CONSTRUCTION CERTIFICATION REPORT FOR THE

PINE AND TUSCARORA REMEDIATION PROJECT

NIAGARA FALLS, NEW YORK

SUBMITTED TO

Olin CHEMICALS

OLIN CORPORATION

CHARLESTON, TENNESSEE

DECEMBER 1990

PREPARED BY

ENGINEERING - SCIENCE
290 ELWOOD DAVIS ROAD
LIVERPOOL, NEW YORK

ES ENGINEERING-SCIENCE

CLOSURE CERTIFICATION REPORT

FOR

PINE AND TUSCARORA REMEDIATION SITE

Submitted To

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Submitted By

OLIN CORPORATION
Charleston, Tennessee

DECEMBER 1990

Prepared By

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290 Elwood Davis Road
Liverpool, New York

1190DPC/124-224#W5

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ES
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191DPC/124-223#W5

9 January, 1991

Mr. James D. Frye
OLIN CHEMICALS
Olin Corporation
Post Office Box 248
Charleston, Tennessee 37310

Subject: Closure Certification Report for Pine and Tuscarora Remediation Site

Dear Mr. Frye:

Enclosed are four copies of the referenced report for your use.

As required by NYSDEC, this report certifies that all activities related to the construction of the remediation project conform to the requirements of the engineering design contained in the NYSDEC-approved Closure Documents. The report contains a discussion of all quality assurance and quality control testing required in the NYSDEC-approved Closure Documents, the results of all testing performed including documentation of any failed test results, descriptions of the procedures used to correct improperly installed material, and statements of all retesting performed.

We would welcome the opportunity to discuss this report with you and address any questions or comments you may have.

Very truly yours,

ENGINEERING-SCIENCE, INC.

Gordon J. Melle

Gordon J. Melle, P.E.
Project Manager

GJM/dee
Enclosure
cc: File SY078.04

CERTIFICATION OF

CONSTRUCTION QUALITY ASSURANCE

AT

OLIN CORPORATION'S

PINE AND TUSCARORA REMEDIATION SITE
NIAGARA FALLS, NEW YORK

I hereby certify that the construction at Olin Corporation's Pine and Tuscarora Remediation Site was accomplished as specified in the Contract Documents and documented in this report, and that I witnessed the performance of the Work.

Louis A. Liberatore
Quality Control Inspector

DECEMBER 4, 1990
Date

CERTIFICATION OF

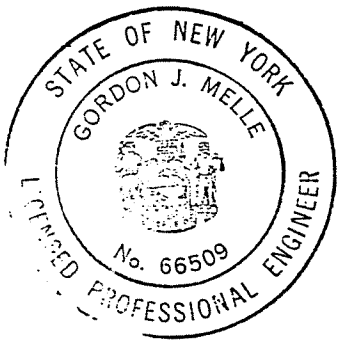
CONSTRUCTION QUALITY ASSURANCE

AT

OLIN CORPORATION'S

PINE AND TUSCARORA REMEDIATION SITE
NIAGARA FALLS, NEW YORK

I hereby certify that the construction at Olin Corporation's Pine and Tuscarora Remediation Site was accomplished as specified in the Contract Documents and documented in this report and that I or a person under my direct supervision witnessed the performance of the Work. I am a Registered Engineer as established under the laws and regulations of the State of New York.



Gordon J. Melle
P.E. No. 066509
Quality Assurance Engineer

December 31, 1990
Date

SECTION 1

INTRODUCTION

1.01 PROJECT BACKGROUND

The Olin Corporation owns a waste disposal site in the Town of Niagara Falls, County of Niagara, and State of New York. The site consists of approximately one acre and is irregular in shape. The site is north of Pine Avenue and is bordered on the west by Tuscarora Road and on the north and east by Cayuga Creek. A single-family dwelling with detached garage is located on the western portion of the property.

Initial waste disposal took place in 1957 on what is now referred to as the Batrouny property of the Gibson site. Wastes disposed of at the site included approximately 400 drums (90 tons) containing hexachlorobenzene (HCB) and 100 truckloads (100 tons) of hexachlorocyclohexane cake (BHC). Investigations have shown that all wastes are in solid form.

Under a Stipulation and Consent Judgement between Olin and the State of New York entered on 2 May 1985, field investigations and remedial design were completed with the goal of isolation from people and the environment of contaminants which were deposited on-site by Olin so as to effectively protect the public health and environment.

1.02 SCOPE OF WORK

The purpose of this Certification Report is to document that the Olin Pine and Tuscarora Remediation Project construction was completed in conformance with the reference design drawings and specifications. The role of Engineering-Science (ES) in the construction of the Pine and Tuscarora Remediation Project was to certify and document that the construction procedures and materials used conformed to the NYSDEC-approved design specifications established by Olin. ES on-site construction inspection personnel were present daily during each construction phase and documented the information and observations that are presented in this Certification Report.

The certification effort included documentation related to the site activities, construction techniques, quality assurance testing, operational difficulties, horizontal and vertical control, geotechnical testing, and materials verification. Conformance with

the Plans and Specifications was monitored as well. Any repair or maintenance operations conducted following the construction phase are not addressed in this report.

1.03 PROJECT RESPONSIBILITIES

The Project Owner and designer is Olin Chemicals.

Construction quality assurance was the responsibility of ES.

The New York State Department of Environmental Conservation was represented on site by Larsen Engineers.

The prime contractors responsible for the construction were International Technology Corporation of Monroeville, Pennsylvania during 1989 and Sevenson Environmental Services, Inc., of Niagara Falls, New York during 1990.

Laboratory testing and on-site geotechnical testing was performed by Buffalo Testing Laboratories, Inc., of Buffalo, New York and Empire Soils Investigations, Inc., of Hamburg, New York. Both testing laboratories were subcontractors of ES in the conduct of the Quality Assurance/Quality Control (QA/QC) Plan. Surveying services were provided by McIntosh and McIntosh, Inc., of Niagara Falls, New York.

1.04 CONSTRUCTION QUALITY CONTROL/QUALITY ASSURANCE

The construction phase of the Pine and Tuscarora Remediation Project was initiated on 6 September 1989 and was completed on 23 October 1990. The Olin Project Manager was responsible for the coordination and management of all work performed during the construction phase.

Construction quality assurance and quality control was provided full-time by ES to insure compliance with the Plans and Specifications and engineering requirements referenced in the Contract Documents. The ES Quality Control inspector communicated directly with the Contractor's superintendent and kept the Olin Project Manager informed of these communications. The ES Quality Control inspector also communicated regularly with the ES Project Manager/Quality Assurance Engineer regarding site activities, quality control testing and any corrective actions required. ES

coordinated and directed QA/QC Program activities such as testing of borrow materials sources, grade controls, thickness verification, geotechnical testing, liner material testing, etc.

1.05 ORGANIZATION OF CERTIFICATION REPORT

The report is organized into three sections and five appendices. This introduction constitutes Section 1. Section 2 sequentially describes construction and installation procedures for each element of the remediation project. Section 3 presents the Quality Control and Quality Assurance oversight conducted by ES. Appendices contain the following documentary material and information:

Appendix A:	Approved Variance Log
Appendix B:	Air Monitoring Results
Appendix C:	Topsoil Analysis
Appendix D:	International Technology Corporation - Tree Disposal
Appendix E:	Herbicide
Appendix F:	Rip-Rap Certification
Appendix G:	Slurry Wall Certifications
Appendix H:	Geofabric/Geogrid Certifications
Appendix I:	HDPE Liner Certification
Appendix J:	Concrete Testing
Appendix K:	Soils Testing
Appendix L:	Daily Inspection Reports
Appendix M:	Site Photographs

SECTION 2

CLOSURE NARRATIVE

2.01 INTRODUCTION

The purpose of this Section is to describe the materials, methods and sequence of activities performed at the Pine and Tuscarora Remediation Project. This Section describes how the construction and installation activities were accomplished, identifies problems encountered and presents corrective actions taken. Significant dates, techniques, equipment, materials, and the sequence of each phase of the construction process are referenced. Daily work reports describing the work performed during each day of construction activity are provided in the Appendix. Also included is a daily record of the amount of rainfall that occurred during construction progress.

2.02 HORIZONTAL AND VERTICAL CONTROL

Throughout all phases of construction, field surveying of alignment and cross-sections indicated on design drawings was performed by the Contractor's registered surveyors and monitored by the Engineering-Science (ES) QC Engineer. Horizontal and vertical controls were established from two iron pins and one benchmark indicated on Sheet D-T323-840-0-5 of the Contract Drawings. A Construction Base Line and Coordinate System was developed from which construction activity developed. Stakes indicating coordinate base lines and elevations were inspected periodically in order to assure their locations and elevations were maintained. Stationing used in this report utilizes survey information indicated on site plan D-T323-840-0-5.

2.03 SITE PREPARATION

Initial site preparation for the Pine and Tuscarora Road remediation project started on 6 September 1989 by the International Technology (IT) Corporation. On 5 October 1989, an on-on-site inspection verified IT Corporation had completed or was working on the following items:

1) Installation of silt booms located upstream and downstream of the work points for the established creek relocation.

2) Clearing of the cap site, the new Cayuga Creek channel and old Cayuga Creek channel was in progress. A wood chipper was deployed in order to reduce tree cuttings to a size that could be weighed and hauled to a sanitary landfill.

3) Approximately 250 c.y. of topsoil removed from the north side of the creek channel was stockpiled on the Zito property adjacent to construction trailers.

4) Installation of temporary fencing along Tuscarora Road and the north and east sides of the Olin property limit, onsite at Zito parking lot, and the access road to the work area.

5) Field surveying for relocation of the Cayuga Creek channel was in progress.

6) Preparation for pumping operations for the Cayuga Creek diversion.

By 10 October 1989, IT Corporation transferred 356.91 tons of chipped wood to Woodlawn Sanitary Landfill. Enclosed in the Appendix is a listing of weight tickets that were used to record materials disposed of at this facility.

Due to inclement weather conditions, IT Corporation's contract work was suspended on 27 October 1989. Construction resumed in April 1990 by Sevenson Environmental. Sevenson installed three construction trailers with telephones, job security quarters, and wash facilities for decontamination as outlined in the Project Specifications. Sevenson also cut remaining grass at the cap site and sprayed this area with Hyvarx herbicide prior to placement of 6" to 8" of clean fill obtained from the north side of the creek channel. Installation of hay bales at the constructed silt fence along the creek channel were maintained throughout construction. Silt fences located upstream and downstream of the established work points in Cayuga Creek were also inspected and maintained on a continuing basis. All clearing and grubbing operations complied with the Work Plan and Project Specifications.

2.04 NEW CHANNEL CONSTRUCTION

Excavation of the new channel started at the east side of Cayuga Creek between Stations 5+00 and 6+00 and proceeded toward Station 0+50. Excavation and grading was conducted with two backhoes, a Komatzu PC400 and a Komatzu PC220, and a Komatzu D-68 bulldozer. Soils were loaded onto tandem dump trucks and taken to the designated staging area onsite immediately north of the Zito used car lot. On 2 May 1990, a soft layer of wet clay at Station 2+35 of the Site Plan was exposed at El. 559.6. The QC Engineer observed a problem with berm construction between the old and new river channel from Station 1+00 to Station 2+00. Soils stress cracks appeared at the top of berm. On 3 May 1990, Sevenson recompacted soils at this area by tracking the slope of the new channel side with a Komatzu D-31 tractor. Nuclear density readings indicated adequate compaction at the middle of the slope. It was decided to leave this area of the berm alone as further compaction would disturb soft underlying clay and possibly create more of a problem. Standard proctor curves of overburden clay and soft wet clay removed from new channel construction were developed for separate stockpiles of staged soil onsite. A listing of standard proctor curves identifying soils used in this closure are in the Appendix.

During channel construction, Sevenson experienced two material shortages of ground stabilization fabric for placement at the new creek channel. Four and one-half rolls of an equal type geotextile were taken from Love Canal Site No. 9-32-020. Reference a letter dated 12 June 1990 from New York State Department of Environmental Conservation in the Appendix. This fabric was placed between Stations 2+75 and 3+50 at the new creek channel. The second material shortage is identified in Variance No. 5 of the approved variance log. Sevenson used #1680 geotextile manufactured by American Engineering Fabrics in lieu of the approved Supac 16NP made by Phillips Fibers. Placement was limited to the area affected by the creek modification, and at the top of slope of the cap area between Stations 1+00 and 5+50. Installation at the top of slope was between riprap and structural fill in order to provide a protective barrier for erosion control. Installation of fabric proceeded as was outlined in the Specifications and Quality Assurance/Quality Control Plan. Panels of fabric were laid perpendicular to channel flow with 3′ minimum overlaps. Upstream panels overlapped downstream panels, and were stapled in place with U-shaped fasteners that

measured 6"x1-1/4". Inspection of geotextile at time of placement verified all material used was in good condition and free of blemishes or damage.

On 3 May 1990, an inspection of riprap at stone quarries belonging to Frontier Stone Co., and Niagara Stone Co., was conducted. Examination of stone from each quarry indicated riprap from Frontier Stone was adequate for placement at the new creek channel. Placement of riprap commenced at Station 3+25 of the relocated creek channel and simultaneously proceeded toward Stations 6+00 and 1+00. Installation and grading along the new creek channel was conducted with two backhoes, a Komatzu PC400 and a Komatzu PC200, and a Komatzu D-68 wide track bulldozer. Field measurements by the QC Engineer of riprap indicated a uniform thickness of 18" minimum on the south and wests banks of the new channel and 12" minimum on the north and east banks. Construction of geofabric and riprap were extended above the 100-year floodplain elevation of 571.0 or to the top of slope along the creek channel at a minimum. On 9 May 1990, the channel bottom was surveyed prior to final acceptance of construction by Olin Chemicals and the QC Engineer.

2.05 EXISTING CHANNEL CONSTRUCTION AND LEACHATE COLLECTION SYSTEM

On 10 May 1990, the new creek channel was opened. Temporary earthen plugs were placed upstream and downstream at the new creek diversion. After all entrapped water was pumped from the existing creek, a layer of shot rock and broken pieces of concrete were placed along the channel bottom in order to stabilize the unstable soft underlying clay. Grading was performed with a Komatzu D-31 low pressure bulldozer.

After stabilization, Sevenson proceeded with excavation for the leachate pipe collection system with a Komatzu PC200 low pressure backhoe. Soils excavated from the collection trench were spread over the shot rock and tracked in place with a bulldozer. The two foot wide excavation was controlled by survey for alignment and depth, and was lined with ground stabilization fabric prior to placement of stone and Schedule 80 perforated 6" PVC drain pipe. Pipe connections were made with standard adhesive joints and a bolt on flange connection at each manhole. The collection conduit was encased in #2 stone, 5" minimum bedding with 12" of cover. Ground stabilization

fabric was then extended over 2' of #4 and #5 stone mix which was enveloped by the fabric as noted in the Construction Documents.

Prior to placement of stone cover, elevations of the underdrain system were surveyed for conformance to the Plans. On 16 May 1990, Sevenson completed installation of two HDPE manholes and related pipe connections to the leachate collection system. All materials and construction methods used for construction of this system conformed to the Specifications and QA/QC Plan. Reference approved Variances #1 and #2 in the Appendix for material changes.

Preparations for placement of structural fill in the old creek channel included excavating a 5 foot clearance of stone and debris between the edge of the previously placed shot rock and the planned slurry wall. Field inspection revealed surface stone and debris from this area had been removed prior to placement of backfill. A Komatzu D-31P low pressure bulldozer spread and tracked the initial lifts of clay located within the 5 foot clearance of the slurry wall. Additional 8" starting lifts were spread and tracked over the entire old creek channel excavation and compacted with an Ingersol-Rand smooth drum roller. Clay for this work was overburden material obtained from the new creek channel excavation. Nuclear density readings indicated compaction efforts met or exceeded contract requirements for the entire old creek channel backfilling operation.

Clay used for the remaining constructed bench at the old creek channel was obtained from the Indian Hill Borrow #5. As backfill operations progressed, additional equipment was used for compaction. An Ingersol-Rand vibrating sheepsfoot roller and Komatzu D-37P bulldozer were added to the equipment used to compact soils in the area of the planned slurry wall. At no time was any of the vibrating equipment on compactive machinery put into operation during soils work. Care was taken not to load any one specific area of the constructed bench with too many pieces of equipment. Clay material was backfilled in 12" lifts loose and compacted in place. Soils backfilled around Manholes A and B were tamped with a hoe pack placed on the boom of a Komatzu PC80 backhoe. Nuclear density readings taken while work progressed indicated all compactive efforts at the constructed bench exceeded contract requirements.

2.06 CONSTRUCTION OF THE SOIL-BENTONITE SLURRY TRENCH

In order to assure compliance with the project QA Plan and Specifications, Sevenson Environmental engaged the services of a full-time superintendent and crew that specialized in slurry wall construction. As part of preparations, Sevenson elected to develop and use a new backfill design mix with clay supplied from Indian Hill Borrow #5 and Bara-Kade #90 bentonite supplied by Baroid Specialty Products. City water which was used for the bentonite-slurry and backfill mix was chemically analyzed and found suitable for use. Permeability and leachate compatibility tests conducted on the new mix design indicated the blend of backfill materials used in construction exceeded the permeability requirement of $5x10^{-8}$ cm/sec specified in contract requirements. Certifications of bentonite, water analysis and soils tests may be found in the Appendix.

After grading the cap area to the elevations shown on the Contract Drawings, Sevenson surveyed the planned location of the trench excavation. Field layout of the clay-bentonite slurry wall was verified and approved by the Owner and QC Engineer prior to construction. Sevenson conducted excavation with a Komatzu PC80 backhoe and a 3′ wide bucket. Clay excavated from the south and west sides of the slurry wall were deposited underneath the cap area. A high shear colloidal mixer was used to mix bentonite slurry. Bentonite slurry was introduced into the lead-in trench and was maintained at least two feet from top of trench during excavation. Backfill was mixed at the cap area with a Komatzu D-31 bulldozer and pushed into the excavation. A vertical trench backfill slope between 6 (horiz.) to 1 (vert.) and 12 (horiz.) to 1 (vert.) was maintained during placement of the backfill. A lead trench was constructed for depositing remaining slurry from the trench excavation to a location underneath the cap area. After completion, the top of the clay bentonite wall was graded to elevations shown on the Drawings prior to placement of geotextile fabric. Samples of clay keying stratum obtained every 20 feet were given to Olin Chemicals for archival storage.

As part of the QA/QC Plan, the QC Engineer conducted continuous observation of excavated cuttings, trench depth, width, and bottom materials in order to determine penetration of 2′ (+4",-0) into the red-brown clay identified as keying stratum. Soundings of trench bottom were measured and recorded every 20 feet. Continuous observation of Marsh viscosity, filtrate loss, pH, and density of bentonite slurry

measured at the mixer and at mid-depth of trench were recorded. Results of slump tests and permeability tests measured on clay-bentonite backfill on a prescribed basis were also documented. Information from the testing and construction process immediately determined any field adjustments that had to be made in order to construct a clay-bentonite wall that met requirements of the Specifications. The slurry wall construction met all performance requirements established by the Contract Documents. The QA Engineer witnessed typical slurry wall operations to assure conformance to the design and required quality control procedures.

2.07 HEALTH AND SAFETY

Sevenson conducted air sampling procedures on a regular basis at four perimeter monitoring stations located at each side of the site. Real-time air monitoring was conducted during clearing and grubbing at the cap area, placement of clean fill at the old creek channel and disposal area, and construction of the new slurry wall. At no time were organic vapors or particulate matter observed that necessitated Level C personnel protection. As a precautionary measure, Class C uniforms with air respirators were worn by laborers spraying the disposal area with herbicides and during clearing and grubbing operations. Modified Level C protection was also worn by personnel placing bentonite slurry into the trench during slurry wall construction. Level D protection was worn during all other phases of construction.

An eyewash station and personnel decontamination facilities were provided at the northeast corner of the garage located adjacent to the west side of the cap area. At the beginning of construction, a decontamination pad for equipment was erected in the disposal area near the south alignment of the slurry wall. High pressure steam equipment was provided for decontaminating equipment. Any collected wash water was deposited on the disposal area below the cap. The decontamination pad was demolished and left under two feet of capping clay as backfill operations of the disposal area progressed. In order to keep a clean site and prevent any possible exposure of contaminants to equipment or personnel, Sevenson Environmental pursued this item at the very early stages of construction. Decontamination of equipment used for slurry wall construction was performed at the cap area near a depression located between the top of slope at the old creek channel and the constructed bench at the new creek channel. Wash water was buried under 2′ of capping clay.

Sevenson Environmental provided personal protective equipment as outlined in the Project Health and Safety Plan to all of its employees.

2.08 CLAY CAP CONSTRUCTION

Rather than use clay sources identified in the Woodward-Clyde Design Study, Sevenson Environmental provided soil for the cap area and the constructed bench at the old creek channel from Indian Hill Clay Borrow #5. Also used for construction was overburden clay excavated from the north side of the new creek channel. Field inspection and laboratory analysis performed prior to construction verified that each source contained clay classified as CL under the Unified Soils Classification, and was suitable for use as sealing clay at the Pine and Tuscarora Remediation Project. Permeability tests conducted on clay samples obtained from each clay source met or surpassed design Specifications.

On 28 August 1990, Sevenson Environmental proceeded with placement of a 6" compacted lift of capping clay at the disposal area. Control of placement was aided with a benchmark elevation and baseline that were surveyed outside of the cap area. Graded stakes were then used for direction of placing capping clay. Soils were deposited at the disposal area and spread with a Komatzu D-68P bulldozer. An Ingersol-Rand sheepsfoot roller compacted soils in place. Moisture was provided with a tanker truck filled with water. Field inspection of soils deposited at the cap area verified it to be free of stone and debris and suitable for use. Technicians from Empire Soils Investigation performed moisture and in-place density tests in accordance with the Specifications.

A second 6" compacted lift of compacted clay and a test pad which measured 30'x34'x2' thick were then constructed. In-place density tests and moisture content tests were taken on a 50 foot grid pattern. All moisture content tests were conducted in accordance with ASTM D3017. All in-place density tests were conducted in accordance with ASTM D2922. Proper standardization was performed prior to taking nuclear readings each day. Moisture-density control was continuously monitored for the "window" of acceptability noted in the Specifications. Results of each test were documented and Olin Chemicals was notified of test results not occurring within the zone of acceptability. Soils work not acceptable was reworked until suitable. Results of the two permeability tests taken on the test pad were 1.16×10^{-8} cm/sec and 1.05×10^{-8}

cm/sec. After receiving the test results, Sevenson graded the test pad and proceeded with work at the old creek channel.

Further placement of capping clay was performed after site clean-up of slurry wall construction, and grading of the clay bentonite wall was complete. Preparation of surface soils included discing and adding moisture to sealing clay at the cap area prior to and during placement of additional soils. Lightly compacted clay was placed over 60 mil geofabric at the slurry cap and compacted in place with a bulldozer. Rolls of Tensar Geogrid reinforcement panels measuring 3 meters wide were field cut for length and fit into place over the slurry wall cap.

Grade stakes were placed and monitored throughout the cap area for control of the 2′ depth of sealing clay. In-place density tests and moisture content tests were conducted in accordance with the Specifications prior to and during placement of the final two lifts of compacted clay.

On Friday, 15 June 1990, final elevation readings of the cap area were taken. In order to prevent desiccation of surface soils, moisture control was maintained on 16 and 17 June 1990. On 19 June 1990, final compactive efforts with a smooth drum roller and a bulldozer were performed while Gundle Lining Systems proceeded with placement of the first layer of HDPE liner material.

