise due the Contractor from the Government.

10. INSPECTION AND TESTING:

10.1 Inspection: The work will be conducted under the general direction of the District Engineer and will be subject to inspection by his appointed inspector(s) to insure strict compliance with the specifications. The Government inspector(s) will direct the maintenance of the gages, ranges, location marks, and limit marks in proper order. Portable lighting shall be provided upon request of the Government inspector(s) for more detailed inspection of potential trouble areas.

10.1.1 The Government inspector(s) will direct suspension of operations at any unit of work where the Contractor upon request does not correct:

(a) A safety hazard which is so grave as to endanger life, limb, or property or cause serious damage to the work. This includes but is not limited to a failure on the part of the Contractor (1) to have a full-time quality control person present and fully alert and awake on the disposal area at all times pumping operations are in progress or (2) provide and maintain the required marine band radio for use by Government inspector(s) at all times while pumping operations are in progress and/or (3) provide and maintain the approved lighting on the disposal area for safe night operations are all basis for Government inspector direct suspension of work.

(b) An effluent reading from the material passing over the weir box crest from the disposal area which exceeds 300 NTU's or 0.4 grams per liter TSS.

(c) An encroachment upon the maintenance of two feet of operating freeboard on the disposal area retention dikes.

(d) Noticeable dike seepage and/or loss of required dike crest width.

10.2 Testing: The Contractor shall provide all equipment and labor necessary to satisfactorily obtain, test, and record the results thereof of weir box effluent testing. The Contractor shall determine the density of the effluent. Effluent samples for density determinations shall be obtained at the weir box. Each sample shall be made by partially filling, without

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overflow, a one-quart container with the mixture flowing over the weir. When settled solids are not present in the sample, the Contractor may determine the density by the turbidity meter method or the weight-volume method as hereinafter specified. When settled solids are present, the density shall be determined by the weight-volume method.

10.2.1 Turbidity Meter Method: When a turbidity meter method is used for density determination, an instrument similar or equal to Hach #16800 shall be used. The instrument shall be capable of reading at least 0 to 100 NTU's.

10.2.2 Weight-Volume Method: When the weight-volume method is used for density determination, the total sample shall be measured to obtain volume in liters and weight in grams. Measurements shall be made with a 1000 c.c. laboratory cylinder to the nearest gram. The unit weight shall be obtained by dividing the total weight in grams by the total volume in liters.

10.2.3 Effluent samples shall be obtained on an hourly basis at all times pumping operations are in progress and immediately after removing any weir boards. The frequency of sampling and testing may be increased at the direction of the Government inspector(s) if effluent densities increase.

10.2.4 Records of disposal area effluent sampling and corrective action(s) taken to ensure compliance with turbidity requirements shall be submitted daily to the Government inspector(s). The Contractor shall also record the height of the dike effluent each time an effluent sample is obtained. Effluent test results shall be recorded immediately after tests are performed and made available to the Government inspector(s) at all times upon request.

10.2.5 The Contractor shall provide a shelter on the disposal area(s) to house testing equipment and furnish shelter for quality control personnel.

11. OVERDEPTH AND SIDE SLOPES:

11.1 Overdepth: To cover inaccuracies of the dredging process, material actually removed from within the specific areas to be dredged to a depth of not more than 1-foot below the required depth, except for stations 41+500 to 43+700 and stations 45+400 to 50+300 which are limited to 0.5-foot below the required depth, will be estimated and paid for at the contract price.

11.2 Side slopes: Material actually removed, within limits approved by the Contracting Officer, to provide for final side slopes not flatter than 1 vertical on 3 horizontal, but not in excess of the amount originally lying above this limiting side slope will be estimated and paid for, whether dredged in original position or by dredging space below the pay slope plane at the bottom of the slope for upslope material capable of falling into the cut. In computing the limiting amount of sideslope dredging, an over-depth of 1-foot, except for stations 41+500 to 43+700 and stations 45+400 to 50+300 which have an over-depth of 0.5-foot, measured vertically will be used.

11.3 Excessive dredging: Material taken from beyond the limits as extended in the provisions of paragraphs 11.1 and 11.2 above will be deducted from the total amount dredged as excessive overdepth dredging, or excessive sideslope dredging for which payment will not be made. Nothing herein shall be construed to prevent payment for the removal of shoals performed in accordance with the applicable provisions of the Special Clauses FINAL EXAMINATION AND ACCEPTANCE or SHOALING.

12. MEASUREMENT AND PAYMENT:

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12.1 Mobilization and Demobilization: Mobilization and demobilization shall include all costs in connection with but not limited to: obtaining any necessary permits and approvals for the work specified in accordance with the Contract Clause PERMITS AND RESPONSIBILITIES; full reimbursement for the premiums actually paid for performance and payment bonds, moving the Contractor's dredging plant and equipment to the site; initial laying of pipelines; accomplishing the work required by the Sediment Control Permit; maintenance of the disposal areas, and the removal of all dredging plant, equipment, fencing and pipelines from the site upon completion of the work. Payment shall be made in accordance with Item No. 0001, "Mobilization and Demobilization" of the Unit Price Schedule which shall be full compensation for the work performed.

12.2 Dike Construction: Dike Construction shall include all costs in connection with building the dikes to contain the dredged material. These items will also include the cost of weirs and effluent pipelines. Payment shall be made in accordance with Item No. 0002A "Mt. Vernon" and Item No 0002B "Sharps Point" of the Unit Price Schedule which shall be full compensation for the work performed.

12.3 Dredging: The total amount of material removed and to be paid for under the contract, will be measured by the cubic yard in place by computing the volume between the bottom surface shown by soundings of the last survey made before dredging and the bottom surface shown by the soundings of a survey made as soon as practicable after the entire work specified has been completed and included within the limits of the overdepth and side slopes described in the Technical Provision paragraph OVERDEPTH AND SIDE SLOPES less any deductions that may be required for misplaced material described in the Technical Provision paragraph MISPLACED MATERIAL. Payment shall be made in accordance with Item No. 0003A "Mt. Vernon", Item No 0003B "Sharps Point" and Item No. 0006 "Maintenance Dredging - Sharps Point" of the Unit Price Schedule which will be full compensation for the work performed.

12.4 Dike Construction - New Cell at Sharps Point: Dike Construction shall include all costs in connection with building the dikes to contain the dredged material, and will be measured by the cubic yard in place by computing the volume between the existing ground and the completed structure. This volume will be based upon check surveys conducted by the contractor. At least one check survey will be made for each 100 foot section of the new cell of the placement site prior to construction and after structure completion, prior to dredging activities. Cross-section readings shall be made and recorded at 5 (five) foot intervals and at breaks along the lines. Other cross-section spacings and reading intervals may be used, however, if approved by the Contracting Officer. Additional elevations shall also be taken as the Contracting Officer may deem necessary or advisable. The surveys shall be conducted in the presence of the Contracting Officer's authorized representative unless otherwise waived. Payment shall be made in accordance with Item No. 0004 "Dike Construction - New Cell at Sharps Point" of the Unit Price Schedule which shall be full compensation for the work performed.

12.4 The maps and/or drawings already prepared are believed to represent accurately conditions existing on the date shown on the contract drawing(s). Determination of quantities removed and the deductions made therefrom to determine quantities by place measurement to be paid in the area specified, after having once been made, will not be reopened except on evidence of collusion, fraud, or obvious error.

12.5 Monthly partial payments will be based on approximate quantities

MAINTENANCE DREDGING, WICOMICO RIVER CHANNEL, SOMERSET AND WICOMICO COUNTIES, MARYLAND

determined by soundings or sweepings taken behind the dredge and/or approximate quantities reported in the Daily Reports of Operations.

12.6 Should the Contractor in conjunction with work under this contract perform dredging for third parties adjacent to the specified area to be dredged, payment will be made by the Government only for material removed from the contract area within a vertical plane at the contract unit lines at the location work is performed for such third parties.

13. WORK IN THE VICINITY OF STRUCTURES AND UTILITY CROSSINGS:

13.1 The Contractor shall exercise caution when working in the vicinity of structures and utility crossings or adjacent to the channel or disposal areas. Repair of any damage resulting from excessive or improper excavation in the bottom or side slopes of the channel shall be the responsibility of the Contractor. Where dredging to the required elevation might endanger any structure, the Contracting Officer or his authorized representative may reduce the required excavation in the vicinity of such structure.

13.2 The Contractor shall provide at least project channel dimensions over all utility crossings. The Contractor shall submit for approval by the Contracting Officer or his authorized representative a detailed plan of operation at each pipeline or utility crossing where construction surveys indicated project channel does not exist. The plan shall contain emergency measures to be taken in the event of an accident. The Contractor shall notify the owners of pipelines or utilities at least three calendar days prior to operating within 150 feet of a pipeline or utility. The Government will not be responsible for any damage to structure or utilities due to the Contractor's deviation from the approved plan.

13.3 Any unidentified pipelines or structures which may be found within the limits of work shall not be disturbed nor shall dredging or the disposal of dredged material be performed at these locations unless, and until, approved by the Contracting Officer.

14. Sediment Control

14.1 General: The Corps has made application for approval of the sediment control plan as presented in the plans and specifications. The contractor must comply with the requirements of plan and any deviations must be approved by the State of Maryland, Water Management Administration, Department of the Environment, and the Contracting Officer. The Contractor shall notify the State of Maryland and the Contracting Officer's Representative at least 7 days before the proposed work begins. The contact for the State of Maryland, is the Compliance Program at (410) 537-3510.

14.2 Retention Dike Sediment Control:

14.2.1 All dike construction shall be so shaped and compacted so as to have side slopes no steeper than the requirements specified in paragraph 7.3.2(b), Technical provisions, Construction Specifications.

14.2.2 An 18-inch minimum annular thickness of drain material shall be provided around the outlet one-third of the pipe spillway to prevent "piping". The drain material shall consist of clean sand meeting the gradation and quality requirements of fine aggregate-portland cement concrete, as specified in Table 901A and 901B of the Maryland Department of Transportation, State Highway Administration, Standard Specifications for Construction and Materials, October 1993. The fine aggregate in-place shall meet the gradation

MAINTENANCE DREDGING, WICOMICO RIVER CHANNEL, SOMERSET AND WICOMICO COUNTIES, MARYLAND

shown below:

<u>SIEVE SIZE</u>	<u>PERCENT BY WEIGHT</u>
<u>U.S. STANDARD SQUARE MESH</u>	<u>PASSING INDIVIDUAL SIEVE</u>
3/8 inch	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 100	2-10

The Contractor shall be required to submit, to the Contracting Officer, documentation verifying that the drain material will meet the gradation specified, prior to its delivery to the project site.

14.2.3 Protection against erosion and scour shall be provided at the pipe weir box point of discharge.

14.2.4 The outside and top surface of the diked containment area shall be stabilized no later than 7 days after construction of the dike is completed.

14.2.5 Silt fence shall be provided in accordance with the requirements of the State of Maryland.

14.3 Final Acceptance: The disposal area dikes will be inspected for sediment control compliance during seeding operations and 30 days after seeding. Seed germination must be sufficient to cover the entire area with a minimum of 100 plants per sq. ft. Bare spots in excess of 2 ft. in diameter are to be reseeded in accordance with the Vegetative Stabilization requirements shown on the plans. Initial seeding will be required to be accomplished during the contract performance period. However, subsequent reseeding, if necessary, will not be required to be accomplished during the contract performance period. Liquidated damages will not be assessed during reseeding operations. However, every effort will be made by the Contractor to complete reseeding operations as quickly as possible."

15. QUALITY CONTROL:

15.1 The Contractor shall establish a Quality Control system to assure compliance with contract requirements and shall maintain records of his quality control for all construction and dredging operations as required in the QUALITY CONTROL paragraphs in the Special Clauses.

DAILY QUALITY CONTROL REPORT

Contract No.: _____ **Date:** _____ **Rpt. No.:** _____

Project Title & Location:

Weather: Clear P. Cloudy Cloudy Rainfall in (% of workday)

Temperature during workday: High degrees F. Low degrees F.

1. WORK PERFORMED BY CONTRACTORS/SUBCONTRACTOR(S)

	No. of Workers	Crafts	Hrs	Description of Work

2. OPERATING EQUIPMENT DATA (Not hand tools)

Equipment	Date of arrival/ departure	Owned or Rented	Hours Used	Hours Idle	Hours of Rep./Main

3. WORK PERFORMED TODAY: (Indicate location and description of work performed by prime and/or subcontractors).

4. QUALITY CONTROL INSPECTIONS & RESULTS (Includes a description of preparatory, initial, and/or follow-up inspections or meetings; check of subcontractors work and materials delivered to site compared to submittals and/or specifications; comments on proper storage of materials; included comments on corrective actions to be taken):

5. QUALITY CONTROL TESTING AND RESULTS (Comment on tests and attach test reports):

6. DAILY SAFETY INSPECTIONS (Include comments on new hazards to be added to Hazard Analysis and corrective action of any safety issues):

7. REMARKS (Include conversations with or instructions from the Government representatives; delays of any kind that are impacting the job; conflicts in the contract documents; comments on change orders; environmental considerations; etc.):

8. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

Contractor Quality Control Officer

DAILY QUALITY CONTROL REPORT

DIKE CONSTRUCTION - DREDGING

Contract No. _____ Report No. _____

Project Name _____ Date _____

Weather _____ Temperature _____ Precipitation Amount _____

1. Phase of Dike Construction in Progress

Dike Designation _____ Dike Designation _____

Length Constructed This Date _____ Length Constructed This Date _____

Height _____ Height _____

Side Slope _____ Side Slope _____

Top Width _____ Top Width _____

Type of Material _____ Type of Material _____

Compaction By _____ Compaction By _____

2. Equipment on Site _____

3. Inspection Made _____

4. Verbal Instruction Received _____

5. Changed Conditions/Delays/Conflicts Encountered _____

6. Safety _____

7. Disposal Areas: (Being Filled)

A. Condition of Dikes _____

B. Condition of Spillways _____

C. Required Tests _____

7. Continued.

2400 to 0800	g/l Spillway	Feet Water Level	Idle or Pumping
0100			
0200			
0300			
0400			
0500			
0600			
0700			
0800			
<u>0800 to 1600</u>			
0900			
1000			
1100			
1200			
1300			
1400			
1500			
1600			
<u>1600 to 2400</u>			
1700			
1800			
1900			
2000			
2100			
2200			
2300			
2400			

8. Remarks: _____

SIGNATURE _____
Quality Control Inspector

Contractor's Verification: The above report is complete and correct and all material and equipment used and work performed during this working period are in compliance with the contract plans and specifications except as noted above.

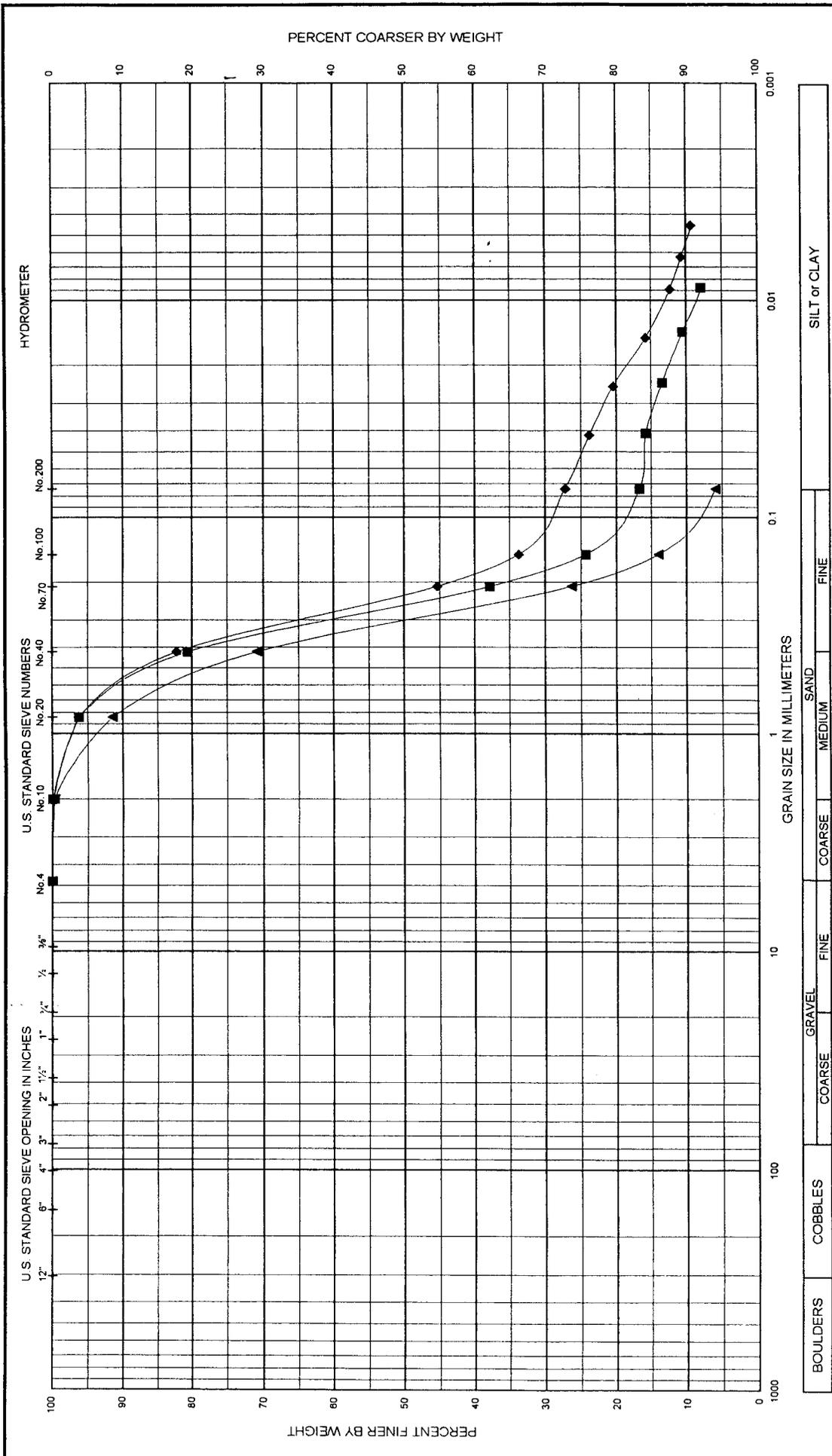
Contractor's Approved Authorized Representative

DAILY REPORT OF OPERATIONS				CONTRACT NO.	DATE	RCS ENKW-37 (Feeder)	
DREDGE				CONTRACTOR			
LOCATION OF WORK (Range, Stationing, Longitudinal position)					CHARACTER OF WORK () Maintenance () New		
DISPOSAL AREA OR REHANDLING BASIN			LENGTH OF DISCHARGE PIPELINE: Total Length Ft. Pontoon Ft. Shore Ft. Submerged Ft.				
CHARACTER OF MATERIAL AND PERCENTAGE OF EACH Gravel Sand Clay Mud Silt Hardpan Stone Others							
AVERAGE DEPTH (Feet and Tenths) Before Dredging After Dredging Payment Depth					WEATHER		
VELOCITY OF DISCHARGE Feet Per Second		AVERAGE VACUUM Inches		AVERAGE DISCHARGE PRESSURE Lbs.		IN PLACE DENSITY G/L	
DENSITY OF RIVER WATER		DENSITY OF WATER DISCHARGING OVER SLUICE WEIR			HEIGHT OF DISCHARGE OVER SLUICE WEIR		
NUMBER OF MEN		MAN HOURS			MAN HOURS TO DATE		
WORK PERFORMED				DISTRIBUTION OF TIME			
ITEM	UNIT	AMOUNT		EFFECTIVE WORKING TIME	HOURS	MINUTES	
		GROSS	NET				
Av. width of cut	Feet			Dredging			
Area dredged	Sq. Ft.		Percentage of total time				
Distance advanced this period	Feet		NON-EFFECTIVE TIME				
Distance advanced previously	Feet		Handling pipe lines				
Distance advanced to date	Feet		Handling swinging lines				
Scows loaded	Number		Clearing pump and pipe line				
Av. load per scow	Cu. Yds.		Clearing cutter or suction head				
Amt. dredged pumping hr.	Cu. Yds.		Taking fuel and supplies				
Amt. dredged this period	Cu. Yds.		Changing location of plant on job				
Amt. dredged previously	Cu. Yds.		Loss due to opposing natural elements				
Total amt. dredged to date	Cu. Yds.		Loss due to passing vessels				
Av. pump speed	R.P.M.		Minor operating repairs				
Av. discharge lift	Feet		Waiting for attendant plant				
			Preparations				
			Transferring plant between works				
		Lay time off shift					
ATTENDANT PLANT				Sundays and Holidays			
ITEM	NAME	HOURS		Waiting for scows			
Tugboat				Fire and boat drills			
Tugboat				Miscellaneous (Explain in remarks)			
Launch				Total Non-effective Time			
Barges				Percentage of Total Time			
Barges				LOST TIME (Not chargeable to cost of work)			
Scows				Repair time (8 consecutive hours or more)			
Derrick				Collisions			
COMMODITIES CONSUMED				Out of commission			
ITEM	UNIT	QUANTITY		Miscellaneous (Explain in remarks)			
Fuel oil	Gals.			Total Lost Time			
Lubricants	Gals.			Percentage of total time			
Lubricants	Pounds			TOTAL TIME IN PERIOD			
Water	Gals.						
No. of Supervisory Inspections: By field personnel				By office personnel			
REMARKS (Attach additional sheet, if necessary)							

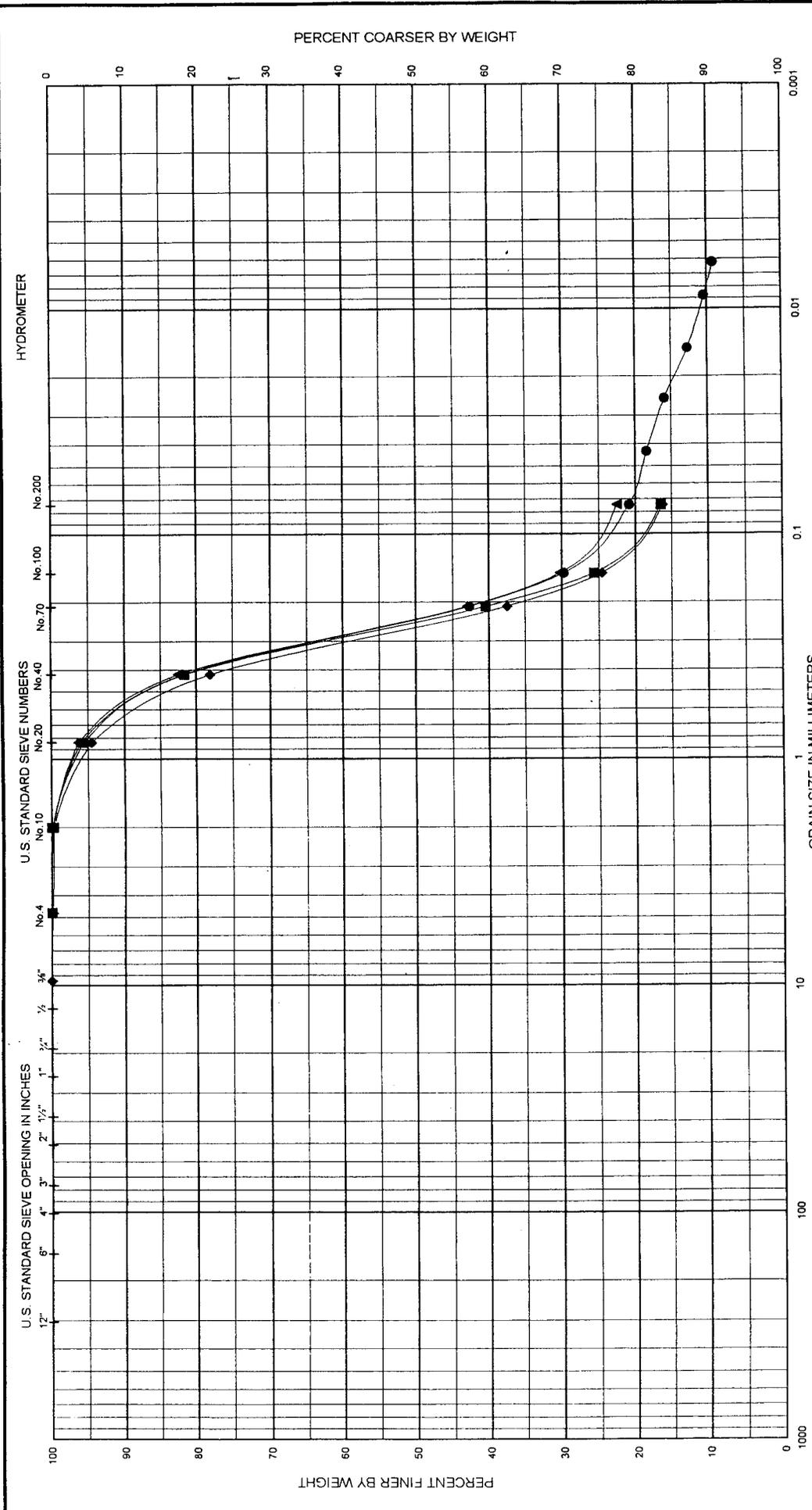
ATTACHMENT 3

SUBSURFACE EXPLORATION DATA

Enclosed in this attachment is the subsurface exploration data for the upland disposal sites. The Mt. Vernon Disposal Site is located in Somerset County, MD and the Sharps Point Disposal Site is located in Wicomico County, MD.

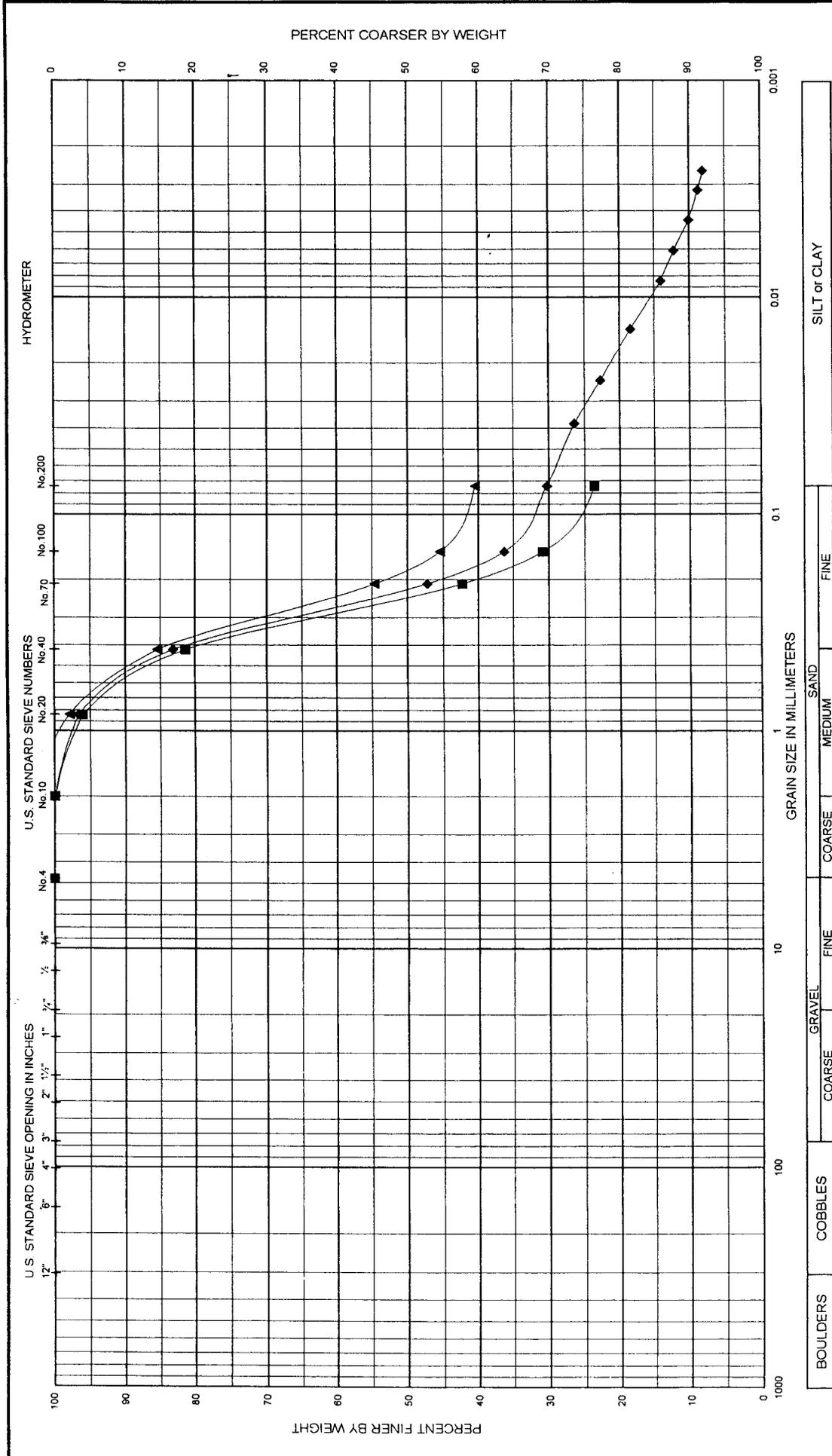


Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
■	Jar-6	5.7-7.8	Silty sand (SM)	13.7	19	16	3
◆	Jar-8	8.5-9.7	Silty clayey sand (SC-SM)	15.3	22	17	5
▲	Jar-10	10.7-12.4	Poorly graded sand with silt (SP-SM)	11.9	—	—	—
GRADATION CURVES (Sieve Analysis: ASTM D422)							
ENG FORM 2087							
PROJECT: Webster Cove Disposal							
AREA: Dike Investigation							
Boring No.: Somerset County, MD							
DATE: AB-3WC Sht. 2 of 2							
DATE: Jul 2001							