2.09 PIEZOMETER INSTALLATION

On 11 June 1990, Empire Soils Investigations arrived onsite with a drill rig and two technicians in order to start installation of Piezometers #1 through #6. All piezometers were surveyed for proper location inside the cap area and outside of the clay-bentonite slurry wall. Inspection of materials determined Schedule 10 galvanized square protective well covers delivered to the site did not comply with the Plans or Specifications. This material was rejected and removed from the site and replaced with 6" Schedule 80 carbon steel pipe. Tip elevations of piezometers were set approximately at El. 560. Excavation for each of the piezometers was one foot below tip elevation.

Sand backfill was placed into the borings to an elevation one foot above the 0.01 slotted screen in the 2" Schedule 80 PVC well pipe. The space around the PVC pipe was then sealed with 2′ of bentonite plug. Borings were then filled with bentonite/cement

grout and capped. HDPE boots were then fusion welded to FML liner at Piezometers #2, #4 and #6. Six-inch Schedule 80 carbon steel covers with lockable weather-resistant caps were installed in cement/bentonite grout after 18" of structural fill was placed at the cap area. All work was deemed acceptable.

2.10 FLEXIBLE MEMBRANE LINER INSTALLATION

Work on the flexible membrane liner system commenced with inspection of materials as they were received on site. Inspection included verifying all rolls of HDPE flexible membrane lining (FML) were tagged with proper identification tags illustrating roll number, thickness, width and length. Rolls of 60 mil and 110 mil geofabric sealed in black polyethylene plastic for ultra-violet protection were also inspected. No flaws or wrinkles were observed as material was unloaded from trailers. Proper storage and material handling was in an area free of rocks, holes and debris adjacent to equipment trailers located at the southeast corner of the site north of the Zito used car lot and out of the way of vehicle traffic.

Periodic inspections were made of the area in order to observe any possible damage to stored materials. No damage to stored material was observed.

The field supervisor for Gundle Lining Systems met with Olin Chemicals and the QC Engineer on site prior to installation and discussed a field panel layout procedure which differed from an originally submitted plan. It was mutually agreed that the field panel layout would be installed in the north/south direction starting at the west side of the cap area and proceed toward the east side of the cap area. Changes in overlapping seam measurements from (6) inches to (3) inches for fusion welds and (4) inches to (3) inches for extrusion welds were also field approved by Olin Chemicals and the QC Engineer. Changes on seam procedure were noted in Variance #4 which was reviewed and approved by the New York State Department of Environmental Conservation. Certification for all material used in the liner system was received. Due to slope failure at the south creek embankment, Gundles' Superintendent was instructed to proceed with installing the double membrane system up to a 20 foot limit located south of the south embankment.

Inspection of the clay cap surface verified no rocks or other objects were underneath liner material as it was rolled into place, and that the surface area was smooth and free of irregularities. The 40 mil HDPE liner material was taken to the cap area with a backhoe and an elongated C-type clamp with a supporting bar. This apparatus suspended each roll and allowed installers to pull each panel over the prepared surface. Panels were then laid with 3-inch overlaps for fusion-type welds. Sandbags were placed on FML sheets in order to prevent damage or movement by wind. No seaming operations occurred while rain or moisture occurred unless shelters were erected in order to protect work from being adversely effected. Temperature ranges during placement in the months of June and September were well within manufacturer's recommendations and specifications.

Trial test strips from each welding apparatus were prepared and tested in the presence of the QC Engineer for destructive sampling prior to start of work and after lunch during each day that liner installation occurred. Test strips of extrusion welds and fusion-type welds were placed on a test stand for peel testing. Test strips were then examined by the QC Engineer for failure of HDPE liner material or failure of welds. No observable adhesion separation of fusion or extrusion type welds were noticed.

Seam samples for destructive seam strength testing of fusion welds were taken at locations directed by the QC Engineer and taken every 500 feet of seam length. Nine samples were sent to Buffalo Testing Laboratory for peel and sheer tests. Results of all tests were documented. All destructive sampling tests conformed to the requirements in the Specifications. Sample seams for destructive testing cut from the pieces that went for laboratory analysis were given to Olin Chemicals for archival storage.

Non-destructive field testing was conducted on all seams and field welds of primary and secondary layers of 40 mil FML. Air pressure tests were conducted on each double fusion welded seam with an air pump and pressure gage, a rubber hose with connections, and a sharp hollow needle. Pressure tests were performed with 25 lbs minimum of air pressure for a period of 8 minutes each test. Double fusion welded seams that failed air pressure tests were repaired by locating the leak and capping the immediate area needing repair. Air pressure testing of each repaired seam continued until the entire seam length was accepted. Vacuum tests were then conducted on extruded welds on the 40 mil FML capping material used to repair fusion type seams. Vacuum tests were conducted with a vacuum box with air gauge that was evacuated to 10 psi for a minimum

of 45 seconds. All vacuum and air pressure testing procedures conformed to the standards identified in the Specifications and were conducted in the presence of the QC Engineer.

Continuous field inspection was performed by the QC Engineer as the double membrane system was installed. Inspection verified that there were no wrinkles, fishmouths or blemishes on any of the liner material as it was rolled onto the cap area. After each roll was laid out, sandbags were put at the edges in order to protect the liner from damage. Prior to welding, final adjustments were made to each panel. Field examination verified 3-inch minimum overlaps for fusion-type welds and 4-inch minimum for extrusion-type welds, and that all seams were free of moisture and dirt prior to proceeding. Field inspection also verified all caps used to repair double-welded seams and cover piezometers and manholes were installed with a 3-inch minimum radius. All FML material was extended to the required depths in anchor trenches located at the west, south and east sides of the cap area.

Placement of 110 mil and 60 mil geofabric was also continuously monitored during installation by the QC Engineer. Rolls of geofabric were inspected for blemishes, deterioration, and damage as fabric material was rolled onto the cap area. After each roll was laid out, field examination verified geotextile fabric was laid with 18" minimum overlaps, and was smooth and without wrinkles, folds or stress. Sandbags were then placed at the edges of each roll in order to protect the material from damage. Both layers of geofabric were extended to the required depths at anchor trenches located at the west, south and east sides of the cap area.

Once an area of 40 mil primary HDPE liner installation was detailed, inspected and accepted as complete, installers would place 110 mil geotextile in place. After inspection and acceptance of the fabric, installers would proceed with placement of 40 mil secondary liner and continue until an area of that installation was detailed and accepted as complete. Placement and acceptance of the 60 mil geofabric was the last step of the double membrane system installation. Emphasis was placed on completing the west side of the cap area while work on the east side of the cap area was in progress. All work progressed up to a twenty foot limit from the south slope of the new channel between Stations 0+00 and 4+00 of the site plan. All work performed at this stage of the double membrane system installation was deemed acceptable and within project specifications.

2.11 CORRECTIVE ACTION FOR SLOPE FAILURE AT THE NEW CREEK CHANNEL

On 14 June 1990, during a field inspection of the cap area at the top of slope of the south embankment of the new creek channel between Stations 1+00 and 2+50 of the Site Plan, soil stress cracks were discovered in the clay cap. Further field examination conducted on 15 June 1990 also found that there was heaving of soil at the bottom of the new creek channel between Stations 1+50 and 2+50. Woodward/Clyde Consultants were immediately notified. Olin Chemicals' Field Superintendent also instructed Sevenson Environmental not to perform any work or move any earthmoving equipment onto this area of the cap. Sevenson Environmental was directed to place three survey points at the slope of the south embankment. These points were periodically monitored for any further movement of soils.

On 28 June 1990, a meeting was held on site with representatives of Olin Chemicals, New York State Department of Environmental Conservation, Woodward-Clyde Consultants, Larson Engineers, and Engineering-Science. The subject of the meeting was to discuss the bank failure at the new creek channel and a design change that would correct the slope failure. Olin Chemicals offered to have Woodward-Clyde Consultants prepare a design change and have Olin Chemicals submit this information to the New York State Department of Environmental Conservation (NYSDEC) for review and approval. In order to immediately relieve loading of the failed bank, Woodward-Clyde Consultants recommended all soils within a twenty foot limit of the edge of the creek channel located between Stations 0+75 and 2+75 be excavated to an approximate elevation of 567.0.

Woodward-Clyde Consultants also recommended that HDPE liner placement at the cap area could proceed up to a twenty foot limit of the south slope of the new creek channel between Stations 0+00 and 4+00 of the Site Plan. Sevenson Environmental completed the excavation within the prescribed limits at the south slope of the new creek channel, and complied with stopping work within the described limits at the cap area. Prior to stopping work on 3 July 1990, Sevenson Environmental placed a protective layer of polyethylene over all exposed HDPE liner and slurry wall excavation at the new creek channel.

After final review and approval by NYSDEC of a design change that would modify previous construction at the new creek channel, Sevenson Environmental resumed construction on 4 September 1990. Initial construction began with excavating and shaping a 2.5:1 slope along the south slope of the new creek channel between the limits on the revised Drawings with a Komatzu PC2000 backhoe. Excavation of depth, shape, and length of the new slope was controlled by survey and grade stakes. The Komatzu PC2000 was located at the top of the slope and deposited soil into tandem dump trucks that stockpiled material at the staging area. No loading of heavy equipment was placed over the flattened excavation at the new creek channel. A Komatzu PC90 backhoe, operating on wooden mats at the bottom of the new slope to distribute its weight at the widened channel, fine-graded and shaped the new channel slope.

Two feet of capping clay was then compacted over the 2.5:1 slope. Soil placement was in three lifts, each of which was compacted with a Komatzu D-51 bulldozer, a Rammax walk-along sheepsfoot, and a Komatzu PC2000 backhoe. Nuclear density readings were obtained on the first 6" lift and final lift of compacted soil. Measurements of all compaction tests exceeded contract requirements. All work performed was within the scope of the Revised Work Plan and Specifications.

Gundle Lining Systems welded a panel of 80 mil textured HDPE liner that fit across the channel modification from Stations 0+75 to 2+75 up to the approximate elevation 506.5. All seams were fusion welded and pressure tested. No leaks in any of the seams across the entire panel were noted. Sevenson proceeded with pressing two feet of 80 mil liner into the south side of the slurry wall with a 1/2" metal plate measuring 2'x5' that was bolted to the bucket of a Komatzu PC2000 backhoe. Field measurements were performed while work progressed in order to assure a 2' deep penetration into the slurry backfill. A layer of SUPAC 16NP geotextile was then placed over the 80 mil liner that extended out of the slurry wall and up the 2.5:1 slope. Overlapping panels of corrugated metal roof deck measuring 12'x3' were then placed over the slurry wall and SUPAC 16NP geotextile at the bottom of the modified channel slope. Two layers of #4 steel reinforcing bars placed at 10"x8" centers were installed over the corrugated metal deck panels.

In order to distribute loading of concrete over the slurry wall, Sevenson divided the concrete placement into four sections measuring 13'x50' each. On 12 September 1990, Sevenson placed concrete at panels located at Stations 0+75 to 1+25, and Stations

1+75 to 2+25 of the new creek channel. On 13 September 1990, Sevenson placed concrete at panels located at Stations 1+25 to 1+75 and 2+25 to 2+75. Concrete material placed over the slurry wall was monitored and met the criteria of the Specifications. All concrete cylinders taken had compressive strengths over 3,000 psi after 3 days.

On 15 September 1990, Gundle Lining Systems crew returned to the site for completion of the HDPE liner system. Gundle's crew proceeded with repair work on 40 mil HDPE primary and secondary liners that were damaged during previous construction activity, and placement of 80 mil textured HDPE liner on the 2.5:1 incline. In order to protect liner welds from mud on the 2.5:1 incline, installers cut 2′ strips of 40 mil HDPE liner and placed them beneath overlapping 80 mil liner seams. 80 mil textured HDPE liner panels were welded together and material was extended up the incline and past the south side of the anchor trench. While backfilling the anchor trench at the top of slope, Mirafi Para Grid 100/25S GeoGrid was keyed into the soil. 80 mil textured HDPE liner was then extrusion welded to the primary 40 mil HDPE liner south of the anchor trench.

While the liner work was in progress, Gundle's crew also extrusion welded a horizontal seam and cap at approximate Elevation 565.5. SUPAC 16NP geotextile and Mirafi Para Grid 100/25S were then placed on the 80 mil textured HDPE from the anchor trench at the top of slope to the southern edge of the concrete slab at the modified channel. A 40 mil liner was extended from the top of the incline at the slope modification and extrusion welded to the secondary liner. Anchor trenches at the east and west sides of the creek modification were backfilled with clay/bentonite mix and compacted with a Bomag Hand Tamper. 40 mil HDPE liner was placed over the creek channel incline at Station 3+00 of the Site Plan and welded to 80 mil liner located at the anchor trench which completed all liner installation over the cap area.

Prior to Gundle Lining Systems performing the liner installation, Sevenson Environmental obtained partially used rolls of 80 mil HDPE textured liner from Love Canal Site #9-32-020 for use at the Pine and Tuscarora Remediation. In order to assure quality control, all rolls of material were inspected and found to be in good condition. A sample of the liner was cut and sent to Buffalo Testing to determine ultimate tensile strength of the material and conformance to NSF Standard 54. Results of tests indicated the material was suitable for use. Two seam samples of the 80 mil liner were obtained

for destructive testing of field welds. Results of peel and shear tests indicated material installed was acceptable. Since each roll of liner material was partially used, no identification numbers were on any of the material. Certifications for all rolls of 80 mil textured HDPE liner used at Love Canal Project #9-32-063 are provided in the Appendix. Inspection of rolls of SUPAC 16NP geotextile fabric verified this to be new material free of blemishes or damage. All vacuum testing and air pressure testing of welded seams conducted while performing HDPE liner installation at the modified channel slope were within the scope of the project QA/QC Plan and Specifications. All seam testing was verified by the QC Engineer.

2.12 STRUCTURAL FILL

Upon completion of the double FML system at the west side of the cap area, Sevenson Environmental proceeded to construct a 15' wide bench of compacted clay that extended from the middle of the south slurry wall to the 20' construction limit at the north side of the cap area. Structural fill was was spread in 12" lifts to a compacted height of 3' with a Komatzu D-51A tractor bulldozer and compacted in place with tandem dump trucks filled with structural fill from the staging area. Once the constructed bench was complete, structural fill was spread towards the west side of the cap area with the low pressure bulldozer. A laborer was placed at the cap area in order to spot trucks and remove visible stone or debris that would interfere with the double FML system. Once the initial twelve inch lift was spread and tracked in place with the low pressure bulldozer, an Ingersol-Rand smooth drum roller compacted the structural fill.

After the first lift of compacted soil was tested and accepted as complete, a second lift of 12" loose soil was compacted in place with the same procedure as outlined for the first lift of soils placement. All soils placement of the second 12" lift and fine grading were controlled by survey in order to assure a minimum 18" thick layer of compacted structural fill. The same construction methods were employed at the east side of the cap area.

In-place density tests conforming to ASTM D2922 and moisture content tests conforming to ASTM D3017 were taken at approximately 50' centers. Compaction of the structural fill over the cap area exceeded contract requirements.

2.13 TOP SOIL

Top soil for the cap area was obtained from the north side of the old Cayuga Creek during excavation and stored on site. Placement of topsoil was conducted with tandem dump trucks depositing soil at the cap area. A Komatzu D-51A Bulldozer spread a ±6" lift over the entire cap. Control of lift size and final grading was conducted by survey and visual observation. A farm tractor and harrow were used for removing lumps, roots, litter and stone. Prior to placement of topsoil at the cap area. A sample of soil was delivered to the cooperative extension at Cornell University for analysis. Based on the study, it was recommended that finely ground sulfur or iron sulfate be applied to the soil and thoroughly mixed prior to seeding. As part of the landscaping warranty, grass is assured to grow at the cap area by Spring 1991.

2.14 FENCING

On 1 October 1990, Fox Fence Company arrived on site for installation of the perimeter fence around the cap area. Prior to commencing work, Mr. Mark Fox met with Olin's representative and the QC Engineer and received field approval for changing 1"x3" smooth milled convex outer face stockade pickets to 1"x4" smooth milled outer face stockade pickets. The Subcontractor proceeded with layout and augering fence postholes 8′ on center around the west, south, east and northeast sides of the cap area. Augered hole sizes for the areas not affected by the new slope modification were 4′ deep by 12" diameter. Foundation pads for the area affected by the new designed slope modification were constructed in accordance with approved Variance #6. Wood used for fence posts was full 4"x4" red cedar. Concrete for foundations was 2000 psi with 3/4" stone aggregate supplied by C.B. Concrete. An equipment access gate and manway gate were relocated in accordance with approved Variance #8. Prior to completion of the work, the QC Engineer departed the site.

2.15 SEEDING

Areas north and east of the relocated Cayuga Creek channel that were stripped of vegetation were seeded with grass, fertilized and mulched in accordance with approved

Variance #3. One of the punch list items noted for completion of this scope of work was to reseed bare spots and add topsoil, if necessary. Growth of reseeded areas should be apparent by Spring 1991. The QC Engineer was not on site during the seeding of the cap area.

2.16 LANDSCAPING

On 26 June 1990, a single row of twenty-five crab apple trees were planted north and east of the relocated creek channel. Plantings were properly staked and tied off. On 4 September 1990, a field inspection noted that some of the trees had yellow/orange bark and had a sparse cover of leaves. These plantings are within the landscaper's warranty. Plantings that do not recover prior to expiration of the warranty period must be replaced.

SECTION 3

QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

3.01 GENERAL

The Quality Assurance/Quality Control Program (QA/QC) that was instituted for this project was designed to document and verify that the materials and methods used in the construction of the Pine and Tuscarora Remediation Site met the requirements of the NYSDEC-approved Closure Documents. A discussion of the QA/QC program is presented herein.

3.02 QA/QC REQUIREMENTS

The Closure Documents for the Pine and Tuscarora Remediation site contain QA/QC testing requirements, procedures and protocols which were approved by the DEC. The QA/QC Program was developed by Woodward-Clyde Consultants.

3.03 QC TESTING OF CLAY CAP MATERIALS

The nature, volume, and characteristics of the borrow area materials and on-site materials used at the clay cap were analyzed in a series of geotechnical investigations conducted by the geotechnical testing laboratories. The reports summarizing these geotechnical investigations are presented in Appendix K. The primary purpose of these investigations was to determine the capability of the material to produce a permeability of less than $1x10^{-7}$ cm/sec and to characterize the moisture/density relationship that would need to be achieved during construction to assure attainment of the target permeability.

The verification of the quality of the material delivered to the site and the construction testing of the clay cap was conducted under the direction of the ES QC Inspector. The construction testing activities performed as part of the QA/QC program were intended to provide assurance that the borrow material and on-site soils remained consistent in quality throughout the clay cap construction process.

3.04 BORROW MATERIAL TESTING

As identified in the daily reports, the proposed borrow area for the material to be used as low permeability clay cap material was the Indian Hills Borrow #5. Empire Soils Investigations conducted geotechnical testing to evaluate the quality of the low permeability clay material present. These reports are presented in Appendix K.

The laboratory tests indicated the borrow source was acceptable for use in the clay cap.

3.03.2 Construction Testing

The testing of the clay cap cover materials during construction was conducted per the requirements of the Closure Documents to assure that the materials used were capable of performing in the manner specified in the Closure Documents. Testing conducted on samples of clay cap materials obtained prior to installation included grain-size analysis, Atterberg limits, and natural moisture content. Testing conducted on the installed clay cap included nuclear moisture/density testing, depth measurements and Shelby tube permeability testing.

3.03.3 Nuclear Moisture/Density Testing

Nuclear moisture/density testing was directed by the ES QC Inspector and conducted by a technician certified and experienced in the operation of such equipment. Instrument calibration logs document that the instrument calibration was verified.

Completed areas of clay cap material were identified in the field and tested each day work was completed. Testing frequency specified in the QA/QC Program was established as a minimum requirement. Testing distribution was controlled by the locations of the established grid point location stakes. Tests were conducted at each grid location that occurred within the area of completed installation. Areas yielding test results corresponding to the established requirements were approved for further work, if applicable, and areas that exhibited insufficient compaction were identified and brought to the attention of the Contractor Superintendent. Whenever a test result indicated insufficient compaction, the area was recompacted and retested. This procedure was repeated until test results indicated sufficient compaction.

Test results were recorded on testing laboratory field data sheets and were made available for review by the ES QC Inspector. Test results were recorded on the field data sheets together with the date, lift, grid location and target moisture and density values. Passing test results were then plotted on a site map to verify the even distribution of passing test results. In addition to the grid locations, tests were conducted wherever there was cause to suspect that clay cap material compaction had not been up to specification. Results of these tests are contained in Appendix K.

3.03.4 Cover Thickness Measurements

Thickness verification of the clay cap material was conducted both during the placement of each lift and after completion of compaction of clay material. Grade marks established on the grid stakes were used as guides to the approximate lift thickness. None of the thickness tests indicated areas of insufficient thickness.

3.03.5 Shelby Tube Permeability Sampling

Shelby tube samples were obtained from the compacted clay cap material test pad area after moisture/density testing indicated that sufficient compaction had been applied. Sampling locations were designated by the ES QC Inspector and collected by a technician for laboratory permeability testing. Sample locations were referenced to the site grid system.

All samples of the compacted clay cap material exhibited permeabilities less than the 1.0×10^{-7} cm/sec requirements of the Closure Specifications. In fact, the permeabilities ranged from 1.05×10^{-8} to 1.16×10^{-8} cm/sec. The results of these tests are presented in Appendix K.

3.04 RIP-RAP

The ES QC Inspector visited the two quarries proposed as sources for rip-rap to be used for channel lining. One source was rejected because of an inadequate supply of suitable rip-rap. The second source was found to be acceptable.

During construction, the rip-rap was visibly inspected at time of delivery and during placement. No variance was observed in the quality or particle size of the rip-rap delivered to the site throughout the project.

3.05 EXISTING CHANNEL FILL CONSTRUCTION

During old channel backfilling operations, the ES QC Inspector visually monitored the condition of erosion and sediment control measures to assure their effectiveness. ES visually monitored the shot rock placement and compaction over the bottom of the old creek channel. The shot rock placement continued until no signs of pumping were evident.

Geotextile placement above the shot rock and around the leachate collection pipe was visually inspected to assure lap dimensions and that the geotextile was not damaged.

The leachate collection pipe was inspected for compliance to the design requirements and found to be acceptable. The NYS DOT Type 4 and 5 stone placed around the pipe and over the shot rock was visually inspected for uniformity and measured for adequacy of lift thickness. The ES QC Inspector monitored the survey layout of the leachate collection pipe. ES also witnessed the assembly and installation of the pipe to assure compliance with the design requirements. Manhole installation was monitored at the same time as the pipe installation.

Engineering-Science visually inspected the initial lifts of clay backfill as they were compacted by tracked equipment. After the initial backfill lifts were stabilized, the remainder of the clay backfill was tested on a regular basis for in-place density. All in-place density tests exceeded 90 percent of maximum Standard Proctor Density.

3.06 SLURRY WALL CONSTRUCTION

Engineering-Science monitored all aspects of the slurry wall construction on a full-time basis. Marsh viscosity and density of the slurry were tested at least twice daily. Filtrate loss was tested daily. Marsh viscosity and density of the slurry in the trench was tested at least daily. Trench bottom cutting samples and soundings were obtained every 20 feet. Sounding readings are incorporated on the as-built drawings. Cutting samples were preserved and given to Olin for archival storage. Slump cone tests were performed daily. Prior to placement of slurry into the trench tests were made to assure compliance

with contract requirements. All slurry backfill conformed to design criteria. ES monitored the survey of the top of the slurry wall.

3.07 FLEXIBLE MEMBRANE LINER (FML)

Engineering-Science obtained certifications for all FML material used on the project. ES assured the clay cap was rolled and compacted prior to FML installation and visually inspected the surface for irregularities. ES approved the panel layout drawing from Gundle Lining Systems and monitored the installation to verify conformance with the Drawing. ES recorded the date installed, panel number and roll number for both layers of 40 mil HDPE liner. Under the direction of the ES QC Inspector, destructive testing of welded seams, both on-site and at the laboratory, was conducted. All except one destructive test passed minimum criteria. The failed test, however, did pass upon retesting. All double wedge seams were vacuum tested on site under the direction and observation of ES. Seam failures were repaired and subsequently retested until acceptance was achieved. All extrusion welds were air tested. Any failed extrusion welds were repaired and retested until no leakage was evident.

Revisions to the FML installation due to the slope failure along the north embankment of the cap area were monitored and tested to the same criteria as the original FML installation. A destructive peel test was performed and passed on the 80 mil to 80 mil seam. The 40 mil to 80 mil welded seams were continuously tested. Samples of the 80 mil liner material procured from the Love Canal project were sent to the laboratory for testing of tensile properties.

3.08 STRUCTURAL FILL

The testing of the structural fill materials during construction was conducted in accordance with the requirements of the Contract Documents to assure that the materials used were capable of performing in the manner specified. Testing conducted on the installed structural fill included nuclear moisture/density testing and depth measurements.

Nuclear moisture/density testing was directed by the ES QC Inspector and conducted by a technician certified and experienced in the operation of such equipment. Completed areas of structural fill were identified in the field and tested each day work was completed. Testing frequency specified in the QA/QC Program was established as a minimum requirement. Testing distribution was controlled by the location of the established grid location stakes. Tests were conducted at each grid location that occurred within the area of completed installation. Areas yielding test results corresponding to the specified values were approved for further work, if applicable, and areas that exhibited insufficient compaction were identified and brought to the attention of the Contractor's Superintendent. Whenever a test result indicated insufficient compaction, the area was recompacted and retested. This procedure was repeated until test results indicated sufficient compaction.

Test results were recorded on field data sheets together with the date, grid location and target moisture and density values. Results of these tests are contained in Appendix K.

Thickness verification of the structural fill was conducted both during the placement of each lift and after completion of compaction activity. Grade marks established on the grid stakes were used as guides to the approximate lift thickness. None of the thickness tests indicated areas of insufficient thickness. ES monitored the survey conducted to establish final grade elevations to assure a minimum 18" thickness of compacted structural fill.

APPENDIX A

APPENDIX A

Approved Variance Log

VARIANCE NO. 1

VARIANCE LOG

PROJECT ACTIVITY Drainage Stone PAGE 1 OF 1

LOCATION Pine & Tuscarora Rd., Niagara Falls, New York DATE 5-8-90

VARIANCE (INCLUDE JUSTIFICATION)

This variance is for encasement of the 6" PVC Drainage Pipe within one foot of surrounding #2 Stone. This cushion will allow a bedding material that will facilitate work and still provide the drainage to meet the specification.

APPLICABLE DOCUMENT:

Construction Procedure and Specifications, Page 11, Paragraph 8, Item C.

Detail "D-D" of Contract Dwg. D-T323-480-0-9A.

REQUESTED BY: [signature] DATE 5-10 90

APPROVED BY: [signature] DATE 5/11/90
Olin Construction Representative

distribution:
(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer [signature] DATE 5-11-90
Engineering Science

APPROVED BY Jim Drum
9:05 A.M. 9/14/90

VARIANCE NO. 2

VARIANCE LOG

PROJECT ACTIVITY Drainage Stone PAGE 1 OF 1

LOCATION Pine & Tuscarora Rd., Niagara Falls New York DATE 5-8-90

VARIANCE (INCLUDE JUSTIFICATION)

Change #4A Stone specified to #4 and #5 mix. After inspection, it was decided this mix of stone would allow proper drainage and meet the intent of the specification.

MIX	3"	2½"	1½"
#4A Stone	100%	90-100%	0-20%
#4 + 5	4"	3"	2"
	100%	90-100%	0-15%

APPLICABLE DOCUMENT:

Construction Procedure and Specifications, Page 11, Paragraph 8, Item C.

Detail "D-D" of Contract Dwg. D-T323-480-0-9A.

REQUESTED BY: [signature] DATE 5·10·90

APPROVED BY: [signature] DATE 5/11/90

Olin Construction Representative

distribution:

(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer

[signature] DATE 5-11-90

Engineering Science

APPROVED BY Jim Drum

9:05 A.M 5/14/90

VARIANCE NO. 3

VARIANCE LOG

PROJECT ACTIVITY Grassing PAGE 1 OF 1

LOCATION Cap Area and North Side of Cayuga Creek DATE 6/19/90
Pine and Tuscarora Road, Niagara Falls, New York

VARIANCE (INCLUDE JUSTIFICATION)

The seeding mixture and fertilizer mixtures identified in Section 14, Page 54 of the Specifications shall be changed to the number of pounds per 1,000 square feet identified in a letter written by Mr. James Van Hoesen, P.E., dated May 18, 1990 and a memo written by Sevenson Environmental Services dated May 25,1990.

APPLICABLE DOCUMENT:

Reference attached letter from Mr. James Van Hoesen, New York State Department of Environmental Conservation and Sevenson Environmental Services' memo signed by Mr. Jim Frye.

REQUESTED BY: Mr. Jim Frye DATE 6/19/90
APPROVED BY: James J Frye DATE 6/22/90
Olin Construction Representative

Distribution:
(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer : Jan C. Ibenter DATE 6/22/90

TO OLIN CHEMICALS

J. FRYE

FROM Sevenson Construction Corporation 2749 LOCKPORT NIAGARA FALLS (716) 284-

SUBJECT CAP SEED, FERT, MULCH DATE 5/25/

MESSAGE AS PER OUR CONVERSATION ON 5-24-90 IT IS ACCEPTABLE TO SEED THE "CAP" IN ACCORDANCE W/ THE HYSDEC'S LETTER DATED 5-18-90 eg KENTUCKY BLUE GRASS 2# / 1000 SF
CREEPING RED FESCUE 2# / 1000 SF
PERENNIAL RYE GRASS 1# / 1000 SF

~~SIGNED~~

REPLY FERTILIZER : 5-10-5 @ 15# / 1000 SF Double
MULCH - STRAW OR HAY 100# / 1000 SF

Kim W Lefebvre

OK, this seed mix meets DEC guidelines from 5/18/90 letter. double quantity per our discussion and Olin Spec.

SIGNED [signature] DATE 5/25/90

SEND PARTS 1 AND 3 WITH CARBON INTACT - PART 3 WILL BE RETURNED WITH REPLY.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 **7010**

Thomas C. Jorling
Commissioner

May 18, 1990

Mr. Blaine Butaud
Olin Chemicals
Lower River Road
P.O. Box 248
Charleston, TN 37310

Dear Mr. Butaud:

Re: Site #9-32-063
Charles Gibson Site
Niagara County

On May 11, 1990, Jim Drumm and I met with representatives of your company at the Charles Gibson Site. At that time Jim Frye of your firm made four requests of us.

1. Change pipe bedding for the drain pipe in the old creek bed from #4 stone to #2 stone. DEC accepts this.

2. Change stone above pipe bedding (drainage stone) from #4A to a mix of #'s 4 and 5. DEC accepts this.

3. Eliminate creeping Red Fescue from seeding on the north side of Cayuga Creek. DEC cannot accept this because the fescue's deep root system is necessary to hold the soil in place.

   Any grassed areas of the flood control system disturbed during the permitted work shall be regraded to their original condition and reseeded as follows:

   Topsoil: place four (4) to six (6) inches of topsoil before seeding.

   CAP AREA ONLY

   Seed: Kentucky Blue Grass @ 2 lb./1,000 sq. ft. 4 LB. / 1000 SQ. FT.
   Creeping Red Fescue @ 2 lb./1,000 sq. ft. 4 LB. / 1000 SQ FT.
   Perennial Rye Grass @ 1 lb./1,000 sq. ft. 2 LB / 1000 SQ FT.

   Fertilizer: 5-10-5 @ 15 lb./1,000 sq. ft. 30 LB / 1,000 SQ. FT.

   Mulch: Adequate straw or hay mulch @ 100 lb./1,000 sq. ft.

4. eliminate one of the two rows of trees on the north side of Cayuga Creek since a number of existing mature trees were saved from removal during construction. DEC accepts this. However, the contractor must remove and properly dispose trees which have been damaged during construction and cannot be saved. Trees that have been wounded and can be saved must be painted with tree wound paint.

If you have any questions, please call Jim Drumm at (518) 457-9279.

Sincerely,

James Van Hoesen

James Van Hoesen, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Div. of Hazardous Waste Remediation

cc: T. Andronico - Rizzo Associates
R. Griffith - Larsen Engineers
A. Wakeman - DOH
A. Bronson - DOL

VARIANCE NO. 4

VARIANCE LOG

PROJECT ACTIVITY Flexible Membrane Liner Installation PAGE 1 OF 1

LOCATION Clay Cap Area DATE June 22, 1990

Pine and Tuscarora Road, Niagara Falls, New York

VARIANCE (INCLUDE JUSTIFICATION)

As noted in Item 8, Page 42, Article 5E of the Modifications to the Subcontract form dated June 4, 1990, "Rolls of membrane shall be overlapped by a minimum of four (4) inches for fusion welding and three (3) inches for extrusion welding."

Justification: Gundle feels there is no advantage to a four (4) inch overlap for an extrusion type weld. Gundle's common field practice is to utilize a three (3) inch overlap for extrusion type welds on 40 mil HDPE Liner.

The fusion-welding machine apparatus Gundle uses is an automated vehicular-mounted device which produces a double seam within an enclosed space. This device has improved manueverablility and steering capability when utilized with a three (3) inch overlapping seam. A 6" overlapping seam would limit the operation of this device and effect the quality of workmanship provided by this equipment.

APPLICABLE DOCUMENT:

Construction Procedure and Specifications

Page 42, Paragraph 4, Item E.

SEVENSON ENVIRONMENTAL INC. REQUESTED BY: [signature] DATE 6-25-90

APPROVED BY: [signature] DATE 6-26-90

Olin Construction Representative

distribution:

SEVENSON ENVIRONMENTAL (Construction Contractor)

Olin Construction Representative

ENGINEERING SCIENCE CQA Contractor Designer

[signature] DATE 6-25-90

Gundle

CONTINUATION OF PAGE 1
GUNDLE PROJECT NO. A053
June 4, 1990

Contractor and Subcontractor agree to the following modifications and additions to the Subcontract form:

1. Section 5 is modified to provide that final payment will be made 30 days after completion of the Subcontract Work and acceptance thereof by the Owner. Acceptance of the Subcontract Work will be indicated by Owner's payment of the full value of the Subcontract Work less only normal retainage.

2. In the last sentence of Section 14 the words "secure all necessary permits and licenses for the performance of its work" are deleted.

3. Section 16 is modified by adding the following sentence: "In the event that Subcontractor's Work is damaged by Contractor, Subcontractor will repair the damage, and Contractor will pay Subcontractor the actual cost of the repairs.

4. Section 24 is modified by adding the following sentence: "In the event that Contractor's order to suspend execution of the Subcontract Work is without fault of Subcontractor, Contractor agrees to reimburse Subcontractor's actual cost, if any, of demobilization and remobilization at the jobsite.

5. Section 17, last two sentence, shall be modified to read "Contractor shall erect and maintain, at all times, all reasonable and necessary safeguards for protection of workers and the public, and shall post warning signs against hazards incidental to the work and the jobsite.

6. Section 18, last sentence is modified by adding ...to the extent that Gundle is found to be negligent.

7. Section 13 is modified to read, "This Agreement is based on Subcontractor crews proceeding without delays or interruptions caused by, but not limited to, incomplete subgrade preparation, incomplete structures, standing time caused by the Owner, Contractor or any other reasons beyond Subcontractor's control (except weather delays). If such delays occur, Subcontractor will charge the Owner or Contractor $300.00 per hour for a maximum of eight hours per day (including travel time, if any). In addition, demobilization and remobilization costs will be charged if incurred by Subcontractor.

8. Clarifications to Specifications: Flexible Membrane Liner, Pages 39-51 and Biaxial Geogrid, Pages 34, 35:

Page 39, Article 3.b
Panel layout plan will not include identification numbers. Since actual panel layout is subject to revision by the Gundle site supervisor as a function of site conditions, panel and seam I.D. numbers are assigned at the time of installation.

Page 42, Article 5.e
The rolls of membrane shall be overlapped by a minimum of four (4) inches for fusion welding and three (3) inches for extrusion welding.

Page 42, Article 5.f
Gundle prefers to limit field tests of welds to a non-quantative "film tear bond" type test because of the inherent inaccuracy of portable tensiometers. If absolutely required, Gundle will perform quantative weld tests in the field, however, any field tests are subject to verification and correction by Gundle's Houston, Texas laboratory.

Page 48, Article 5
Gundle has no objection to tests by independent or third party laboratories, however, all results are subject to confirmation by Gundle's Houston, Texas laboratory. In the event of a discrepancy in the results, Gundle reserves the right to confer with the outside laboratory and resolve the difference.

VARIANCE NO. 5

VARIANCE LOG

PROJECT ACTIVITY Ground Stabilization Fabric PAGE 1 OF 5

LOCATION Pine and Tuscarora Remidiation Project, Niagra Falls New York
New Creek Channel Sta, 0+75 to 2+75 DATE

VARIANCE (INCLUDE JUSTIFICATION)

This variance is for a change in ground stabilization fabric used to cover the north embankment of the Pine and Tuscarora remediation project. Limits of coverage extend to the area defined in Woodward/Clyde's modification dated August 9, 1990. This modification was reviewed and approved by New York State Department of Environmental Conservation on August 21, 1990.

Sevenson environemtal experienced a material shortage of 160 mil Supac 16 NP manufactured by Phillips Fibers. The replacement fabric style identification is #1680 manufactured by American Engineering Fabrics. Sevenson Environmental has based this modification on the time and availability it would take to supply this project with a suitable material. Attached is a copy of page 10, item 7 of the specifications, and descriptions of the physical properties of Supac 16NP, and #1680. Prior to purchase,this modification was reviewed and approved by Richard Roe, Woodward Clyde Consultants, and Jim Drum, New York State Departent of Environmental Conservation on September 14, 1990.

APPLICABLE DOCUMENT:

Page 10, item 7 of the specifications.

Sevenson Environmental REQUESTED BY: _____ DATE Sept. 13, 1990
APPROVED BY: _____ DATE Sept. 14, 1990
Olin Construction Representative

distribution:
(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer

_____ DATE Sept. 14, 1990

JDF

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

AUG 21 1990

Mr. Blain Butaud
Olin Chemical Corporation
P.O. Box 248
Charleston, TN 37310

Dear Mr. Butaud:

The New York State Department of Environmental Conservation (NYSDEC) has received and reviewed the most recent revised construction procedure and slope stability analysis dated August 9, 1990 as prepared by Woodward Clyde Consultants (WCC). Based upon this stability analysis and the professional judgement of WCC, the NYSDEC accepts this design. However, this acceptance does not indicate that the NYSDEC agrees totally with the methods or judgements of WCC.

In general, the entire set of stability analyses are suspect since they are all based upon a faulty determination of the residual shear strength. The determination of the residual strength is faulty since it does not include consideration of the pore pressures generated by the constructed embankment. The shear strength used in the analyses by WCC is the effective strength which will not develop for many years. In the short-term the strengths may be considerably less. The enclosure to this letter further addresses this, and other, problems of the analyses.

If you have any questions, please contact me at 518/457-4343.

Sincerely,

A. Jeffrey Mirarchi

A. Jeffrey Mirarchi, P.E.
Project Manager
Bureau of Western Remedial Action
Division of Hazardous Waste Remediation

TABLE 2

PHYSICAL REQUIREMENTS* OF GROUND STABILIZATION FABRIC

AOS (U.S. Standard Sieve Size)	Puncture ASTM D 4833 (lb)	Mullen Burst ASTM D 3786 (psi)	Trapezoid Tear Strength ASTM D 4533-85 (lb)	Grab Tensile ASTM D 4632-86 (lb)
100	200	670	160	375

*All values are minimum average roll values.

Riprap shall be fitted and placed where shown on Olin drawings to prevent erosion of the new creek channel. Riprap shall be placed in an approximately uniform layer. Riprap shall be placed from the bottom up and in a manner to not damage the ground stabilization fabric. Alternate placement will be considered only if the contractor first demonstrates his ability to do so without fabric damage and advance approval from Olin is obtained. Stone shall be blocky and predominantly angular in shape.

A) Light riprap shall be used on the south and west banks of the new creek channel and shall have a uniform thickness, of 18" minimum.

B) Light riprap shall be used on the creek bottom and the north and east banks. Light riprap shall have a uniform thickness, 12" minimum.

All riprap shall be graded in accordance with New York State, Department of Transportation, Standard Specifications, Section 620.

All areas to be riprapped shall be protected by embankment ground stabilization fabric applied as per the Project QA/QC Plan under the riprap and keyed into a trench at the riprap perimeter.

After completion of the new channel, the end plugs shall be removed. The south end plug shall be removed first followed by the north end plug. All plug removal shall be in compliance with the sedimentation control requirements of the Fish and Wildlife Department. After the soil has been excavated and shaped to the correct cross section, the bottom and sides of all new excavation must be riprapped the same as the typical channel. Ground stabilization fabric and riprap will be carefully placed under water in these sections or placed "in the dry" after installing temporary sand bag dikes and silt barriers, as necessary, during favorable weather periods. Grades will be shot at plug excavations to provide a smooth transition and leave no high spots. Grade will be shot on the finish riprap also.

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS 66 COMPANY

SENECA, SOUTH CAROLINA 29679
P. O. BOX P-66

SUPAC 16 NP

PHILLIPS FIBERS CORPORATION
NONWOVEN GEOTEXTILES

ISSUE DATE:
DEC 1989

PROPERTY	STANDARD TEST PROCEDURE	WEAKEST DIRECTION VALUE	SPECIAL TEST INFORMATION	SUPAC 16 NP L17800
TENSILE STRENGTH pounds	ASTM D-4632	MINIMUM	CERTIFIABLE	360
ELONGATION percent	ASTM D-4632	MINIMUM	CERTIFIABLE	50
PUNCTURE STRENGTH pounds	ASTM D-4833	MINIMUM	CERTIFIABLE	225
MULLEN BURST STRENGTH,psi	ASTM D-3786	MINIMUM	CERTIFIABLE	650
TRAPEZOIDAL TEAR STRENGTH , pounds	ASTM D-4533	MINIMUM	CERTIFIABLE	160
ABRASION RESISTANCE % strength retained	ASTM D-4886	MINIMUM	CERTIFIABLE	90
COEFFICIENT of PERMEABILITY,cm/sec	ASTM D-4491	MINIMUM	CERTIFIABLE	0.25
FLOW RATE gpm/sf	ASTM D-4491	MINIMUM	CERTIFIABLE	50
PERMITTIVITY per second	ASTM D-4491	MINIMUM	CERTIFIABLE	0.7
APPARENT OPENING SIZE,US Std Sieve	ASTM D-4751	MAXIMUM OPENING	CERTIFIABLE	100
UV STABILITY strength %/hrs.	ASTM D-4355	MINIMUM	CERTIFIABLE	70 150
STANDARD ROLL SIZES	180 INCHES WIDE	LINEAR YARDS SQUARE YARDS		40 200
	150 INCHES WIDE	LINEAR YARDS SQUARE YARDS		48 200

Date 5/24/90 Q. A. Lab Supv. M. V. Roach/cm

AEF Geotextiles are 100% staple polyester and polypropylene needlepunched fabrics designed for multi-purpose engineered use.

AEF Geotextiles provide tensile reinforcement, filtration, and separation for roads, roofs, railroads, ponds, dams, trenches, landfills and many other civil engineering and construction uses.

AEF Geotextiles are resistant to tears, soil chemicals, puncture, ultra violet light exposure, and are virtually unaffected by hydrocarbons, mildew, rot and freeze-thaw.

AEF GEOTEXTILES

TYPICAL PHYSICAL PROPERTIES

Fabric Style	480HSft	480	680HSft	680	880	1080	1280	1480	1680	1880
Weight: oz/yd²	4.5	4.5	6	6	8	10	12	14	16	18
Weight grams/m²	150	150	200	200	270	340	410	475	545	610
Thickness (mils) ASTM D - 1777	80	85	80	85	120	130	145	155	175	190
Grab Strength (Lbs.) ASTM D - 1682	120	90	180	145	210	260	285	360	435	610
Elongation (%) ASTM D - 1682	75	100	75	100	100	100	100	100	100	100
Puncture Strength 5/16" (Lbs.) ASTM D-751	75	50	90	65	120	130	185	200	220	240
Mullen Burst Strength (PSI) ASTM D - 3786	200	150	270	225	315	390	440	520	600	1000+*
Trapezoid Tear Strength (Lbs.) ASTM D - 1117	50	55	75	85	95	110	145	170	190	200
EOS (CW-02215)	50-70	50-70	50-70	50-70	70-100	70-100	100-120	100-120	100-120	120
Vertical Water Flow (GPM/ft²) L.T.M.	325	365	300	312	305	300	295	292	290	282
Air Permeability (Ft.³/Ft.²/min) ASTM D - 737-75	275	300	245	255	200	155	95	75	50	25
I.D. Roll Width (Ft.) **	← 12.5 & 15 Ft. →									
I.D. Roll Length (Ft.)	400	400	400	400	300	300	200	200	200	200

* Strength exceeds 1000 PSI capacity of testing gauge.

** Selected rolls & special widths available.

Rolls wound on 4" (I.D.) cores and wrapped with black polyethylene f

Specific certified properties will be provided upon request.

warranty or guarantee expressed or implied is made regarding the performance of product since the conditions of use are beyond our control. Nothing contained ein is to be construed as permission or recommendation to infringe any patent. The

Information presented herein, while not guaranteed, is to the best of our knowledge accurate and reliable. American Engineering Fabrics, Inc., assumes no responsibility for the use of information presented and hereby disclaims all liability in regard to such use.

Needled and heatset by flame bonder.

VARIANCE NO. 6

VARIANCE LOG

PROJECT ACTIVITY Fencing

PAGE 1 OF 2

LOCATION Pine and Tuscarora Remiation Project
Niagra Falls, New York

DATE 9/21/90

VARIANCE (INCLUDE JUSTIFICATION)

This variance is for a change in the methods used to provide anchoring for fence posts in the area effected by Woodward/Clyde's modification to the north creek channel dated August 9, 1990. This modification was reviewed and approved by the New York State Department of Environmental Conservation on August 21, 1990.

The new revision at the north creek channel extended HDPE liner material from the slurry wall to the top of the cap area. This modification made it difficult to install fence posts without installing boots constructed of HDPE liner material. The enclosed detail illustrates a method of anchoring fence posts in the structural fill at the top of slope along the creek channel. This change would be limited to the 2.5:1 slope modification identified in Woodward/Clydes revision.