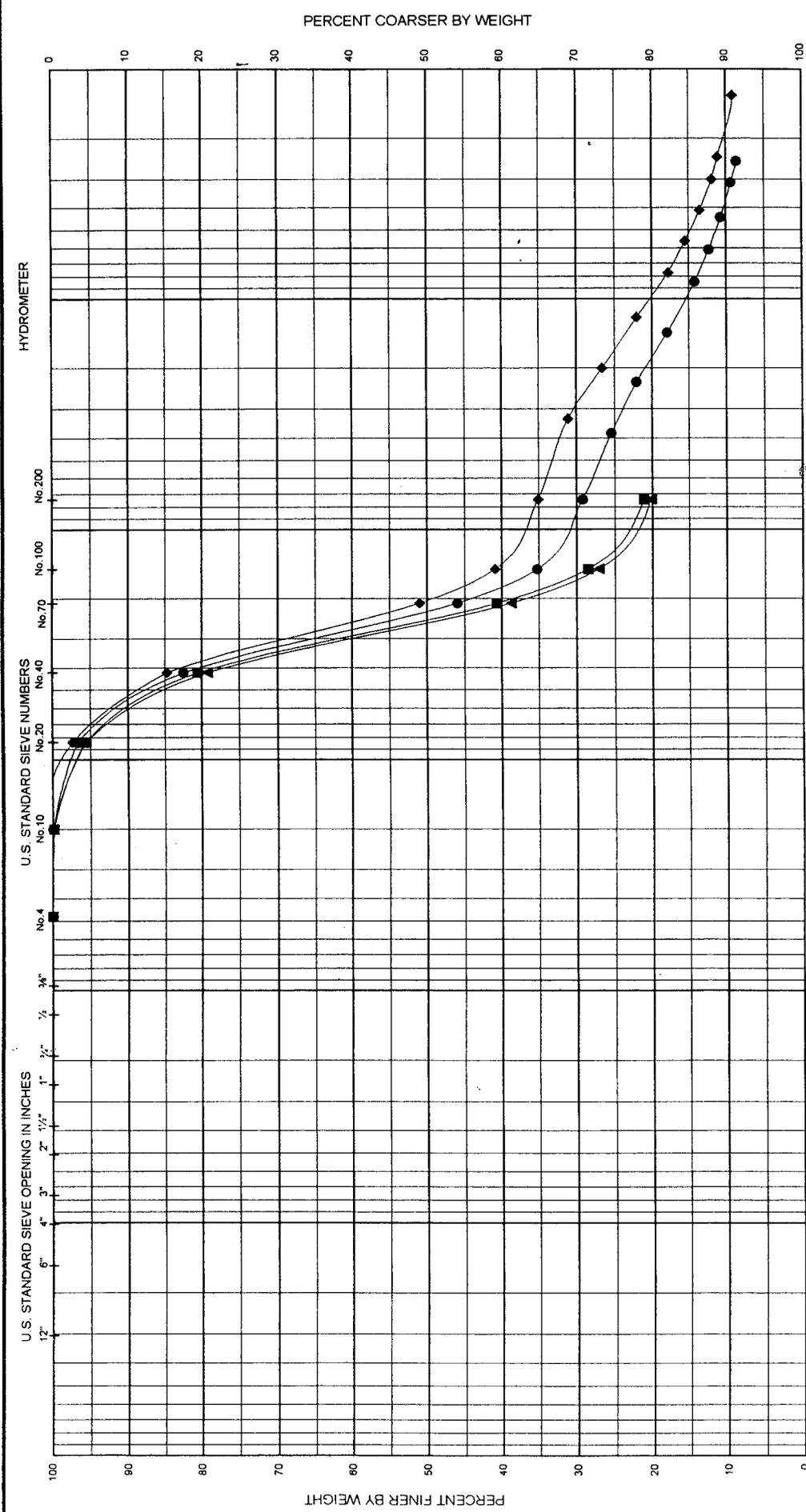


BOULDERS		COBBLES		GRAVEL		SAND			FINE			SILT or CLAY		
Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI	
Jan-1	0.5-2.8	Silty sand (SM)	12.0	20	17	3	Jan-1	0.5-2.8	Silty sand (SM)	12.0	20	17	3	
Jan-3	4.3-5.0	Silty sand (SM)	15.6	20	17	3	Jan-3	4.3-5.0	Silty sand (SM)	15.6	20	17	3	
Jan-4	5.6-7.0	Silty sand (SM)	13.5	20	18	2	Jan-4	5.6-7.0	Silty sand (SM)	13.5	20	18	2	
Jan-5	7.0-8.9	Silty sand (SM)	13.3	20	18	2	Jan-5	7.0-8.9	Silty sand (SM)	13.3	20	18	2	

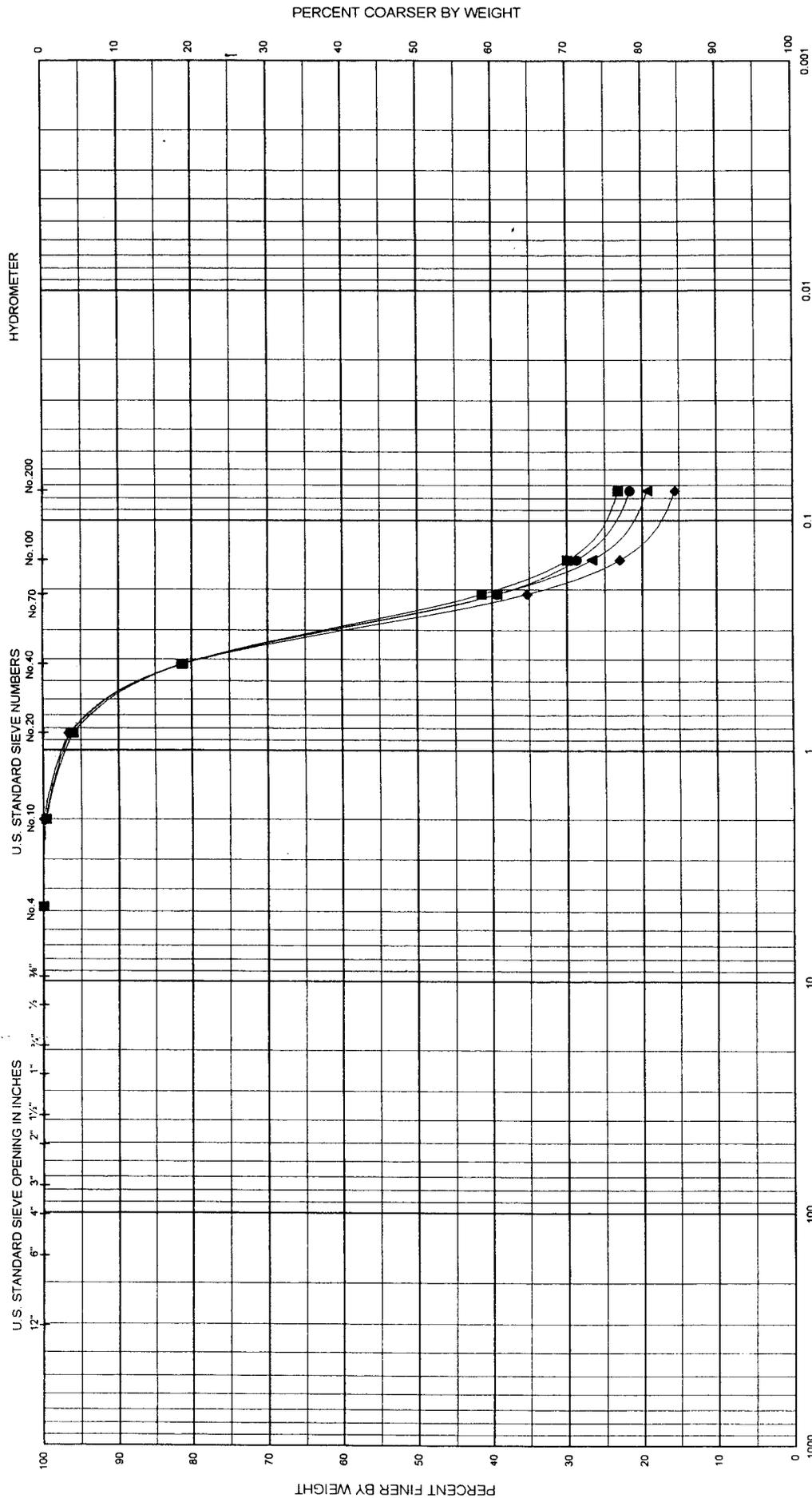
PROJECT: Webster Cove Disposal
 Dike Investigation
 Somerset County, MD
AREA: Boring No.: AB-4WC
DATE: Jul 2001



PROJECT: Webster Cove Disposal	
AREA: Dike Investigation	
Boring No.: Somerset County, MD	
DATE: AB-5WC	
DATE: Jul 2001	
GRADATION CURVES	
(Sieve Analysis: ASTM D422)	
ENG FORM 2087	



BOULDERS		COARSE GRAVEL		FINE GRAVEL		COARSE SAND		MEDIUM SAND		FINE SAND		SILT or CLAY	
Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)									PROJECT:	
—■—	Jar-1	0.9-2.3	Silty sand (SM)	Nat w%	12.7	LL	18	PL	13	PI	5	Webster Cove Disposal	
—◆—	Jar-2	2.9-3.8	Silty clayey sand (SC-SM)	Nat w%	14.1	LL	10.3	PL	15	PI	5	Dike Investigation	
—▲—	Jar-3	3.8-5.2	Silty sand (SM)	Nat w%	13.0	LL	20	PL	15	PI	5	Somerset County, MD	
—●—	Jar-4	6.2-7.0	Silty clayey sand (SC-SM)	Nat w%	13.0	LL	20	PL	15	PI	5	Boring No.: AB-6WC	
GRADATION CURVES												DATE:	
(Sieve Analysis: ASTM D422)												Jul 2001	
ENG FORM 2087													



PROJECT: Webster Cove Disposal
Dike Investigation
Somerset County, MD

AREA: Somerset County, MD

Boring No.: AB-7WC

DATE: Jul 2001

USCS Classification (ASTM D2487)

BOULDERS **COBBLES** **GRAVEL** **SAND** **SILT or CLAY**

Legend **Sample No.** **Depth (ft)** **USCS Classification (ASTM D2487)** **Nat w%** **LL** **PL** **PI**

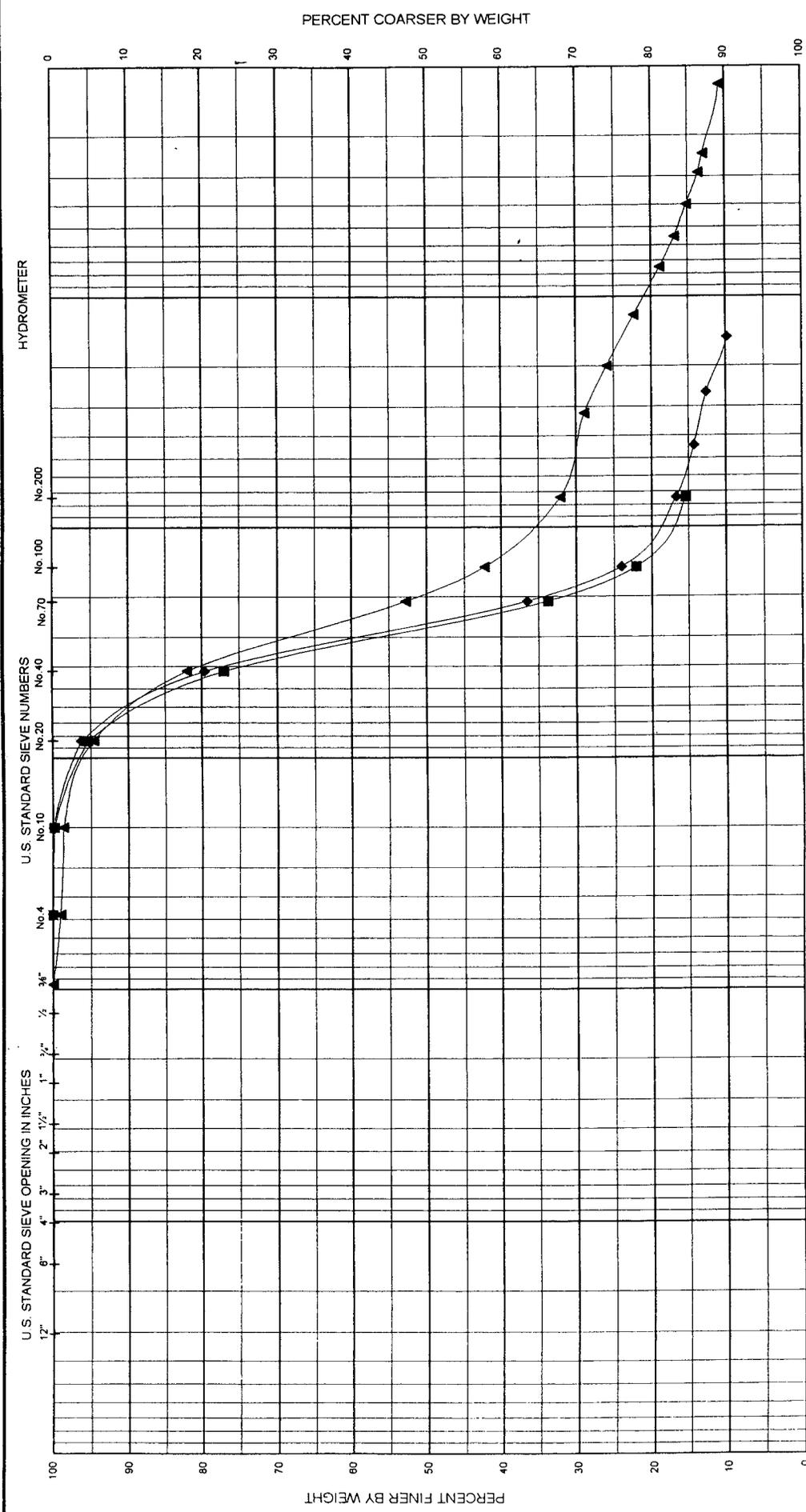
Jar-2 0.8-1.8 Silty sand (SM) 11.1 — — —

Jar-4 3.0-4.0 Silty sand (SM) 11.3 — — —

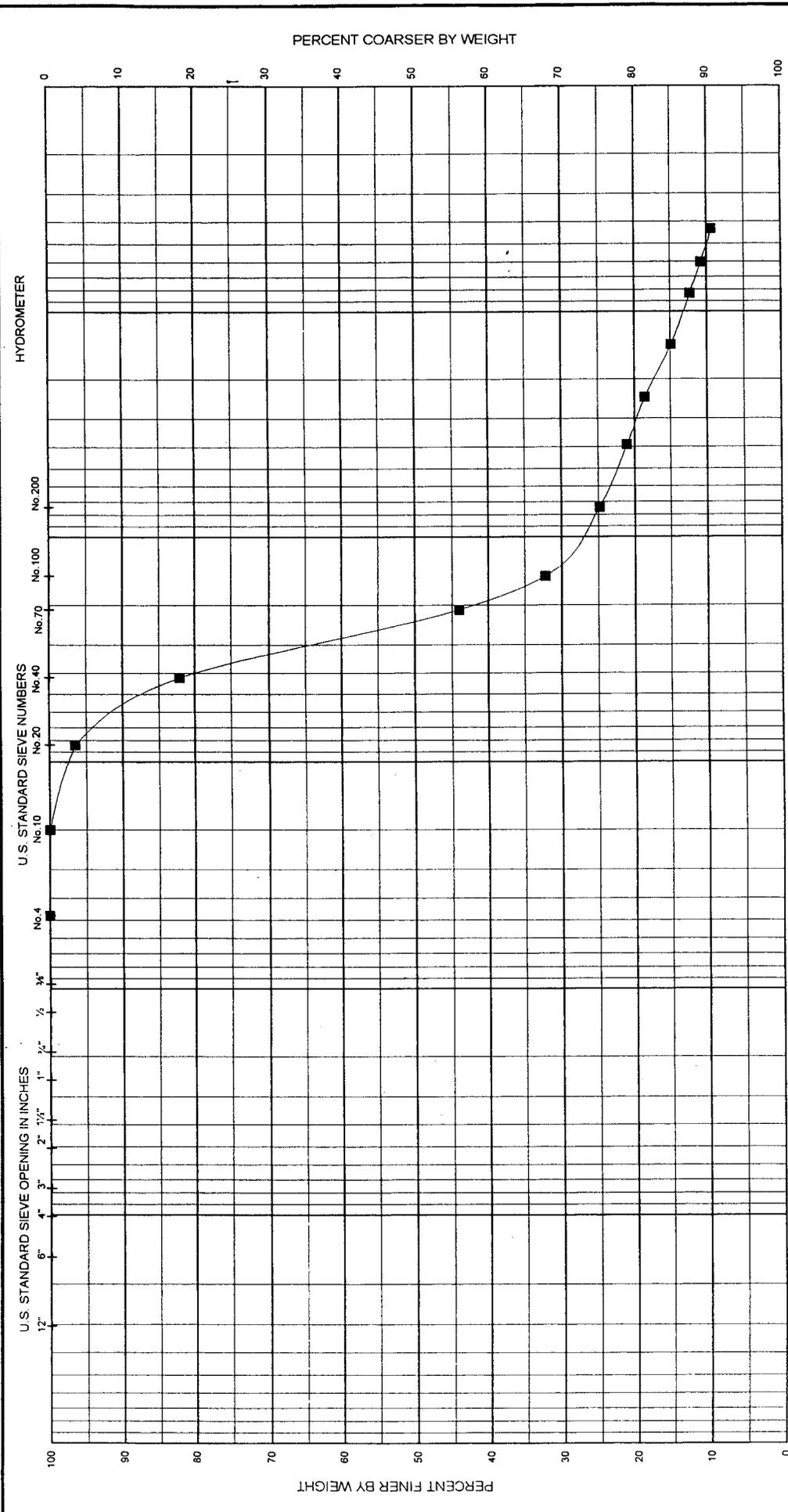
Jar-7 7.0-7.6 Silty sand (SM) 15.1 — — —

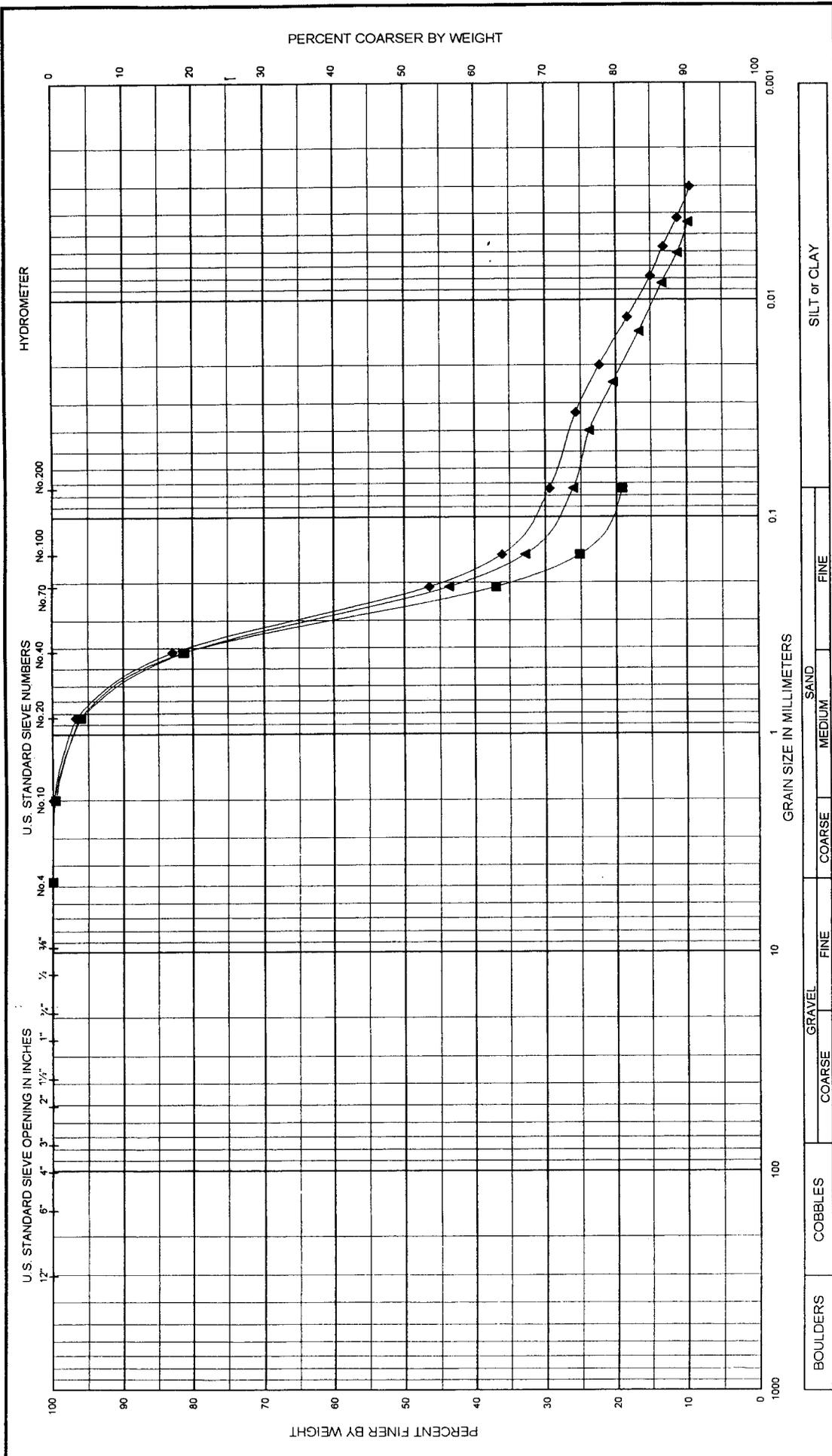
Jar-8 7.6-8.1 Silty sand (SM) 20.3 — — —

ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)			SAND			FINE			SILT or CLAY		
			COARSE	GRAVEL	COARSE	MEDIUM	FINE	LL	PL	PI	LL	PL	PI	
—■—	Jar-3	2.4-3.5	Silty sand	(SM)	Nat w%	7.2	LL	—	PL	—	PI	—	—	—
—◆—	Jar-5	5.1-6.2	Silty sand	(SM)	Nat w%	14.1	LL	N.P.	PL	N.P.	PI	—	—	—
—▲—	Jar-7	8.0-9.0	Clayey sand (tr. gravel)	(SC)	Nat w%	17.2	LL	24	PL	16	PI	8	—	—
PROJECT: Webster Cove Disposal AREA: Somerset County, MD Boring No.: AB-8WC														
DATE: Jul 2001														
GRADATION CURVES (Sieve Analysis: ASTM D422)														





PROJECT: Webster Cove Disposal
 Dike Investigation

AREA: Somerset County, MD

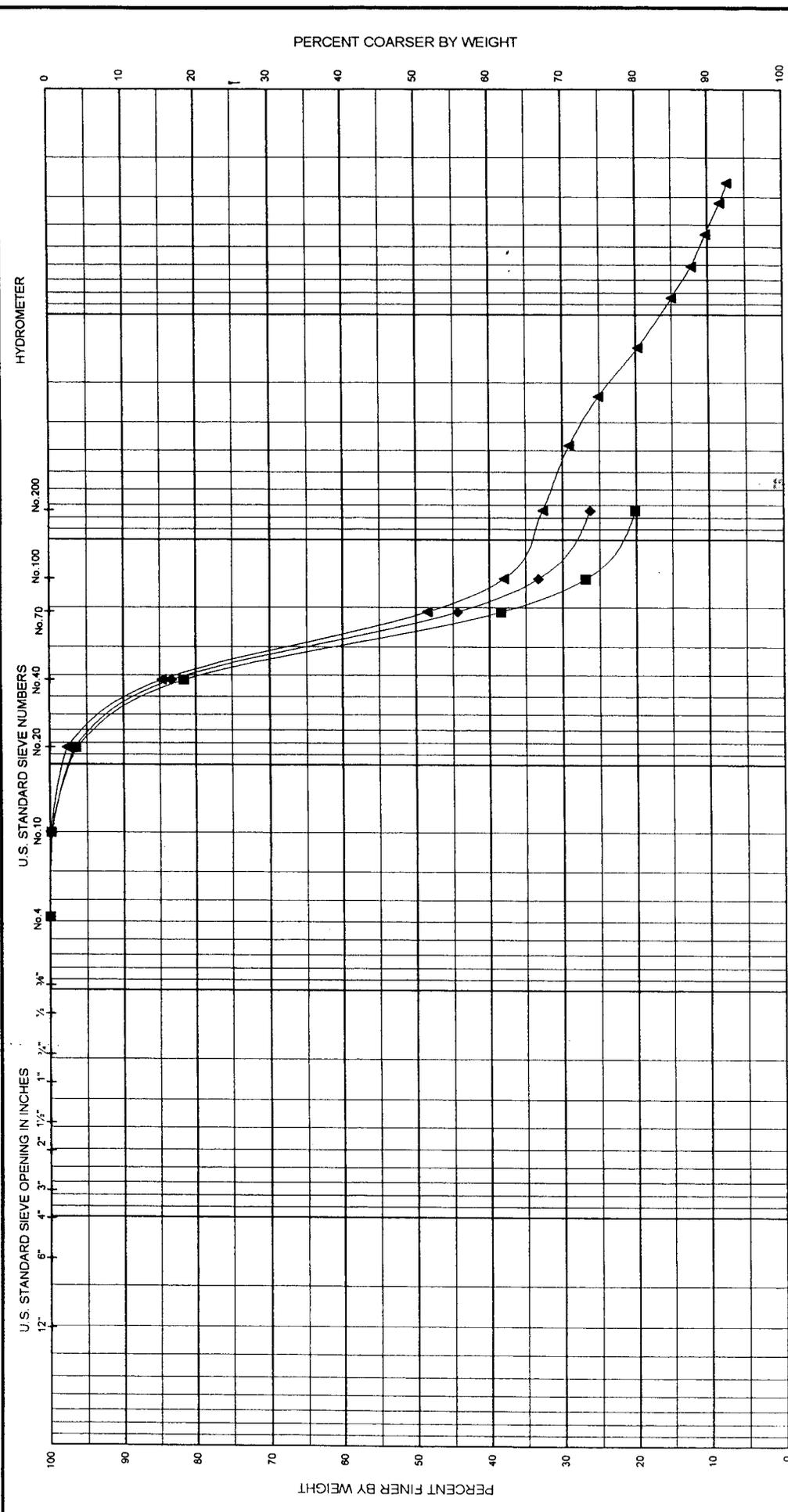
Boring No.: TP-3

DATE: Jul 2001

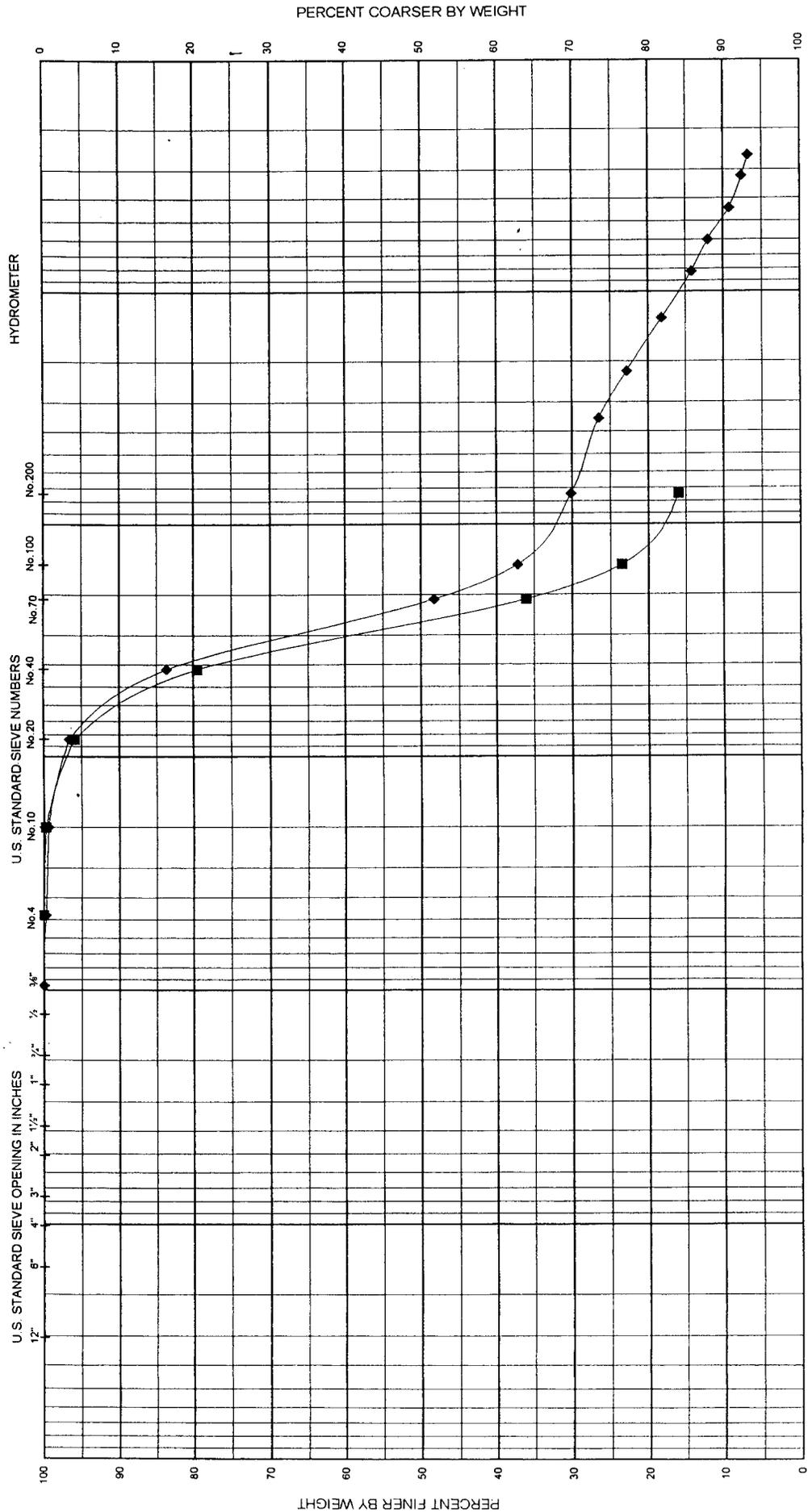
USCS Classification (ASTM D2487)

GRADATION CURVES (Sieve Analysis: ASTM D422)

ENG FORM 2087



Legend		Sample No.	Depth (ft)	USCS Classification (ASTM D2487)				SAND				SILT or CLAY				
Symbol	Material			COARSE	GRAVEL	FINE	COARSE	MEDIUM	FINE	LL	PL	PI				
■	Silty sand	S-1	0.0-3.0	(SM)									PROJECT: Webster Cove Disposal			
◆	Silty sand	S-2	3.0-6.0	(SM)									Dike Investigation			
▲	Silty sand	S-3	6.0-6.8	(SM)			10.4		N.P.				AREA: Somerset County, MD			
													Boring No.: TP-4			
GRADATION CURVES													DATE: Jul 2001			
ENG FORM 2087													(Sieve Analysis: ASTM D422)			



PROJECT: Webster Cove Disposal
 Dike Investigation
 Somerset County, MD

AREA: Somerset County, MD

Boring No.: TP-5

DATE: Jul 2001

(Sieve Analysis: ASTM D422)

GRADATION CURVES

ENG FORM 2087

Laboratory Compaction Test Results

SUBSURFACE EXPLORATION NOTES
WICOMICO MAINTENANCE DREDGING
SHARPS POINT DISPOSAL SITE

1. SUBSURFACE EXPLORATION FOR DRILL HOLES (DH-SP3,5,6,8 AND 11) WAS PERFORMED DURING APRIL 1996. EXPLORATIONS FOR TESTING PITS (TP-1 THROUGH TP-8) AND SURFACE SAMPLES (FROM CELLS 3A AND 3B) WERE PERFORMED DURING FEBRUARY 2004.
2. DRILL HOLES (DH) WERE ACCOMPLISHED BY STANDARD PENETRATION TEST PROCEDURE (SPT) USING A 1-3/8" X 2'-8" LONG SPLIT SPOON. SAMPLE SPOONS WERE ADVANCED BY A 140# HAMMER FALLING 30". THESE HOLES WERE POWER AUGERED BETWEEN SAMPLES UNLESS OTHERWISE INDICATED. BLOW COUNTS SHOWN ARE FOR 0.5' OF DRIVE UNLESS OTHERWISE INDICATED.
3. BLOW COUNTS REQUIRED TO ADVANCE SAMPLE ARE SHOWN IN COLUMN (a).
4. COLUMN (b) SHOWS THE NATURAL WATER CONTENTS IN PERCENT OF DRY WEIGHT OF THOSE SAMPLES TESTED.
5. SOIL DESCRIPTIONS ARE SHOWN IN COLUMN (c).
6. SOIL DESCRIPTIONS ARE LABORATORY CLASSIFICATIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (MIL-STD-619B) OR (ASTM D2487), EXCEPT THOSE INDICATED THUS (**), WHICH ARE FIELD INSPECTOR'S CLASSIFICATIONS
7. GROUNDWATER DEPTHS ARE INDICATED ON THE LOGS AS ▽, ▽ & ▽ ARE SHOWN IN COLUMN (d). PERTINENT DATA FOR THESE READINGS ARE SHOWN AT THE BOTTOM OF LOG UNDER GROUNDWATER DATA (DEPTHS GIVEN IN FEET). THE ACTUAL GROUNDWATER LEVEL MAY VARY DEPENDING UPON SEASONS AND AMOUNT OF RAINFALL!
8. ELEVATIONS SHOWN ON THE BORING LOGS ARE GROUND SURFACE ELEVATIONS AT THE TIME OF EXPLORATION. THEY WERE DETERMINED BY ESTIMATION FROM CONTOUR MAPS; DESIGNATED (±).
9. FOR LOCATIONS OF SUBSURFACE EXPLORATIONS SEE SHARPS POINT SUBSURFACE EXPLORATION PLAN.

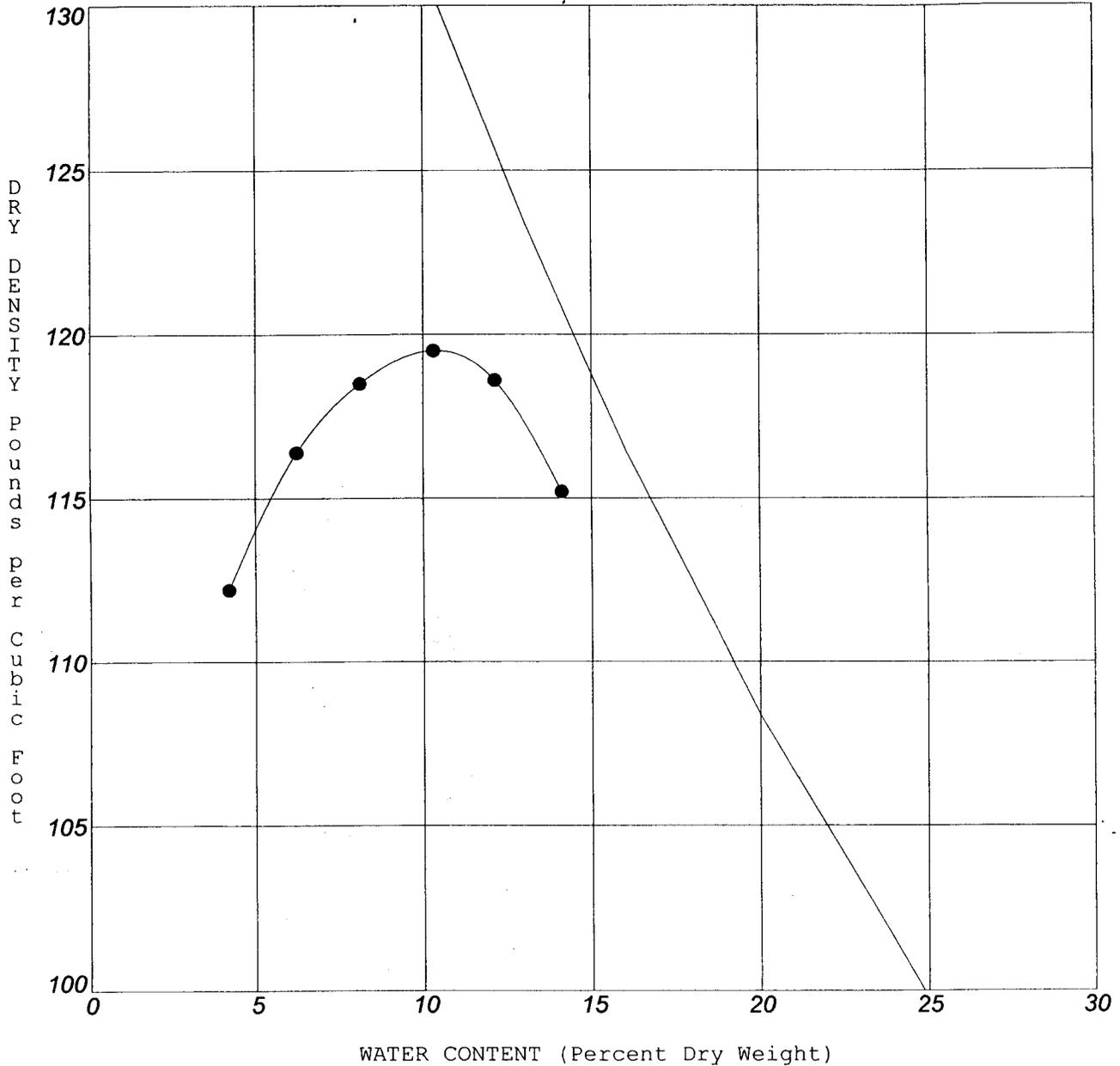
PROJECT: **Somerset County, MD**

DATE: Jul 01

AREA: **Webster Cove Disposal Dike Investigation**

TEST PIT NO. TP-1 SAMPLE NO. Bucket 1-4 DEPTH (FT): 0.0-6.3

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 119.5 pcf

OPTIMUM WATER CONTENT: 10.3 %

SPECIFIC GRAVITY: 2.66

CLASSIFICATION: SILTY SAND

SM

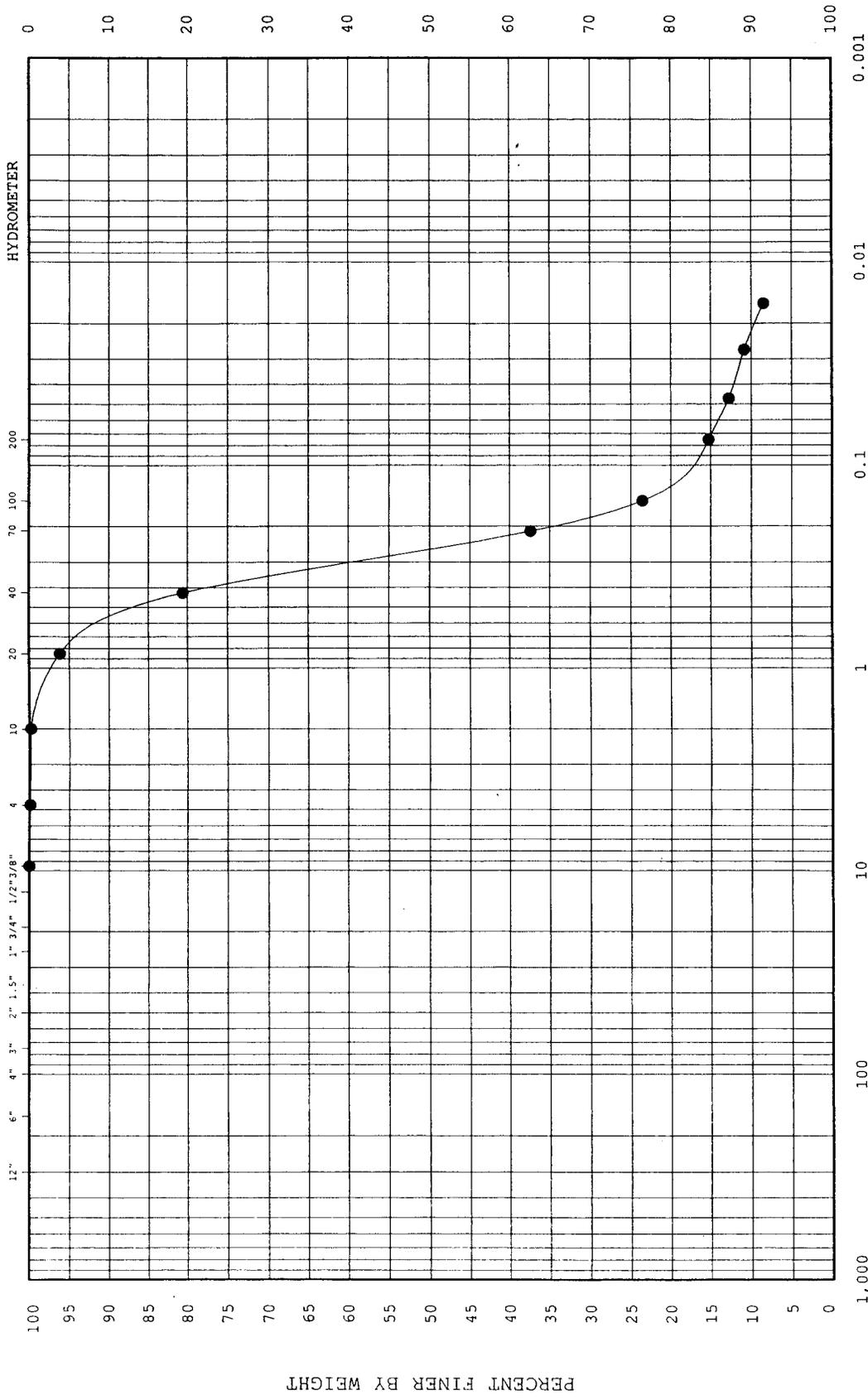
REMARKS:

LEGEND	
	CORRECTED + No.4
	CORRECTED + 3/8"
	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS



PERCENT COARSER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

COBBLES	GRAVEL			SAND			SILT or CLAY
	COARSE	FINE		COARSE	MEDIUM	FINE	

Legend	Sample No.	Depth (ft)	Classification (ASTM D 2487)	Nat wt%	LL	PL	PI
—●—	Bucket 1-4	0.0-6.3	SILTY SAND	SM	11.4	NP	NP

PROJECT: Somerset County, MD
 AREA: Webster Cove Disposal Dike Investigation

BORING NO.: TP-1

DATE: Jul 01

REMARKS:

ENG FORM ENG2087 SOMERSET.GPJ TEST METHOD: ASTM D 422

GRADATION CURVES

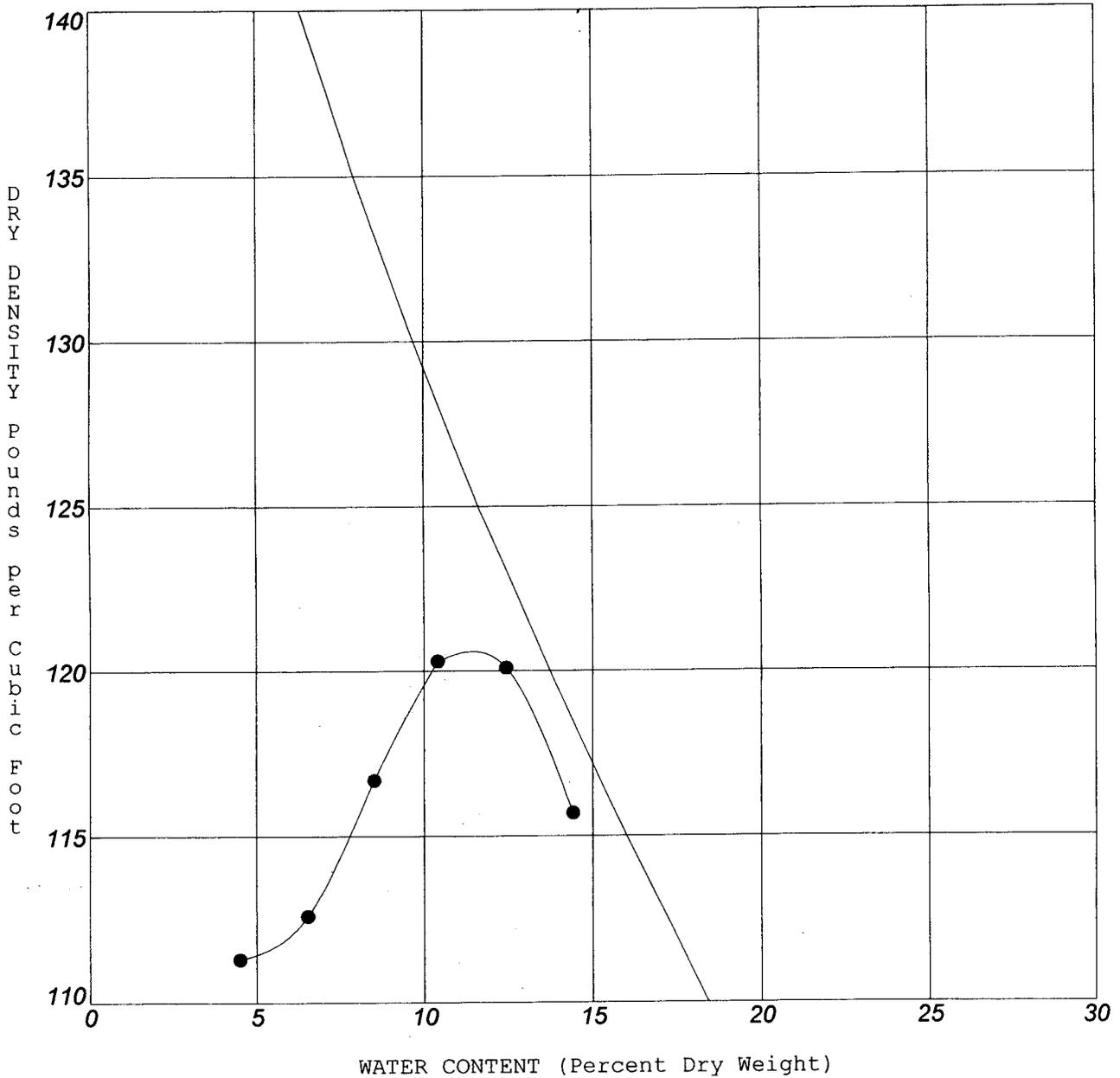
PROJECT: **Somerset County, MD**

DATE: Jul 01

AREA: **Webster Cove Disposal Dike Investigation**

TEST PIT NO. TP-2 SAMPLE NO. Bucket 3-4 DEPTH (FT): 4.3-9.2

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 120.6 pcf

OPTIMUM WATER CONTENT: 11.4 %

SPECIFIC GRAVITY: 2.61

CLASSIFICATION: SILTY SAND **SM**

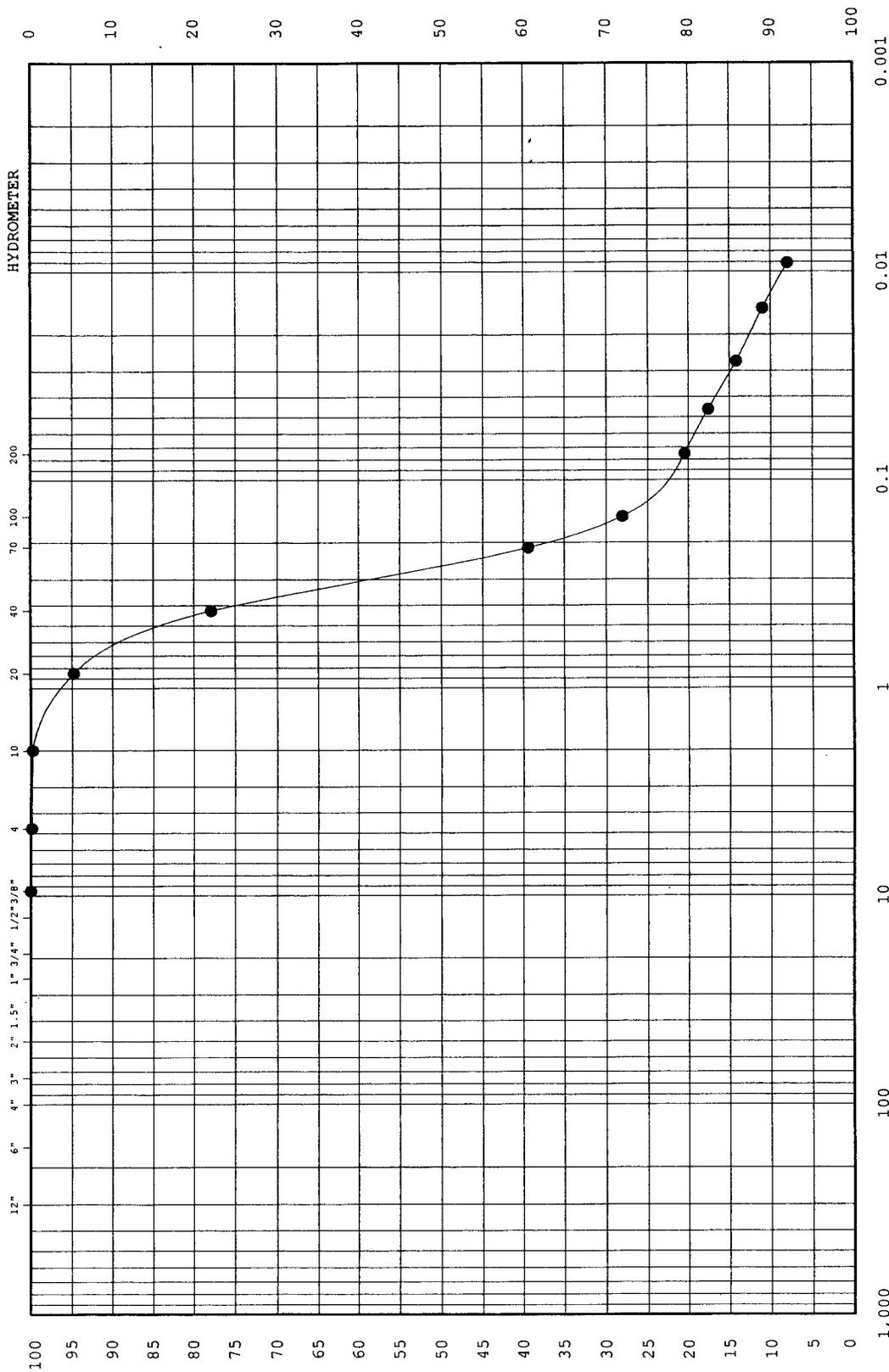
REMARKS:

LEGEND	
	CORRECTED + No.4
	CORRECTED + 3/8"
	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS



PERCENT COARSER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

COBBLES	GRAVEL			SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

Legend	Sample No.	Depth (ft)	Classification (ASTM D 2487)	Nat wc%	LL	PL	PI
●	Bucket 3-4	4.3-9.2	SILTY SAND	SM 14.8	NP	NP	NP
—							
—							
—							

PROJECT: Somerset County, MD
 AREA: Webster Cove Disposal Dike Investigation

REMARKS:

ENG FORM ENG2087SOMERSET.GPJ

TEST METHOD: ASTM D 422

GRADATION CURVES

BORING NO.: TP-2

DATE: Jul 01

PROJECT: **Somerset County, MD**

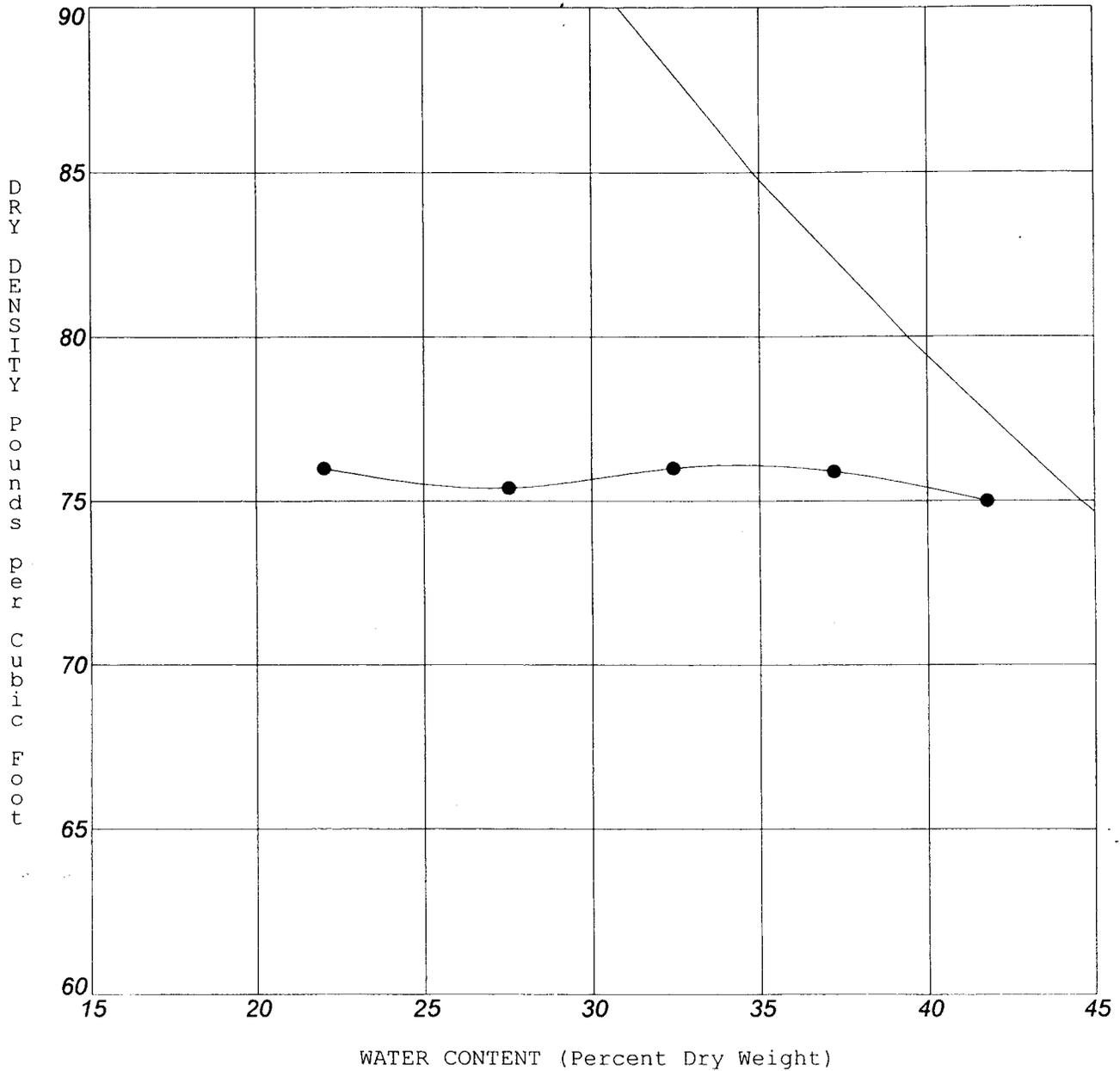
AREA: **Webster Cove Disposal Dike Investigation**

DATE: Jul 01

SAMPLE LOCATION: **Composite Sample**

TEST PIT NO. None SAMPLE NO. C-1 DEPTH (FT): 0.0-2.0

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 76.1 pcf

OPTIMUM WATER CONTENT: 34.5 %

SPECIFIC GRAVITY: 2.59

CLASSIFICATION: **FAT CLAY** **CH**

REMARKS:

LEGEND	
○	CORRECTED + No.4
○	CORRECTED + 3/8"
○	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

Sharps Point Disposal Site
Subsurface Exploration Data

STA.
 OFFSET:
 TOP ELEV:

Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 Wicomico County, MD

N
 E
 COMPLETED: April 25, 1996

DH-SP-3
 1 of 1

DEPTH (ft)	(c)	(d)	(a)	(b)
2.0	Wet yellowish brown silty med. to fine SAND (SM)	▼	1-1-3	
4.5	Very moist lt. brown silty SAND (SM)	▼	2-4-7	19.8
7.0	Very moist lt. gray brown poorly graded med. to fine SAND (SP)		5-6-12-18	
9.5	Wet grayish brown silty med. to fine SAND (SM)		5-4-3	
12.0	Very moist lt. brown gray poorly graded med. to fine SAND (SP)		7-8-11	
14.5	Moist dk. gray & lt. brown gray clayey SAND (SC)		3-3-4	19.5
16.5	Moist dk. gray & gray brown lean CLAY w/ sand (CL)		9-8-13	21.2
Bottom of Hole				
			20	
			25	
			30	
			35	

GEO-2, 006LL, 5/24/96, 11:00

**DH-SP-3
 GROUND WATER DATA**

▼ WHILE DRILLING: 2
 ▼ ON COMPLETION: 2
 ▼ 24 Hr. READING: .9

 Fill
  Auger
  SPT
  RB
  Cored

STA.

Wicomico Maintenance Dredging

N

DH-SP-11

OFFSET:

Sharps Point Disposal Site

E

1 of 1

TOP ELEV:

Wicomico County, MD

COMPLETED: April 25, 1996

DEPTH (ft)

(c)

(d)

(a)

(b)

Very moist very dk. gray brown poorly graded med. to fine SAND w/ silt, w/ tr. of roots 2.5-5.0' (SP-SM)

5.0

Very moist grayish brown poorly graded med. to fine SAND (SP)

10.0

Moist dk. gray fat CLAY w/ sand and tr. of shell fragments (CH)

12.5

Moist dk. gray fat CLAY w/ sand (CH)

15.0

Bottom of Hole

5

10

15

20

25

30

35

32.4

GEO-2 0061.L. 5/24/96 10:59

DH-SP-11

GROUND WATER DATA

▽ WHILE DRILLING: 2

▽ ON COMPLETION: 1.5

▽ 24 Hr. READING: 1.5

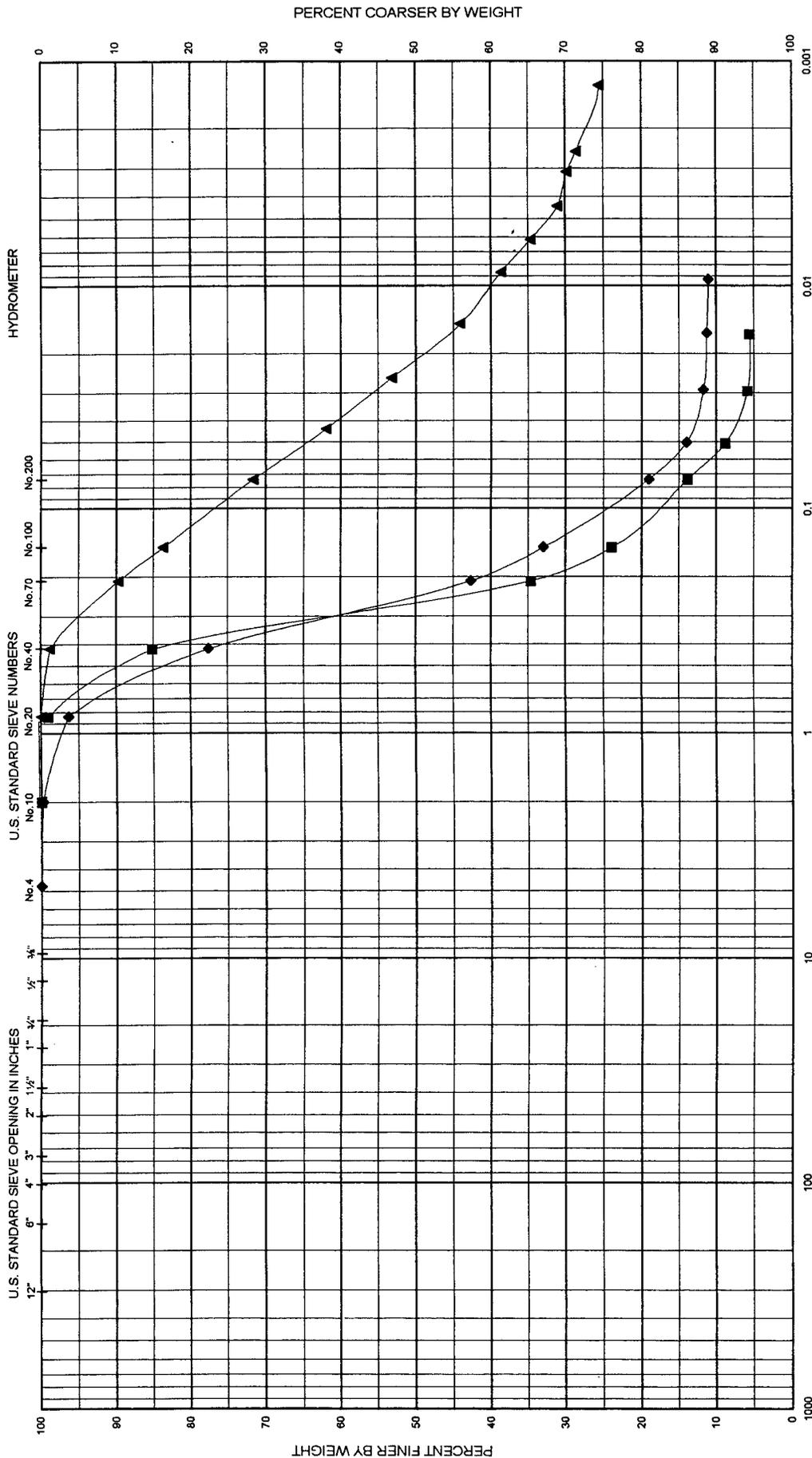
○ Fill

■ Auger

⊗ SPT

□ RB

▣ Cored



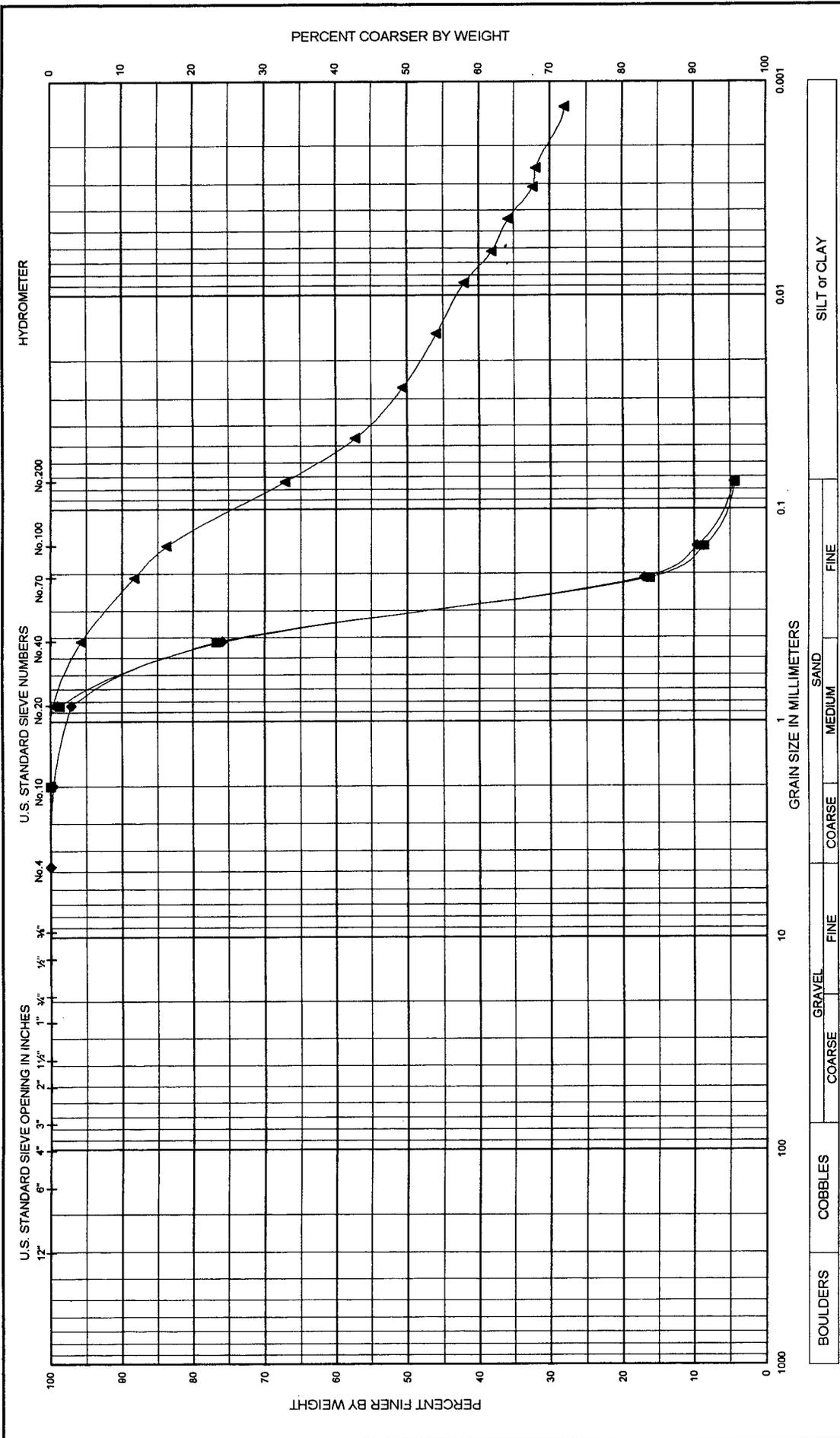
Legend	Sample No.	Depth (ft)	Classification				SAND			FINE			PI
			COARSE	GRAVEL	FINE	COARSE	Nat w%	LL	PL	PI			
—■—	Jar-2	2.5-4.0	Silty sand	(SM)	19.8	27	16	11					
—◆—	Jar-6	12.5-14.0	Clayey sand	(SC)	19.5	29	14	15					
—▲—	Jar-7	15.0-16.5	Lean clay with sand	(CL)	21.2	29	14	15					