APPLICABLE DOCUMENT:

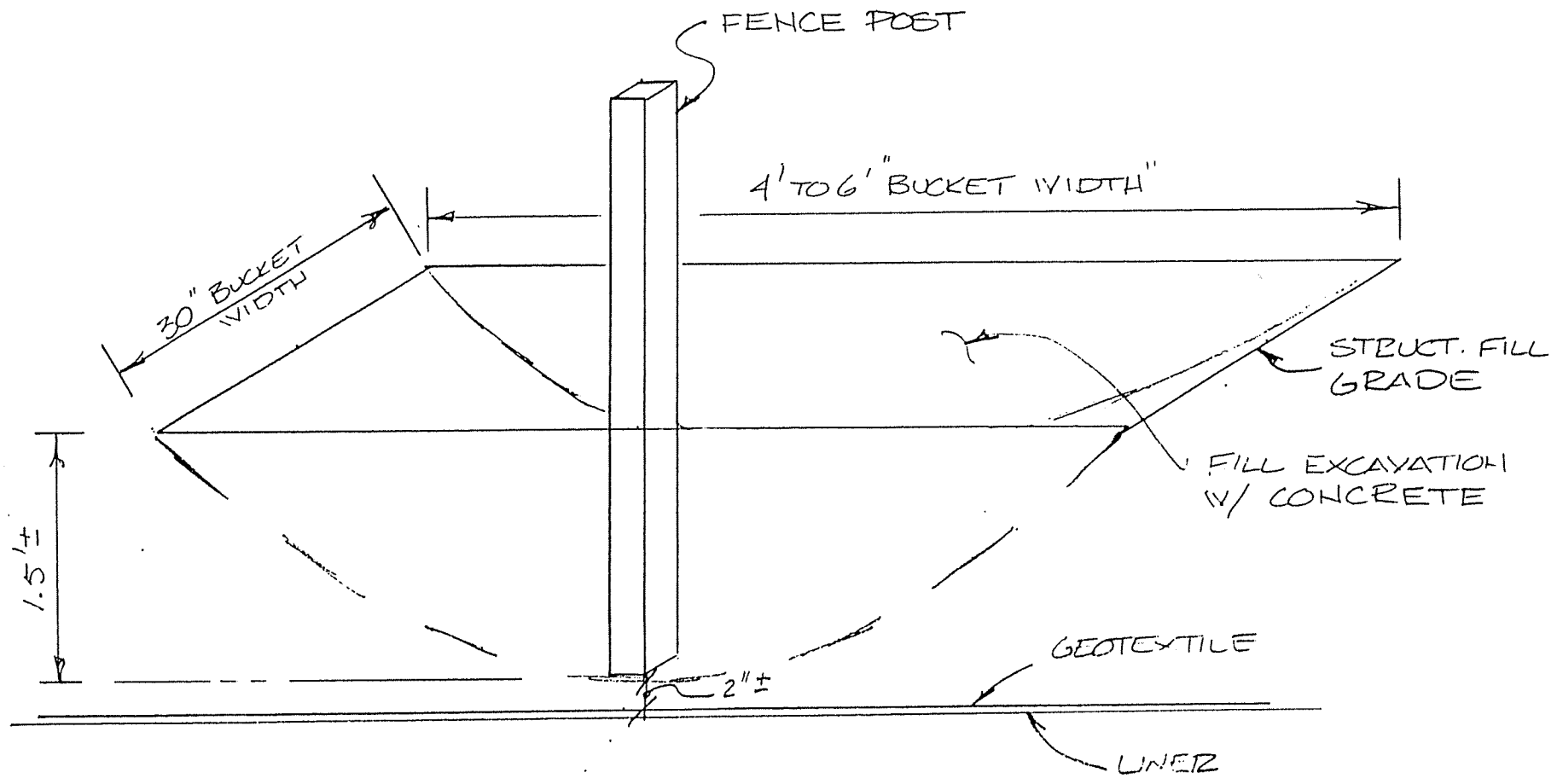
Drawing number D-T323-840-0-9 Rev. 2, Detail 2

Sevenson Environmental REQUESTED BY: [signature] DATE 9.21.90
APPROVED BY: [signature] DATE 9/21/90
Olin Construction Representative

distribution:

(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer

[signature] DATE 9/21/90


FENCE POST
4' TO 6' BUCKET WIDTH"
30" BUCKET WIDTH
STRUCT. FILL GRADE
FILL EXCAVATION W/ CONCRETE
1.5'±
GEOTEXTILE
2"±
LINER

VARIANCE NO. 7

VARIANCE LOG

PROJECT ACTIVITY Seeding

LOCATION Pine And Tuscarora Remediation Project

DATE Sept.22, 1990

Niagra Falls, New York

VARIANCE (INCLUDE JUSTIFICATION)

Item 14, page 56 of the contract specifications defines the fall seeding period to be from August 15 through October 1. Due to modifications which had to be performed at the north creek channel, projected completion of the Pine and Tuscarora Remediation project is October 12, 1990. This variance is for an extension of time of the fall seeding period from October 1, 1990 to October 12, 1990.

APPLICABLE DOCUMENT:

Item 14, Page 56, Seeding Period

REQUESTED BY: _____ DATE 9-24-90

APPROVED BY: _____ DATE 9/24/90

Olin Construction Representative

distribution:

(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer

_____ DATE 9-24-90

For all areas to be seeded:

1. Agricultural limestone shall be applied at the rate of one hundred pounds per 1,000 square feet or as determined by the soil test to bring topsoil pH to a range of 6.0 to 7.0.

2. Fertilizer (10-20-10) shall be applied at the rate of thirty pounds per 1,000 square feet unless otherwise determined by the soil test.

3. Spring and fall seeding mix shall be applied at the rate of ten pounds per 1,000 square feet. Temporary seed mix shall be applied at a rate of two (2) pounds per 1,000 square feet.

4. Straw mulch shall be applied to a rate of seventy five pounds per 1,000 square feet on all areas not hydroseeded.

5. Latex acrylic copolymer shall be applied over placed straw mulch at a rate of 1 gallon per 1000 square feet diluted in water at a ratio of 40 parts water to 1 part latex acrylic copolymer mix.

6. Wood cellulose applied by hydroseeding shall be applied at a rate of 35 pounds per 1000 square feet. The hydroseed mix shall be comprised of 50 pounds of wood cellulose per 100 gallons of water to which 1.5 gallons of latex acrylic copolymer is added.

Seeding, mulching and conditioning shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by Olin. The contractor shall seed only on a calm day.

Schedules for seeding and fertilizing must be submitted to Olin for approval prior to the work. Seeding as specified herein shall be accomplished between the following periods:

Spring Seeding Period
March 1 - May 15

Fall Seeding Period
August 15 - October 1

The Contractor shall notify Olin at least 2 weeks prior to the start of seeding operations. Seeding during other periods shall only be undertaken upon approval of Olin.

Seeding during the period of May 16 though August 14 shall be undertaken using the temporary seeding mix only upon approval of Olin. Any areas seeded using temporary seeding mix shall be reseeded during the subsequent fall or spring seeding period. Prior to reseeding all straw mulch must be removed or thoroughly incorporated into the topsoil, and the topsoil seedbed prepared as outlined. Any reseeding of areas in which temporary seeding has occurred shall be at the Contractor's expense.

VARIANCE NO. 8

VARIANCE LOG

PROJECT ACTIVITY Permanent Fencing

PAGE 1 OF 3

LOCATION Pine and Tuscarora Rd. Remediation, Niagra Falls New York

DATE Sept. 26. 1990

VARIANCE (INCLUDE JUSTIFICATION)

Original contract drawings illustrate a 12' access gate at the south east side of the cap area and a manway gate at the southwest side of the cap area. This variance is for a change in location of each gate. Proposed relocations for each gate are:

1.) Placement of the 12' access gate on the north west side of the cap area at a planned access that would lead to the property from Tuscarora Rd.

2.) Placement of the mangate at the original planned location of the 12' gate.

This change would accomodate equipment access to the cap area without interfering with the Niagra Mohawk Power Co. right of way at the south side of the constructed cap. Attached are two drawings depicting planned changes.

APPLICABLE DOCUMENT:

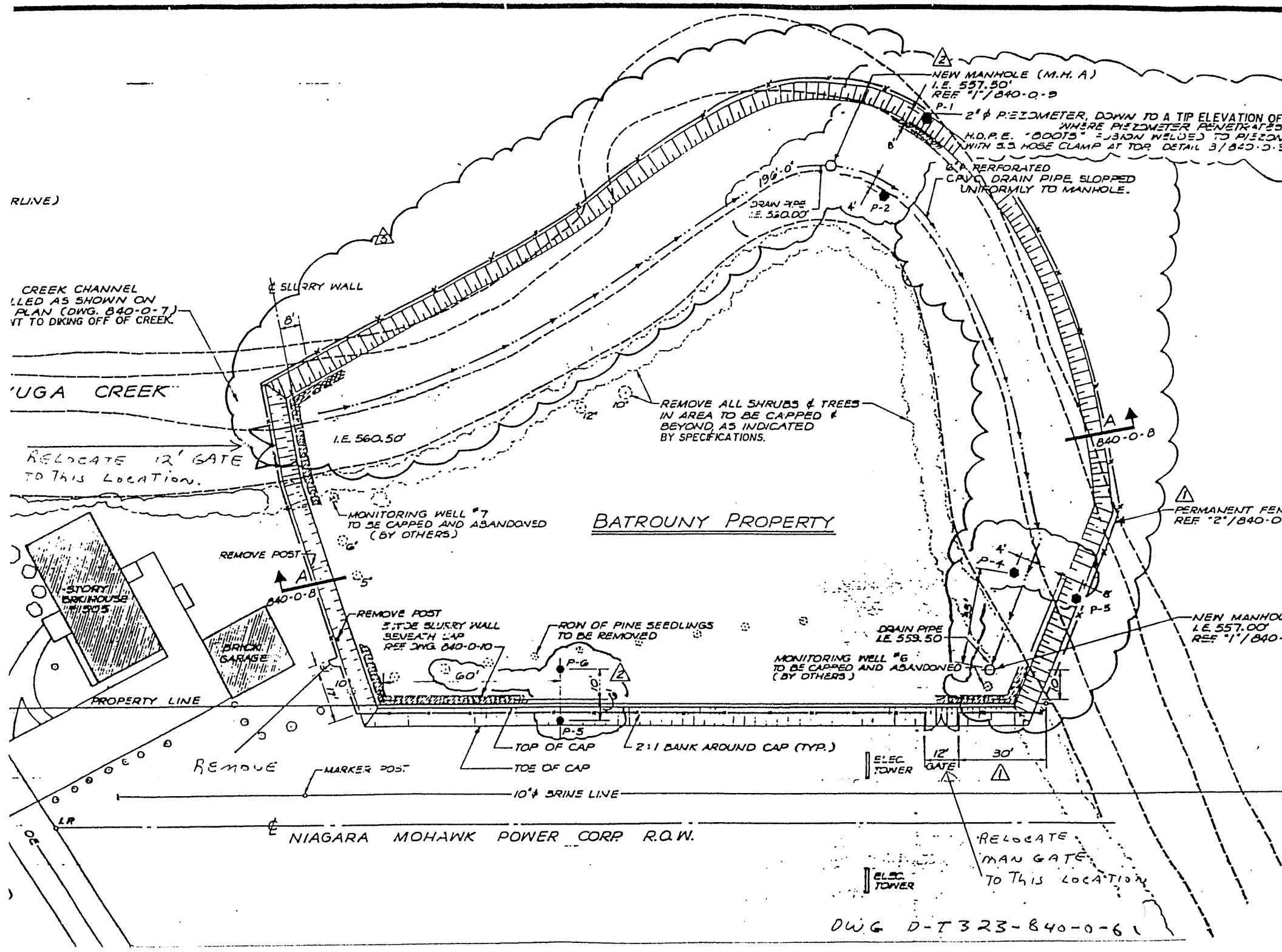
Item 13, Permanent Fencing of the specifications and Dwg. No. D-T323-840-0-6

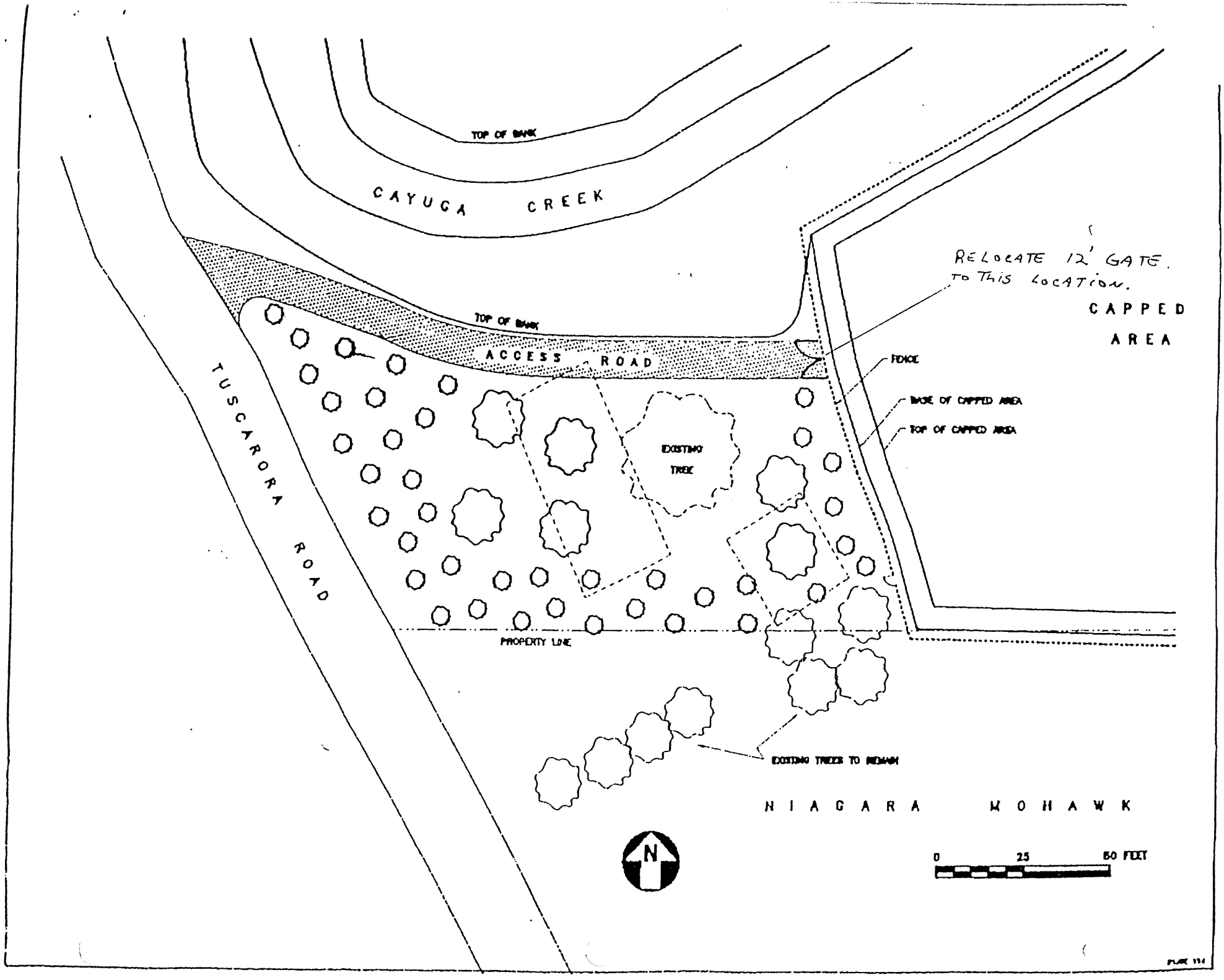
REQUESTED BY: James I. Fryer DATE Sept. 26, 1990
APPROVED BY: James I. Fryer DATE Sept. 26, 1990
Olin Construction Representative

distribution:

(Construction Contractor)
Olin Construction Representative
CQA Contractor
Designer

Jean Tibenton DATE Sept 26, 1990


NEW MANHOLE (M.H. A)
I.E. 557.50'
REF "1"/840-0-9
P-1
2" ϕ PIEZOMETER, DOWN TO A TIP ELEVATION OF
WHERE PIEZOMETER PENETRATES
H.D.P.E. "BOOTS" FUSION WELDED TO PIEZOM
WITH SS HOSE CLAMP AT TOP. DETAIL 3/840-0-9
6" ϕ PERFORATED
CAVO DRAIN PIPE, SLOPPED
UNIFORMLY TO MANHOLE.
DRAIN PIPE
I.E. 560.00'
P-2
CREEK CHANNEL
LLED AS SHOWN ON
PLAN (DWG. 840-0-7)
VT TO DIKING OFF OF CREEK.
℄ SLURRY WALL
'UGA CREEK"
I.E. 560.50'
REMOVE ALL SHRUBS & TREES
IN AREA TO BE CAPPED &
BEYOND AS INDICATED
BY SPECIFICATIONS.
RELOCATE 12' GATE
TO THIS LOCATION.
MONITORING WELL "7
TO BE CAPPED AND ABANDONED
(BY OTHERS)
BATROUNY PROPERTY
REMOVE POST
840-0-8
REMOVE POST
3' TOE SLURRY WALL
BENEATH CAP
REF DWG. 840-0-10
ROW OF PINE SEEDLINGS
TO BE REMOVED
DRAIN PIPE
I.E. 559.50
MONITORING WELL "6
TO BE CAPPED AND ABANDONED
(BY OTHERS)
P-4
P-5
P-6
PERMANENT FEN
REF "2"/840-0
NEW MANHOL
I.E. 557.00'
REF "1"/840-
STORY
BRICKHOUSE
#1305
BRICK
GARAGE
PROPERTY LINE
REMOVE
MARKER POST
TOP OF CAP
TOE OF CAP
2:1 BANK AROUND CAP (TYP.)
ELEC
TOWER
12'
GATE
30'
10"ϕ BRINE LINE
℄ NIAGARA MOHAWK POWER CORP. R.O.W.
RELOCATE
MAN GATE
TO THIS LOCATION
ELEC.
TOWER
DWG D-T323-840-0-6


TOP OF BANK
CAYUGA CREEK
TOP OF BANK
ACCESS ROAD
TUSCARORA ROAD
RELOCATE 12' GATE TO THIS LOCATION.
CAPPED AREA
FENCE
BASE OF CAPPED AREA
TOP OF CAPPED AREA
EXISTING TREE
PROPERTY LINE
EXISTING TREES TO REMAIN
NIAGARA MOHAWK
N
0
25
50 FEET

APPENDIX B

APPENDIX B

Air Monitoring Results

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 6.8.90

TO: OLIN CHEMICAL
C/O PROJECT SITE

ATTN: W.A. BROWN

RE: P&T REMEDIATION
NIAGARA FALLS NY

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☑ other AIR MONITORING RESULTS

NO of COPIES	DRAWING NO.	COMPANY	ITEM
3		GALSON LABS	ANALYTICAL RESULTS
			SAMPLED 4-28-90 &
			5-24-90

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

Galson Laboratories

6601 Kirkville Road
E Syracuse, NY 13057
Tel: (315) 432-0506
1-800-950-0506

LABORATORY ANALYSIS REPORT

Client: SEVENSON ENVIRONMENTAL SERVICES, INC.
Task Number: 90050910 Job Number: K9002
Location: PROJECT#E183 Date Sampled: 24-MAY-1990

		Lab ID:	J10648	J10649	J10650BL	METHOD
		Client ID:	SES:TR4-24C	SES:TR4-24D	SES:XX4BB BLANK	BLANK
TO4 - AIR TOXIC METHOD TO4						
ALPHA-BHC	AIR VOL L		1146.125	1059.66	NA	NA
	TOTAL UG		<0.05	<0.05	<0.05	<0.05
	UG/M3		<0.04	<0.05	NA	NA
BETA-BHC	AIR VOL L		1146.125	1059.66	NA	NA
	TOTAL UG		<0.1	<0.1	<0.1	<0.1
	UG/M3		<0.09	<0.09	NA	NA
DELTA-BHC	AIR VOL L		1146.125	1059.66	NA	NA
	TOTAL UG		<0.1	<0.1	<0.1	<0.1
	UG/M3		<0.09	<0.09	NA	NA
GAMMA-BHC	AIR VOL L		1146.125	1059.66	NA	NA
	TOTAL UG		<0.05	<0.05	<0.05	<0.05
	UG/M3		<0.04	<0.05	NA	NA
HEXACHLOROBENZENE	AIR VOL L		1146.125	1059.66	NA	NA
	TOTAL UG		<0.05	<0.05	<0.05	<0.05
	UG/M3		<0.04	<0.05	NA	NA

(<) - Less Than
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
L - Liters
PPM - Parts Per Million
UG - Micrograms

Footnotes:

Submitted by: KN
Approved by:

1971 - 1991 20th Anniversary

A division of Galson Technical Services, Inc

Galson Laboratories

6601 Kirkville Road
E. Syracuse, NY 13057
Tel: (315) 432-0506
1-800-950-0506

LABORATORY ANALYSIS REPORT

Client: SEVENSON ENVIRONMENTAL SERVICES, INC.
Task Number: 90050910 Job Number: K9002
Location: PROJECT#E183 Date Sampled: 24-MAY-1990

TOTAL DUST

Sample ID	Lab ID	VOLUME M3	TOTAL MG	MG/M3
SES:TR4-24G	J10651	0.42665	<0.05	<0.1
SES:TR4-24H	J10652	0.41454	<0.05	<0.1
SES:XX4BA BLANK	J10653BL	NA	<0.05	NA

Method(s): NIOSH 0500
Footnotes:

(<) - Less Than
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
MG - Milligrams
L - Liters
M^3 - Cubic Meter
MG/M^3 - Milligrams Per Cubic Meter
PPM - Parts Per Million
UG - Micrograms
NG - Nanograms
BL - Blank

Submitted by: SM
Approved by: A. Bdzio
Date: 22-MAY-1990

1971 - 1991 20th Anniversary

A division of Galson Technical Services, Inc

Galson Laboratories

6601 Kirkville Road
E Syracuse, NY 13057
Tel: (315) 432-0506
1-800-950-0506

LABORATORY ANALYSIS REPORT

Client: SEVENSON ENVIRONMENTAL SERVICES, INC.
Task Number: 90050911 Job Number: K9002
Location: PROJECT #E183 Date Sampled: 28-APR-1990

		Lab ID:	J10654	J10655	METHOD
		Client ID:	SES:TR4-28 C	SES:TR4-28 D	BLANK
TO4 - AIR TOXIC METHOD TO4					
ALPHA-BHC	AIR VOL L		2098.97	1992.64	NA
	TOTAL UG		<0.05	<0.05	<0.05
	UG/M3		<0.02	<0.02	NA
BETA-BHC	AIR VOL L		2098.97	1992.64	NA
	TOTAL UG		<0.1	<0.1	<0.1
	UG/M3		<0.05	<0.05	NA
DELTA-BHC	AIR VOL L		2098.97	1992.64	NA
	TOTAL UG		<0.1	<0.1	<0.1
	UG/M3		<0.05	<0.05	NA
GAMMA-BHC	AIR VOL L		2098.97	1992.64	NA
	TOTAL UG		<0.05	<0.05	<0.05
	UG/M3		<0.02	<0.02	NA
HEXACHLOROBENZENE	AIR VOL L		2098.97	1992.64	NA
	TOTAL UG		<0.05	<0.05	<0.05
	UG/M3		<0.02	<0.02	NA

(<) - Less Than
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
L - Liters
PPM - Parts Per Million
UG - Micrograms

Footnotes:

Submitted by: KN
Approved by:

1971 - 1991 20th Anniversary

A Division of Galson Technical Services, Inc.

Galson Laboratories

6601 Kirkville Road
E. Syracuse, NY 13057
Tel: (315) 432-0506
1-800-950-0506

LABORATORY ANALYSIS REPORT

Client: SEVENSON ENVIRONMENTAL SERVICES, INC.
Task Number: 90050911 Job Number: K9002
Location: PROJECT #E183 Date Sampled: 28-APR-1990

TOTAL DUST

Sample ID	Lab ID	VOLUME M3	TOTAL MG	MG/M3
SES:TR4-28 G	J10656	0.78894	<0.05	<0.06
SES:TR4-28 H	J10657	0.792745	<0.05	<0.06

Method(s): NIOSH 0500
Footnotes:

(<) - Less Than
(>) - Greater Than
NA - Not Applicable
ND - Not detectable
NS - Not specified
MG - Milligrams
L - Liters
M^3 - Cubic Meter
MG/M^3 - Milligrams Per Cubic Meter
PPM - Parts Per Million
UG - Micrograms
NG - Nanograms
BL - Blank

Submitted by: SM
Approved by: A. Galson
Date: 22-MAY-1990

1971 - 1991 20th Anniversary

A division of Galson Technical Services, Inc.

APPENDIX C

APPENDIX C

Topsoil Analysis
Seeding
Fencing

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5-16-90

TO: OLIN CHEMICAL
C/O PROJECT SITE

RE: P&T REMEDIATION
GIBSON SITE
NIAGARA FALLS NY

ATTN: WM BROWN

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☑ other

NO of COPIES	DRAWING NO.	COMPANY	ITEM
5		NIAGARA CTY	TOPSOIL Ph
		COOPERATIVE EXT	ANALYSIS - ON-SITE
			MATERIAL

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit
☑ File and Information
☐ Approved
☐ Approved As Corrected
☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed K W Brown

FORM 12996B NOTABLE BUSINESS FORMS INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

5/10/90

SOIL pH TEST FOR HOME GARDENERS

This test measures the relative acidity or alkalinity of a soil. pH is measured on a scale from 0-14 with 0 being very acid and 14 very alkaline. All crops grow best in a specific pH range. This test will determine if your soil pH is in the proper range for the crops being grown. If it is not in the proper range, we will tell you what adjustments to make.

Name Chris MacKeen Address 2749 Severson Environmental [redacted] Lockport Rd Niagara Falls, NY 14305

Phone Number 297-0431

Where was this sample taken from?

_____ Vegetable garden
_____ Flowers
_____ Lawn
_____ Trees & Shrubs
Excavated Creek bed ∞ Other (please specify)

Any problems with growing plants in this soil?

_____ None
_____ Poor Yield/Growth
_____ Yellow Leaves, Plants Dying
_____ Other (please specify)

TEST RESULTS

pH Level 8.0 Recommended Level _____

Adjustments to be made:

_____ None, pH is in the proper range

_____ Add lime to raise pH

_____ Add sulfer to lower pH

Amount to apply and timing:

Questions? Call: 433-2651

COOPERATIVE EXTENSION

Cornell University
State University of New York
U.S. Department of Agriculture

Cooperative Extension Association of
Erie County, Agriculture Program
21 South Grove St., East Aurora, NY 14052

Telephone: 716-652-5400

SOIL PREPARATION AND FERTILIZERS FOR THE HOME FLOWER AND VEGETABLE GARDEN

A well-drained soil is preferred for flower and vegetable gardens. Avoid low areas where water tends to collect or the soil remains soggy well into spring or after rain. Avoid planting on subsoil fill. Coarse sandy soil that dries rapidly is satisfactory if properly prepared with organic matter and water is available for irrigation. Because gardeners usually have to work with the soil available on the property, modification of the soil and proper selection of suitable plants is essential.

GENERAL INFORMATION

ORGANIC MATTER

Organic matter loosens and improves the structure and drainage of heavy clay soils, and in medium and light sandy soils, helps to hold moisture and nutrients. Sources of organic matter are peat moss, compost, plant residues, leaf mold, manure, wood chips, sawdust and ground corn cobs. The last 3 materials tend to reduce the nitrogen available to plants when mixed into the soil; use 1½ times the normal rate of fertilizer before planting to supply additional nitrogen.

SOIL REACTION OR pH

The term pH refers to the acidity or alkalinity of the soil. A pH of 7.0 is neutral, while soil with pH of 7.1 or above is alkaline or "sweet". Most plants grow best in soils with pH of 6.0 to 6.8. When the pH is below 6.0, ground agricultural limestone is added to raise the pH. Peat moss and many soluble fertilizers tend to lower the pH. If a soil is too alkaline, iron sulfate or sulfur are used to lower the pH. Moss or a green color on the soil are not definite indications that the soil is too acid. A pH test is recommended every 2 or 3 years.

FERTILIZERS

For good growth, ornamental plants need various elements especially nitrogen, phosphorus, and potassium; these are supplied in commercial complete fertilizers. Commercial fertilizers bear a label that gives the analysis such as 5-10-10, 10-10-10, etc. A 10-10-10 fertilizer, for example, contains 10% nitrogen (N), 10% phosphoric acid (P_2O_5) and 10% potash (K_2O). Dry fertilizers are used in soil preparation before planting and can be used in established gardens if applied carefully among plants or along the rows. Fertilizer on the leaves causes leaf injury. Fertilizer solutions are useful for fertilizing annual and perennial flower borders because of ease of application and uniform distribution among plants.

Minor or trace elements are usually not a problem in garden soils if one adds organic matter and uses complete fertilizers. Often, foliar chlorosis attributed to nutrition is due to root injury by too much fertilizer, soil pests, or inadequate aeration because of poor drainage of water.

SPECIFIC GUIDELINES

SOIL PREPARATION BEFORE PLANTING

Organic Matter: For a new garden, or an area being rehabilitated, where there are no plants, spread organic matter such as peat moss, or compost, on the soil at the rate of 2 bushels per 100 square feet of area. You can use more peat moss or compost if you wish. Weathered sawdust and wood chips also are satisfactory.

(over)

Cooperative Extension in New York State provides Equal Program and Employment Opportunities. New York State College of Agriculture and Life Sciences, New York State College of Human Ecology, and New York State College of Veterinary Medicine at Cornell University, Cooperative Extension Associations, County Governing Bodies, and United States Department of Agriculture, cooperating

For vegetable gardens, where control of weeds by cultivation is easier than in a mixed flower garden, farm manure can supply most of the nutrients needed by vegetable plants if the manure is supplemented with 1 pound of superphosphate per bushel of manure, which is enough for 50-75 square feet of garden area. Unless the manure is well rotted, apply and turn under by plowing, spading, or rotary tilling. Poultry, sheep, or goat manure is used at no more than 1 bushel to 100 square feet of garden area.

For a vegetable garden, organic matter also can be supplied by sowing rye or ryegrass seed in late summer or early fall and then plowing or spading it into the soil early in the spring.

For an established flower garden, organic matter is added by mulching plants with peat moss or leaf compost which is cultivated into the soil in the fall, or spring, when the soil is not too wet.

Compost is prepared by putting leaves, grass clippings, straw and waste plant material (unless it is diseased) from the garden and kitchen in a pile where the materials gradually break down and then are applied to the garden before soil preparation. A cup of agricultural lime and a cup of 10-10-10 or 5-10-10 fertilizer with each bushel of material added to the pile hastens decay. Keep the material moist. A cylinder of woven wire, or snow fence lined with a sheet of plastic, is a good holder for compost. However, it takes a lot of plant material to make a small amount of compost. See the Bulletin reference on the last page.

Soil reaction (pH): A slightly acid soil (pH 6.0 to 6.8) is favorable for growth of most plants.

Raising the pH: Use lime only when a soil pH test has been made and the soil is shown to be too acid.

If the pH of the soil is between 5.5 and 6.0, apply 3 pounds of ground limestone to each 100 square feet of garden area on sandy soils or 5 pounds on heavy soils. Spread the material on the soil before digging, spading, or rotary tilling. If the pH is between 5.0 and 5.5, make another application of the same amount after digging the soil but before raking and leveling. If the pH is 4.9 or below, apply 12 pounds on sandy soils and 20 pounds on heavy soils, half before digging and half after digging.

Wood ashes have the same effect on soil acidity as does lime and should not be applied in large quantities unless the soil is definitely known to be acid. To correct an acid soil, use wood ashes at approximately double the rates as suggested for lime.

Lowering the pH: If the pH is 7.5 to 8.0, one can lower the pH by applying 2 pounds of finely ground sulfur or 6 pounds of iron sulfate per 100 square feet of area and mixing it thoroughly into the soil before planting.

FERTILIZERS BEFORE PLANTING: Apply 10-10-10 or 5-10-10 complete fertilizer at the rate of 4 or 5 pounds per 100 square feet. If manure has been worked into the soil, apply only 2 pounds.

In vegetable gardens where the plants have been well fertilized for several years, 1 or 2 pounds of 10-10-10 or 5-10-10 fertilizer may give the best results.

Often good results are obtained when half of the fertilizer is mixed in thoroughly while the soil is being prepared and the remainder applied as a side-dressing during the growing season.

If a soil test shows adequate nitrogen but inadequate phosphorus and potassium, a commercial fertilizer of 0-20-20 or similar analysis should be applied at 2 or 3 pounds per 100 square feet.

FERTILIZERS DURING THE GROWING SEASON

For annual or flowering plants, apply fertilizer in the spring after plants have started to grow and are 4 to 6 inches tall. A second application is made 4 to 6 weeks later. For some late flowering plants such as chrysanthemum and hardy asters, a third application is made a month later. If you find it difficult to apply dry fertilizers among plants, consider fertilizer solutions which can be applied right over the plants.

Commercial dry fertilizers: These are 10-10-10, 5-10-10, or similar analysis applied at 2 pounds of fertilizer per 100 square feet of area. Spread the fertilizer among the plants and then cultivate lightly to scratch it into the soil without injuring the roots. Don't allow the fertilizer to fall on the plant; it will cause leaf injury unless washed off immediately. In a flower border, it often is easier and safer to apply fertilizer solution.

If the plants are in rows such as in a vegetable garden, sprinkle fertilizer in bands along each side of the row about 2 to 4 inches away from the plants using 1½ pounds on each side of the row for each 100 feet of row. Then cultivate the fertilizer lightly into the soil.

Readily soluble high-analysis fertilizers: These are dry fertilizers which dissolve quickly in water making a fertilizer solution easily applied among plants.

Fertilizer solutions: Dissolve 1¼ ounces of 15-15-15, 15-30-15 or similar analysis OR 1 ounce of 20-20-20, 23-19-17 or similar analysis in 2½ gallons of water. If directions are given on the fertilizer container, follow them instead. Give the soil a good watering with the fertilizer solution, about 1 quart per square foot of soil area. Two waterings with these solutions are equivalent to about 1 of the aforementioned applications of dry fertilizers. A home postal scale is useful in weighing small amounts of fertilizer.

It's sometimes easier to use volume measurement. Fertilizers vary somewhat in their weight per unit volume, but in general two level tablespoons of a 20-20-20 or similar fertilizer weigh about one ounce. Thus, you can use 3 tablespoons of the soluble 15-15-15 fertilizer OR 2 level tablespoons of 20-20-20 or similar fertilizer in a 2½ gallon watering can, stir it well, and water the plants.

Fertilizer proportioners: For larger garden areas, it may not be convenient to apply liquid fertilizer with a 2½ gallon watering can. There is available a small brass proportioner which is attached to the faucet, and then the garden watering hose is attached. A plastic tube is attached to the proportioner, and one end placed in a pail of concentrated fertilizer stock solution. When you turn on the water, fertilizer solution is sucked up through the small tube and mixes with the water as it goes out through the hose. You can figure that the concentrated fertilizer solution is diluted about 15 or 16 to 1. Therefore, a pound of 20-20-20 or similar soluble fertilizer dissolved in 2½ gallons of water will result in a stock solution coming out the end of the hose equivalent to 1 ounce in 2½ gallons of water.

Complete liquid fertilizer: These are similar to readily soluble fertilizers except that they are liquid concentrates which are diluted with water, according to manufacturer's directions, to make a fertilizer solution to be applied to the soil.

Slowly available fertilizers: Some relatively new fertilizers are manufactured by a special process so the nutrients are released slowly. One fertilizer with an

(over)

18-6-12 analysis will supply nutrients for 8 to 9 months, making it possible to apply the fertilizer at time of planting, with the nutrients being released slowly into the warm soil all season long. Some formulations release for 3 to 4 months. Most research information relates to its use for greenhouse and nursery crops. Follow the manufacturer's recommendations on the container for home gardens.

Foliar fertilization: This refers to application of fertilizer solutions to the foliage of growing plants and is sometimes called "foliar feeding". Research has shown that small amounts of nutrients enter the leaves. Foliar applied nutrients may improve the appearance and growth of some plants especially when absorption through the roots has been inadequate. Not all plants are equally adaptable or responsive to foliar fertilization.

One can apply the fertilizer solutions to the foliage, and drippings from the leaves will provide nourishment through the soil and roots. Foliar applications, however, are only a supplement, not a substitute, for soil applications which are essential for good growth and flowering of plants.

If you have limed and fertilized properly yet your garden is not producing, perhaps other factors may be the cause of the problem:

Is your garden receiving 4-6 hours of sunlight daily?
Is the soil poorly drained?
Have you used recommended vegetable varieties?
Have you planted too early, too late?
Have you controlled insects, diseases and weeds?

PUBLICATIONS

Many gardening publications of the New York State College of Agriculture and Life Sciences are available from your County Cooperative Agricultural Extension Office. You may obtain a catalog which lists available publications from the Distribution Center, Building 7, Research Park, Cornell University, Ithaca, N.Y. 14850.

The following bulletins may be of interest to you:

Information Bulletin #101--The Home Vegetable Garden $2.00

Similarly, there are many excellent bulletins on gardening available from other Colleges of Agriculture. For publications of the U.S. Department of Agriculture, see your County Cooperative Extension Office, or write to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20407.

Prepared by: Joann Gruttadaurio 2/80

P. O. BOX 366
BUFFALO, NY 14240

Stanford Seed

MUDDY CREEK ROAD
DENVER, PA 17517

RAIN FOREST

P.O. Box 361, Lake Oswego, Oregon 97034
(503) 684-0774 1-800-547-1929

SALESMAN	NO.	DATE	OUR ORDER NO.
DAN RICE	2	10/20/89	5832

CUSTOMER NO./BUYER: MIKE

ORDER CONFIRMATION

PLEASE LOOK THIS OVER CAREFULLY!

Terms on the reverse side are part of this agreement.
We are unwilling to proceed with this transaction unless you assent to the terms contained herein.
If in error please advise US AT ONCE as your order will be shipped as acknowledged. Please sign and return Duplicate Copy.
In case of Shortages or Damages, Please read instructions on reverse side.

263

TO
FOX FENICE
2637 LOCKPORT RD.
NIAGARA FALLS, N Y

14305

SHIP TO
SAME
716-284-1444

ROUTING:

CARLOAD

TERMS: INTEREST shall be charged monthly on all unpaid past due accounts at the highest rate permitted by Oregon law.	CAR NUMBER	FRT. RATE	SHIPMENT
2% 10 NET 30 AA ADAF			DEC 89'/SNR

DESCRIPTION	FOB MILL	FREIGHT	DELIVERED PRICE
WESTERN RED CEDAR & ALASKAN YELLOW CEDAR STD/BTR & #2/BTR S4S RO DET NLGA NO GS			
STD/BTR WESTERN RED CEDAR S4S			
1456 PCS 2X4X16' .EE			
(1 9/16 X 3 9/16 X 16')			
STD/BTR 2/BTR ALASKAN YELLOW CEDAR RO			
150 PCS 6X6X10'			
(FULL6"XFULL6"X10')			
144 PCS 4X4X10'			
(FULL4"XFULL4"X10')			
576 PCS 4X4-7'			
(FULL4"XFULL4"X7')			
BALANCE 4X4X9'			
(FULL4"XFULL4"X9')			

RECEIVED
OCT 1990
Cleveland ES

☐ ICK ☐ DOUBLE DOOR BOX CAR ☐ FLAT CAR ☐ UNITIZED ☐ PAPER WRAPPED

RAIN FOREST

By _____

Accepted By _____

We acknowledge with thanks your order as entered above. Please check in detail and if any errors appear, notify us at once, otherwise order will be s
We ask you to sign the white copy and return to us; failure to return this form constitutes acceptance as written. All agreements are contingent upon s
other delays beyond our control. Claims for shortages and/or disputed quality must be made within ten days after receipt of goods, accompanied by an
are to be held intact subject to re-inspection and settlement.

Semmerling Fence & Supply, Inc.
3941 River Rd
TONAWANDA, NY 14150

(716) 874-3400

INVOICE

№ 1432

INVOICE DATE	SALESPERSON

SHIP TO

CALL COST 24 [illegible]
IN ADVANCE
[illegible] 284-1444

FOX FENCE INC
[illegible]637 LOCKPORT RD
NIA. FALLS NY. 14305

YOUR ORDER NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
	1 / 90			

QTY. ORDERED	B/O	QTY. SHIPPED	DESCRIPTION	UNIT PRICE	TOTAL
[illegible]960 pc		10317	1 x 4 x 4 ([illegible] 4[illegible] pcs)		
[illegible]115 pc		10318	1 x 4 x 5 ([illegible])		
11,077 pc		10319	1 x 4 x 6 (12 [illegible]) [illegible]		
			1 x 4 x 6 ([illegible]) [illegible]		
4081 pc		10313	1 x 6 x 5 (11 [illegible] 71)		
7791 pc		10314	1 x 6 x 6 ([illegible])		
			1 x 6 x 6 (3 [illegible] 71)		
			BOXCAR LOAD TO BE RELOADED ON FLATBED		
			EQUAL SPLIT [illegible] FOOTAGE [illegible]		
			# 1 [illegible] FACED ROUGH		

TRIPLICATE

Thank You

15709

C.B. CONCRETE

INSPECTOR

WARNING Contact with freshly mixed concrete may cause severe irritation or burns. Avoid direct contact with skin and wash exposed areas promptly with water. If concrete gets into eyes, rinse with water immediately and seek prompt medical attention.

SANBORN PLANT AND OFFICE | SALES AND CENTRAL DISPATCH 694-4300 | 2186 CORY DRIVE, SANBORN, NY 14132

PLANT	TIME	DATE	ACCOUNT NO.	DISP. NO.	TRUCK	DRIVER	BATCH NO.
1	12:46	10/03/90	F5000		31	THE DOC	3683

CUSTOMER
FOX FENCE INC.
4205 HYDE PARK BLVD.
NIAGARA FALLS, NEW YORK
14035

DELIVERY ADDRESS
OLIN GIBSON
NIAGARA FALLS BLVD
COR OF TUSCARORA
STIFF STIFF STIFF

PURCHASE ORDER	SALES ORDER	TAX	CREDIT	CU. YDS. THIS LOAD.	CUMM. YDS.	SLUMP
	17	2		8.00	8.00	2.00

LOAD QTY.	PRODUCT	DESCRIPTION	UNIT PRICE	AMOUNT
8.00	1*	2000 PSI 3/4" WALL/FTG		
5.00	T	NON-TAXABLE TRUCKING		

CONCRET FOR FENCE POSTS.

LEAVE PLANT	ARRIVE JOB SITE	START DISCHARGE	FINISH DISCHARGE	ARRIVE PLANT
	110	115		

TERMS AND CONDITIONS

1. Purchaser agrees to provide proper guidance and direction to execute delivery and agrees to hold C.B. Concrete harmless for all injury and for damage arising from onsite deliveries.
2. The undersign assumes all responsibility for damage when delivery is made inside of curb.
3. Purchaser will be allowed 5 min. per cubic yard, or 15 min. minimum free unloading time after arrival of truck. Delay over this time will be charged at the rate of $0.90/min. No claims for late delivery will be allowed, since all orders are dispatched to the best of our ability.
4. Purchaser agrees that transfer of the concrete from our truck is unconditional, since the handling, placing and curing of the concrete are important factors beyond our control.
5. C.O.D. order are net, due upon receipt. A service charge of 1½%, per month will be added to all past due accounts.
6. Purchaser assumes full responsibility for strength, slump and quality of concrete when water or other materials are added on the job site, at the request of the customer.

Water Added at Customers Request 8 GAL:

SUBTOTAL	
TAX	
SUBTOTAL	
PREVIOUS BALANCE	
TOTAL	
OTHER	
CALCIUM (BAGS)	
HOLDING TIME (MIN)	
C.O.D. TOTAL	

Purchaser's signature, his agent or his employee's signature, constitutes an agreement with the above terms and conditions.

Signature X

BATCH DATA

AGG-ST	CEM-ST	WAT-ST	AXA-ST	AXB-ST	AXC-ST	AXD-ST	AGG-1
0 LB	5 LB	0.0 GL	0.0 OZ	0.0 OZ	0 OZ	0 OZ	6.80 %
							13000 LB
							12950 LB

AGG-2	CEM-1	WAT-1	AXA-1	AXB-1
0.50 %				
26650 LB	2960 LB	102.0 GL	89.0 OZ	73.5 OZ
25700 LB	2935 LB	102.0 GL	89.0 OZ	74.0 OZ

AGG-ET	CEM-ET	AXA-ET	AXB-ET	AXC-ET	AXD-ET
50 LB	10 LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ

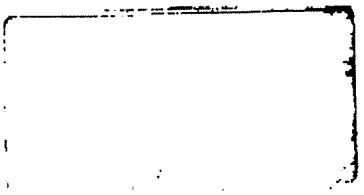
UNLOCK TOL OK MANUAL

12:52

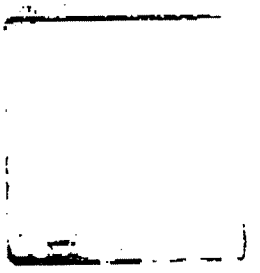
APPENDIX D

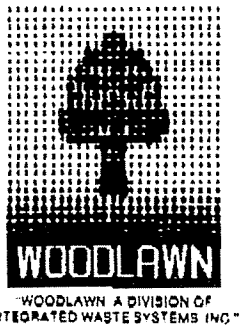
APPENDIX D

International Technology Corporation - Tree Disposal





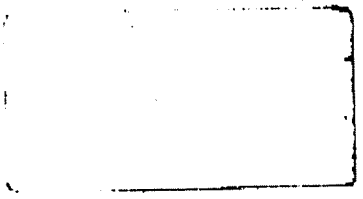




"WOODLAWN A DIVISION OF
INTEGRATED WASTE SYSTEMS INC."

Kevin Parks
Project Manager

333 Ganson Street
Buffalo, New York 14203
(716) 847-8473
FAX (716) 852-4390
Pager No. 680 0656



Item 3

③

INTERNATIONAL TECHNOLOGY CORPORATION

By _____ Date _____ Subject Offsite Disposal Sheet No. ____ of ____

Chkd. By ____ Date _____ Proj. No. _____

$\frac{713820\#}{2000}$ = 356.91 ton @ $90/ton

= $32,122

see Scale Tickets

SCALE TICKET

(4) No 2909

DATE 10-2-89

099100 LB G
026800 LB TE
072300 LB NT

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

SCALE TICKET

No [illegible]

DATE 10-2-89

093740 LB G
026800 LB TE
066950 LB NT

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

SCALE TICKET

No [illegible]

DATE 10-2-89

093950 LB G
026800 LB TE
066650 LBNT

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

SCALE TICKET

(5) No 2977

DATE 10-4-89

088550 LB G
026800 LB TE
061750 LB NT

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

SCALE TICKET

No 2980

DATE 10-4-89

093560 LB G
026800 LB TE
066760 LB NT

SCALE TICKET

(6) № 2929

DATE 10-5-89

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

078990 LB G
026800 LB TE
052190 LB NT

SCALE TICKET

№ 2919

DATE 10-5-89

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

079360 LB G
026800 LB TE
053060 LB NT

SCALE TICKET

№ 2912

DATE 10-5-89

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

081560 LB G
026800 LB TE
054760 LB NT

SCALE TICKET

(7)

№ 2976

DATE 10-9-89

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

082450 LB G
026800 LB TE
055650 LB NT

SCALE TICKET

№ 2968

DATE 10-9-89

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

077580 LB G
026800 LB TE
050780 LB NT

SCALE TICKET

№ 2975

DATE

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

078360 LB G
026800 LB TE
052060 LB NT

INTEGRATED TIRE

334 Ganson Street
Buffalo, N.Y. 14203
Phone: (716) 847-8473

SCALE TICKET

(8)

No. 994

DATE 10-10-89

089720 LB G

026800 LB TE

062920 LB NT

APPENDIX E

APPENDIX E

Herbicide

DUPONT
REG. U.S. PAT. & TM. OFF.