PROJECT: Wicomico Maintenance Dredging
AREA: Sharps Point Disposal Site
Boring No.: Wicomico County, MD
 DH-SP-3

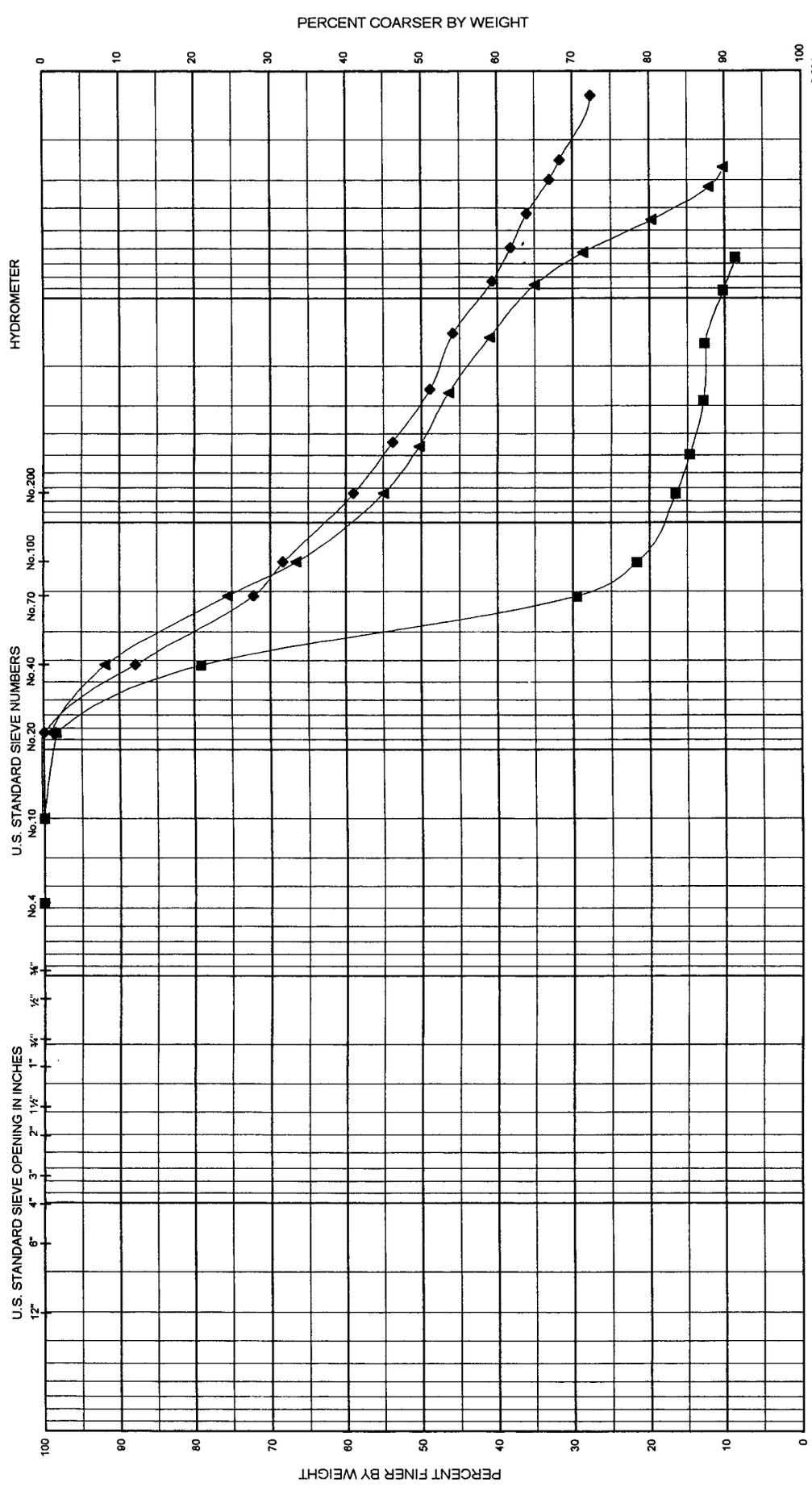
DATE: May 1996

ENG FORM 2087

GRADATION CURVES



PROJECT: Wicomico Maintenance Dredging	
Sharps Point Disposal Site	
AREA: Wicomico County, MD	Boring No.: DH-SP-5
DATE: May 1996	
GRADATION CURVES	
ENG FORM 2087	



Legend	Sample No.	Depth (ft)	Classification			SAND			FINE			SILT or CLAY		
			COARSE	GRAVEL	Classification	COARSE	MEDIUM	Nat w%	LL	PL	PI	LL	PL	PI
—■—	Jar-1	0.0-1.5	Silty sand	(SM)	23.2	58	29	29	29	29	29	29	29	29
—◆—	Jar-4	7.5-9.0	Sandy fat clay	(CH)	20.2	47	23	23	23	23	23	23	23	23
—▲—	Jar-6	12.5-14.0	Sandy lean clay	(CL)	33.6	47	23	23	23	23	23	23	23	23

PROJECT: Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 AREA: Wicomico County, MD
 Boring No.: DH-SP-6

DATE: May 1996

GRADATION CURVES

**Mt. Vernon Disposal Site (formally Webster Cove)
Subsurface Exploration Data**

MT. VERNON DISPOSAL DIKE
INVESTIGATION
SOMERSET COUNTY, MD.

SUBSURFACE EXPLORATION NOTES

1. SUBSURFACE EXPLORATIONS FOR AUGER BORINGS (AB-1WC THROUGH AB-8WC), TESTING PITS (TP-1 THROUGH TP-5), AND SURFACE SAMPLES (S-1WC THROUGH S-8WC) WERE PERFORMED DURING MAY 2001. ADDITIONAL SURFACE SAMPLES (S-9WC THROUGH S-12WC) WERE OBTAINED IN FEBRUARY 2004.
2. AUGER BORINGS (AB) WERE ACCOMPLISHED WITH A 3" ID HAND AUGER.
3. TEST PITS (TP) WERE ACCOMPLISHED BY BACKHOE.
4. COLUMN (b) SHOWS THE NATURAL WATER CONTENTS IN PERCENT OF DRY WEIGHT OF THOSE SAMPLES TESTED.
5. SOIL DESCRIPTIONS ARE SHOWN IN COLUMN (c) AND ARE LABORATORY CLASSIFICATIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487/2488), EXCEPT THOSE INDICATED THUS (**), WHICH ARE FIELD INSPECTOR'S CLASSIFICATIONS.

THE ORGANIC TEST (ASTM D 2974, METHOD "C"; OR LOSS ON IGNITION TEST (LOI) (AASHTO-T-267) WAS USED TO EVALUATE AND DESCRIBE THE ORGANIC CONTENT OF SOILS FOR DESIGN AND CONSTRUCTION AS FOLLOWS:

<u>LOI</u>	<u>SOIL DESCRIPTION</u>
<12	INORGANIC
12 TO 24	ORGANIC
25 TO 60	VERY ORGANIC
>60	PEAT (Pt)

6. GROUNDWATER DEPTHS ARE INDICATED ON THE LOGS AS ▽, ▼ & ▼ ARE SHOWN IN COLUMN (d). PERTINENT DATA FOR THESE READINGS ARE SHOWN AT THE BOTTOM OF LOG UNDER GROUNDWATER DATA, OR AS A NOTE IN COLUMN (c) BELOW BOTTOM OF HOLE. THESE READINGS MAY VARY DEPENDING UPON SEASONS AND AMOUNT OF RAINFALL.

NE - INDICATES GROUNDWATER NOT ENCOUNTERED

NT - INDICATES GROUNDWATER READING NOT TAKEN
7. FOR LOCATIONS OF SUBSURFACE EXPLORATIONS, SEE MT. VERNON SUBSURFACE EXPLORATION PLAN.
8. THE MT. VERNON SITE WAS FORMERLY KNOWN AS THE WEBSTER COVE DISPOSAL DIKE FOR A PREVIOUS DREDGING PROJECT. SOME OF THE LOGS AND TEST DATA PROVIDED IN THIS CONTRACT ARE STILL LABELED AS THE WEBSTER COVE DISPOSAL DIKE, WHICH AGAIN IS THE MT. VERNON SITE.

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 22, 2001

AB-1WC
 1 of 1

DEPTH(ft)	(c)	(d)	(a)	(b)
	Moist, dk. yellowish brown, silty SAND (SM)			12.1
2.0				
2.8	Moist, dk. yellowish brown, silty SAND w/ roots (SM)			
	Moist, yellowish brown, silty SAND (SM)			8.0
		5	AUGER	11.9
6.8	Wet, yellowish brown, silty SAND (SM)			16.0
				18.4
9.8				
	Moist, dk. yellowish brown, silty SAND (SM)			16.3
11.2				
BOTTOM OF HOLE				
<p>Note: Soft & wet material @ ±6.0', material flow out of auger. At 24 hr. groundwater reading, hole was caved at 5.0'.</p>				
				15
				20
				25

AB-1WC
 GROUNDWATER DATA

∇ WHILE DRILLING: 6.0

∇ ON COMPLETION: 6.0

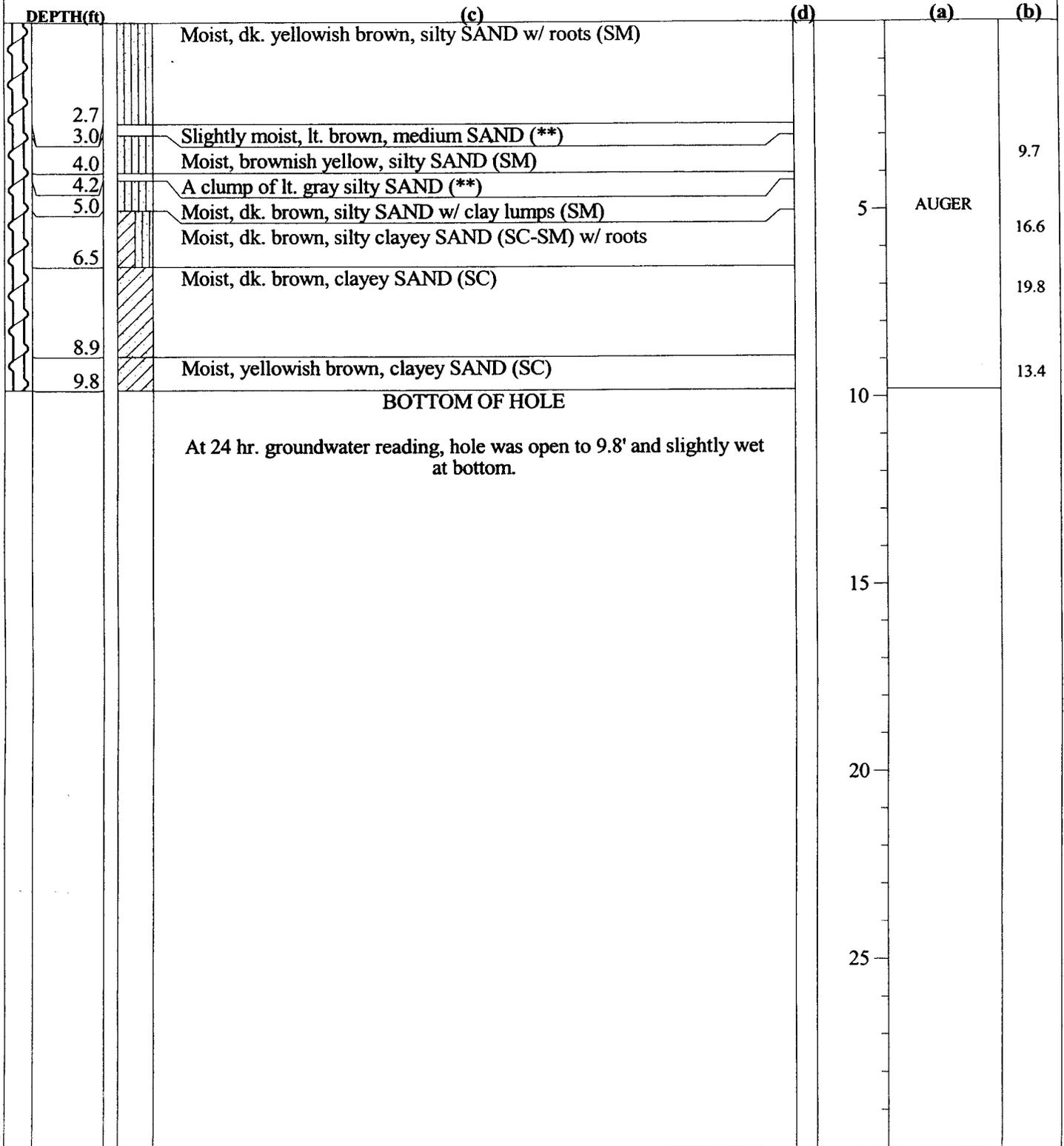
24 Hr. READING:

-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  -

STA.
 OFFSET:
 TOP ELEV.:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001
AB-2WC
 1 of 1



GEO-2 WEBCOVE.GPJ 3/14/02 07:21

AB-2WC
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING:

- | | | | |
|---|--|---|--|
|  Fill |  Auger |  SPT |  RB |
|  Cored |  300 lb |  Tubex |  Hand |
|  Fish Tail |  Vibra Core |  Water Jet |  _ |

STA.
 OFFSET:
 TOP ELEV.:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 22, 2001

AB-3WC
 1 of 1

DEPTH(ft)	(c)	(d)	(a)	(b)
0.8	Moist, dk. yellowish brown, silty SAND (SM)			
1.6	Moist, yellowish brown, silty SAND (SM)			
2.8	Moist, dk. yellowish brown, silty SAND (SM)			12.9
3.4	Moist, dk. yellowish brown, silty clayey SAND (SC-SM)			14.7
	Moist, very dk. brown, silty SAND w/ roots (SM) & w/ organic odor 3.4'-4.3': L.O.I. = 2.1% - Inorganic At 3.4'-4.3' it was slightly difficult to turn auger		5	12.9
			AUGER	13.7
7.8	Moist, dk. brown, silty clayey SAND w/ roots (SC-SM)			15.3
9.7	Moist, dk. yellow brown, silty SAND (SM)			
10.7	Moist, strong brown, poorly graded SAND w/ silt (SP-SM)	▼	10	
12.4				11.9
	BOTTOM OF HOLE			
	At 24 hr. groundwater reading, hole caved @ 10.5' and water was at ±10.5'.			
			15	
			20	
			25	

GEO-2 WEBCOVE.GPJ 3/14/02 07:21

AB-3WC
 GROUNDWATER DATA

WHILE DRILLING: NE

ON COMPLETION: NE

▼ 24 Hr. READING: 10.5

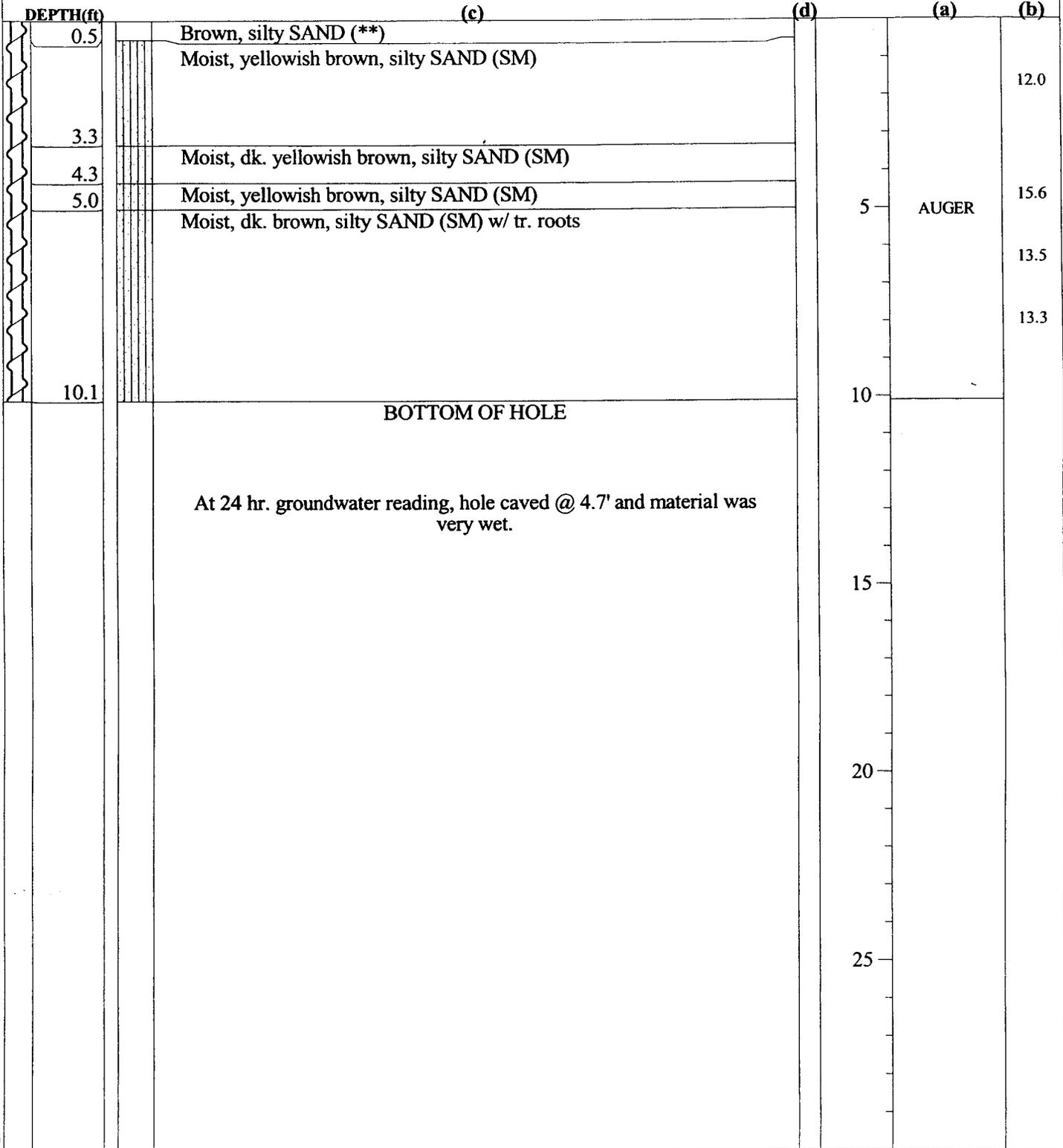
- | | | | |
|-----------|------------|-----------|------|
| Fill | Auger | SPT | RB |
| Cored | 300 lb | Tubex | Hand |
| Fish Tail | Vibra Core | Water Jet | _ |

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 22, 2001

AB-4WC
 1 of 1



AB-4WC
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING:

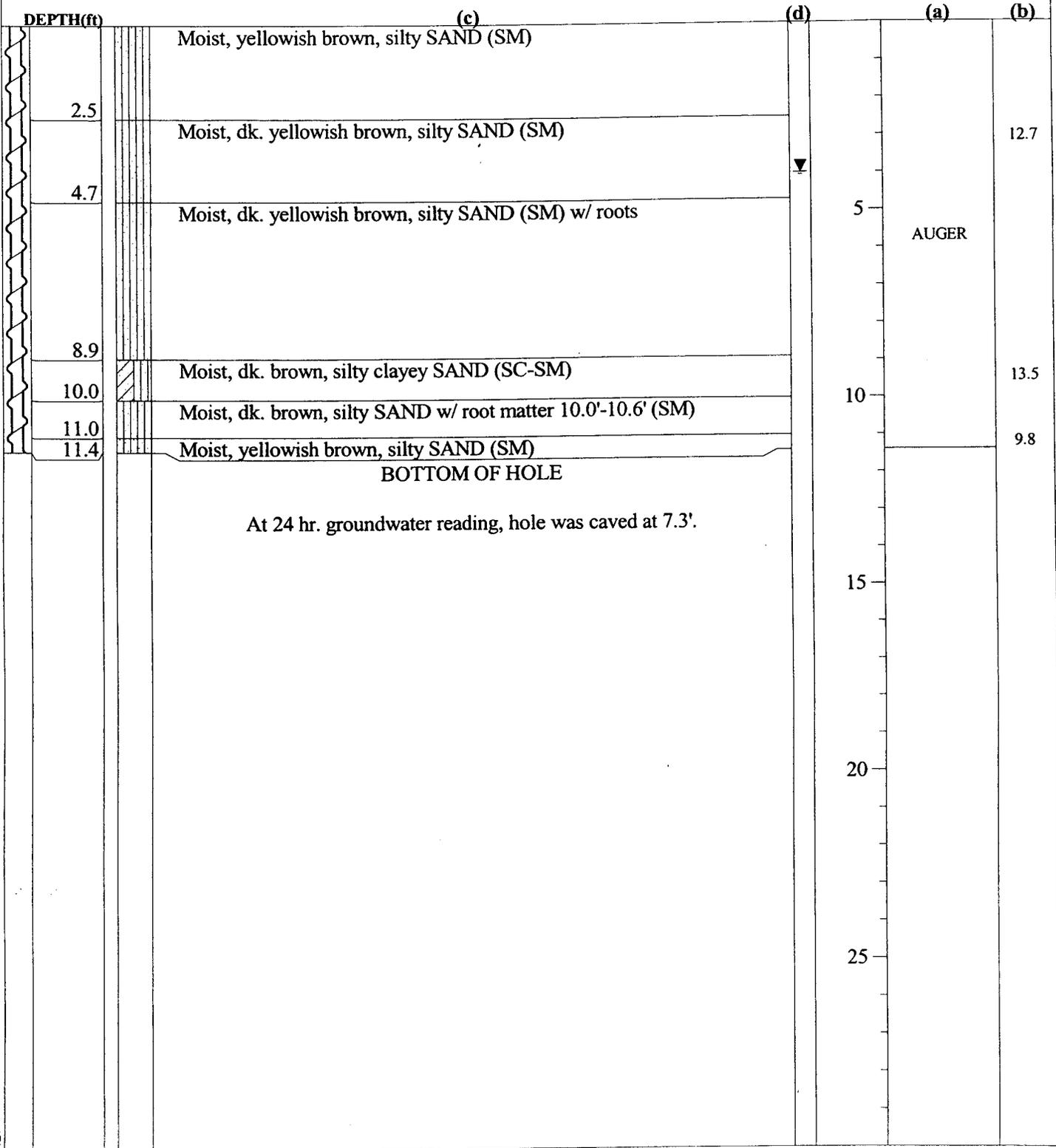
-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV.:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 22, 2001

AB-5WC
 1 of 1



AB-5WC
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 ▼ 24 Hr. READING: 4.0

- Fill
- Auger
- SPT
- RB
- Cored
- 300 lb
- Tubex
- Hand
- Fish Tail
- Vibra Core
- Water Jet
- _

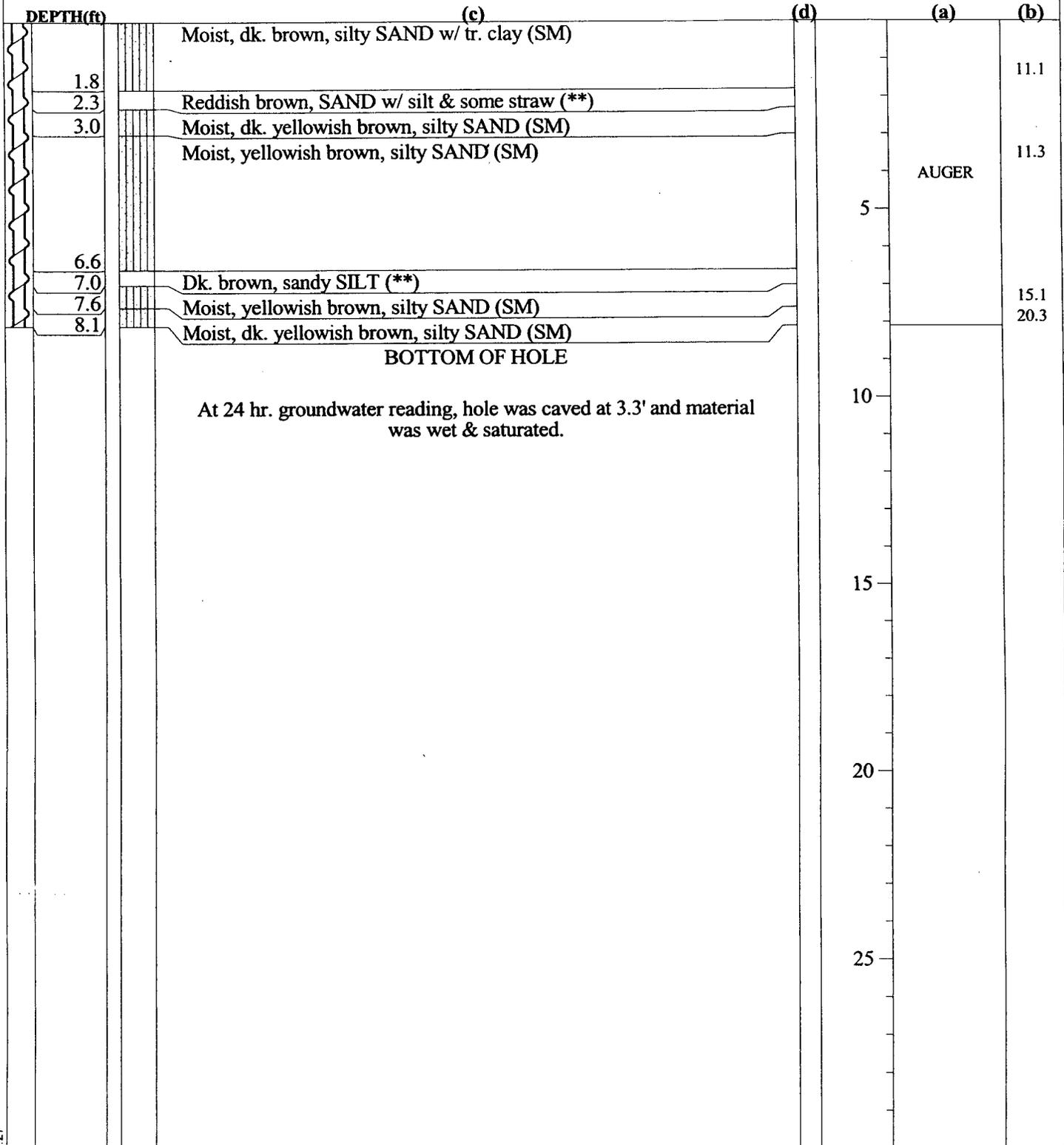
GEO-2 WEBCOVE.GPJ 3/14/02 07:21

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 22, 2001

AB-7WC
 1 of 1



AB-7WC
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING:

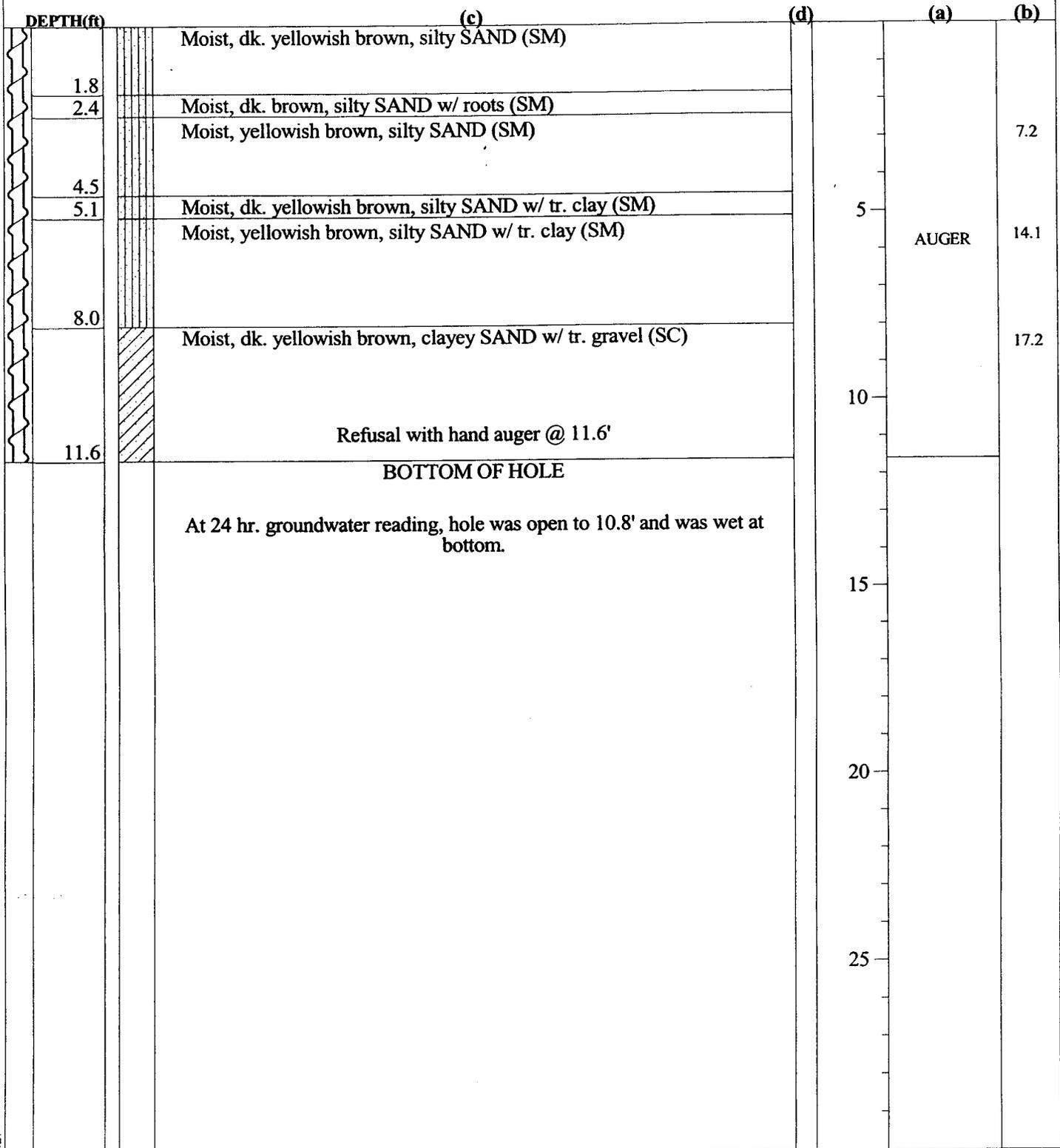
-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

AB-8WC
 1 of 1



AB-8WC
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING:

-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

TP-1
 1 of 1

DEPTH(ft)	(c)	(d)	(a)	(b)
2.0	Moist, dk. brown, silty SAND w/ root fibers (SM)			15.5
5.5	Moist, yellowish brown, silty SAND (SM/SP-SM)		BACKHOE	11.7
6.3	Wet, dk. yellowish brown, silty SAND w/ root fibers (SM)		5	14.4
	BOTTOM OF PIT			21.8
	Tested pit started to cave in @ ±5.0' and water was visually observed seeping in from sidewalls.		10	
			15	
			20	
			25	

GEO-2 WEBCOVE.GPJ 3/14/02 07:21

TP-1
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING: NE

-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

TP-2
 1 of 1

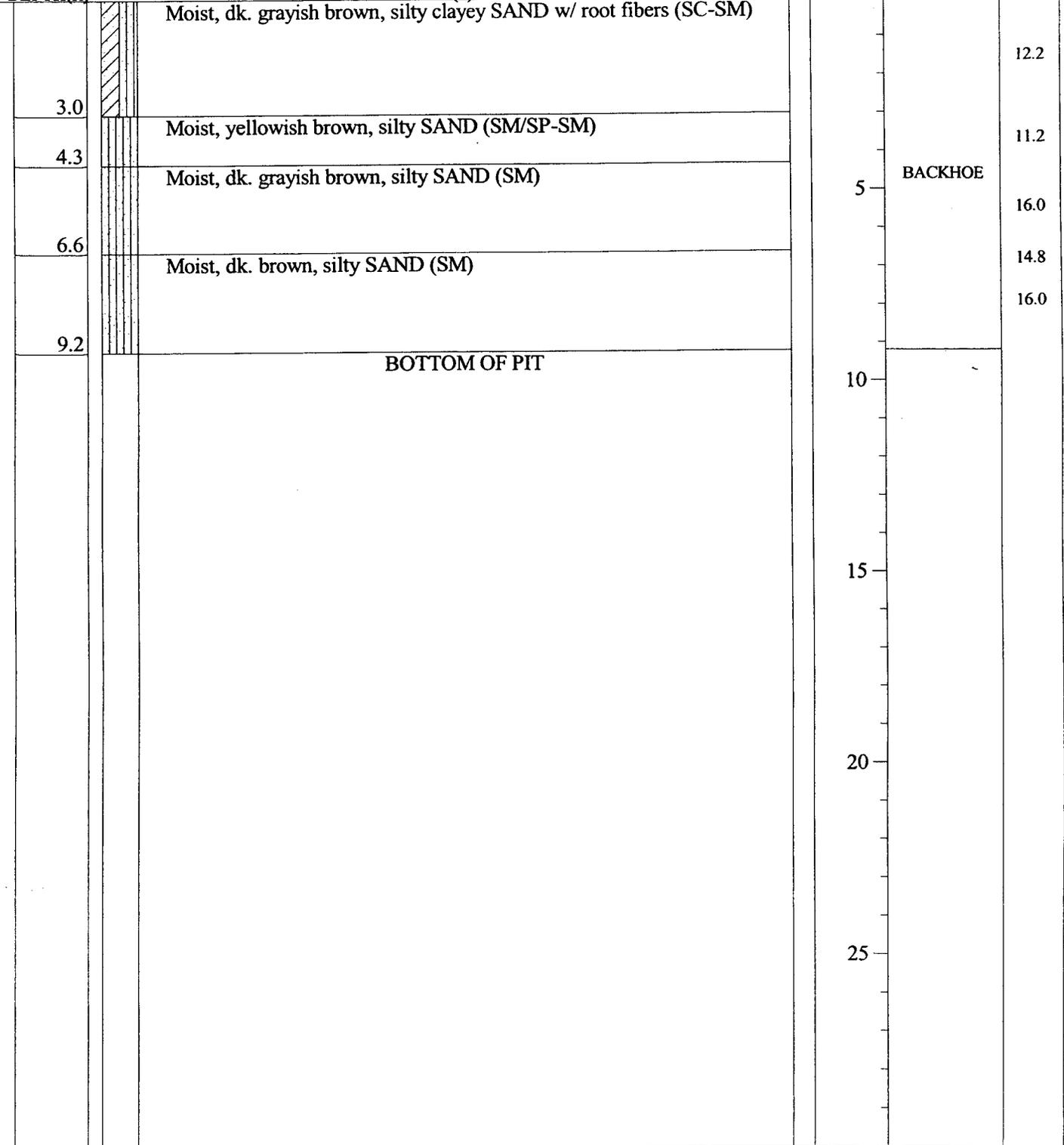
DEPTH(ft)

(c)

(d)

(a)

(b)



TP-2
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING: NE

- Fill
- Auger
- SPT
- RB
- Cored
- 300 lb
- Tubex
- Hand
- Fish Tail
- Vibra Core
- Water Jet
- _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

TP-3
 1 of 1

DEPTH(ft)	(c)	(d)	(a)	(b)
1.7	Moist, dk. yellowish brown, silty SAND (SM)			
4.5	Moist, yellowish brown, silty SAND (SM)			14.6
6.8	Moist, dk. grayish brown, silty clayey SAND w/ roots (SC-SM)		5	17.0
8.2	Moist, dk. yellowish brown, silty clayey SAND (SC-SM)			15.0
	BOTTOM OF PIT			
			BACKHOE	
			10	
			15	
			20	
			25	

TP-3
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING: NE

-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

TP-4
 1 of 1

DEPTH(ft)	(c)	(d)	(a)	(b)
3.0	Moist, yellowish brown, silty SAND (SM) w/ layer of decomposed straw - organics			11.8
6.0	Moist, yellowish brown, silty SAND w/ root fibers (SM)		BACKHOE	13.6
6.8	Moist, dk. yellowish brown, silty SAND (SM)			10.4
	BOTTOM OF PIT Water was visually observed seeping out @ 5.0'.			

GEO-2 WEBCOVE.GPJ 3/14/02 07:21

TP-4
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING: NE

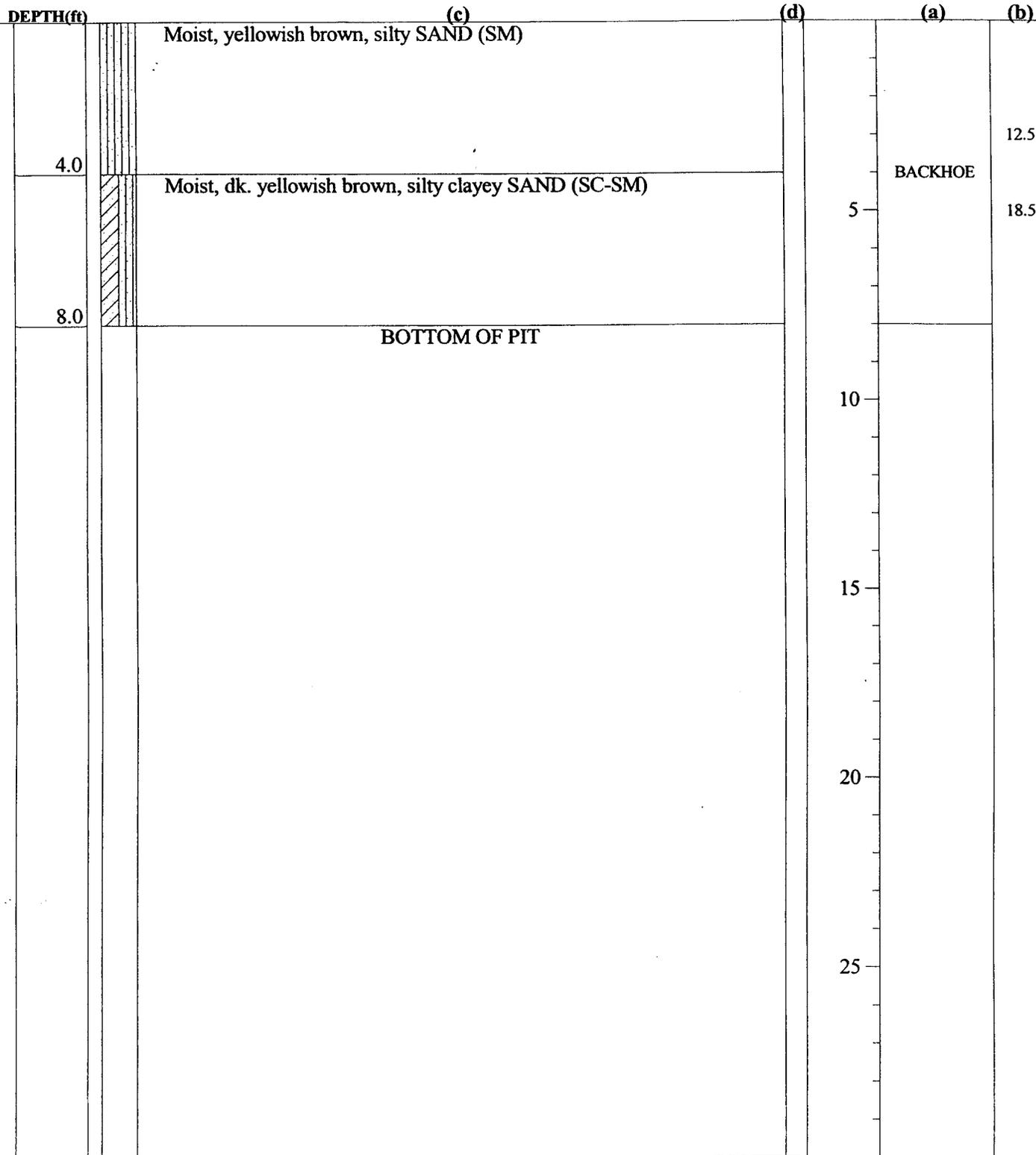
-  Fill
-  Auger
-  SPT
-  RB
-  Cored
-  300 lb
-  Tubex
-  Hand
-  Fish Tail
-  Vibra Core
-  Water Jet
-  _

STA.
 OFFSET:
 TOP ELEV:

WEBSTER COVE DISPOSAL DIKE
 INFORMATION
 SOMERSET COUNTY, MD.

N
 E
 COMPLETED: May 23, 2001

TP-5
 1 of 1



TP-5
 GROUNDWATER DATA
 WHILE DRILLING: NE
 ON COMPLETION: NE
 24 Hr. READING: NE

- Fill
- Auger
- SPT
- RB
- Cored
- 300 lb
- Tubex
- Hand
- Fish Tail
- Vibra Core
- Water Jet
- _

Gradation Curves and Moisture Contents

LABORATORY TEST RESULTS

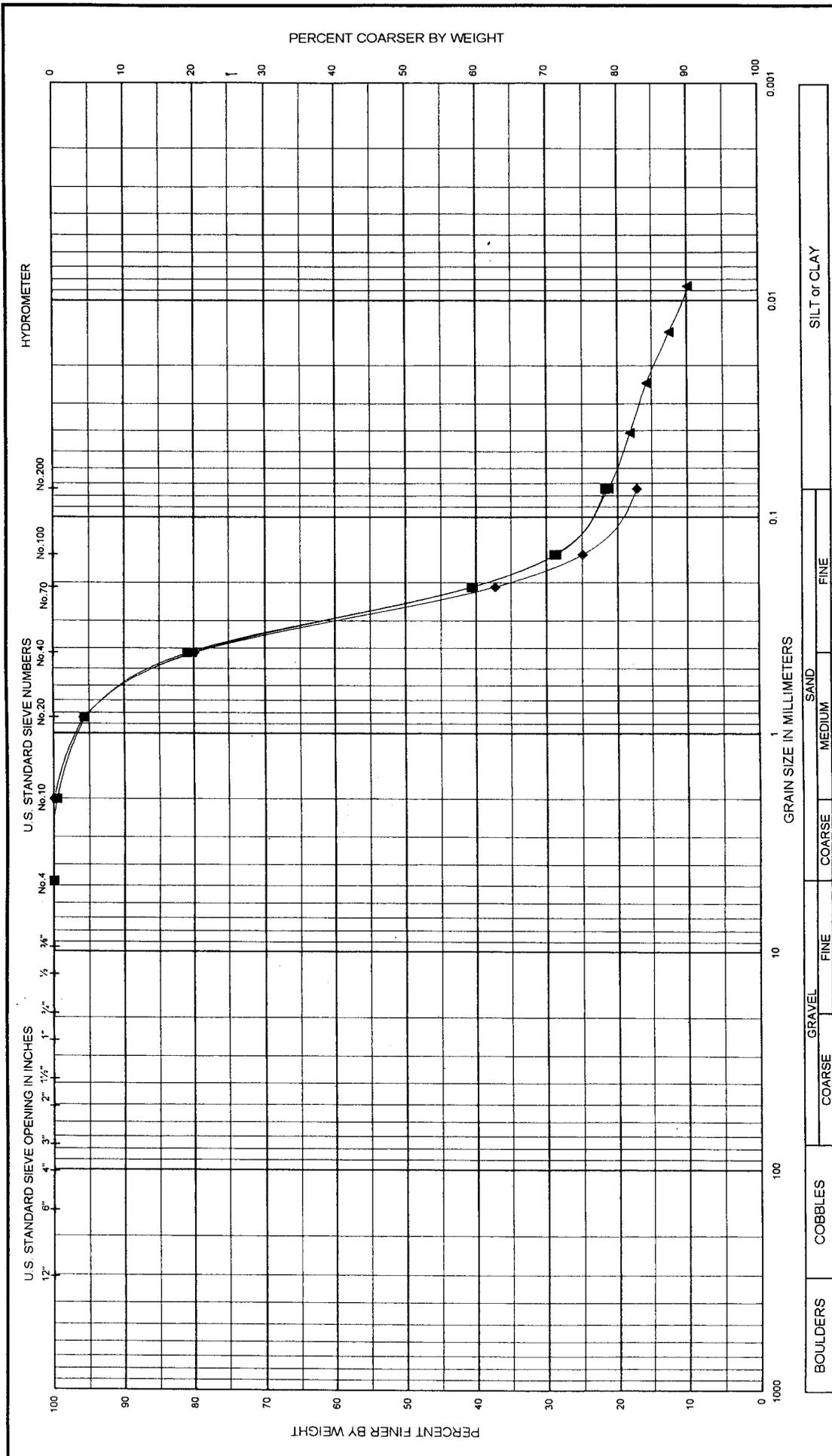
PROJECT: Somerset County, MD

DATE: Jun 01

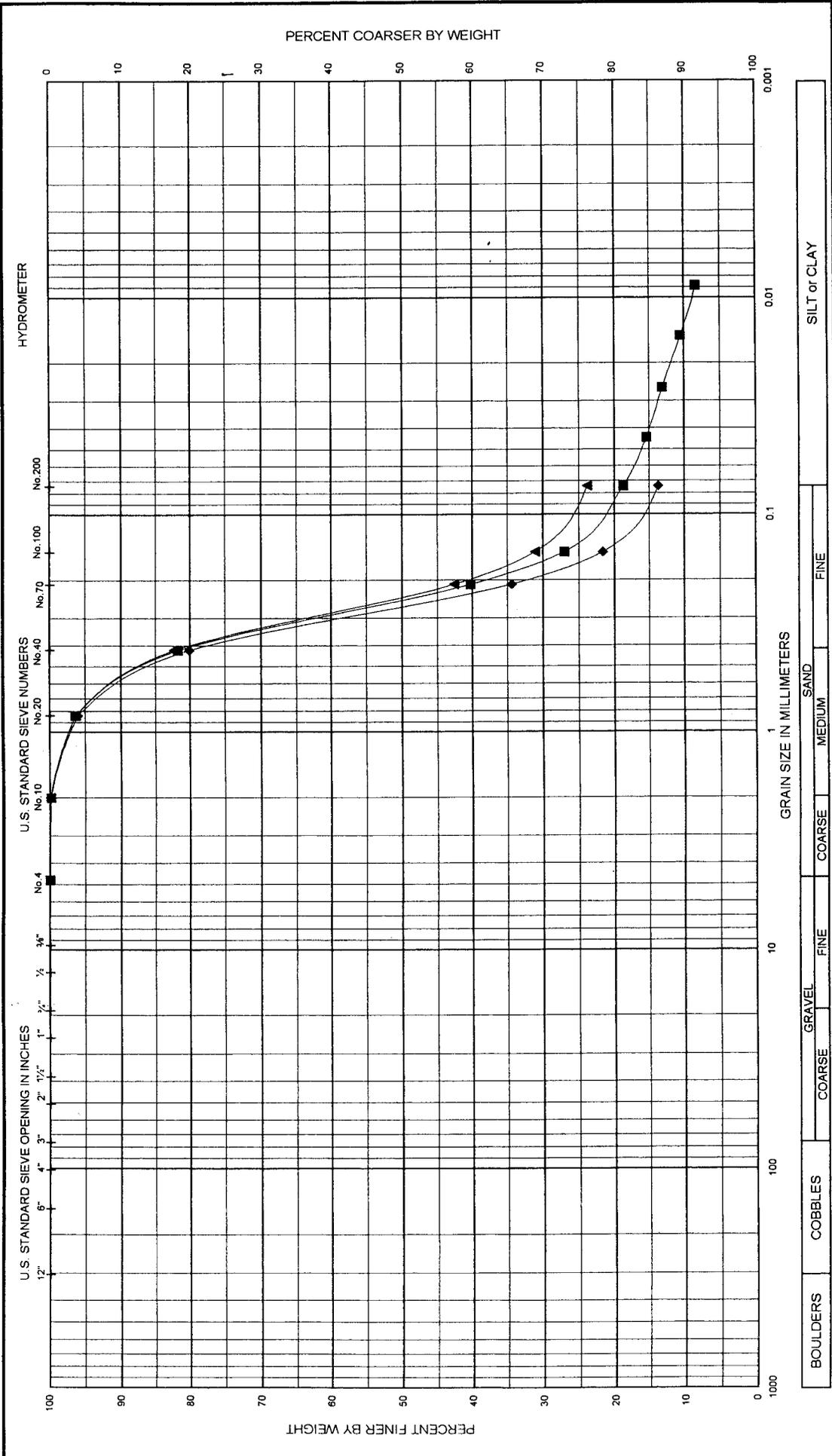
AREA: Webster Cove Disposal
Dike Investigation

Test: Natural Moisture Contents (ASTM D2216)

Hole No.	Sample No.	Depth (ft)	Moisture Content, %
TP-1	Bucket-1	0.0-2.0	15.5
TP-1	Bucket-2	2.0-4.0	11.7
TP-1	Bucket-3	4.0-5.5	14.4
TP-1	Bucket-4	5.5-6.3	21.8
TP-2	Bucket-1	0.0-3.0	12.2
TP-2	Bucket-2	3.0-4.3	11.2
TP-2	Bucket-3	4.3-6.6	16.0
TP-2	Bucket-4	6.6-9.2	16.0
TP-3	Bucket-2	1.7-4.5	14.6
TP-3	Bucket-3	4.5-6.8	17.0
TP-4	Bucket-1	0.0-3.0	11.8
TP-4	Bucket-2	3.0-6.0	13.6
None	C-1 / Bucket-1	None	134.2
S-1WC	SB-1	0.0-0.3	47.5
S-1WC	SB-2	0.3-0.8	96.3
S-1WC	SB-3	0.8-1.2	128.0
S-1WC	SB-4	1.2-1.5	147.5
S-2WC	SB-1	0.0-0.3	48.4
S-2WC	SB-2	0.3-0.8	117.9
S-2WC	SB-3	0.8-1.5	135.3
S-2WC	SB-4	1.5-2.0	138.2
S-5WC	SB-1	0.0-0.3	63.8
S-5WC	SB-2	0.3-0.9	120.3
S-5WC	SB-3	0.9-1.5	128.8
S-6WC	SB-1	0.0-0.5	102.6
S-8WC	SB-1	0.0-0.3	69.7
S-8WC	SB-2	0.3-0.6	137.3
S-8WC	SB-3	0.6-1.0	134.0
Hole No.	Sample No.	Depth (ft)	Organic Content, %
None	C-1 / Bucket-1	None	9.2



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)			PI		
			COARSE	MEDIUM	FINE	Nat w%	LL	PL
—■—	Jar-2	1.0-2.0	Silty sand	(SM)		12.1		
—◆—	Jar-4	2.8-4.0	Silty sand	(SM)		8.0		
—▲—	Jar-6	5.2-6.0	Silty sand	(SM)		11.9	N.P.	
GRADATION CURVES								
(Sieve Analysis: ASTM D422)								
PROJECT: Webster Cove Disposal AREA: Dike Investigation Boring No.: Somerset County, MD AB-1WC Sht. 1 of 2								
DATE: Jul 2001								

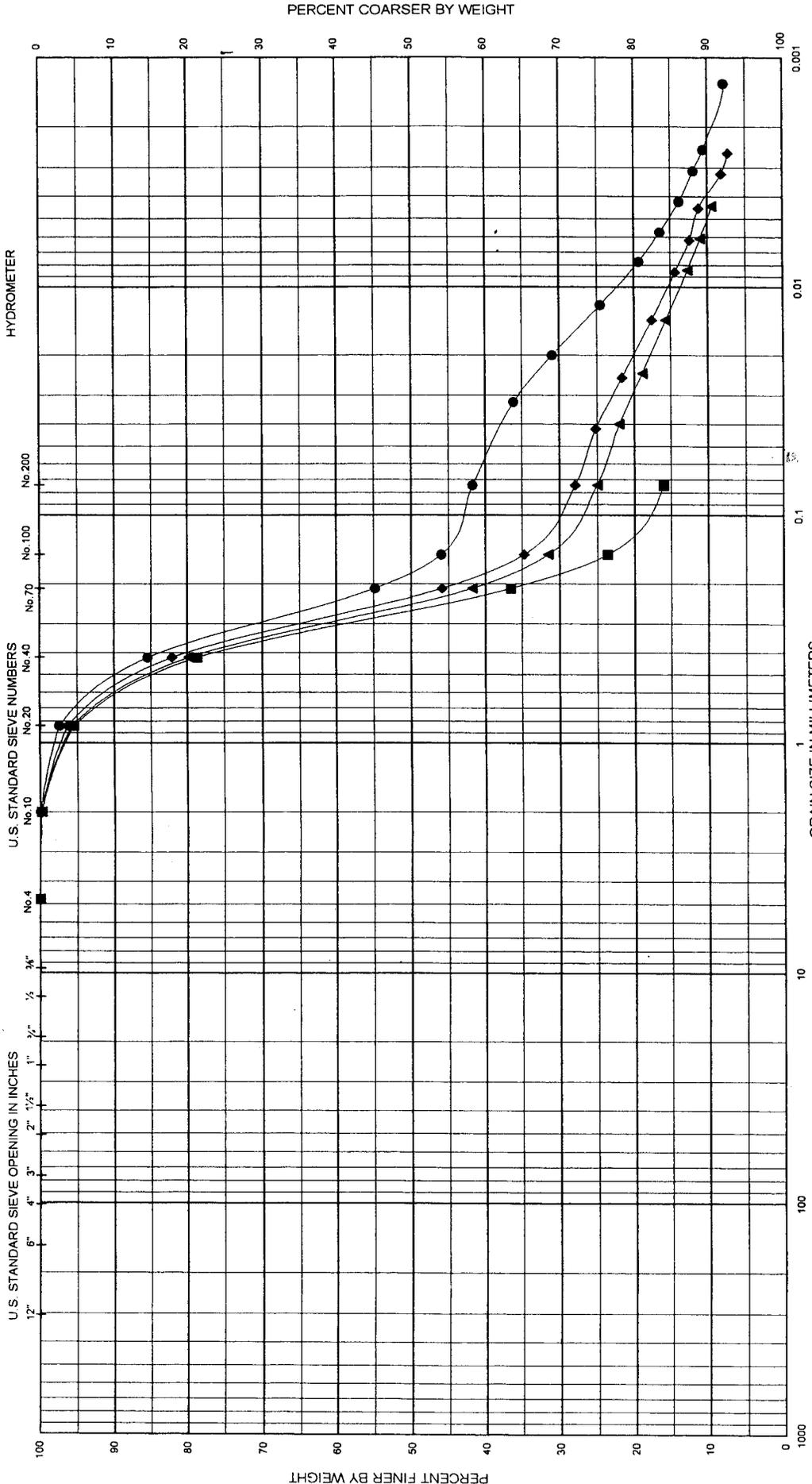


Legend	Sample No.	Depth (ft)	Soil Description	Nat w%	LL	PL	PI
■	Jar-7	6.0-6.8	Silty sand	16.0	—	N.P.	—
◆	Jar-8	6.8-7.8	Silty sand	18.4	—	—	—
▲	Jar-10	9.8-11.2	Silty sand	16.3	—	—	—

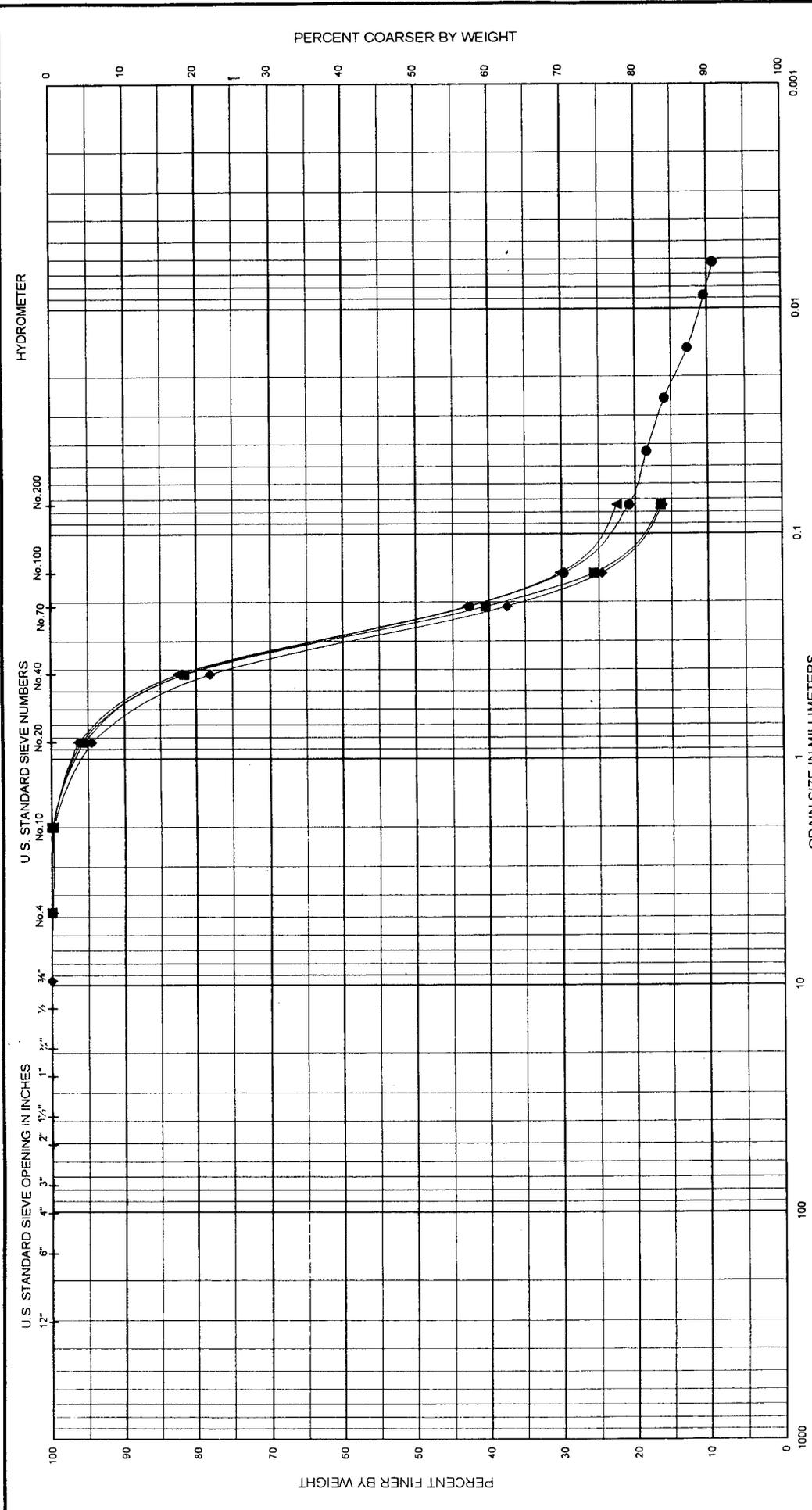
BOULDERS		COBBLES		GRAVEL		SAND		SILT or CLAY	

PROJECT:	Webster Cove Disposal
AREA:	Dike Investigation
Boring No.:	Somerset County, MD
	AB-1WVC Sht. 2 of 2
DATE:	Jul 2001