HYVAR® X

HERBICIDE

Product Labeling

DIRECTIONS FOR USE

DUPONT
REG. U.S. PAT. & TM. OFF.

HYVAR® X HERBICIDE

WETTABLE POWDER

ACTIVE INGREDIENT:	
Bromacil (5-bromo-3-sec-butyl-6-methyluracil)	80%
INERT INGREDIENTS	20%
	TOTAL 100%

EPA Reg. No. 352-287

KEEP OUT OF REACH OF CHILDREN

CAUTION

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION! MAY IRRITATE EYES, NOSE, THROAT AND SKIN.

Avoid breathing dust. Avoid contact with skin, eyes or clothing.
Wash thoroughly with soap and water after handling.

For medical emergencies involving this product, call toll free 1-800-441-3637.

STATEMENT OF PRACTICAL TREATMENT

If in eyes: Flush with plenty of water. Get medical attention if irritation persists.
If on skin: Wash with plenty of soap and water. Get medical attention if irritation persists.

ENVIRONMENTAL HAZARDS

Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes.

Bromacil is a chemical which can travel (seep or leach) through soil and can enter ground water which may be used as drinking water. Bromacil has been found in ground water as a result of agricultural use. The correct use rates by geographical area, specified herein, and proper mixing-loading site precautions and procedures must be followed to minimize potential bromacil movement into groundwater.

IMPORTANT

Injury to or loss of desirable trees or other plants may result from failure to observe the following: Do not apply (except as recommended for crop use), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of dry powder or spray to desirable plants. Do not contaminate domestic waters. Keep from contact with fertilizers, insecticides, fungicides, and seeds. Thoroughly clean all traces of "Hyvar" X from application equipment immediately after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

PESTICIDE HANDLING

- Calibrate sprayers only with clean water away from the well site.
- Make scheduled checks of spray equipment.
- Assure accurate measurement of pesticides by all operation employees.
- Mix only enough product for the job at hand.
- Avoid over-filling of spray tank.
- Do not discharge excess material on the soil at a single spot in the field/grove or mixing/loading station.
- Dilute and agitate excess solution and apply at labeled rates/uses.
- Avoid storage of pesticides near well sites.

GENERAL INFORMATION

Du Pont "Hyvar" X Herbicide is a wettable powder to be mixed in water and applied as a spray for control of weeds and brush. It is non-corrosive to equipment, non-flammable and non-volatile.

"Hyvar" X is an effective general herbicide for the control of many annual weeds at low rates and perennial weeds and brush at higher rates and is particularly useful for control of perennial grasses. It may be used on non-cropland or non-selective weed and brush control and for selective weed control in certain crops.

Effects are slow to appear and may not become apparent until the chemical has been carried into the root zone of the weeds by moisture. The degree of control and duration of effect will vary with the amount of herbicide applied, soil texture, rainfall, and other conditions.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Du Pont "Hyvar" X herbicide should be used only in accordance with recommendations on this label, or in separate published Du Pont recommendations available through local dealers.

Du Pont will not be responsible for losses or damages resulting from use of this product in any manner not specifically recommended by Du Pont. User assumes all risks associated with such nonrecommended use.

Do not apply this product through any type of irrigation system.

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

Farm workers performing hand labor operations should not enter treated areas without protective clothing until sprays have dried. Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to farm workers performing hand labor operations who are expected to be in a treated cropland area or in a cropland area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Warnings must include the following information: "CAUTION. Area treated with "Hyvar" X on (date of application). Do not enter without appropriate protective clothing until sprays have dried. In case of contact, flush eyes with plenty of water; wash skin with plenty of soap and water. Get medical attention if irritation persists."

Apply "Hyvar" X as a spray just before or during the period of active growth of plants to be controlled and when rainfall can be expected for soil activation. If dense growth is present, results will be improved if vegetation is removed before treatment. Do not apply when ground is frozen.

Before spraying, calibrate equipment to determine quantity of water necessary to uniformly cover measured area to be treated. Weigh the proper amount "Hyvar" X and mix into necessary volume of water.

For crop use, apply with a fixed-boom power sprayer properly calibrated to a constant speed and rate of delivery. Use sufficient water (min. 40 gal. per acre) to provide thorough and uniform coverage of the ground. Spray booms must be shut off while starting, turning, slowing, or stopping, or injury to the crop or successive crops may result.

For non-crop use, application also may be made with a handgun sprayer using at least 200 gals. spray per acre to insure uniform coverage. For small areas, a hand sprayer or sprinkling can may be used.

Nozzle screens should be 50 mesh or larger. Continuous agitation in the spray tank is required to keep the material in suspension. Agitate by mechanical or hydraulic means in the spray tank. If by-pass or return line is used, it should terminate at bottom of tank to minimize foaming. Do not use air agitation.

WEED CONTROL NON-CROP USE

To control most weeds for an extended period of time on non-cropland areas such as RAILROAD, HIGHWAY and PIPELINE RIGHT-OF-WAYS, PETROLEUM TANK FARMS, LUMBERYARDS, STORAGE AREAS and INDUSTRIAL PLANT SITES:

Apply 3 to 6 lbs. per acre for control of annuals such as cheat, crabgrass, downy brome, foxtail, lambsquarters, puncturevine, ragweed, ryegrass, turkey mullein, and wild oats. When applied just prior to or after emergence of annuals, rates as low as 2 lbs. per acre control many annual weeds and grasses in low rainfall areas and give short term control in higher rainfall areas.

Apply 7 to 15 lbs per acre for control of perennials such as bahiagrass, bermudagrass, bluegrass, broomsedge, dandelion, dog fennel, goldenrod, johnsongrass, nutsedge, plantain, purpletop, natalgrass (redtop), quackgrass, smooth brome, and wild carrot. In areas with low or seasonal rainfall, rates as low as 5 lbs. per acre control many perennial weeds and grasses.

Where limited rainfall (usually less than 4 inches) occurs during the active growth period, such as some areas of the West, "Hyvar" X usually will not provide satisfactory control of hard-to-kill, deep-rooted perennial weeds such as johnsongrass. Note—Use the higher levels of the dosage ranges on adsorptive soils (those high in organic matter or carbon.)

Retreatment—Apply 2 to 6 lbs per acre when annual weeds and grasses reappear on sites where weed growth has been controlled.

For Small Areas—¼ cupful of "Hyvar" X per 250 sq. ft. is approximately 15 lbs. per acre.

Combinations—For broader spectrum control of emerged weeds, apply "Hyvar" X (as listed above) plus surfactant with "Banvel" D (dicamba) or 2,4-D amine, or dalapon, or MSMA or paraquat or "Phytar" 560 (Na salt of cacodylic acid); use the higher rates of "Hyvar" X on heavier soils or soils high in organic matter; use the companion herbicides as recommended on package labels using higher rates on heavy, dense vegetation.

BRUSH CONTROL

To control undesirable woody plants on non-cropland areas such as RAILROAD RIGHT-OF-WAYS, STORAGE AREAS, INDUSTRIAL PLANT SITES, and DRAINAGE DITCHES:

Apply in spring or summer as a broadcast or basal (spot) treatment; for use on drainage ditches, apply as a basal (spot) treatment only. Note: For effective brush control and prevention of damage to desirable vegetation: do not apply to brush standing in water; do not use water from treated ditches for irrigation; do not use in irrigation ditches nor on right-of-ways or other sites where marketable timber or other desirable trees or shrubs are immediately adjacent to the treated area.

Broadcast Treatment—Apply 7 to 15 lbs per acre to control brush such as oak, pine, sweet gum, and willow. Use the higher rates on adsorptive soils (those high in organic matter or carbon).

Basal (Spot) Treatment—2½ lbs in 5 gals. of water and apply at the rate of 1 to 2 fl. oz. per stem 2" to 4" in basal diameter; wet base of stem to run-off. Treatment controls woody plants such as cottonwood, hackberry, maple, oak, poplar, red bud, sweet gum, wild cherry, willow, and winged elm.

SELECTIVE USE IN CROPS

All dosages of "Hyvar" X are expressed as broadcast rates. For band treatment, use proportionately less.

Mosture is necessary to activate the chemical; best results are obtained if moisture is supplied by rainfall or irrigation within two weeks after application.

CITRUS

Apply as a band or broadcast treatment beneath and/or between trees. Avoid contact of foliage and fruit with spray or mist. Temporary yellowing of citrus leaves may occur following treatment. Do not use on citrus in Kern County, California.

Dosage rates are expressed as broadcast rates; for band treatment use proportionately less.

Because injury to citrus trees may result: do not use on soils low in organic matter (less than 1%) nor on poorly drained soils; do not apply more than 8 lbs. per acre per year; do not treat trees planted in irrigation furrows; do not treat diseased trees such as those with foot rot. Do not use in citrus orchards interplanted with other trees or desirable plants, nor in home citrus plantings or in areas where roots of other valuable plants or trees may extend as plant injury may result. Do not graze cattle in treated areas. Treated areas may be planted to citrus trees one year after last application; do not replant to other crops within 2 years after last application as plant injury may result.

FLORIDA ONLY

East Coast/Flatwoods Areas—(low permeable soils)

- The maximum allowable is 6.4 lbs active (bromacil) per acre per year. The allowable amount is inclusive of all bromacil formulations used within one year.
- Under the above guidelines, do not apply more than 8 lbs per acre per year of "Hyvar" X which contains 6.4 lbs active (bromacil).
- Multiple applications may improve control of "hard-to-kill" species.

Trees Established Less Than One Year: For control of annuals, apply 2-3 lbs of "Hyvar" X per acre as needed to maintain weed control. Do not apply at less than 60 day intervals; do not apply more than 6 pounds per acre within any 6 month period, or more than 8 pounds during the first year.

Trees Established One to Three Years: For control of annuals, apply 2-3 lbs of "Hyvar" X per acre as needed to maintain weed control. Do not apply more than 6 pounds per acre within any 6 month period, or more than 8 pounds per acre per year.

Trees Established Three or More Years: Apply 2-4 lbs per acre as needed to maintain weed control. Do not use more than 4 pounds per acre in any one application, nor more than 8 pounds per acre per year. Use the higher rate for control of perennials listed below. Repeat annual treatments are required to control perennials.

Ridge areas - (highly permeable soils; sands, loamy sands)

- The maximum allowable is 4 lbs active (bromacil) per acre per year. The allowable amount is inclusive of all bromacil formulations used within one year.
- Under the above guidelines, do not apply more than 5 lbs per acre per year of "Hyvar" X which contains 4 lbs active (bromacil).
- Multiple applications may improve control of "hard-to-kill" species.

Trees Established Less Than One Year: For control of annual weeds, apply 2-3 lbs of "Hyvar" X per acre as needed to maintain weed control. Do not apply at less than 60 day intervals; do not use more than 5 lbs per acre per year.

Trees Established One to Three Years: For control of annual weeds, apply 2-3 lbs of "Hyvar" X per acre as needed to maintain weed control. Do not use more than 5 lbs per acre per year.

Trees Established Three or More Years: For control of annual weeds, apply 2-4 lbs of "Hyvar" X per acre as needed to maintain weed control. Do not use more than 4 pounds per acre in any one application, nor more than 5 lbs per acre per year. To control established perennials (listed below) use the seasonal use rate of 5 lbs "Hyvar" X per acre. Repeat annual treatments are required to control perennials.

WEEDS CONTROLLED (annuals)

barnyardgrass
crabgrass
crowfootgrass
Florida pusley
henbit
lambsquarter
mustard
natalgrass (red top)
puncturevine
purslane
sandspur
sedge (annual)
sprangletop
Texas panicum
turkey mullein

WEEDS CONTROLLED (perennials)

bermudagrass
torpedograss
paragrass
pangolagrass
Bahiagrass
Johnsongrass
nutsedge

Note: Partial control of perennials usually occurs with a single treatment; repeat applications are required to control perennials. Control of perennials may be improved by cultivation prior to treatment; otherwise, avoid working the soil as long as weed control continues or else effectiveness of the treatment may be reduced.

TEXAS ONLY

Trees Established for at Least One Year to Four Years

Apply 2 to 4 lbs "Hyvar" X per acre. Use the lower rate for 1 to 2 year old trees and the higher rate for trees more than 2 years old. A second application may be made if needed, but do not apply more than 4 lbs "Hyvar" X per acre per year as injury to the trees may result.

U.S. (Except Florida)

Do not use on citrus in Kern County, California.

Trees Established for Four Years or More

Annual Weeds—Including barnyardgrass (watergrass), crabgrass, crowfootgrass, Florida pusley, henbit, lambsquarters, mustard, natalgrass (red top), puncturevine, purslane, sandspur, sedge (annual), sprangletop, Texas panicum (Colorado grass), and turkey mullein, apply 2 to 4 lbs. per acre. Apply anytime of the year, preferably shortly before or after weed growth begins when adequate moisture is available.

Perennial Weeds—Best results are obtained if application is made shortly before or shortly after weed growth begins; if dense growth is present, remove tops and spray the ground. Effects on perennial weeds are slow to appear, usually progressing over a period of several months.

Make a single application per year during the period from winter to early summer; use at the following rates:

Soil Texture	Lbs "Hyvar" X Per Acre
Sand, loamy sand	4 to 5
Sandy loam	5 to 6
Silt loam, clay loam	6 to 8

Alternatively, make two applications of 3 to 4 lbs "Hyvar" X per acre per year. In Texas, and Louisiana, apply in spring and summer; in California and Arizona, apply in fall and spring.

Note: Partial control usually occurs with a single treatment; repeat applications are required to control perennials.

"Hyvar" X controls the following:

Bermudagrass	All areas U.S.
Johnsongrass	Texas
Nutsedge	Texas, California

Control of perennials may be improved by cultivation prior to treatment; otherwise, avoid working the soil as long as weed control continues or else effectiveness of the treatment may be reduced.

PINEAPPLE

Do not replant treated areas to any crop other than pineapple within 2 years after last application as injury to subsequent crops may result.

Hawaii and Florida—For control of seedling weeds such as amaranthus, balsamapple, chloris, crabgrass, Floras paintbrush, foxtail, goosegrass (wiregrass), and Hialoa, apply 2 to 6 lbs. per acre broadcast before the planting material begins to grow. Use the lower rates in low rainfall areas (5 to 10 inches annually) and on clean-culture fields; use the higher rates in high rainfall areas (above 10 inches annually) and for trashmulch fields.

Follow with 2 to 4 lbs. per acre as directed interline spray as needed prior to differentiation, or apply 2 lbs. per acre broadcast as needed after plants are 8 months old but before differentiation. Do not apply more than 10 lbs. total per acre per plant crop.

For ratoon crop, apply 1 to 4 lbs. per acre broadcast after harvesting plant crop but before differentiation. Do not apply more than 4 lbs. total per acre per ratoon crop.

Puerto Rico—For control of seedling weeds such as crabgrass, goosegrass, jungle rice, pigweed, and purslane, apply 2 to 4 lbs. per acre broadcast immediately after planting and before planting material begins to grow.

SPRAY PREPARATION

Mixing in water - Fill tank ½ full with water. Start agitation system, add "Hyvar" X and continue adding water. Add separately each additional component of any tank-mix while adding water. Continue agitation throughout.

Mixing in liquid fertilizer (citrus only) - A fertilizer solution may be used in the spray mixture. Small quantities should be tested for compatibility by the following procedures before full scale mixing.

1. Put 1 pint fertilizer solution in a quart jar.
2. Mix 2 teaspoons "Hyvar" X with 2 tablespoonfuls of water; mix thoroughly and add to fertilizer solution.
3. Close jar and shake well.
4. If other herbicides are used in the mixture, premix 2 teaspoonfuls of dry materials to 1 teaspoonful of liquids with 2 tablespoons of water; add to "Hyvar" X/fertilizer solution mixture.
5. Close jar and shake well.
6. Watch mixture for several seconds; check again in 30 minutes.
7. If mixtures does not separate, foam, gel or become lumpy, it may be used.

Provided the above procedure shows the mixture to be compatible, prepare the tank mixture as follows: Add the fertilizer solution to the spray tank first; mix the required amount of "Hyvar" X with water to form a slurry, with the agitator running, slowly add the slurry and mix thoroughly. For other herbicides, follow directions above. When tank mixing with other herbicides, all applicable directions, restrictions, and precautions for the additional herbicides are also to be followed.

Thoroughly reagitate before using if allowed to settle.

STORAGE AND DISPOSAL

STORAGE: Store product in original container only, away from other pesticides, fertilizer, food, or feed.

PESTICIDE DISPOSAL: Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

NOTICE OF WARRANTY

Du Pont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Du Pont. In no case shall Du Pont be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. DU PONT MAKES NO WARRANTIES OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

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AGRICULTURAL PRODUCTS DEPARTMENT, WILMINGTON, DE 19898

AG-4200 4049 4/13/89

APPENDIX F

APPENDIX F

Rip-Rap Certification

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5·8·90

TO: OLIN CHEMICALS
C/O PROJECT SITE

RE: P&T REMEDIATION
HIAGARA FALLS NY

ATTN: VAL BROWN

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☑ other

NO of COPIES	DRAWING NO.	COMPANY	ITEM
1		NYSDOT	HIAGARA STONE
			QUARRY STATE
			APPROVAL AS SOURCE
1		HIAGARA STONE	RE: SOURCE
			APPROVAL

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit
☑ File and Information
☐ Approved
☐ Approved As Corrected
☐ Return of Bid Documents
☐ Request For Bid Documents

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REMARKS NOTE DOT LETTER DATED 3·30·90

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Sevenson Environmental Services, Inc.

Signed K W Rafael

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc is an Equal Employment Opportunity Employer

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

FRANKLIN E. WHITE
COMMISSIONER

R. J. Russell
Regional Director

Technical Services Laboratory
95 Main Street
Hamburg, New York 14075

March 30, 1990

Niagara Stone Corp.
Attention: David Fittante
8875 Quarry Road
Niagara Falls, NY 14304

Gentlemen:

The 1990 Annual Quarry Report submitted for the proposed operating location noted below is approved. It satisfactorily fulfills all requirements outlined in Materials Procedure 85-3 issued September, 1985.

Please note from your copy of the report the areas within which operations are proposed. There shall be no extension or alteration of these limits without prior approval.

Niagara Stone Corp.
Source No. 5- 4R
Niagara Falls, NY

Very truly yours,

W. R. CASSEDAY
REGIONAL CONSTRUCTION ENGINEER

BY _____
Edward J. Zack
Regional Materials Engineer

WRC/EJZ/sml

Niagara Stone Corporation
Medina Sandstone Quarry Div.

QUARRY ROAD - NIAGARA FALLS, NEW YORK 14304

PHONE: 297-3031 - 694-8292

RE: Annual Certification of Stone

To Whom It May Concern:

This quarry whose source number is 5-4R, located in the Town of Niagara, Niagara County, New York is an APPROVED SOURCE according to the New York State Department of Transporation and has been assigned the following test number:

87 AR 58

This number is applicable to crushed stone aggretes produced at this plant.

Stone as represented by this sample is accepted for Item 703.02 (Coarse Aggregate).

Robert J. Knerr

Robert J. Knerr
Quality Control Technician

Niagara Stone Corporation
Medina Sandstone Quarry Div.

QUARRY ROAD - NIAGARA FALLS, NEW YORK 14304

PHONE: 297-3031 - 694-8292

Plant Identification: Niagara Stone Corp.

Item No. & Type: #4 Crushed Stone

Date: April 30, 1990

SIEVE	WEIGHT	% RETAINED	% PASSING	SPECS.
4"	-0-	-0-	100	100
3"	9.0	6.3	93.7	90-100
2"	90.0	63.4	30.3	0-15
1"	41.0	28.9	1.4	
PAN	2.0	1.4		
TOTALS:	142.0			

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS CORRECT TO THE BEST OF MY KNOWLEDGE.

Sincerely yours,

Robert L. Knerr

Robert Knerr
Quality Control

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

FRANKLIN E. WHITE
COMMISSIONER

R. J. Russell
Regional Director

Technical Services Laboratory
95 Main Street
Hamburg, New York 14075

February 9, 1989

Niagara Stone Corp.
8875 Quarry Road
Niagara Falls, New York 14304
Attention: J. Mancini

RE: Niagara Stone Quarry
Source Number 5-4R

Gentlemen:

Listed below are the most recent results of tests performed by the Materials Bureau in Albany on samples obtained from the quarry above:

703-02 COARSE AGGREGATE

Test Number	87AR58
Date Accepted	1/4/88
Specific Gravity	2.72
Absorption	1.4%
10 Cycle Magnesium Sulphate Test	4.2% Loss
L.A. Abrasion Test "A"	29.1% Loss
25 Cycle Freeze and Thaw Test	0.0% Loss

Composition (Size 2)

Dolomite (Oak Orchard) 100%

Very truly yours,

W. R. CASSEDAY
REGIONAL CONSTRUCTION ENGINEER

E. J. Zack

E. J. Zack
Regional Materials Engineer

WRC/EJZ/sml

cc: Materials File

APPENDIX G

APPENDIX G

Slurry Wall Certifications

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date MAY 22, 1990

TO: OLIN CHEMICALS
PROJECT SITE

RE: P & T REMEDIATION
GIBSON SITE
NIAGARA FALLS, NY

ATTN: MARVIN BROWN

Job No. E 183

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5	-	WASTE STREAM TECHNOLOGY	WATER RESULTS FROM HYDRANT

PURPOSE OF TRANSMITTAL

☒ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☒ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

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REMARKS WATER TO BE USED FOR SLURRY WALL

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Sevenson Environmental Services, Inc.

Signed _____

FORM 12996B NOTABLE BUSINESS FORMS, INC

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WASTE STREAM TECHNOLOGY



FAX LEAD SHEET

W.S.T. # (716) 838-1044

W.S.T. FAX # (716) 837-4117

DATE: / /

NUMBER OF PAGES INCLUDING THIS SHEET: 2

SENT TO: Alan Elia Jr.

AT FAX #: 1-Sevenson

FROM/COMMENTS:

Alan, here are the results from the water tests. If you need any further information please let me know.

Dan

Analytical Laboratory Report

Client Name Sevenson Environmental - Alan Ellis Jr.

Site Name Olan

Sample Date 5/8/90

Sample Description Fire hydrant Water for Bentonite Slurry

Date Sample Received _____

Date Sample Analyzed 5/18/90

RESULTS

Sample Number 901660

pH 7.65 TDS* 120 mg/L TSS** 45 mg/L

* TDS = Total Dissolved Solids
** TSS = Total Suspended Solids

Authorized Signature Daniel W. Vollmer

Daniel W. Vollmer
Laboratory Director

References: pH - EPA Method 150.1
TDS - EPA Method 160.1
TSS - EPA Method 160.2

All the above methods are from "Methods for Chemical Analysis of Water and Wastes", March 1983.

END

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5-17-90

TO: OLIN CHEMICAL
C/O PROJECT SITE

RE: P&T REMEDIATION
GIBSON SITE
NIAGARA FALLS, NY

ATTN: MARVIN BROWN

Job No. E 183

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5		BAROID	BENTONITE ANALYSIS

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☐ Architect Approval
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☐ Approved
☐ Approved As Corrected
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☐ Request For Bid Documents

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EMARKS _____

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Sevenson Environmental Services, Inc.