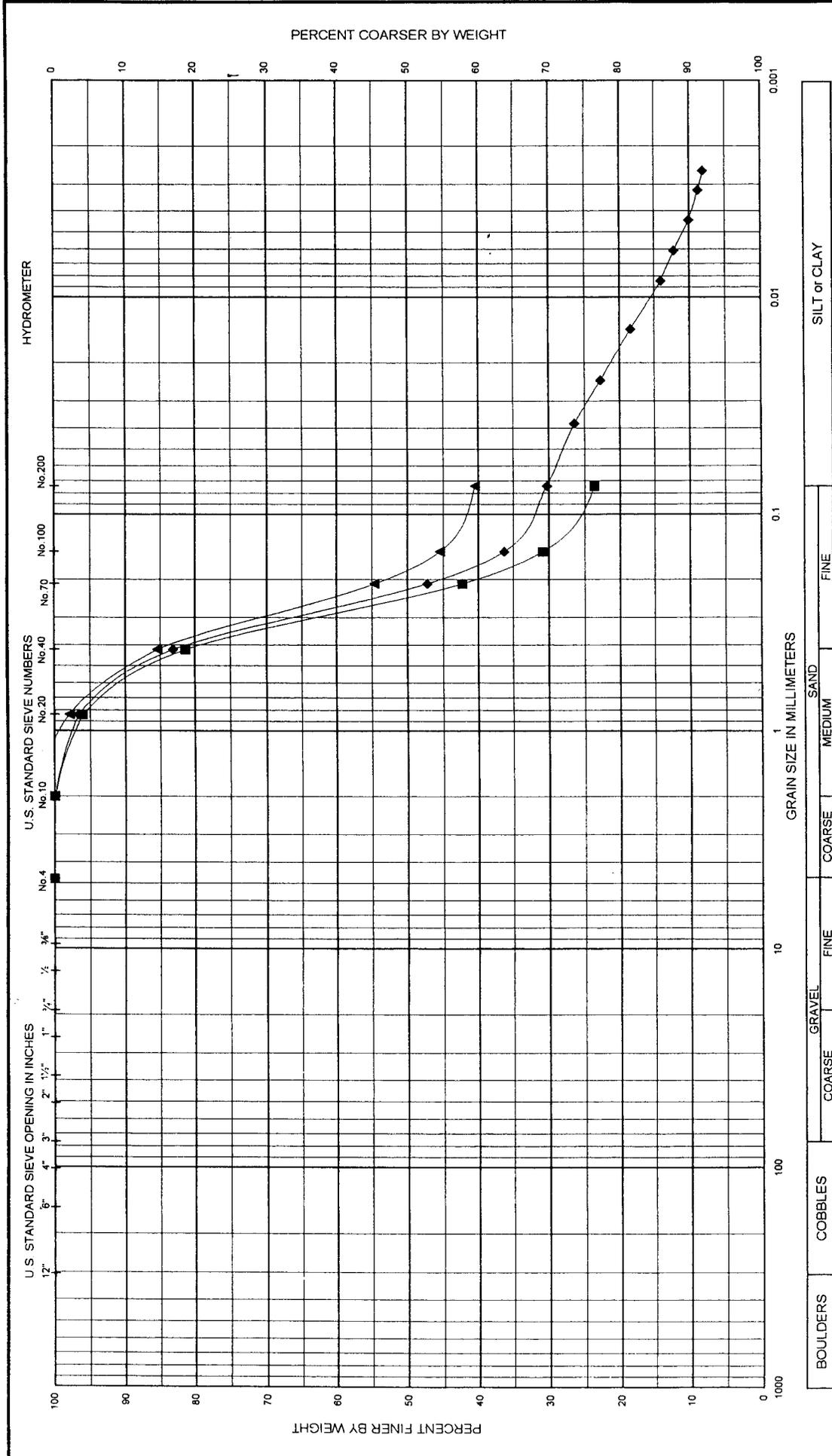
ENG FORM 2087	GRADATION CURVES	(Sieve Analysis: ASTM D422)
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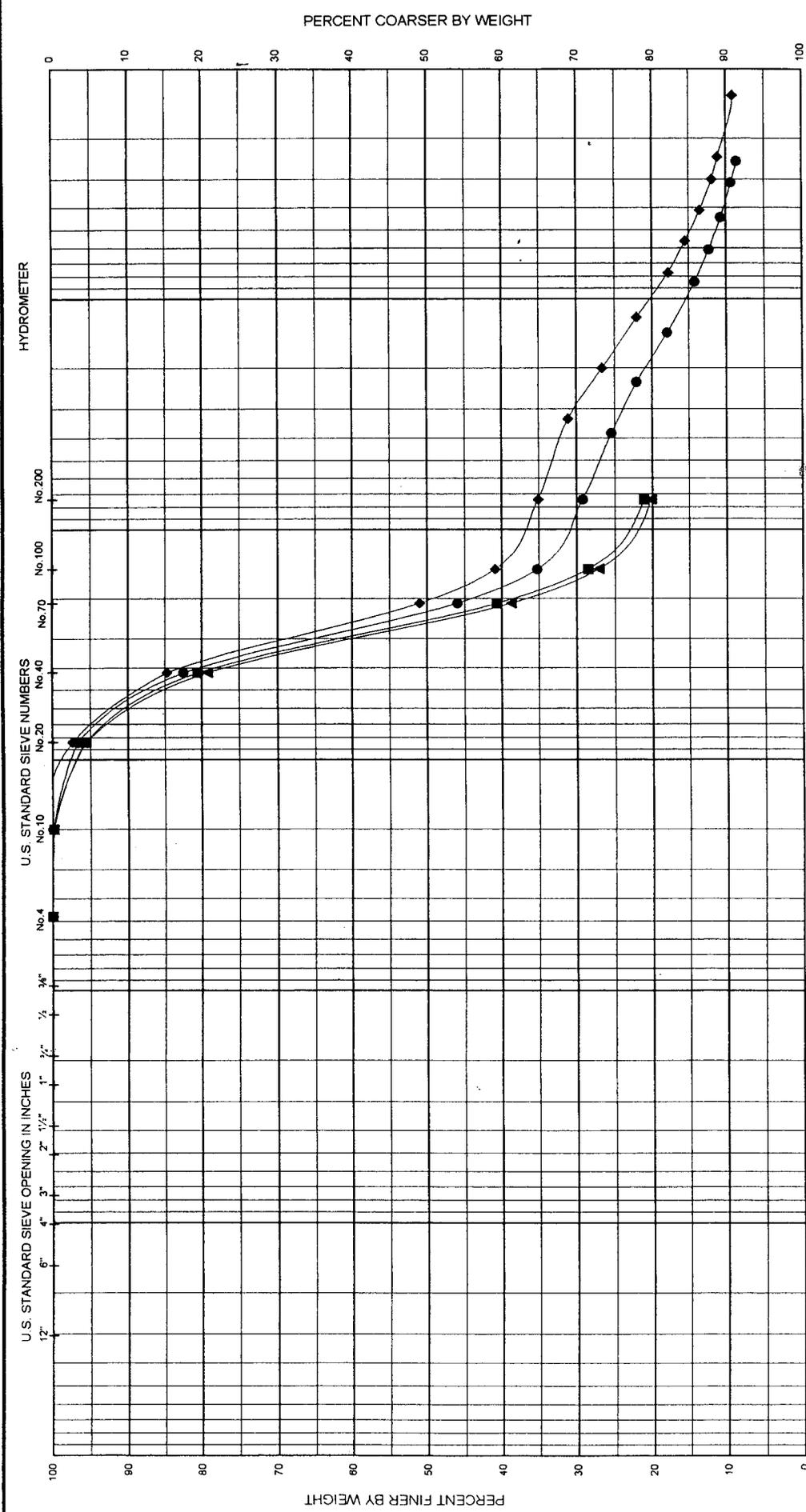
BOULDERS		COBBLES		GRAVEL		SAND		FINE		SILT or CLAY	
Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI					
Jar-2	3.0-4.0	Silty sand (SM)	9.7	N.P.	N.P.	N.P.					
Jar-4	5.0-6.0	Silty clayey sand (SC-SM)	16.6	23	16	7					
Jar-5	6.5-7.7	Clayey sand (SC)	19.8	29	19	10					
Jar-7	8.9-9.8	Clayey sand (SC)	13.4	30	16	14					
GRADATION CURVES (Sieve Analysis: ASTM D422)										PROJECT: Webster Cove Disposal Dike Investigation AREA: Somerset County, MD Boring No.: AB-2WC	
ENG FORM 2087										DATE: Jul 2001	



BOULDERS		COBBLES		GRAVEL		SAND			SILT or CLAY		
Sample No.	Depth (ft)	COARSE	FINE	COARSE	FINE	COARSE	MEDIUM	FINE	LL	PL	PI
USCS Classification (ASTM D2487)											
Legend									Nat w%		
—■—	Jar-1	0.5-2.8	Silty sand	(SM)					12.0		
—◆—	Jar-3	4.3-5.0	Silty sand	(SM)					15.6		
—▲—	Jar-4	5.6-7.0	Silty sand	(SM)					13.5	20	3
—●—	Jar-5	7.0-8.9	Silty sand	(SM)					13.3	20	2
GRADATION CURVES											
(Sieve Analysis: ASTM D422)											
PROJECT: Webster Cove Disposal Dike Investigation Somerset County, MD AREA: Somerset County, MD Boring No.: AB-4WC DATE: Jul 2001											



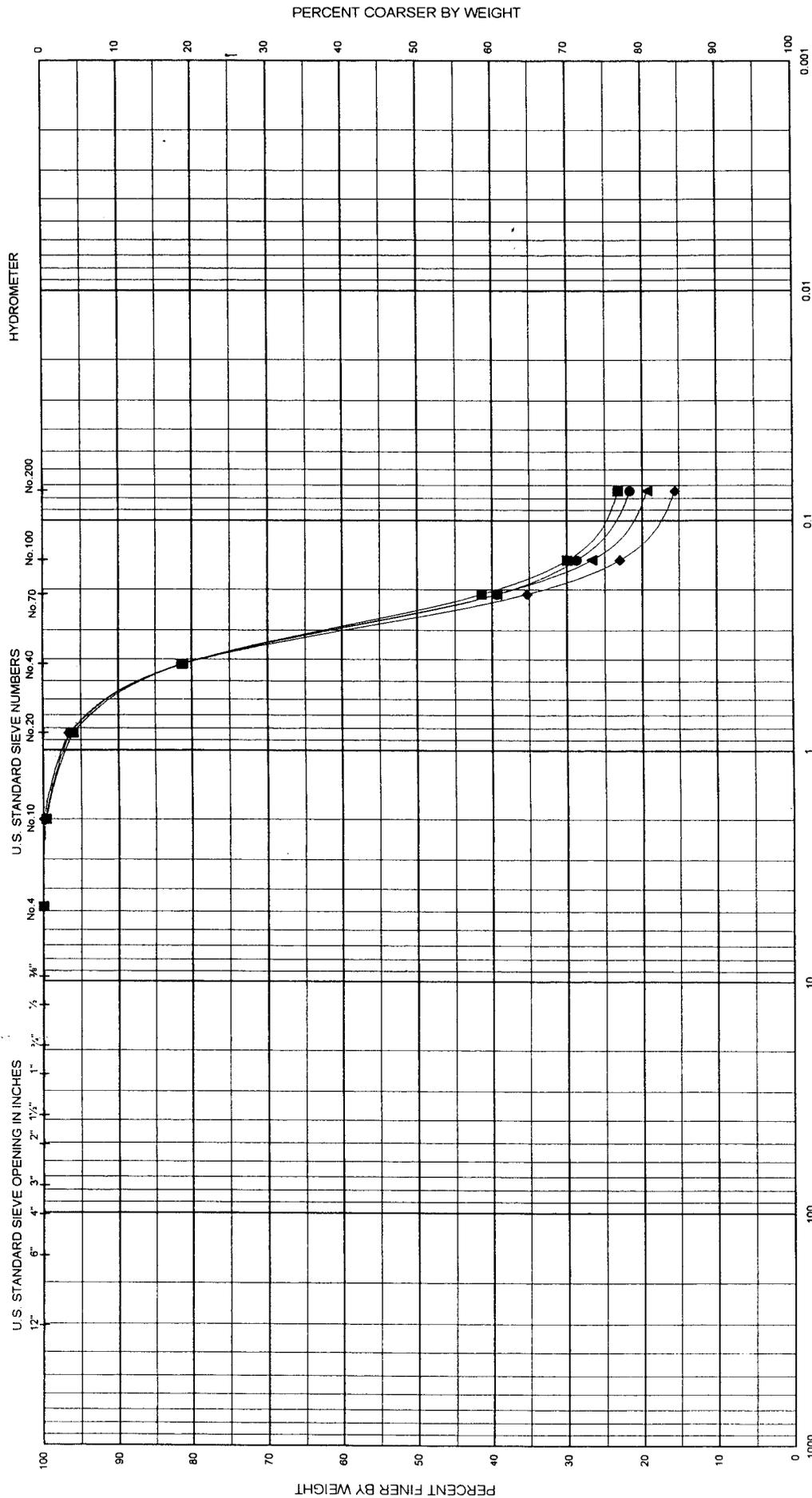
PROJECT: Webster Cove Disposal	
AREA: Dike Investigation	
Boring No.: Somerset County, MD	
DATE: AB-5WC	
DATE: Jul 2001	
GRADATION CURVES	
(Sieve Analysis: ASTM D422)	
ENG FORM 2087	



BOULDERS		GRAVEL		SAND		SILT or CLAY	
COARSE	FINE	COARSE	FINE	MEDIUM	FINE	LL	PI
USCS Classification (ASTM D2487)							
Sample No.	Depth (ft)	USCS Classification (ASTM D2487)		Nat w%	LL	PL	PI
Jar-1	0.9-2.3	Silty sand (SM)		12.7	18	13	5
Jar-2	2.9-3.8	Silty clayey sand (SC-SM)		14.1	10.3	15	5
Jar-3	3.8-5.2	Silty sand (SM)		13.0	20	15	5
Jar-4	6.2-7.0	Silty clayey sand (SC-SM)		13.0	20	15	5

PROJECT: Webster Cove Disposal
 Dike Investigation
AREA: Somerset County, MD
Boring No.: AB-6WC

DATE: Jul 2001
 (Sieve Analysis: ASTM D422)
GRADATION CURVES

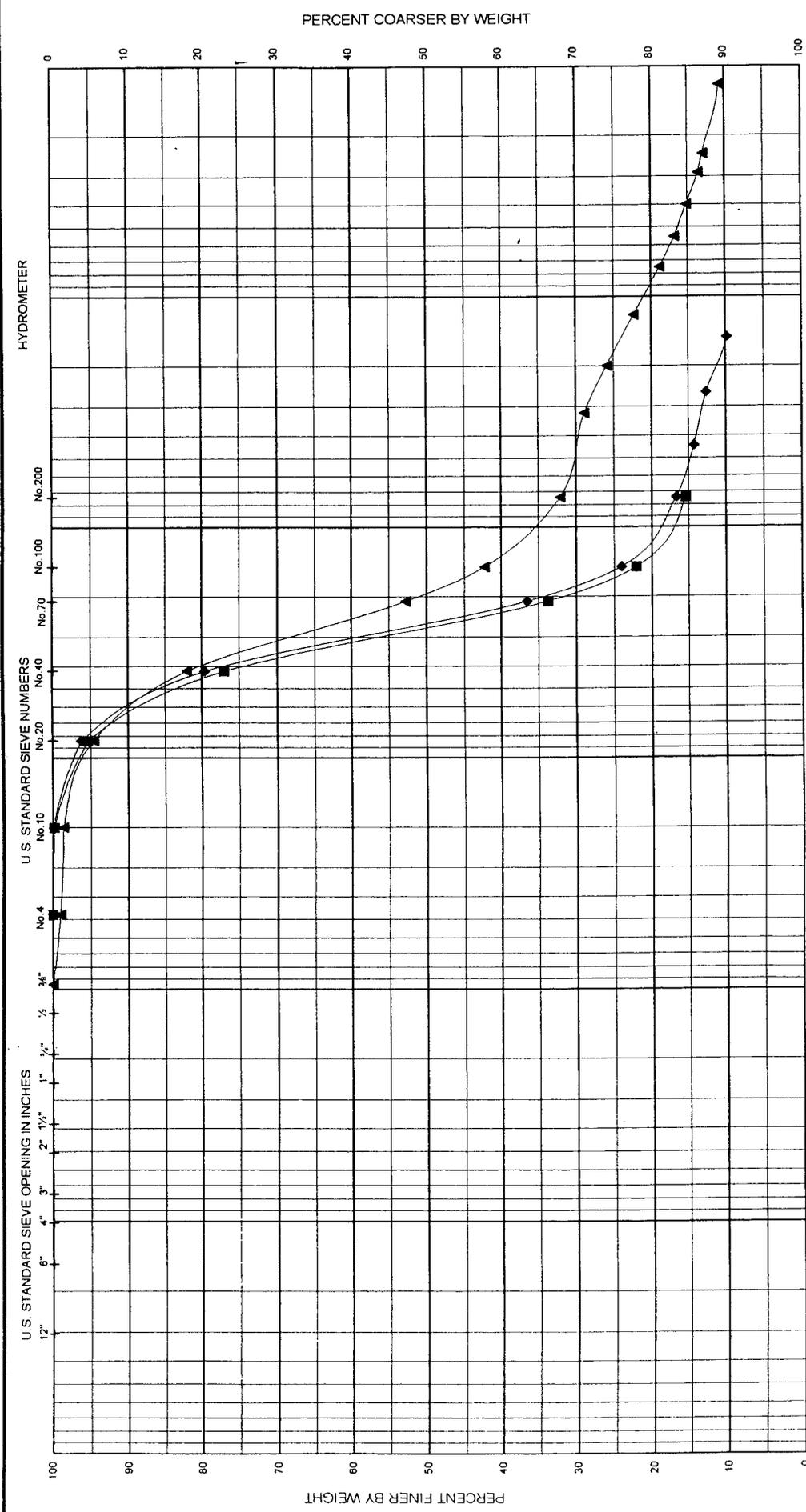


Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
—■—	Jar-2	0.8-1.8	Silty sand (SM)	11.1	—	—	—
—◆—	Jar-4	3.0-4.0	Silty sand (SM)	11.3	—	—	—
—▲—	Jar-7	7.0-7.6	Silty sand (SM)	15.1	—	—	—
—●—	Jar-8	7.6-8.1	Silty sand (SM)	20.3	—	—	—

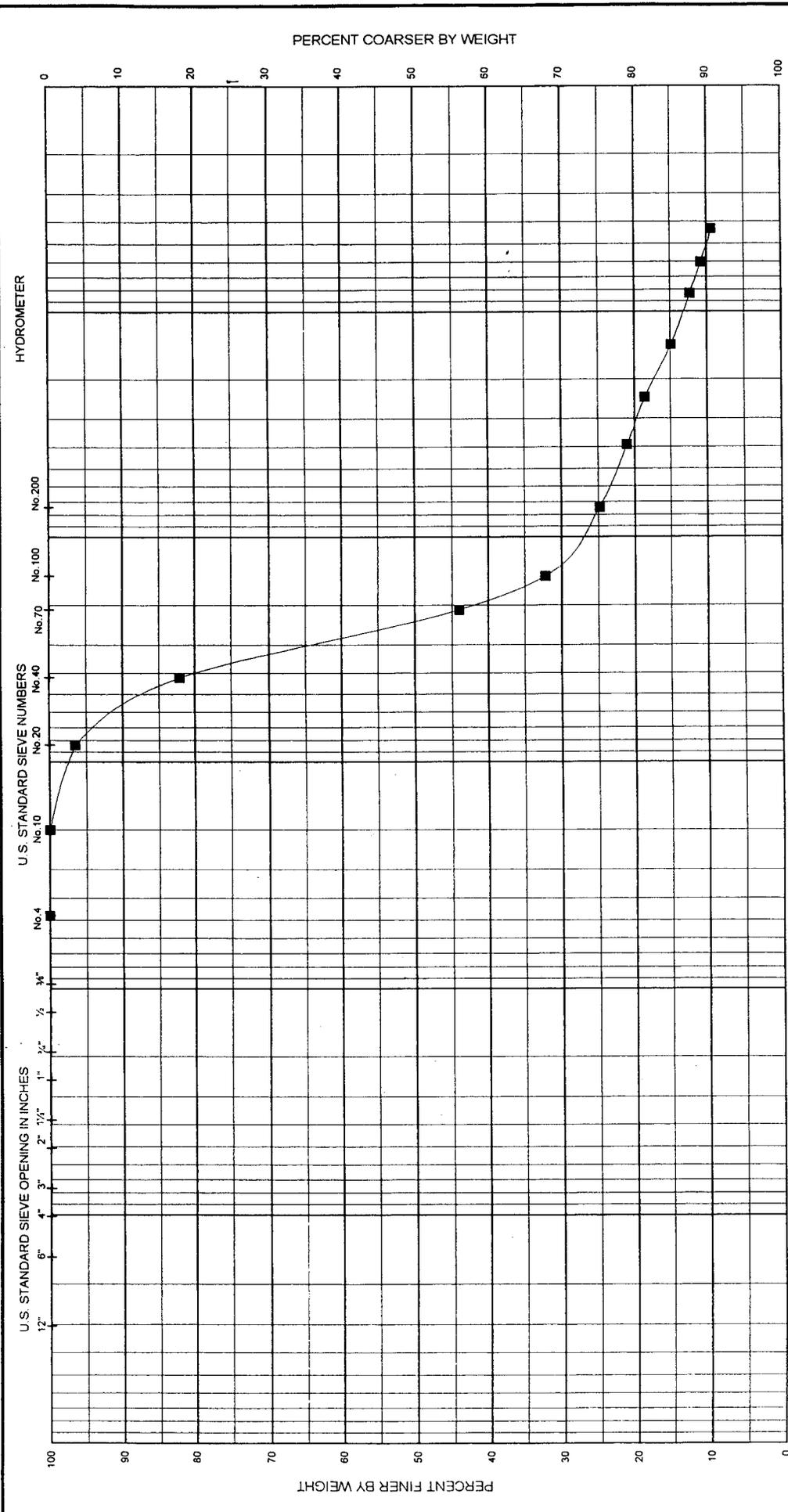
BOULDERS		GRAVEL		SAND		FINE		SILT or CLAY	
	COARSE	COARSE	FINE	COARSE	MEDIUM	FINE			

PROJECT:	Webster Cove Disposal
AREA:	Dike Investigation
Boring No.:	Somerset County, MD
DATE:	AB-7WC

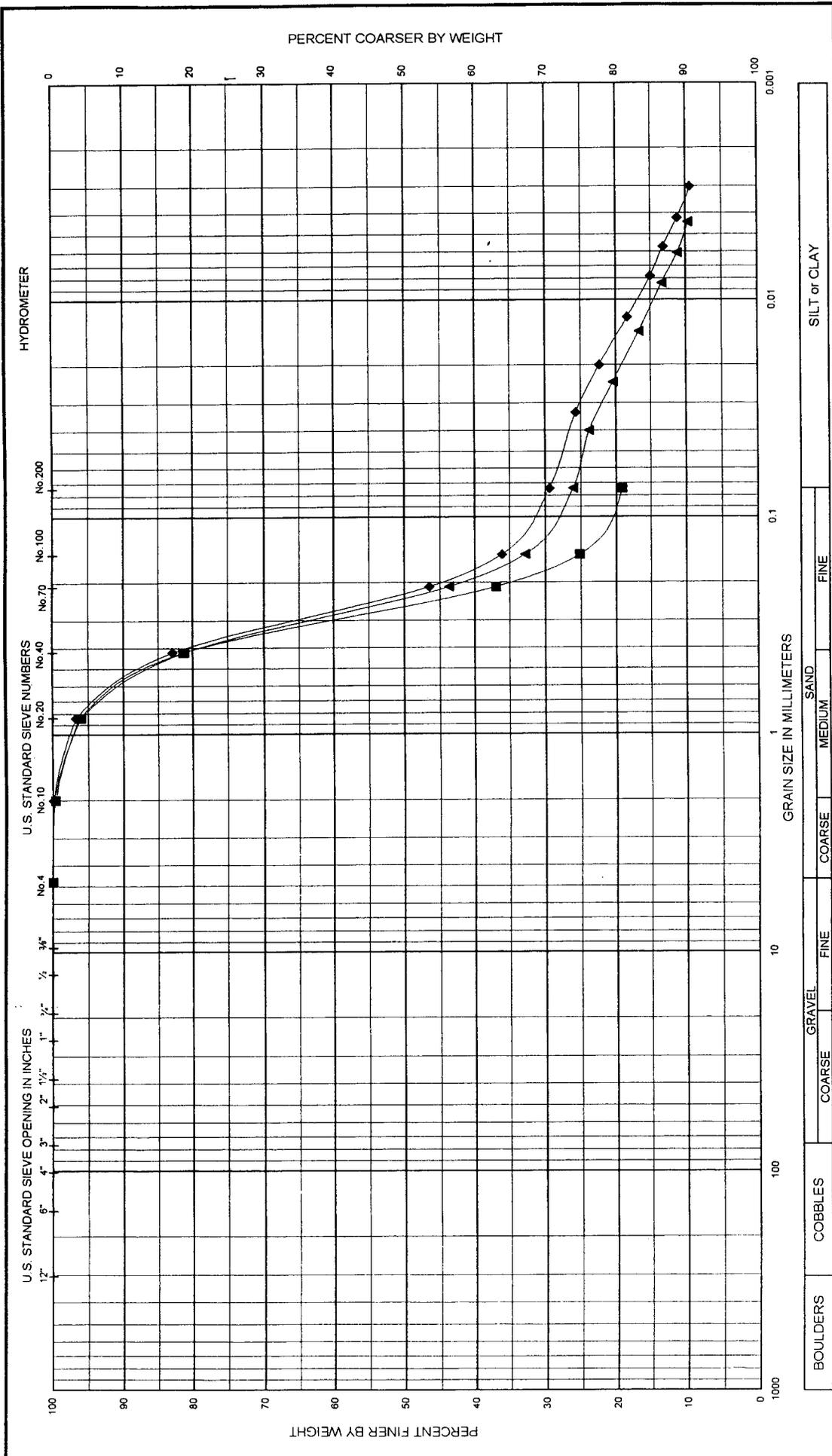
ENG FORM 2087	GRADATION CURVES	(Sieve Analysis: ASTM D422)
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Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)			SAND			FINE			SILT or CLAY		
			COARSE	GRAVEL	COARSE	MEDIUM	FINE	LL	PL	PI	LL	PL	PI	
—■—	Jar-3	2.4-3.5	Silty sand	(SM)	Nat w%	7.2	LL	—	PL	—	PI	—	—	—
—◆—	Jar-5	5.1-6.2	Silty sand	(SM)	Nat w%	14.1	LL	N.P.	PL	N.P.	PI	—	—	—
—▲—	Jar-7	8.0-9.0	Clayey sand (tr. gravel)	(SC)	Nat w%	17.2	LL	24	PL	16	PI	8	—	—
PROJECT: Webster Cove Disposal AREA: Somerset County, MD Boring No.: AB-8WC DATE: Jul 2001														



BOULDERS		COBBLES		GRAVEL		SAND			SILT or CLAY					
COARSE	FINE	COARSE	FINE	COARSE	MEDIUM	FINE								
USCS Classification (ASTM D2487)														
Silty clayey sand (SC-SM)														
Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)									PROJECT: Webster Cove Disposal		
—■—	S-1	0.0-3.0	Silty clayey sand									Dike Investigation		
												AREA: Somerset County, MD		
												Boring No.: TP-2		
ENG FORM 2087												DATE: Jul 2001		
GRADATION CURVES												(Sieve Analysis: ASTM D422)		



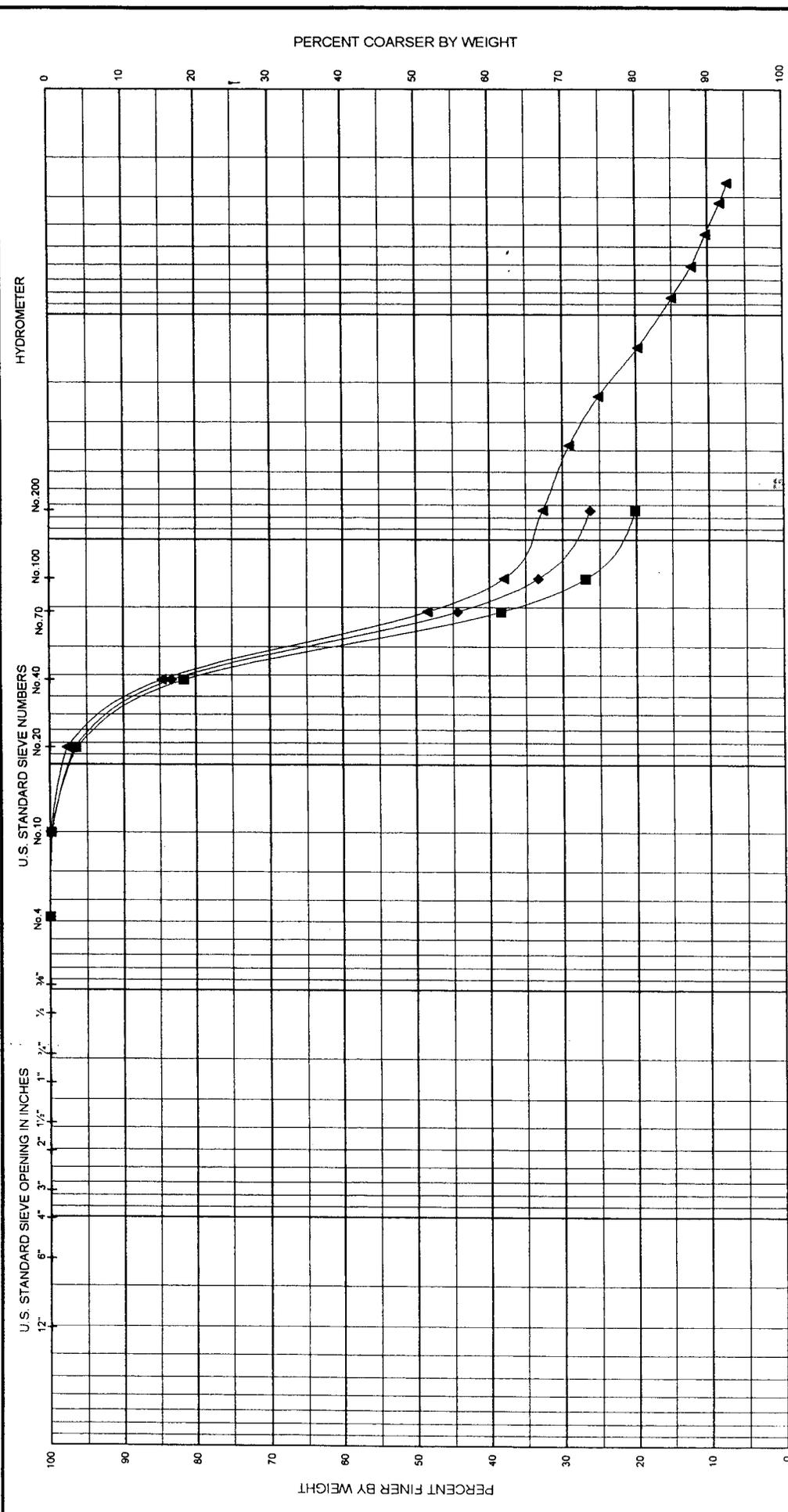
Legend		Sample No.	Depth (ft)	Soil Description	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
—■—	S-2	1.7-4.5	Silty sand	(SM)					
—◆—	S-3	4.5-6.8	Silty clayey sand	(SC-SM)		23	17	6	
—▲—	S-4	6.8-8.2	Silty clayey sand	(SC-SM)	15.0	21	16	5	
GRADATION CURVES									
(Sieve Analysis: ASTM D422)									
ENG FORM 2087									