Signed _____

FORM 12996B NOTABLE BUSINESS FORMS, INC.

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ERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69. BOX 112
COLONY PLANT
BELLE FOURCHE. SO. DAK. 57717

LOCK NUMBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
HILLS 96	5-09	8.59	76.8	43.5	12.0	19.5	12.8	2.8	9.22

MAY NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
	M. AVG.	8.43	79.27	40.83	11.67	14.17	11.87	2.30	9.18
3	STD. DEV.	0.11	4.22	4.13	0.85	4.29	0.68	0.71	0.09

YEAR TO DATE NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
	M. AVG.	8.43	79.27	40.83	11.67	14.17	11.87	2.30	9.18
3	STD. DEV.	0.11	4.22	4.13	0.85	4.29	0.68	0.71	0.09

SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS. NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-10-90

CC: JIN ANDERSON
MARK WARNACK

CERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69, BOX 112
COLONY PLANT
BELLE FOURCHE, SD. 57717

TRUCK NUMBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
N HILLS 111	5-08	8.36	85.2	35.0	10.5	14.0	11.6	1.3	9.26
N HILLS 61	5-08	8.35	75.8	44.0	12.5	9.0	11.2	2.8	9.05

MAY NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
2	M. AVG.	8.36	80.50	39.50	11.50	11.50	11.40	2.05	9.16
	STD. DEV.	0.00	4.70	4.50	1.00	2.50	0.20	0.75	0.10

YEAR TO DATE NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
2	M. AVG.	8.36	80.50	39.50	11.50	11.50	11.40	2.05	9.16
	STD. DEV.	0.00	4.70	4.50	1.00	2.50	0.20	0.75	0.10

SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS, NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-09-90

CC: JIM ANDERSON
MARK WARNACK

CERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69, BOX 112
COLONY PLANT
BELLE FOURCHE, SD. 57717

TRUCK NUMBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
N HILLS 111	5-08	8.36	85.2	35.0	10.5	14.0	11.6	1.3	9.26
N HILLS 61	5-08	8.35	75.8	44.0	12.5	9.0	11.2	2.8	9.05

MAY NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
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SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS, NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-09-90

CC: JIM ANDERSON
MARK WARNACK

ERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69. BOX 112
COLONY PLANT
BELLE FOURCHE. SO. DAK. 57717

UCK NBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
HILLS 96	5-09	8.59	76.8	43.5	12.0	19.5	12.8	2.8	9.22

MAY NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
	N. AVG.	8.43	79.27	40.83	11.67	14.17	11.87	2.30	9.18
3	STD. DEV.	0.11	4.22	4.13	0.85	4.29	0.68	0.71	0.09

YEAR TO DATE NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
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SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS. NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-10-90

CC: JIM ANDERSON
MARK WARNACK

ERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69, BOX 112
COLONY PLANT
BELLE FOURCHE, SD. DAK. 57717

RUCK NMBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
HILLS 96	5-09	8.59	76.8	43.5	12.0	19.5	12.8	2.8	9.22

MAY NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
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YEAR TO DATE NUMBER of TRUCKS		% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
	N. AVG.	8.43	79.27	40.83	11.67	14.17	11.87	2.30	9.18
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SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS, NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-10-90

CC: JIM ANDERSON
MARK WARNACK

CERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69, BOX 112
COLONY PLANT
BELLE FOURCHE, SD. 57717

TRUCK NUMBER	SHIP DATE	% MOISTURE 10.0 MAX	MESH %-200 70.0 MIN	FANN 600-AGED 30-45	PLASTIC VISCOSITY	YIELD POINT <3 X PV	FLUID LOSS 15.0 MAX	%GRIT +200 W.S. 4.0 MAX	pH
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	M. AVG.	8.36	80.50	39.50	11.50	11.50	11.40	2.05	9.16
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NIAGARA FALLS, NEW YORK 14305

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CERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

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NIAGARA FALLS, NEW YORK 14305

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5-09-90

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ERTIFICATE OF ANALYSIS

SEVENSON ENVIRONMENTAL

PRODUCT: BARA-KADE 90

1990

SHIPPED FROM: BAROID
HCR 69. BOX 112
COLONY PLANT
BELLE FOURCHE. SD. DAK. 57717

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SEVENSON ENVIRONMENTAL
2749 LOCKPORT ROAD
NIAGARA FALLS. NEW YORK 14305

QUALITY ASSURANCE SUPV.
MARSHAL L SUDRALA
5-10-90

CC: JIM ANDERSON
MARK WARNACK

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering Science, Inc.

DATE: October 26, 1990

PROJECT NO.: BT-90-128

REPORT NO.: L-5

REPORT OF MATERIAL TESTING

MATERIAL: One sample of Soil Bentonite slurry prepared from materials supplied from the above referenced project as follows:
Soil- Indian Hills Borrow area
Bentonite- Baroid 90
Permeate- On-site Leachate from Piezometer #1 6

Six and Half (6.5%) Bentonite Slurry was mixed with soil to a consistency of 5" "slump" then permeated with on-site leachate.

CONSTANT HEAD TRIAXIAL PERMEABILITY (Remolded)

	RUN #1	RUN #2	RUN #3
Permeability (cm/sec)	2.22×10^{-8}	2.37×10^{-8}	3.00×10^{-8}
Differential Head (psi)	3.2	3.2	2.8

Please see the attached Permeability test report for details of test.

If you have any questions regarding the data as presented, please feel free to contact our office at any time.

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper
Manager of Testing Services

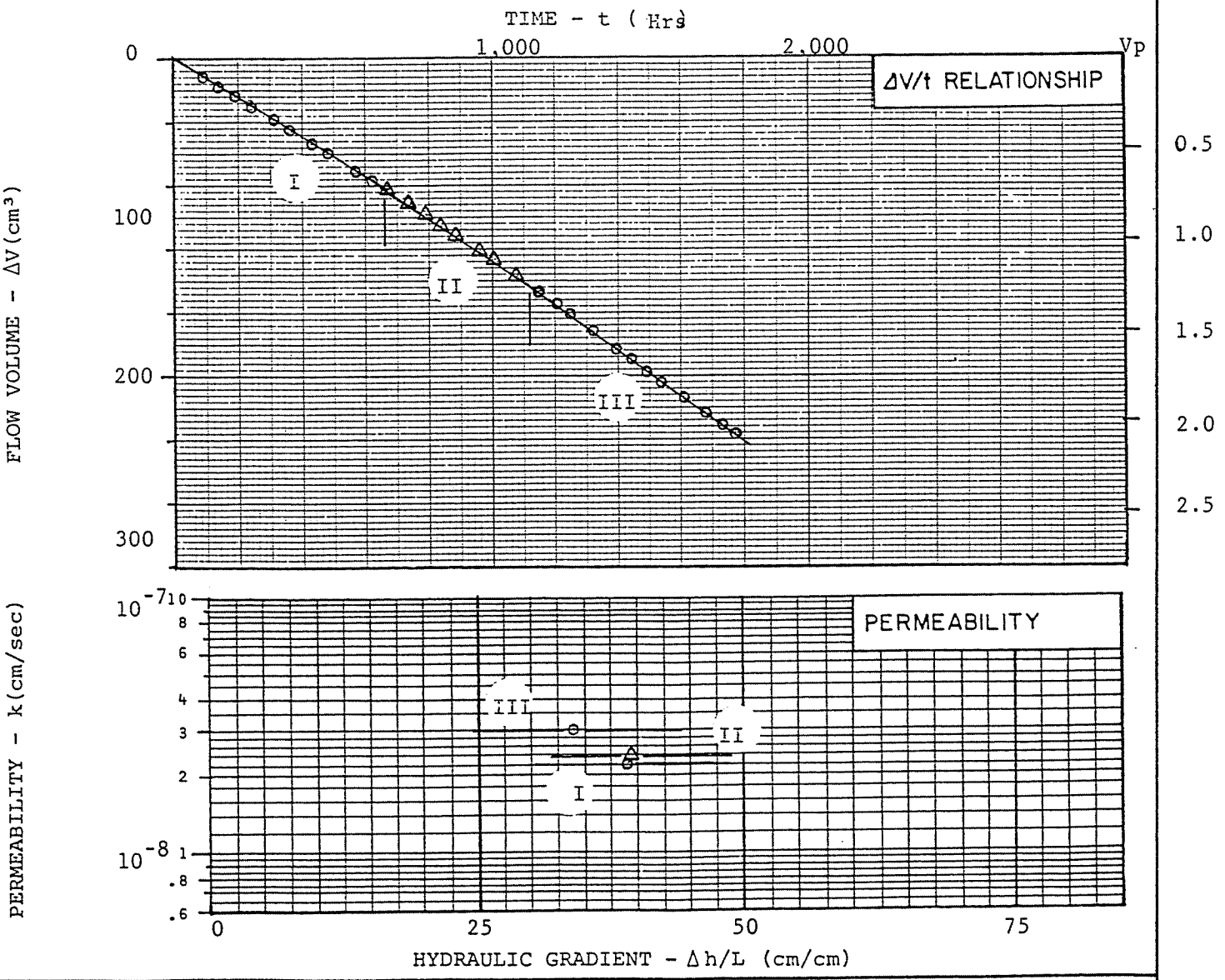
Niel W. Zuern
Laboratory Services Manager

cck
encl.

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110, TELEFAX 716-649-8051

405.001

TEST DATA:			SAMPLE DATA:
Specimen Height (cm):	6.10		Sample Identification: Lab No. 405.001
Specimen Diameter (cm):	7.09		Soil-Bentonite Backfill, Permeant Site GW
Dry Unit Weight (pcf):	89.6		Visual Description: Indian Hills Borrow
Moisture Content Before Test (%):	33.4		Mixed w/6.5% Bentonite Slurry to 5" Slump.
Moisture Content After Test (%):	30.9		Remarks: Specific Gravity, G=2.74
Cell Confining Pressure (psi):	85.0		Pore Volume, $V_p = 114.4 cm^3$
Test Pressure (psi):	82.2	82.0	Maximum Dry Density
Back Pressure (psi):	79.0	78.8	(ASTM D ____) (pcf): ____
Differential Head (psi):	3.2	3.2	Optimum Moisture Content (%): ____
Flow Rate ($\Delta V/t$) (cm^3/sec)	O 3.42×10^{-5}	Δ 3.70×10^{-5}	Percent Compaction: ____
Permeability (cm/sec):	O 2.22×10^{-8}	Δ 2.37×10^{-8}	Permeameter Type: Flexible Wall



EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Pine & Tuscarora Remediation
Niagara Falls, New York

DR BY: JFC	CK'D. JFC	DATE: Oct 1990	PROJ.NO. BT-90-128

405.001

TEST DATA:

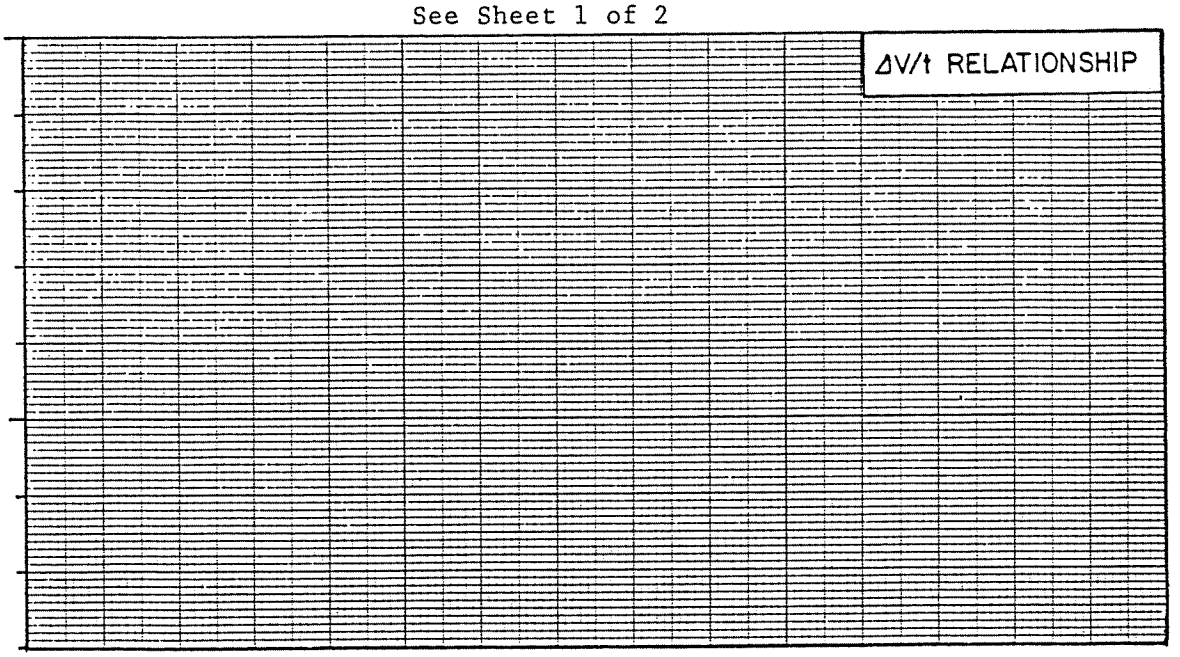
Specimen Height (cm): 6.10
Specimen Diameter (cm): 7.09
Dry Unit Weight (pcf): 89.6
Moisture Content Before Test (%): 33.4
Moisture Content After Test (%): 30.9
Cell Confining Pressure (psi): 85.0
Test Pressure (psi): 81.9
Back Pressure (psi): 79.1
Differential Head (psi): 2.8
Flow Rate ($\Delta V/t$) (cm^3/sec) O 4.01×10^{-5} Δ
Permeability (cm/sec): O 3.00×10^{-8} Δ

SAMPLE DATA:

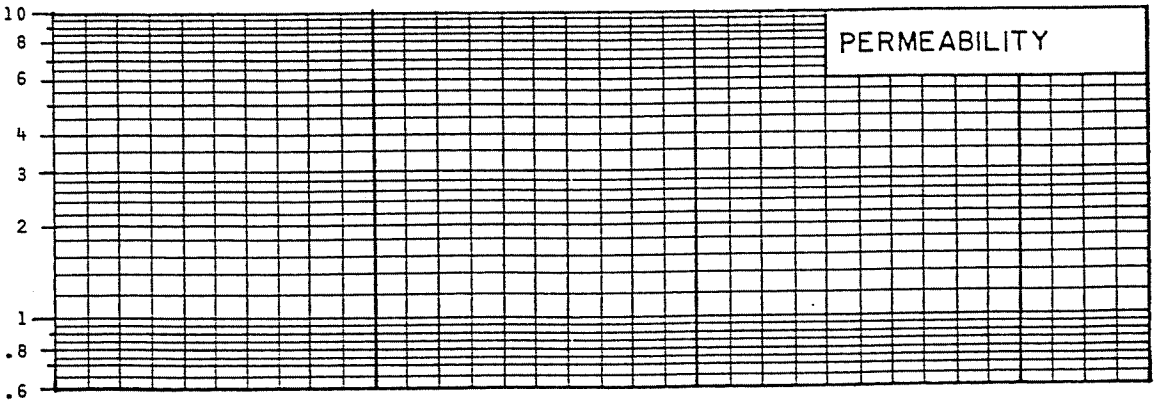
Sample Identification: Lab No. 405.001
Soil-Bentonite Backfill, Permeant Site G.W.
Visual Description: Indian Hills Borrow
Mixed w/6.5% Bentonite Slurry to 5" Slump
Remarks:

Maximum Dry Density
(ASTM D ____) (pcf):
Optimum Moisture Content (%):
Percent Compaction:
Permeameter Type: Flexible Wall

TIME - t (sec)
See Sheet 1 of 2



FLOW VOLUME - ΔV (cm^3)



PERMEABILITY - k (cm/sec)

HYDRAULIC GRADIENT - $\Delta h/L$ (cm/cm)

EMPIRE SOILS INVESTIGATIONS INC.

PERMEABILITY TEST REPORT

Pine & Tuscarora Remediation
Niagara Falls, New York

DR BY: JFC	CK'D. JFC	DATE: OCt 1990	PROJ.NO. BT-90-128

Sevenson Environmental Services, Inc.

SLURRY TRENCH QUALITY CONTROL

DATE 6/6/90

JOB NAME PHT Remediation

JOB NUMBER E-183

EXCAVATION			COMMENTS
STATION	DEPTH	KEY	
5+80	10	2	8+23 or 0+00 → 2
6+00	11	2	
6+20	11½	2	0+10 → 2
6+40	10	2	
6+60	11	2	
6+80	11	2	
7+00	11	2	
7+20	11	2	
7+40	11	2	
7+60	12	2	
7+80	11½	2	
8+00	11	2	

BACKFILL						COMMENTS
TIME			SLUMP	WC	% PASSING #200	
8:30			5"			
1:30 PM			4½"			

SLURRY									COMMENTS
TRENCH					MIXING UNIT				
STATION	TIME	DEPTH	γ	VISC.	γ	FILTRATE	VISC	TIME	
5+80	9:28	9'	68	55.43	64.5		45.34	9:15	
5+80	9:32	4½'	68	53.48	64.5	15½ cc	40.20	12:40	
8+00	1:34	6'	74	68.9					

Permit (GRAD) sample taken at STA. 7+50

Backfill Density - STA 5+60 - 112 lbs/F³

S.C.C. [signature]

OWNER [signature]

Sevenson Environmental Services, Inc.

SLURRY TRENCH QUALITY CONTROL

JOB NAME P+T Remediation

DATE 6/5/90

JOB NUMBER E-183

EXCAVATION			COMMENTS
STATION	DEPTH	KEY	
5+40	11	2	5+80 10 2
5+60	11	2	
5+80	11	2	
4+00	11½	2	
4+20	10	2	
4+40	10	2	
4+60	10	2	
4+80	9	2	
5+00	9	2	
5+20	9½	2	
5+40	10	2	
5+60	10	2	

BACKFILL						COMMENTS
TIME			SLUMP	WC	% PASSING #200	
7:30			5¼"			
8:00			5½"			

SLURRY									COMMENTS
TRENCH					MIXING UNIT				
STATION	TIME	DEPTH	γ	VISC.	γ	FILTRATE	VISC	TIME	
5+60	11:00	10'	66.5	42.37	64.5	12	41.5	9:30 AM	[illegible]
[illegible]	11:05	5'	64.5	41.85	64.5		42.0	2:45 PM	
4+40	2:15	6'	67.5	50.0					

8:30 AM	Backfill	Density		103 [illegible] ft³
8:35 AM	"	"		105 [illegible] ft³
Permit Grab	Sample	for	lab Testing	at Sta 3+00

S.C.C. [illegible] OWNER [illegible]

Sevenson Environmental Services, Inc.

SLURRY TRENCH QUALITY CONTROL

JOB NAME P&T Remediation

DATE 6/4/90

JOB NUMBER E-183

EXCAVATION

STATION	DEPTH	KEY	COMMENTS
0+00	7	2	
0+20	8	2	
0+40	7	2	
0+60	7	2	
0+80	7	2	
1+00	7	2	
1+20	6	2	
1+40	7	2	
1+60	6½	2	
1+80	6	2	
2+00	6	2	
2+20	6½	2	
2+40	6½	2	
2+60	7	2	
2+80	10	2	
3+00	10	2	
3+20	10	2	
3+40	11	2	

BACKFILL

TIME			SLUMP	WC	% PASSING #200	COMMENTS
7:25			5½"			STA 0+00
12:15			4"			STA 0+80 PERMEAMETER TEST SAMPLES
						TAKEN FROM TRENCH

SLURRY

TRENCH					MIXING UNIT				COMMENTS
STATION	TIME	DEPTH	γ	VISC.	γ	FILTRATE	VISC	TIME	
0+60	10:30	9'	65.5	45	64.3	14CC	41	8:00	P.H 8
2+20	2:00	5'	67	44.64	64.5	18.5CC	41.09	1:39	

S.C.C. Thomas Odell

OWNER Dave Gibson

EMPIRE

TRENCH SLURRY TESTING QUANTITATIVE/QUALITATIVE

Lab No. 349.001

Mix No. _____

PROJECT: PINE & TUSCARORA PROJECT NO. BT-90-180

SLURRY MATERIAL: BARA-KADE SOURCE: BAROID

MIX PROPORTIONS		BATCH SIZE	
Slurry Agent	6.5 %	130	g
Hydrating Fluid	FRAPH$_2$O	2000	g
Other			g
Other			g

TECHNICIAN: [illegible] DATE: 5/24/90

Mixing Time HI SPEED 3.5 min.

Hydration Period 24 hrs.

Mixing Time LOW SPEED 2 min.

QUANTITATIVE TEST RESULTS

VISCOSITY (MARSH FUNNEL) 56 sec. TEMP. — °C

FANN VISCOMETER TEST

a) dial reading for 600 rpm _____ cp

b) dial reading for 300 rpm _____ cp

c) plastic viscosity (a-b) _____ cp

d) yield point (b-c) _____ lb/100 ft^2

e) apparent viscosity (1/2 a) _____ cp

FILTRATION TEST AT 100 psi

TIME INTERVAL

Filtrate Loss: 11.4 cm^3 30 min.

Filter Cake Thickness: .044" /32in.

Subjective Description of Filter Cake: COHESIVE

SLURRY DENSITY (MUD BALANCE)

DENSITY _____ lbs/ft^3

SPECIFIC GRAVITY 1.035 g/cm^3

REMARKS:

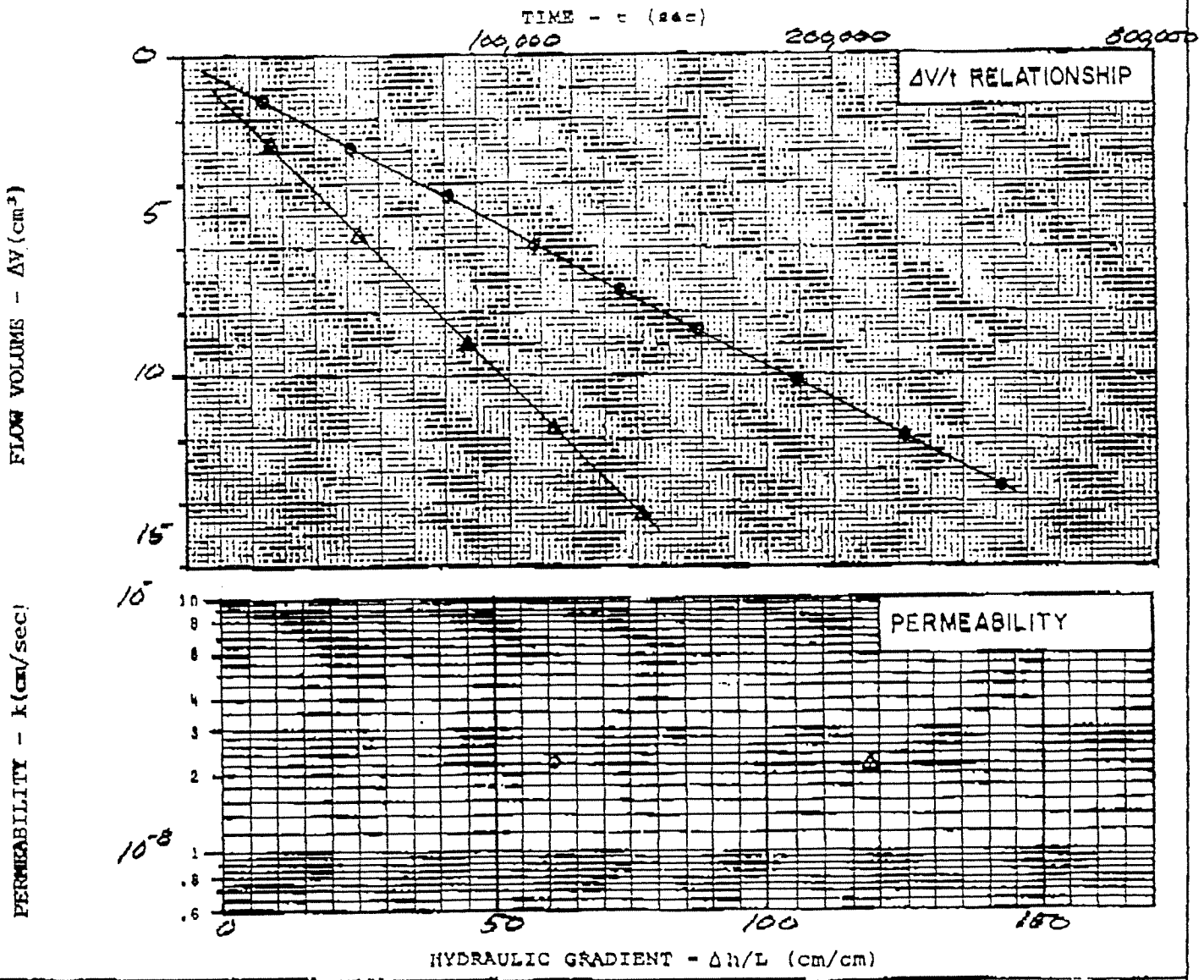
3A.