PROJECT: Webster Cove Disposal
Dike Investigation

AREA: Somerset County, MD

Boring No.: TP-3

DATE: Jul 2001

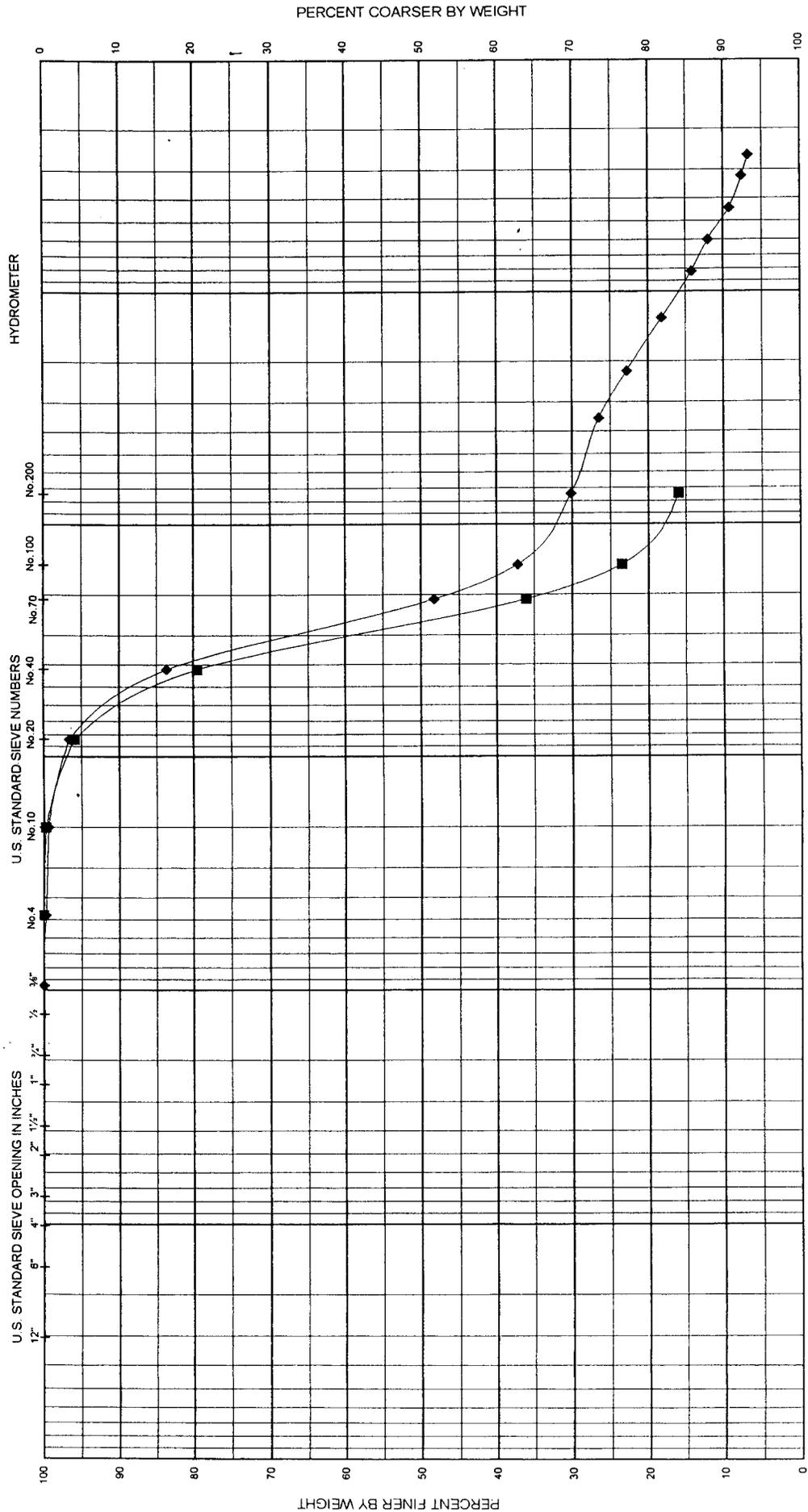


Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
■	S-1	0.0-3.0	Silty sand (SM)	_____	_____	_____	_____
◆	S-2	3.0-6.0	Silty sand (SM)	_____	_____	_____	_____
▲	S-3	6.0-6.8	Silty sand (SM)	10.4	N.P.	_____	_____

BOULDERS	COBBLES	GRAVEL	SAND	SILT or CLAY
COARSE	COARSE	FINE	COARSE	MEDIUM
			FINE	

PROJECT:	Webster Cove Disposal Dike Investigation
AREA:	Somerset County, MD
Boring No.:	TP-4
DATE:	Jul 2001

GRADATION CURVES	
(Sieve Analysis: ASTM D422)	



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
■	S-2	2.0-4.0	Silty sand (SM)	12.5	—	—	—
◆	S-3	4.0-6.0	Silty clayey sand (SC-SM)	18.5	23	17	6
PROJECT: Webster Cove Disposal							
AREA: Dike Investigation							
Boring No.: Somerset County, MD							
DATE: TP-5							
DATE: Jul 2001							

Laboratory Compaction Test Results

SUBSURFACE EXPLORATION NOTES
WICOMICO MAINTENANCE DREDGING
SHARPS POINT DISPOSAL SITE

1. SUBSURFACE EXPLORATION FOR DRILL HOLES (DH-SP3,5,6,8 AND 11) WAS PERFORMED DURING APRIL 1996. EXPLORATIONS FOR TESTING PITS (TP-1 THROUGH TP-8) AND SURFACE SAMPLES (FROM CELLS 3A AND 3B) WERE PERFORMED DURING FEBRUARY 2004.
2. DRILL HOLES (DH) WERE ACCOMPLISHED BY STANDARD PENETRATION TEST PROCEDURE (SPT) USING A 1-3/8" X 2'-8" LONG SPLIT SPOON. SAMPLE SPOONS WERE ADVANCED BY A 140# HAMMER FALLING 30". THESE HOLES WERE POWER AUGERED BETWEEN SAMPLES UNLESS OTHERWISE INDICATED. BLOW COUNTS SHOWN ARE FOR 0.5' OF DRIVE UNLESS OTHERWISE INDICATED.
3. BLOW COUNTS REQUIRED TO ADVANCE SAMPLE ARE SHOWN IN COLUMN (a).
4. COLUMN (b) SHOWS THE NATURAL WATER CONTENTS IN PERCENT OF DRY WEIGHT OF THOSE SAMPLES TESTED.
5. SOIL DESCRIPTIONS ARE SHOWN IN COLUMN (c).
6. SOIL DESCRIPTIONS ARE LABORATORY CLASSIFICATIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (MIL-STD-619B) OR (ASTM D2487), EXCEPT THOSE INDICATED THUS (**), WHICH ARE FIELD INSPECTOR'S CLASSIFICATIONS
7. GROUNDWATER DEPTHS ARE INDICATED ON THE LOGS AS ▽, ▽ & ▽ ARE SHOWN IN COLUMN (d). PERTINENT DATA FOR THESE READINGS ARE SHOWN AT THE BOTTOM OF LOG UNDER GROUNDWATER DATA (DEPTHS GIVEN IN FEET). THE ACTUAL GROUNDWATER LEVEL MAY VARY DEPENDING UPON SEASONS AND AMOUNT OF RAINFALL!
8. ELEVATIONS SHOWN ON THE BORING LOGS ARE GROUND SURFACE ELEVATIONS AT THE TIME OF EXPLORATION. THEY WERE DETERMINED BY ESTIMATION FROM CONTOUR MAPS; DESIGNATED (±).
9. FOR LOCATIONS OF SUBSURFACE EXPLORATIONS SEE SHARPS POINT SUBSURFACE EXPLORATION PLAN.

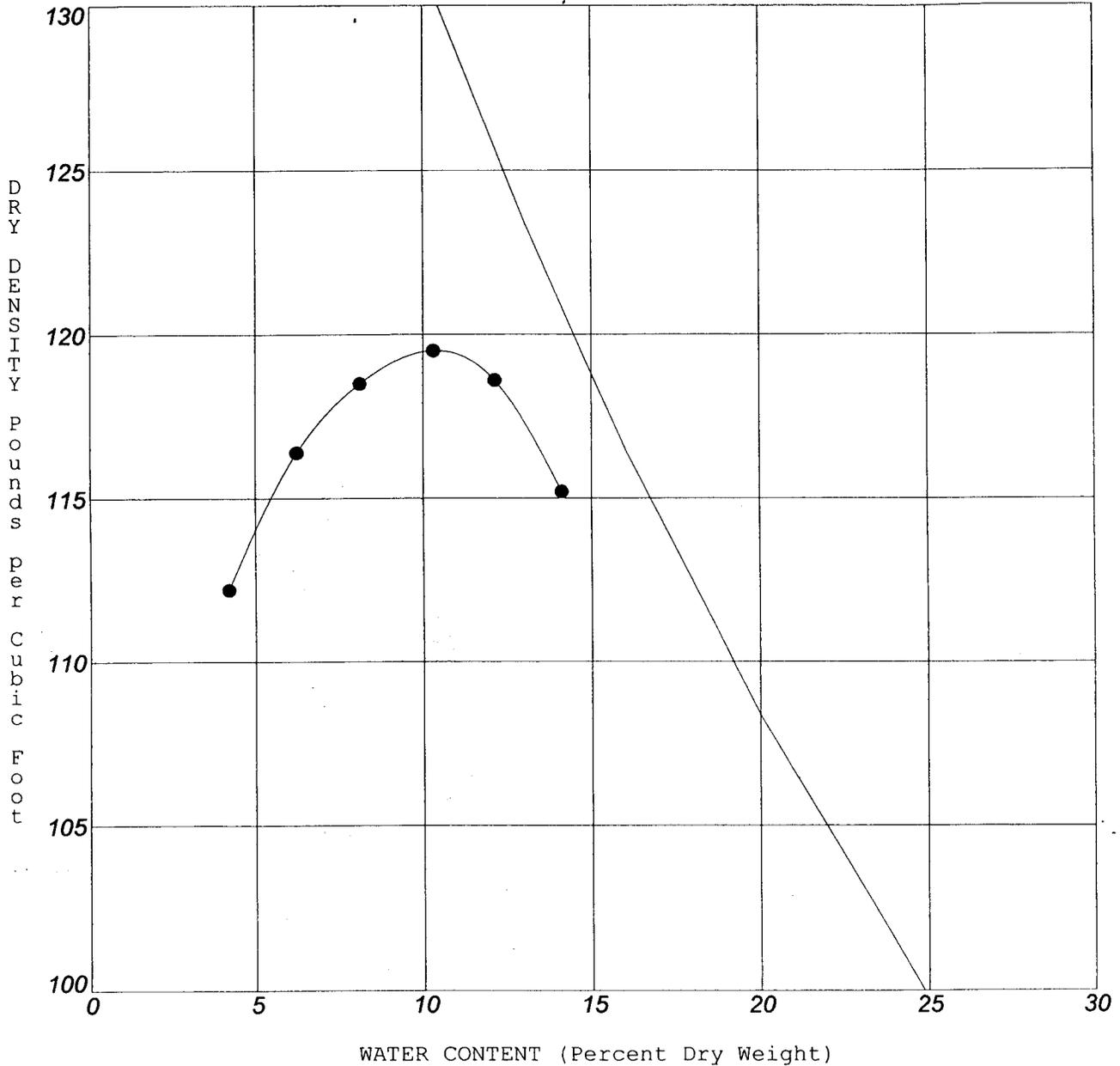
PROJECT: **Somerset County, MD**

DATE: Jul 01

AREA: **Webster Cove Disposal Dike Investigation**

TEST PIT NO. TP-1 SAMPLE NO. Bucket 1-4 DEPTH (FT): 0.0-6.3

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 119.5 pcf

OPTIMUM WATER CONTENT: 10.3 %

SPECIFIC GRAVITY: 2.66

CLASSIFICATION: SILTY SAND

SM

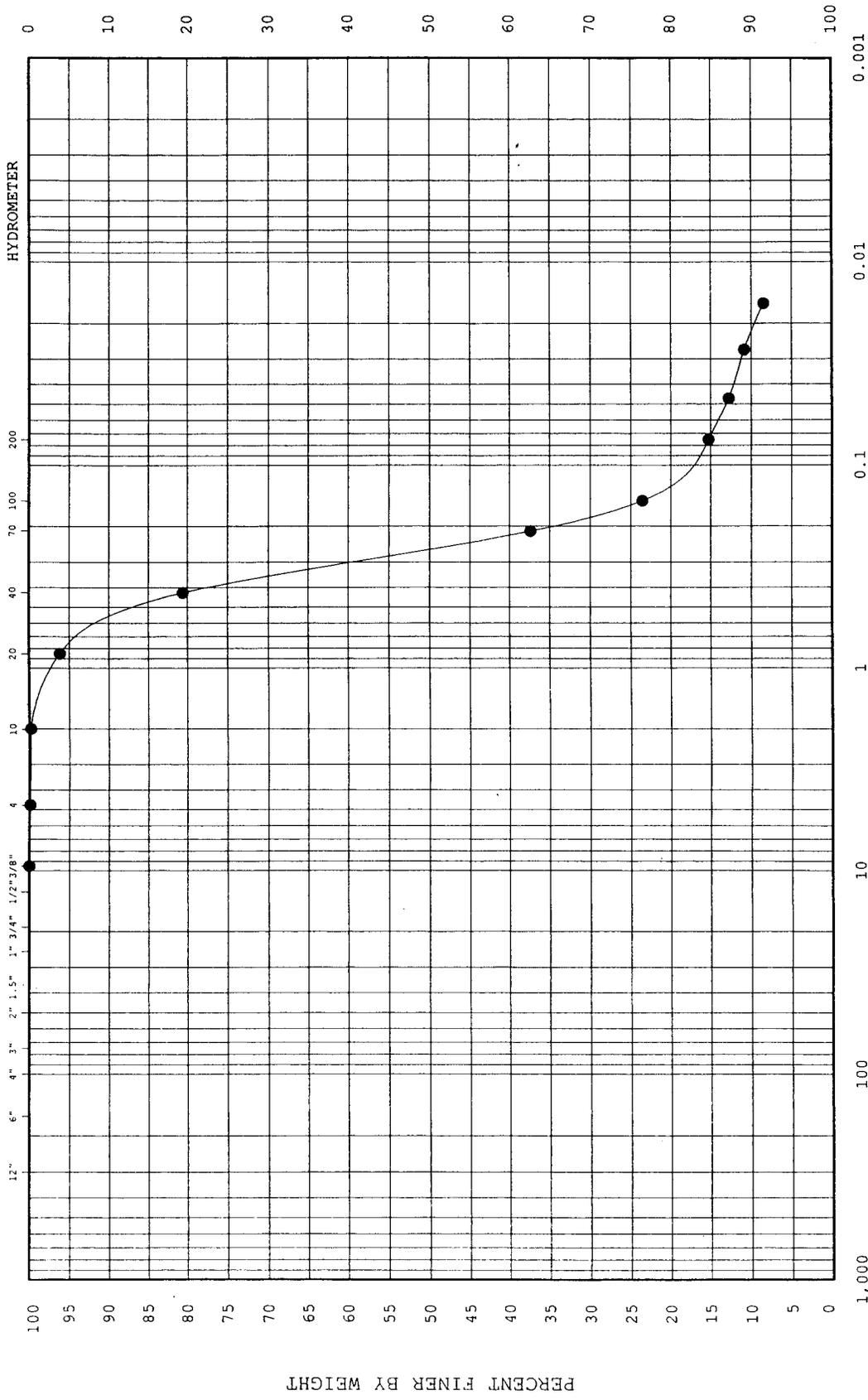
REMARKS:

LEGEND	
	CORRECTED + No.4
	CORRECTED + 3/8"
	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS



PERCENT COARSER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

COBBLES	GRAVEL			SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

Legend	Sample No.	Depth (ft)	Classification (ASTM D 2487)	Nat wt%	LL	PL	PI
—●—	Bucket 1-4	0.0-6.3	SILTY SAND	SM	11.4	NP	NP

PROJECT: Somerset County, MD
 AREA: Webster Cove Disposal Dike Investigation

BORING NO.: TP-1

DATE: Jul 01

REMARKS:

ENG FORM ENG2087 SOMERSET.GPJ TEST METHOD: ASTM D 422

GRADATION CURVES

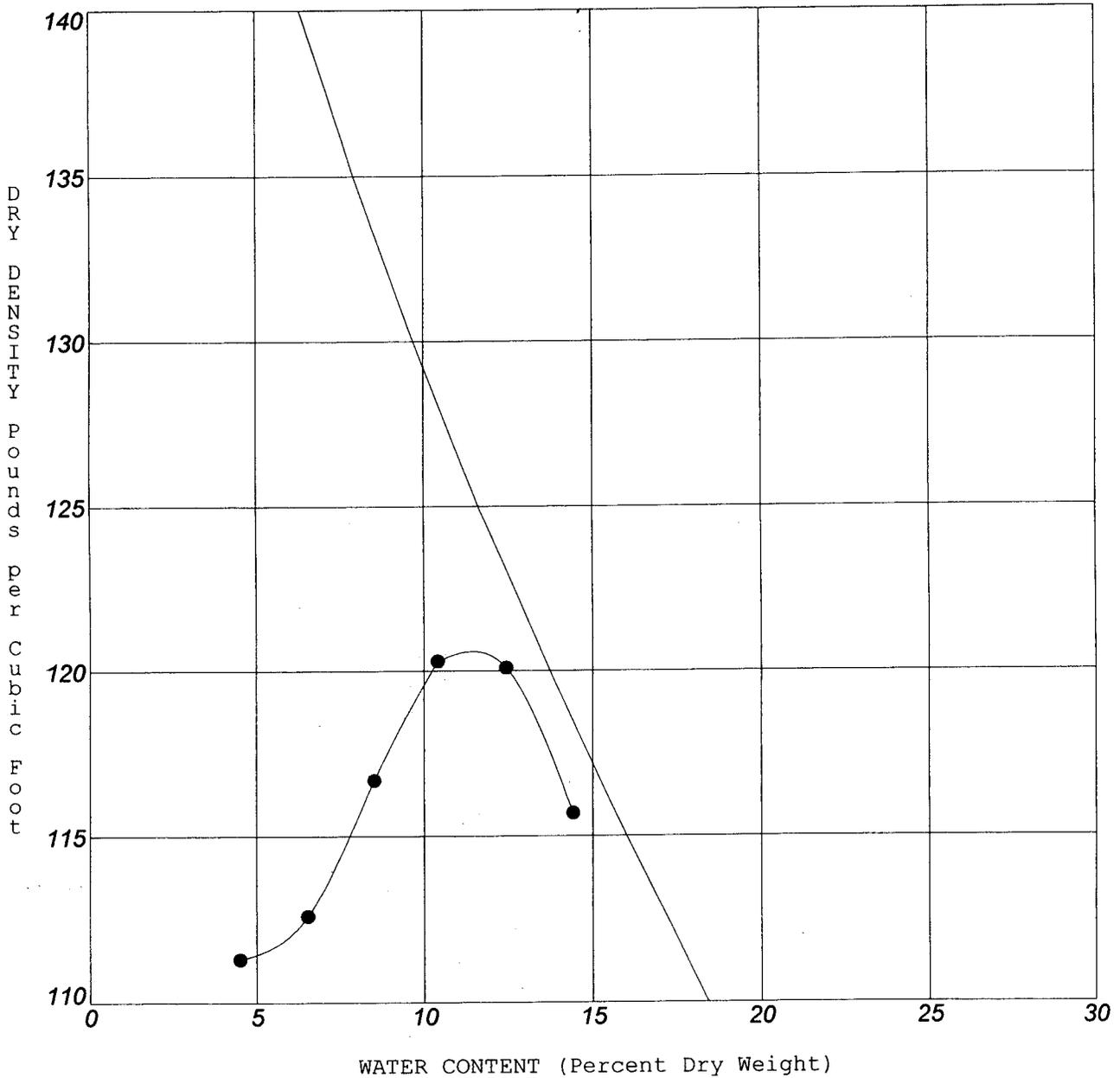
PROJECT: **Somerset County, MD**

DATE: Jul 01

AREA: **Webster Cove Disposal Dike Investigation**

TEST PIT NO. TP-2 SAMPLE NO. Bucket 3-4 DEPTH (FT): 4.3-9.2

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 120.6 pcf
 OPTIMUM WATER CONTENT: 11.4 %
 SPECIFIC GRAVITY: 2.61
 CLASSIFICATION: SILTY SAND **SM**

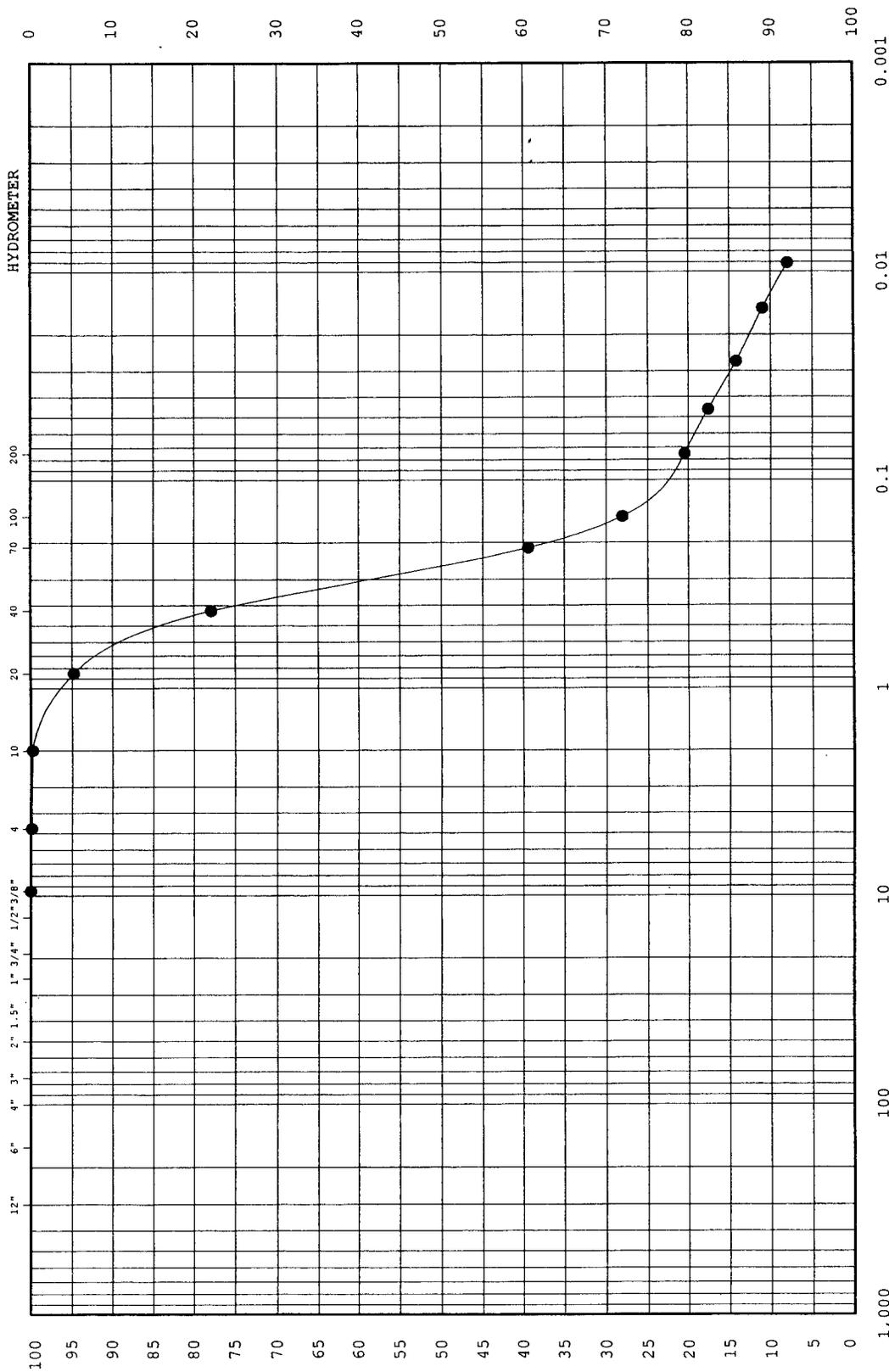
REMARKS:

LEGEND	
	CORRECTED + No.4
	CORRECTED + 3/8"
	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS



PERCENT FINER BY WEIGHT

PERCENT COARSER BY WEIGHT

GRAIN SIZE IN MILLIMETERS

COBBLES	GRAVEL			SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

Legend	Sample No.	Depth (ft)	Classification (ASTM D 2487)	Nat wc%	LL	PL	PI
●	Bucket 3-4	4.3-9.2	SILTY SAND	SM 14.8	NP	NP	NP
—							
—							
—							

PROJECT: Somerset County, MD
 AREA: Webster Cove Disposal Dike Investigation

REMARKS:

ENG FORM ENG2087SOMERSET.GPJ

TEST METHOD: ASTM D 422

GRADATION CURVES

BORING NO.: TP-2

DATE: Jul 01

PROJECT: **Somerset County, MD**

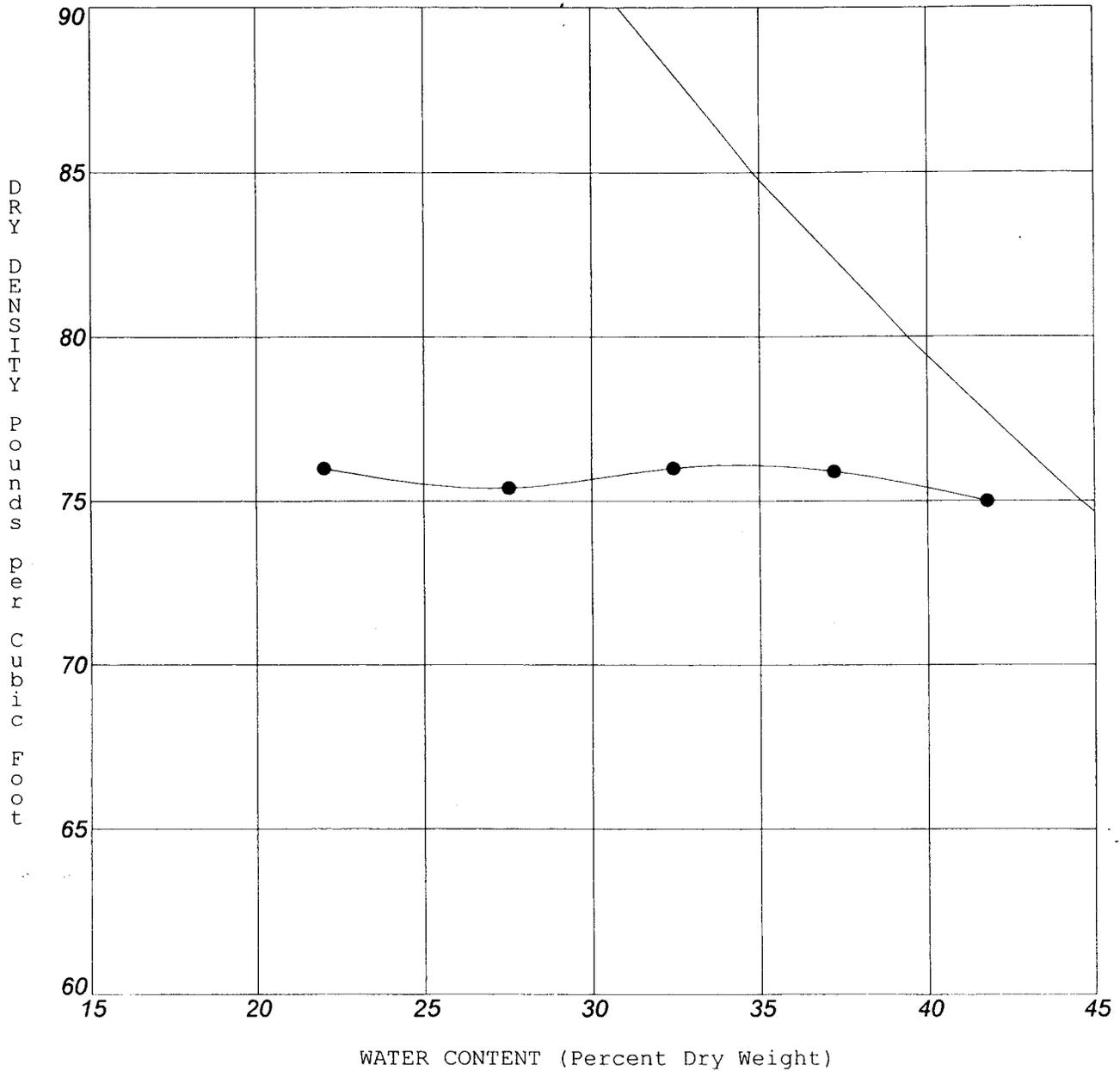
AREA: **Webster Cove Disposal Dike Investigation**

DATE: Jul 01

SAMPLE LOCATION: **Composite Sample**

TEST PIT NO. None SAMPLE NO. C-1 DEPTH (FT): 0.0-2.0

TEST METHOD: ASTM D698-91 Procedure A



MAXIMUM DRY DENSITY: 76.1 pcf

OPTIMUM WATER CONTENT: 34.5 %

SPECIFIC GRAVITY: 2.59

CLASSIFICATION: **FAT CLAY** **CH**

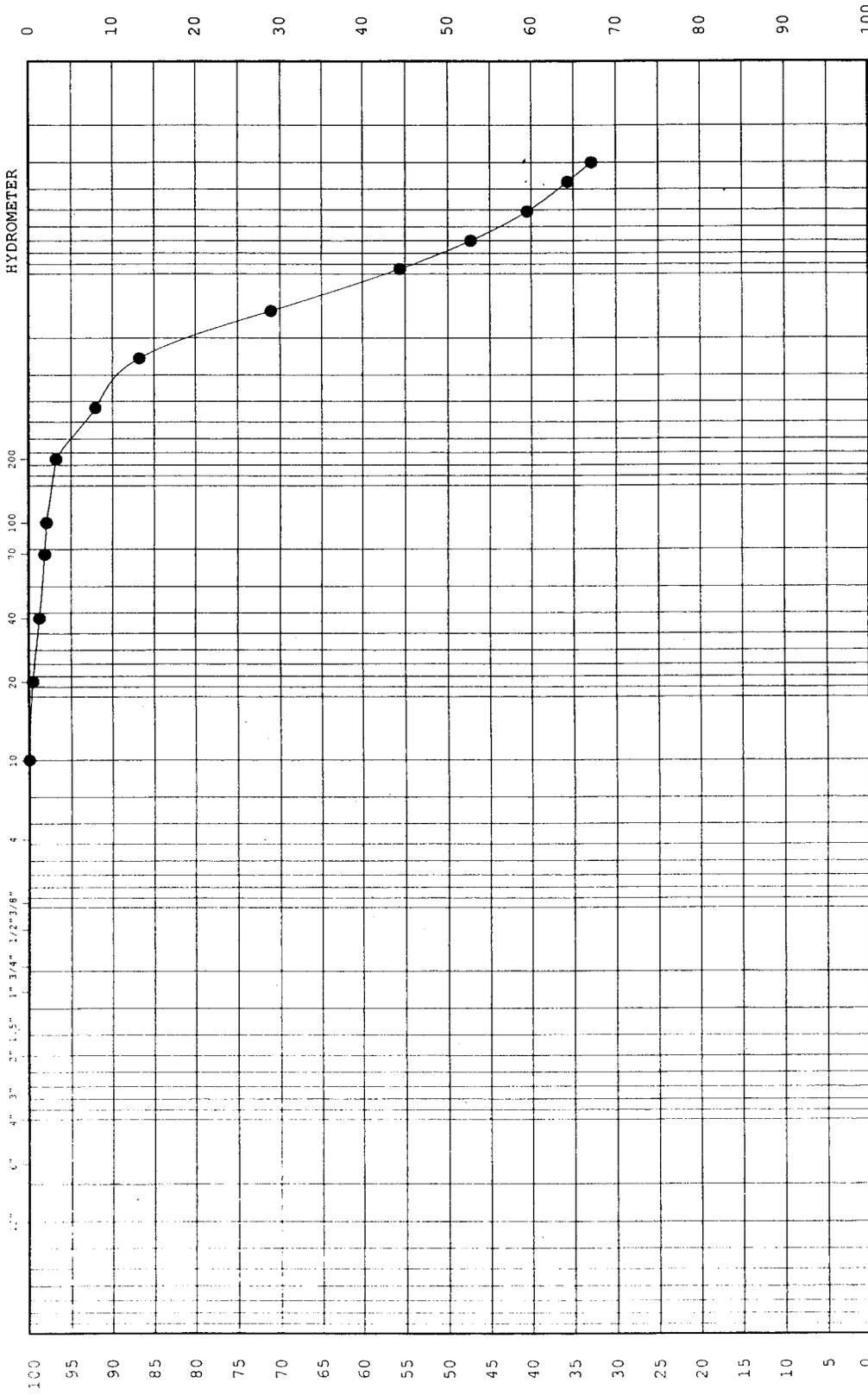
REMARKS:

LEGEND	
○	CORRECTED + No.4
○	CORRECTED + 3/8"
○	CORRECTED + 3/4"
●	NO CORRECTION NEEDED

MOISTURE-DENSITY RELATIONSHIP

U. S. Army Corps of Engineers
Baltimore, MD

U.S. STANDARD SIEVE OPENING IN INCHES U.S. STANDARD SIEVE NUMBERS



Sharps Point Disposal Site
Subsurface Exploration Data

STA.
 OFFSET:
 TOP ELEV:

Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 Wicomico County, MD

N
 E
 COMPLETED: April 25, 1996

DH-SP-3
 1 of 1

DEPTH (ft)	(c)	(d)	(a)	(b)
2.0	Wet yellowish brown silty med. to fine SAND (SM)	▼	1-1-3	
4.5	Very moist lt. brown silty SAND (SM)	▼	2-4-7	19.8
7.0	Very moist lt. gray brown poorly graded med. to fine SAND (SP)		5 6-12-18	
9.5	Wet grayish brown silty med. to fine SAND (SM)		5-4-3	
12.0	Very moist lt. brown gray poorly graded med. to fine SAND (SP)		10 7-8-11	
14.5	Moist dk. gray & lt. brown gray clayey SAND (SC)		3-3-4	19.5
16.5	Moist dk. gray & gray brown lean CLAY w/ sand (CL)		15 9-8-13	21.2
Bottom of Hole				
			20	
			25	
			30	
			35	

GEO-2, 006LL, 5/24/96, 11:00

**DH-SP-3
 GROUND WATER DATA**

▼ WHILE DRILLING: 2
 ▼ ON COMPLETION: 2
 ▼ 24 Hr. READING: .9

 Fill
  Auger
  SPT
  RB
  Cored

STA.
 OFFSET:
 TOP ELEV:

Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 Wicomico County, MD

N
 E
 COMPLETED: April 26, 1996

DH-SP-5
 1 of 1

DEPTH (ft)	(c)	(d)	(a)	(b)
	Moist to wet yellow brown & dk. brown to brown poorly graded SAND w/ silt and tr. of roots & leaves (SP)	▼	1-1-1	
4.5		▼	1-5-8	22.9
7.0	Moist brown yellow & lt. brown poorly graded SAND w/ silt (SP-SM)	5	9-11-15	
13.5	Moist lt. gray & gray poorly graded SAND tr. of plant matter (SP)	10	12-16-18	17.3
14.5	Moist dk. gray sandy lean CLAY (CL)		13-15-9	
16.5	Very moist dk. gray silty med. to fine SAND (SM)	15	3-4-7	18.5
	Bottom of Hole		5-9-8	
		20		
		25		
		30		
		35		

GEO-2 006LL 5/24/96 11:01

**DH-SP-5
 GROUND WATER DATA**

▼ WHILE DRILLING: 3
 ▼ ON COMPLETION: 2.5
 ▼ 24 Hr. READING: 1

 Fill
  Auger
  SPT
  RB
  Cored

STA.

Wicomico Maintenance Dredging

N

DH-SP-11

OFFSET:

Sharps Point Disposal Site

E

1 of 1

TOP ELEV:

Wicomico County, MD

COMPLETED: April 25, 1996

DEPTH (ft)

(c)

(d)

(a)

(b)

Very moist very dk. gray brown poorly graded med. to fine SAND w/ silt, w/ tr. of roots 2.5-5.0' (SP-SM)

5.0

Very moist grayish brown poorly graded med. to fine SAND (SP)

10.0

Moist dk. gray fat CLAY w/ sand and tr. of shell fragments (CH)

12.5

Moist dk. gray fat CLAY w/ sand (CH)

15.0

Bottom of Hole

5

10

15

20

25

30

35

32.4

GEO-2 0061.L. 5/24/96 10:59

DH-SP-11

GROUND WATER DATA

▽ WHILE DRILLING: 2

▽ ON COMPLETION: 1.5

▽ 24 Hr. READING: 1.5

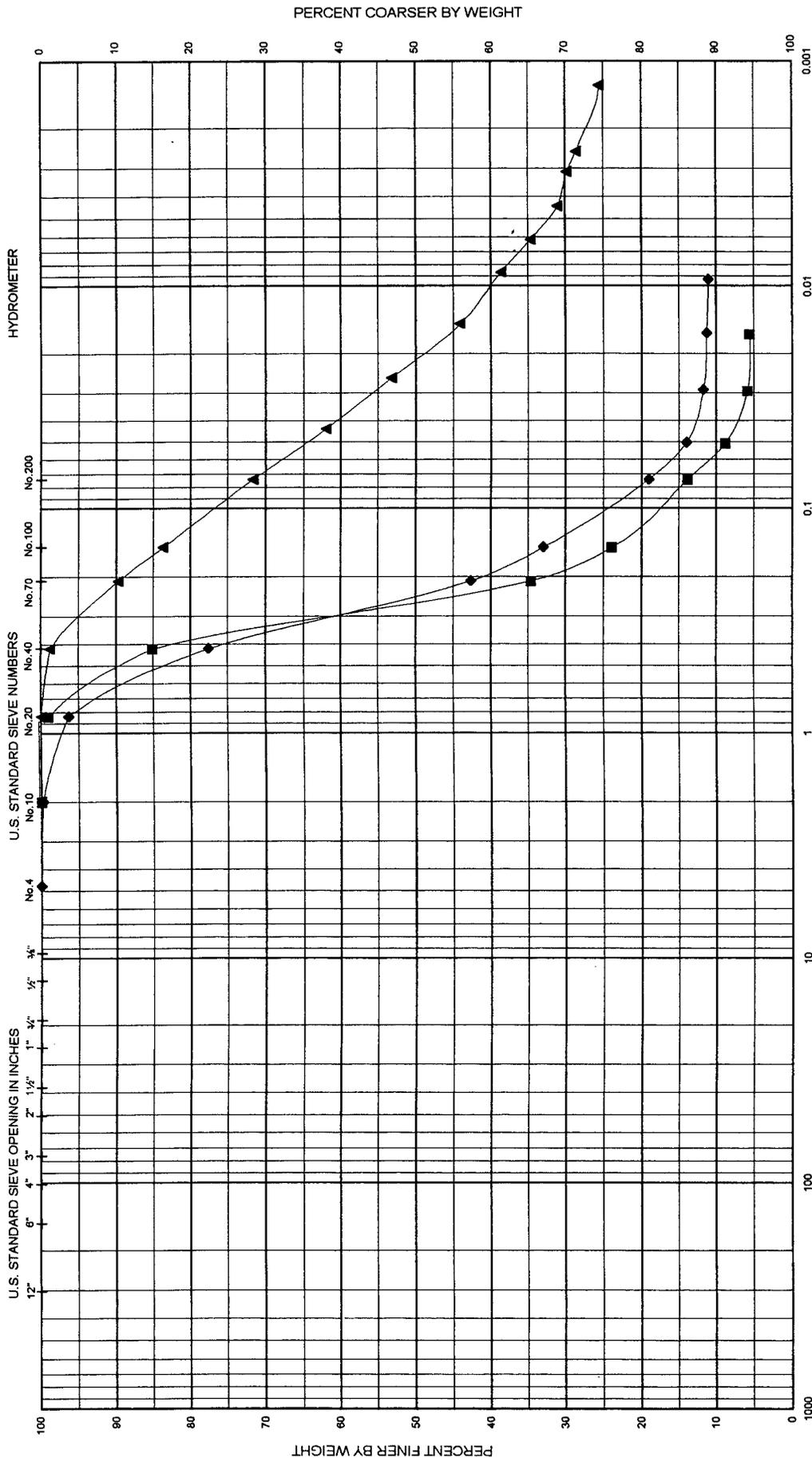
○ Fill

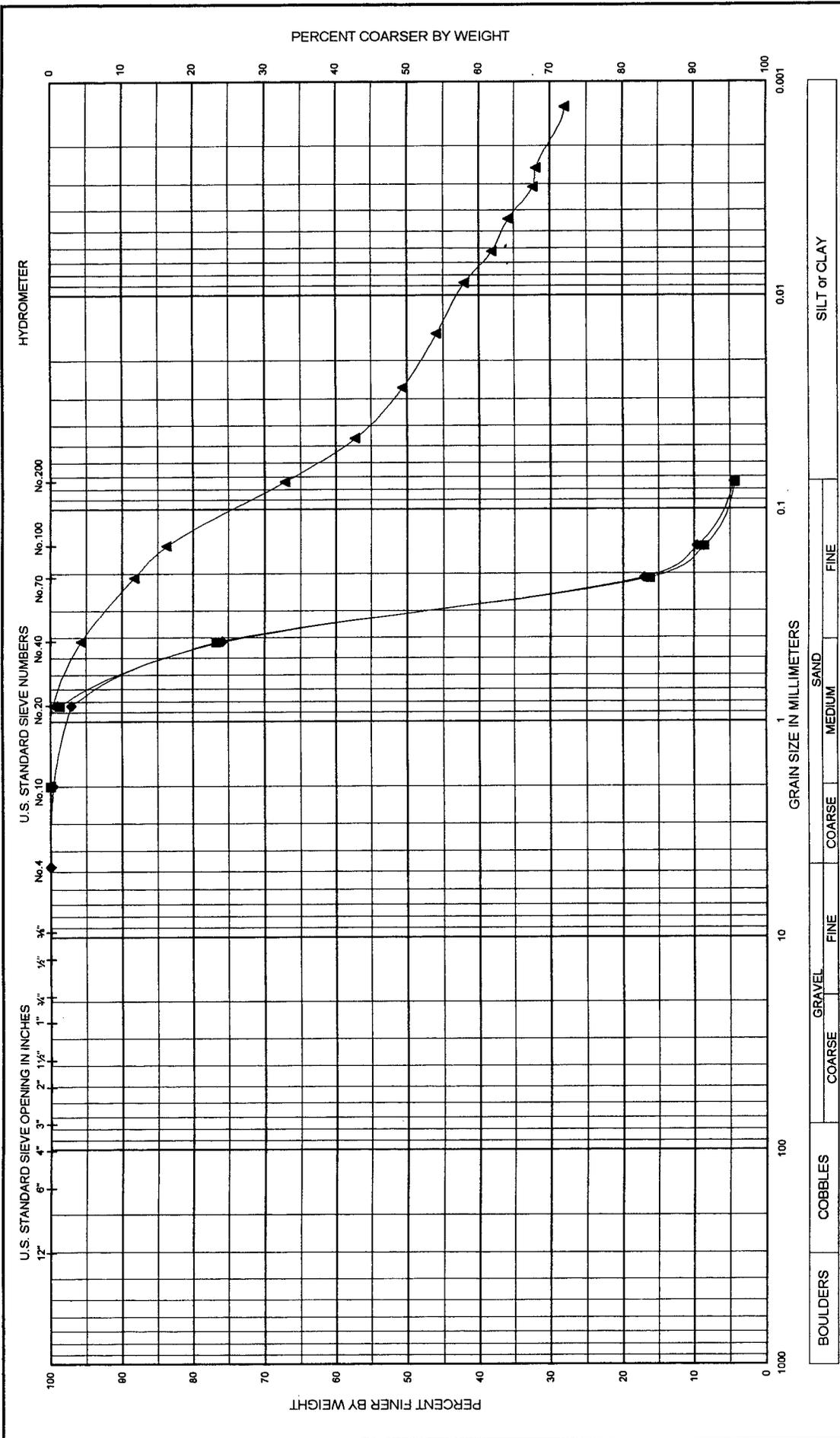
■ Auger

⊗ SPT

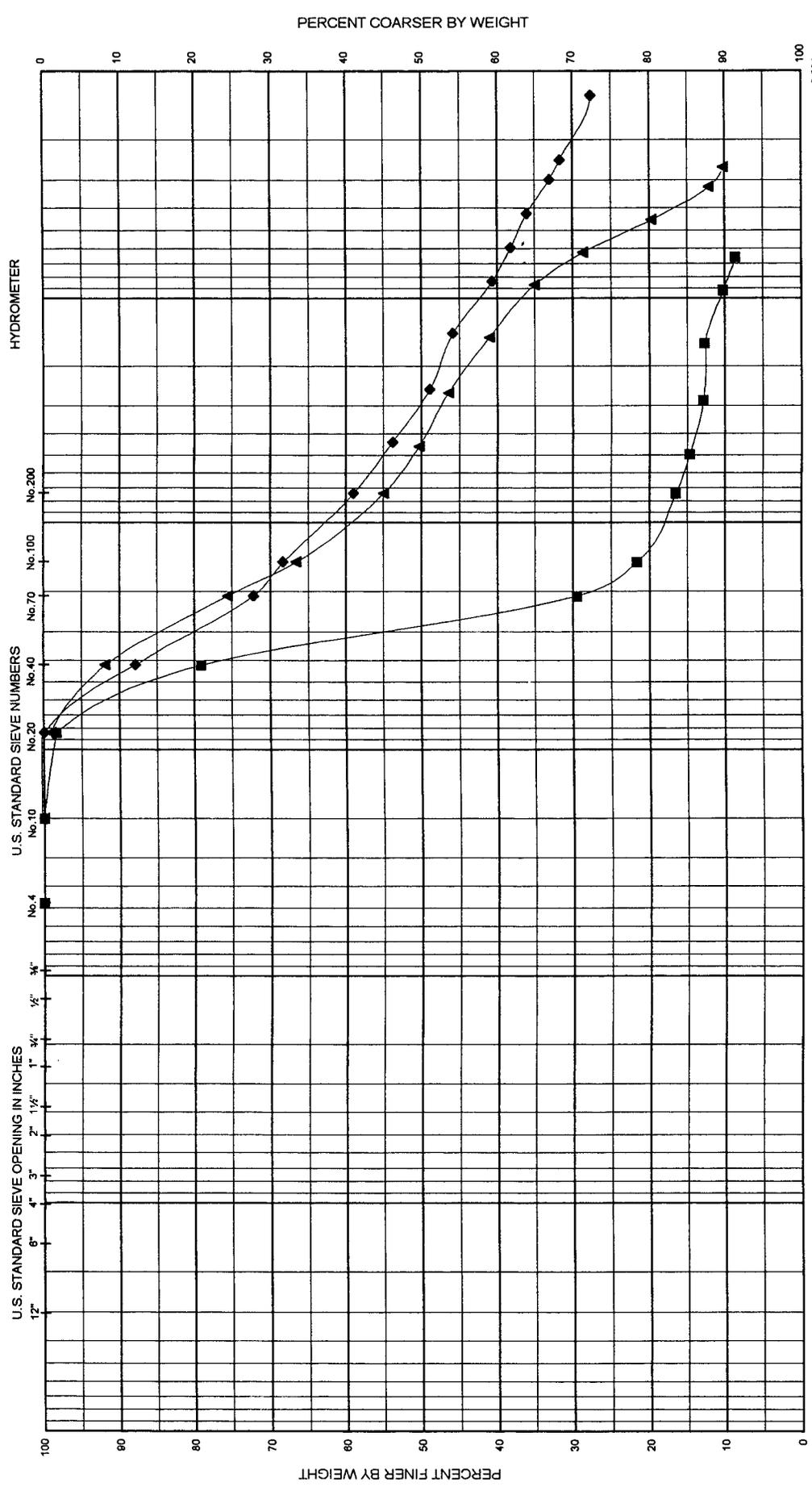
□ RB

▣ Cored





PROJECT: Wicomico Maintenance Dredging	
Sharps Point Disposal Site	
AREA: Wicomico County, MD	Boring No.: DH-SP-5
DATE: May 1996	
GRADATION CURVES	
ENG FORM 2087	

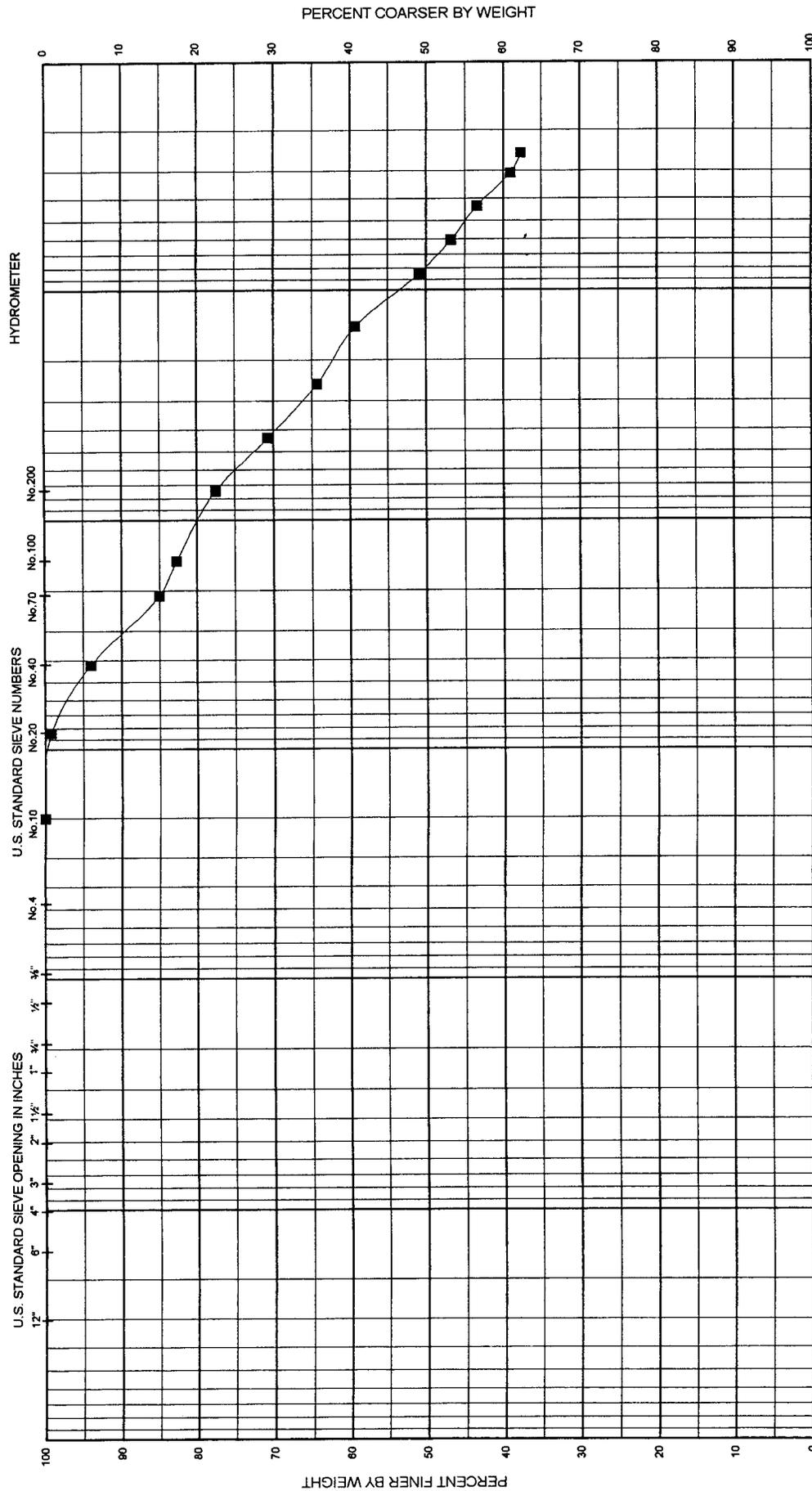


Legend	Sample No.	Depth (ft)	Classification			SAND			FINE			SILT or CLAY		
			COARSE	MEDIUM	FINE	Nat w%	LL	PL	PI	COARSE	MEDIUM	FINE	COARSE	MEDIUM
—■—	Jar-1	0.0-1.5	Silty sand	(SM)	23.2	58	29	29	29	29	29	29	29	29
—◆—	Jar-4	7.5-9.0	Sandy fat clay	(CH)	20.2	47	23	23	23	23	23	23	23	23
—▲—	Jar-6	12.5-14.0	Sandy lean clay	(CL)	33.6	47	23	23	23	23	23	23	23	23

PROJECT: Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 AREA: Wicomico County, MD
 Boring No.: DH-SP-6

DATE: May 1996

GRADATION CURVES



BOULDERS		COBBLES		GRAVEL		SAND		SILT or CLAY	
Sample No.	Depth (ft)	Classification	Nat w%	LL	PL	PI			
Jar-5	10.0-12.5	Fat clay with sand (CH)	32.4	53	21	32			

PROJECT: Wicomico Maintenance Dredging
 Sharps Point Disposal Site
 AREA: Wicomico County, MD
 Boring No.: DH-SP-11
 DATE: May 1996

ENG FORM 2087 GRADATION CURVES

MAINTENANCE DREDGING, WICOMICO RIVER CHANNEL, SOMERSET AND WICOMICO COUNTIES, MARYLAND

WATER QUALITY CERTIFICATION

WILL BE ISSUED BY AMENDMENT

Table 25 Permanent Seeding for Low Maintenance Areas

MIX	SEED MIX (USE CERTIFIED ¹ MATERIAL IF AVAILABLE)	PLANTING		SITE CONDITIONS	USDA HARDI- NESS ZONES ²	RECOMMENDED PLANTING DATES ³								
		LBS/AC	LBS/1000 SQ FT			3/1- 5/15	3/15- 6/1	5/16- 8/14	6/2- 7/31	8/1- 10/1	8/15- 10/15	8/15- 11/15		
1	TALL FESCUE (75%), CANADA BLUEGRASS (10%), KENTUCKY BLUEGRASS (10%), REDTOP (5%) ⁴	150	3.4	MOIST TO DRY	5b		X				X			A
					6a		X			X				
					6b	X						X		
					7a	X							X	
					7b	X							X	
2	KENTUCKY BLUEGRASS (50%), CREEPING RED FESCUE OR A HARD FESCUE (40%), REDTOP (10%)	150	3.4	MOIST TO MODERATELY DRY TO DRY	5b		X			X			B	
					6a		X			X				
					6b	X					X			
3	TALL FESCUE (85%), PERENNIAL RYEGRASS (10%), KENTUCKY BLUEGRASS (5%)	125	2.9	MOIST TO DRY	5B		X			X			C	
		15	.34		6A		X			X				
		10	.23		6B	X					X			
					7A	X						X		
					7B	X						X		
4	RED FESCUE OR CHEWINGS FESCUE (80%) PERENNIAL RYEGRASS (20%)	60	.92	MOIST TO DRY	5b		X			X			D	
		60	.92		6a		X			X				
		15	.34		6b	X					X			
5	TALL FESCUE (85%) OR, PERENNIAL RYEGRASS (50%) PLUS CROWN VETCH OR FLATPEA	110	2.5	MOIST TO DRY	5b		X			X				
		20	.46		6a		X			X				
		20	.46		6b	X					X			
		20	.46		7a	X						X		
					7b	X						X		
6	WEEPING LOVEGRASS (17%) SERECIA LESPEDEZA (83%)	4	.09	DRY TO VERY DRY	6a	X		X					F	
		20	.46		7a	X		X						
					7b	X		X						

NOTES: A/ USED BY SHA ON SLOPED AREAS. ADD A LEGUME FOR SLOPES > THAN 3:1.
 B/ USED IN MEDIAN AREAS BY SHA. SHADE TOLERANT.
 C/ POPULAR MIX - PRODUCES PERMANENT GROUND COVER QUICKLY. BLUEGRASS THICKENS STAND.
 D/ BEST USE ON SHADY SLOPES NOT ON POORLY DRAINED CLAYS.
 E/ USE ON LOW MAINTENANCE, STEEP SLOPES. USE TALL FESCUE IN DRAUGHTY COND. CROWN VETCH BEST FOR 5b, 6a, 6b
 F/ SUITABLE FOR SEEDING IN MID-SUMMER.

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¹ See Table 20 for a list of recommended varieties best suited for Maryland.

² Refer to Figure 5.

³ Recommended planting dates are indicated by an X. For seeding during time periods not recommended use a nurse crop such as weeping love grass or millet (mid-summer), or cereal rye (late fall to early spring) refer to Table 26 Temporary Seeding

⁴ Maryland State Highway Administration Approved Mixes.

Table 25 Permanent Seeding for Low Maintenance Areas (Cont'd)

MIX	SEED MIX (USE CERTIFIED MATERIAL IF AVAILABLE)	PLANTING RATE		SITE CONDITIONS	USDA HARDI- NESS ZONES	RECOMMENDED PLANTING DATES						N O T E S		
		LBS/AC	LBS/1000 SQ FT			3/1- 5/15	3/15- 6/1	5/16- 8/14	6/2- 7/31	8/1- 10/1	8/15- 10/15		8/15- 11/15	
7	TALL FESCUE (83%) WEeping LOVEGRASS (2%) PLUS SERECIA LESPEDEZA (15%)	110	2.5	DRY TO VERY DRY	5b		X		X	X			G	
		3	.07		6a		X		X	x				
		20	.46		6b	X		X				X		
					7a	X		X						X
					7b	X		X						X
8	REED CANARYGRASS (75%) REDTOP (6%) PLUS BIRDSFOOT TREEFOIL* (19%)	40	.92	WET TO MODERATELY DRY	5b		X			X			H	
		3	.07		6a		X			X				
		10	.23		6b	X						X		
					7a	X								X
					7b	X								x
9	TALL FESCUE (86%) POA TRIVIALIS (7%) BIRDSFOOT TREEFOIL (7%)	125	2.9	WET TO MODERATELY DRY	5b		X			X			I	
		10	.23		6a		X			X				
		10	.23		6b	X						X		
10	TALL FESCUE (80%) HARD FESCUE (20%)	120	3.4	WET TO DRY	5b		X			X			J	
		30	.69		6a		X			X				
					6b	X						X		
					7a	X								X
					7b	X								X
11	HARD FESCUE (100%)	.75	1.7	MOIST TO DRY	5b		X			X			K	
					6a		X			X				
					6b	X						X		
					7a	X								X

NOTES: G/ WEeping LOVEGRASS MAY BE SEEDeD WITH TALL FESCUE IN MID-SUMMER. SERECIA LESPEDEZA IS BEST SUITED FOR ZONES 7a AND 7b.
H/ USE ON POORLY DRAINED SOILS - DITCHES OR WATERWAYS. BIRDSFOOT TREEFOIL IS BEST FOR ZONES 5b, 6a, ABOVE 2,000 FT.
I/ USE IN AREAS OF MOIST SHADE. POA TRIVIALIS THRIVES IN WET SHADY AREAS.
J/ TALL FESCUE MAY BE SEEDeD ALONE. THE HARD FESCUE PROVIDES BETTER SHADE TOLERANCE AND PRODUCES A BETTER STAND.
K/ LOW FERTILITY GRASS. REQUIRES INFREQUENT MOWING, GOOD COMPANION FOR WILDFLOWERS.

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* LEGUMINOUS SEEDS SHALL BE INOCULATED OR TREATED WITH UNEXPIRED APPROVED CULTURE FOR THE SPECIFIC LEGUME, IN THE PROPER PROPORTIONS, AS SPECIFIED ON THE PACKAGE LABEL. THE INOCULANT SHALL BE STORED AT ROOM TEMPERATURE, OUT OF DIRECT SUNLIGHT AND AWAY FROM HEATING UNITS. WHEN SEEDING DRY WITH MECHANICAL SEEDERS THOROUGHLY MIX THE POWDER FORM OF THE INOCULANT WITH THE SEED BY WETTING THE SEED WITH A SMALL AMOUNT OF WATER AND THEN ADDING THE POWDER. THE INOCULATED SEED IS THEN MIXED WITH OTHER SEEDS AND PLANTED WITHIN 48 HOURS. SEEDS INOCULATED WITH LIQUID CULTURES SHALL BE PLANTED WITHIN 24 HOURS. INOCULATED SEED NOT PLANTED WITHIN THE SPECIFIED TIME WILL BE REINOCULATED. WHEN USING HYDRAULIC SEEDERS, USE 10 TIMES THE AMOUNT OF INOCULANT SPECIFIED FOR DRY SEEDING. INOCULATED SEED SHALL NOT BE EXPOSED TO SUNLIGHT OR LEFT IN A SLURRY FOR MORE THAN ONE HOUR. OTHERWISE REINOCULATION WILL BE NECESSARY.

Table 26 Temporary Seeding Rates, Depths, and Dates

SPECIES	MINIMUM SEEDING RATES		PLANTING DEPT ⁴	HARDINESS ZONES ³⁷ AND SEEDING DATES ³⁸													
	PER ACRE	LBS/1000 SQ.FT.		7a and 7b						6b						6a and 5b	
				2/1-4/30	5/1-8/14	8/15-11/30	3/1-4/30	5/1-8/14	8/15-11/15	3/15-5/31	6/1-7/31	8/1-10/31					
CHOOSE ONE: BARLEY OATS RYE ³⁹	2.5 BU. (122 lbs) 3 BU. (96 lbs) 2.5 BU. (140 lbs)	2.80 2.21 3.22	1-2 1-2 1-2	X X X	- - -	BY 10/15 - X	X X X	- - -	BY 10/15 - X	X X X	- - -	X X X	- - -	BY 10/1 - X			
BARLEY OR RYE PLUS FOXTAIL MILLET ⁴⁰	150 lbs	3.45	1	X X	X X	10/15 X	X X	X X	10/15 X	X X	X X	X X	X X	10/1 X			
WEEPING LOVEGRASS ⁴¹	4 lbs	.09	1/4 - 1/2	-	X	-	-	X	-	-	-	-	X	-			
ANNUAL RYEGRASS	50 lbs	1.15	1/4 - 1/2	X	-	11/1	X	-	11/1	-	11/1	X	-	8/15			
MILLET ⁴²	50 lbs	1.15	1/2	-	X	-	-	-	-	X	-	-	X	-			

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³⁶ Applicable on slopes of 3:1 or flatter

³⁷ Refer to Figure A - Adopted from USDA, ARS Miscellaneous Publication #1475, January 1990

³⁸ Between fall and spring seeding dates, use mulch only if ground is frozen and reseed when thawed

³⁹ May be used as a nurse crop for late fall/early winter permanent seedings, add 56 lbs/ac to the permanent seeding mixture

⁴⁰ Maryland State Highway Administration Temporary Seed Mix

⁴¹ May be used as a nurse crop for mid-summer permanent seedings. Add 2 lbs/ac to permanent seed mix.

⁴² May be used as a nurse crop for mid-summer permanent seedings. Add 10 lbs/ac to the permanent seeding mix.

FIGURE 5

MARYLAND USDA PLANT HARDINESS ZONES