TEST DATA:

Specimen Height (cm):	6.09	
Specimen Diameter (cm):	7.07	
Dry Unit Weight (pcf):	109.6	
Moisture Content Before Test (%):	20.5	
Moisture Content After Test (%):	18.7	
Cell Confining Pressure (psi):	95.0	
Test Pressure (psi):	85.3	90.2
Back Pressure (psi):	80.2	80.1
Differential Head (psi):	5.1	10.1
Flow Rate (ΔV/t)(cm³/sec) ○	5.30×10⁻⁴	△ 1.01×10⁻⁴
Permeability (cm/sec): ○	2.81×10⁻⁸	△ 2.19×10⁻⁸

SAMPLE DATA:

Sample Identification: SAMPLE NO. 90-634
INDIAN HILLS MATERIAL
Visual Description: SOIL MIXED WITH 6.5% BENTONITE SLURRY TO 5½" SLUMP
Remarks: CONSOLIDATED IN SLURRY CONSOLIDOMETER AT 15 PSI NET PRESSURE
Maximum Dry Density (ASTM D ____) (pcf): ____
Optimum Moisture Content (%): ____
Percent Compaction: ____
Permeameter Type: FLEXIBLE WALL



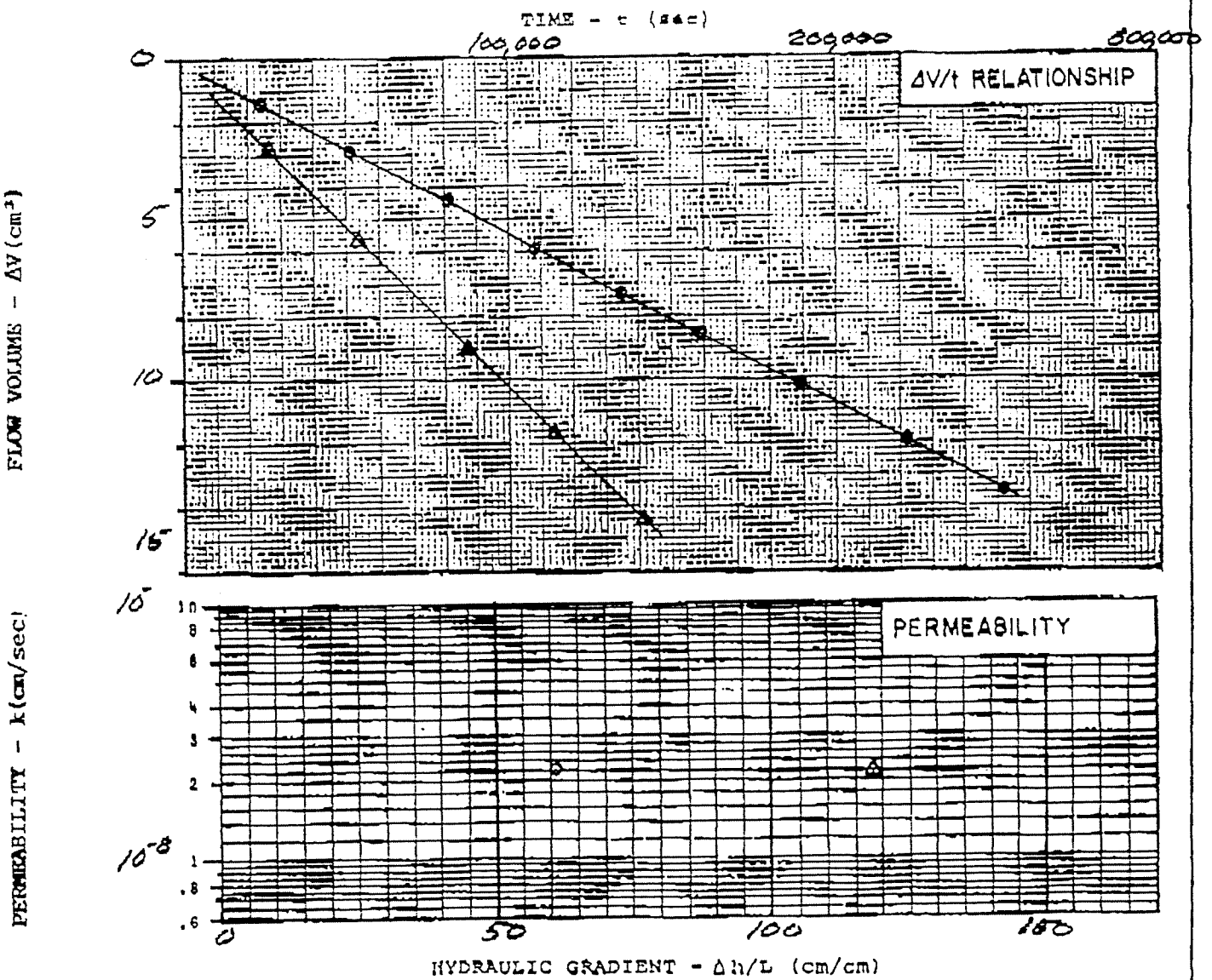
EMPIRE SOILS INVESTIGATION, INC.

PERMEABILITY TEST REPORT

PINE & TUSCARORA REMEDIATION
NIAGARA FALLS, NEW YORK

34.

TEST DATA:			SAMPLE DATA:
Specimen Height (cm):	6.09		Sample Identification: SAMPLE NO. 90-634
Specimen Diameter (cm):	7.07		INDIAN HILLS MATERIAL
Dry Unit Weight (pcf):	109.6		Visual Description: SOIL MIXED WITH
Moisture Content Before Test (%):	20.5		6.5% BENTONITE SLURRY TO 5½" SLUMP
Moisture Content After Test (%):	18.7		Remarks: CONSOLIDATED IN SLURRY CONSOLI-
Cell Confining Pressure (psi):	95.0		DOMETER AT 15 PSI NET PRESSURE
Test Pressure (psi):	85.3	90.2	Maximum Dry Density
Back Pressure (psi):	80.2	80.1	(ASTM D ____) (pcf): ____
Differential Head (psi):	5.1	10.1	Optimum Moisture Content (%): ____
Flow Rate (ΔV/t)(cm³/sec)	O 5.30×10⁻⁵	Δ 1.01×10⁻⁴	Percent Compaction: ____
Permeability (cm/sec):	O 2.81×10⁻⁸	Δ 2.19×10⁻⁸	Permeameter Type: FLEXIBLE WALL



EMPIRE SOILS INVESTIGATIONS, INC.

PERMEABILITY TEST REPORT

PINE & TUSCARORA REMEDIATION
NIAGARA FALLS, NEW YORK

AS-BUILT SLURRY WALL

$\bar{\pi}$ @ N 7246.08 E 8385.93

PT. #	AZ	H.D.	NORTH	EAST
1	230-45-00	201.89	7118.34	8229.59
2	252-36-00	191.62	7188.78	8203.08
3	262-31-40	182.95	7222.29	8204.53
4	274-32-50	126.39	7256.10	8259.94
5	305-14-40	82.85	7293.89	8318.27
6	316-18-00	78.40	7302.76	8331.76
7	326-14-10	76.57	7309.73	8343.37
8	338-10-10	76.38	7316.98	8357.53
	350-52-40	77.19	7322.29	8373.69
10	3-21-50	77.59	7323.54	8390.48
11	15-05-10	77.84	7321.24	8406.19
12	27-21-10	75.35	7313.01	8420.55
13	38-16-30	73.52	7303.80	8431.47
14	51-12-30	71.46	7290.85	8441.63
15	65-38-10	70.46	7275.15	8450.12
16	96-48-30	78.99	7236.72	8464.36
17	119-13-10	102.33	7196.13	8475.24
18	151-53-40	141.40	7121.35	8452.54
19	172-05-00	125.66	7121.62	8403.24
20	203-16-50	137.45	7119.82	8331.61
21	211-46-20	147.64	7120.56	8308.19
22	227-41-30	188.59	7119.14	8246.46

APPENDIX H

APPENDIX H

Geofabric/Geogrid Certifications

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5·30·90

TO: OLIN CHEMICAL
C/O PROJECT SITE

RE: P&T REMEDIATION
GIBSON SITE
NIAGARA FALLS NY

ATTN: WM BROWN

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☑ other

NO. of COPIES	DRAWING NO.	COMPANY	ITEM
5		PHILLIPS FIBERS	16HP CERTIFICATION
		CORP.	

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed Kim W. Tuffel

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS 66 COMPANY

SENECA, SOUTH CAROLINA 29679
P. O. BOX P-66

May 24, 1990
c90.303

Conbar Materials, Inc.
3813 Broadway
Buffalo, NY 14227

RE: Published Certifiable Minimum Physical Properties

Dear Sirs:

Attached are roll numbers with test data taken during production run for Phillips Fibers Supac* 16NP merge L17800 supplied to you on PFC order #18958-001, Customer P. O.#0915 and Bill of Lading #24375.

M. V. Roach/clm
M. V. Roach
Q. A. Lab Supv.

*REG. TM PHILLIPS PETROLEUM COMPANY

c: C. Timberlake
N. Livengood

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS 66 COMPANY

SENECA, SOUTH CAROLINA 29679
P. O. BOX P-66

SUPAC 16 NP

PHILLIPS FIBERS CORPORATION
NONWOVEN GEOTEXTILES

ISSUE DATE:
DEC 1989

PROPERTY	STANDARD TEST PROCEDURE	WEAKEST DIRECTION VALUE	SPECIAL TEST INFORMATION	SUPAC 16 NP L17800
TENSILE STRENGTH pounds	ASTM D-4632	MINIMUM	CERTIFIABLE	360
ELONGATION percent	ASTM D-4632	MINIMUM	CERTIFIABLE	50
PUNCTURE STRENGTH pounds	ASTM D-4833	MINIMUM	CERTIFIABLE	225
MULLEN BURST STRENGTH,psi	ASTM D-3786	MINIMUM	CERTIFIABLE	650
TRAPEZOIDAL TEAR STRENGTH , pounds	ASTM D-4533	MINIMUM	CERTIFIABLE	160
ABRASION RESISTANCE % strength retained	ASTM D-4886	MINIMUM	CERTIFIABLE	90
COEFFICIENT of PERMEABILITY,cm/sec	ASTM D-4491	MINIMUM	CERTIFIABLE	0.25
FLOW RATE gpm/sf	ASTM D-4491	MINIMUM	CERTIFIABLE	50
PERMITTIVITY per second	ASTM D-4491	MINIMUM	CERTIFIABLE	0.7
APPARENT OPENING SIZE,US Std Sieve	ASTM D-4751	MAXIMUM OPENING	CERTIFIABLE	100
UV STABILITY strength %/hrs.	ASTM D-4355	MINIMUM	CERTIFIABLE	70 150
STANDARD ROLL SIZES	180 INCHES WIDE	LINEAR YARDS SQUARE YARDS		40 200
	150 INCHES WIDE	LINEAR YARDS SQUARE YARDS		48 200

Date 5/24/90 Q. A. Lab Supv. M. V. Roach/cm

ROLL NUMBER	WTH IN	LIN YD	ELONGATN MD	ELONGATN XMD	TENSILE MD	TENSILE XMD	TEAR MD	TEAR XMD	MULN	FUN	AOS	COEF PERM CM/SEC
805	180	33	102	73	433	598			696	243	140	0.398
03 812	180	33										
03 815	180	33										
03 822	180	33										
05 2078	180	50	97	93	422	654						
05 2093	180	50										
05 2094	180	50										
05 2095	180	50										
05 2096	180	50										
05 2097	180	50										
05 2099	180	50	101	89	427	645						
05 2100	180	50										
05 2101	180	50										
2103	180	50										
05 2106	180	50										
05 2108	180	50										
05 2109	180	50										
05 2112	180	50										
05 2114	180	50										
05 2116	180	50										
05 87304	180	33	89	79	444	587						
05 87325	180	33										
06 79391	180	40	86	75	427	542	168	226	723	233		
06 79400	180	40	84	78	431	601	202	256	755	225		
R4 14370	180	33										
R4 16176	180	33										
R4 17416	180	33										
R4 17417	180	33										

ROLL NUMBER	WTH IN	LIN YD	ELONGATN MD	ELONGATN XMD	TENSILE MD	TENSILE XMD	TEAR MD	TEAR XMD	MULN	PUN	AOS	COEF PERM CM/SEC
F 17970	180	33										
R4 18361	180	33										
R4 18398	180	33										
R4 18404	180	50										

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

RECEIVED
JUN 18 1990
JUN 12 1990
SEVENSON ENVIRONMENTAL SERVICES, INC.

Thomas C. Jorling
Commissioner

Mr. Kim Lickfield
Project Manager
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, NY 14302

Re: Black and Bergholtz Creeks Remediation Contract No. D001939
Love Canal Site No. 9-32-020, Niagara Falls, New York

Dear Mr. Lickfield:

I received your letter dated June 5, 1990 in which you submitted SES's cost breakdown for the 4-1/2 rolls of Geotextile taken from the Love Canal site for use at the Charles Gibson site (site no. 9-32-063).

Please be advised that the NYSDEC does not consider your deduction of $120.00 for contractor's overhead and profit (20% of the $600.00) appropriate. The material purchased by SES for use under the contract became NYSDEC property as soon as your payment application including the cost of this material was processed. The use of this material by SES was not for change order work, where contractor's overhead and profit is considered, but instead for use under another non-related contract.

The NYSDEC accepts the copy of the invoice from Phillips Fibers Corporation as being the true cost per square yard of the Geotextile. A credit of $600.00 will be applied to the contract.

If you have any questions, please contact me at (518) 457-0927.

Sincerely,

Philip G. Waite, P.E.
Senior Sanitary Engineer
Operations and Maintenance Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: D. Melancon
J. Tuk

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

RECEIVED
JUN 18 1990
JUN 12 1990
SEVENSON ENVIRONMENTAL
SERVICES, INC.

Thomas C. Jorling
Commissioner

Mr. Kim Lickfield
Project Manager
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, NY 14302

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Sincerely,

Philip G. Waite, P.E.
Senior Sanitary Engineer
Operations and Maintenance Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: D. Melancon
J. Tuk

Sevenson Environmental Services, Inc.

~~2749~~ LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5·30·90

TO: OLIN CHEMICALS
C/O PROJECT SITE

ATTN: WM BROWN

RE: P&T REMEDIATION
GIBSON SITE
NIAGARA FALLS N.Y.

CERTIFICATIONS OF GEOFABRIC AND GEOTEXTILES

Job No. E183

We are ☑ enclosing ☐ forwarding under sepa

☐ drawing ☑ other

NO. of COPIES	DRAWING NO.	COMPANY	ITEM
5	LTR	FLUID SYSTEMS	RE: CERTIFICATIONS
5		AMOCO	AMOCO 4506 CERT.
5		"	AMOCO 4510 CERT
5		TENSAR	BIAXIAL GEOGRID CERT.

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed Kim W. Ryall

FORM 129968 NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

FLUID SYSTEMS, INC.

32 Triangle Park Drive
Suite 3201
Cincinnati, Ohio 45246

513/771-5656
800/346-9107
FAX: 513/771-4844

May 29, 1990

SEVENSON ENVIRONMENTAL SERVICES
2749 Lockport Road
Niagara Falls, NY 14302

Attention: Mr. Kim Lickfield

SUBJECT: **CERTIFICATE OF COMPLIANCE**
PURCHASE ORDER # E1832003

Dear Mr. Lickfield,

Attached, please find the Certificate of Compliance for the TENSAR BX1200, the AMOCO 4506, and the AMOCO 4510, shipped to the Pine & Tuscarora Remediation Gibson Site on May 14th and May 21st.

If you have any questions or require further information, please do not hesitate to call.

Very truly yours,

Gregory J. Scales
Sales Engineer

GJS/dlt
Attachments

MAY 17 RECD

Amoco Fabrics and Fibers Company
Quality Control Department
P. O. Box 836
Hazlehurst, Georgia 31539-0451

May 14, 1990

Fluid Systems
32 Triangle Park Drive
Suite 3201
Cincinnati, OH 45246

Re: Purchase Order # 1835
Amoco Shipping # J 453 dated May 14, 1990

Amoco Style 4506 is a 100% polypropylene nonwoven needlepunched fabric. This engineered geotextile is stabilized to resist degradation due to ultraviolet exposure. It is resistant to commonly encountered soil chemicals, mildew, and insects, and is non-biodegradable. Polypropylene is stable within a ph range of 2 to 13 making it one of the most stable polymers available for geotextiles today. The Amoco 4506 conforms to the physical property values listed below:

Property	Unit	Test Method	Typical Value	Minimum Average Roll Value
Weight	oz/yd^2	ASTM-D-3776	6.0	
Thickness	Mils	ASTM-D-1777	85	75
Grab Tensile (CMD/MD)	lbs.	ASTM-D-4632	210/170	150
Grab Tensile Elongation (CMD/MD)	%	ASTM-D-4632	60/55	50
Mullen Burst	psi	ASTM-D-3786	370	350
Puncture Resistance	lbs.	ASTM-D-4833	105	90
Trapezoid Tear (CMD/MD)	lbs.	ASTM-D-4533	85/75	65
Permittivity	$Gal/Min/Ft^2$	ASTM-D-4491	110	90
Apparent Opening Size (AOS)	Sieve Size	ASTM-D-4751	70/140	70

CMD - Cross Machine Direction
MD - Machine Direction

W. D. Morrison
Quality Control Manager

mom

My Commission Expires
July 24, 1990

MAY 17 RECD

Amoco Fabrics and Fibers Company

Quality Control Department
P. O. Box 836
Hazlehurst, Georgia 31539-0451

May 14, 1990

Fluid Systems
32 Triangle Park Drive
Suite 3201
Cincinnati, OH 45246

Re: Purchase Order # 1835
Amoco Shipping # J 453 dated May 14, 1990

Amoco Style 4510 is a 100% polypropylene nonwoven needlepunched fabric. This engineered geotextile is stabilized to resist degradation due to ultraviolet exposure. It is resistant to commonly encountered soil chemicals, mildew, and insects, and is non-biodegradable. Polypropylene is stable within a ph range of 2 to 13 making it one of the most stable polymers available for geotextiles today. The Amoco 4510 conforms to the physical property values listed below:

Property	Unit	Test Method	Typical Value	Minimum Average Roll Value
Weight	oz/yd^2	ASTM-D-3776	10.0	
Thickness	Mils	ASTM-D-1777	130	110
Grab Tensile (CMD/MD)	lbs.	ASTM-D-4632	350/270	225
Grab Tensile Elongation (CMD/MD)	%	ASTM-D-4632	70/60	50
Mullen Burst	psi	ASTM-D-3786	620	550
Puncture Resistance	lbs.	ASTM-D-4833	180	165
Trapezoid Tear (CMD/MD)	lbs.	ASTM-D-4533	140/110	95
Permittivity	$Gal/Min/Ft^2$	ASTM-D-4491	80	70
Apparent Opening Size (AOS)	Sieve Size	ASTM-D-4751	100+	70

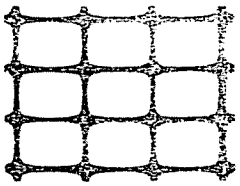
CMD - Cross Machine Direction
MD - Machine Direction

W. D. Morrison
Quality Control Manager

mom

My Commission Expires
July 24, 1990

MAY 1 8 RECD



Tensar

The Tensar Corporation

1210 Citizens Parkway
Morrow, Georgia 30260
Tel. (404) 968-0255

May 15, 1990

Mr. George Zagorski
Fluid Systems, Inc.
32 Triangle Park Drive
Suite 3201
Cincinnati, OH 45246

Dear Mr. Zagorski:

This is to certify that BX120040 (SS2-3m) as manufactured by The Tensar Corporation and sold to Fluid Systems, Inc. for use by Sevenson Environmental and purchased per customer purchase order #01811, meets the characteristics and properties per the attached specification sheet.

Sincerely,

W. S. Shelton
Director of Production Technology

WSS/jb/FSI01811

Attachment

BIAXIAL GFOGRID BX1200 (SS-2)

The geogrid shall be a regular grid structure formed by biaxially drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being reinforced. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being reinforced and shall also have high continuity of tensile strength through all ribs and junctions of the grid structure. The geogrid shall maintain its reinforcement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices and to all forms of biological or chemical degradation normally encountered in the material being reinforced.

The geogrid shall also conform in all respects to the property requirements listed below.

PROPERTY	TEST METHOD	UNITS	VALUE
Interlock			
o aperture size[1]	I.D. Calipered[2]		
o MD		in	1.0 (nom)
o CMD		in	1.3 (nom)
o open area	COE Method[3]	%	70 (min)
o thickness	ASTM D 1777-64		
o ribs		in	0.05 (nom)
o junctions		in	0.16 (nom)
Reinforcement			
o flexural rigidity	ASTM D1388-64[4]		
o MD		mg-cm	750,000 (min)
o CMD		mg-cm	1,000,000 (min)
o tensile modulus	GRI GG1-87[5]		
o MD		lb/ft	18,500 (min)
o CMD		lb/ft	30,000 (min)
o junction strength	GRI GG2-87[6]		
o MD		lb/ft	1,050 (min)
o CMD		lb/ft	1,890 (min)
o junction efficiency	GRI GG2-87[6]	%	90 (min)
Material			
o polypropylene	ASTM D 4101 Group 1/Class 1/Grade 2	%	98 (min)
o carbon black	ASTM 4218	%	0.5 (min)
Dimensions			
o roll length		ft	164
o roll width		ft	9.8 & 13.1
o roll weight		lb	102 & 135

Notes:

1 MD dimension is along roll length. CMD dimension is across roll width.
2 Maximum inside dimension in each principal direction measured by calipers.
3 Percent open area measured without magnification by Corps of Engineers method as specified in CW 02215 Civil Works Construction Guide, November 1977.
4 ASTM D 1388-64 modified to account for wide specimen testing as described in Tensar test method TTM-5.0 "Stiffness of Geosynthetics".
5 Secant modulus at 2% elongation measured by Geosynthetic Research Institute test method GG1-87 "Geogrid Tensile Strength". No offset allowances are made in calculating secant modulus.
6 Geogrid junction strength and junction efficiency measured by Geosynthetic Research Institute test method GG2-87 "Geogrid Junction Strength".

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
1-800-845-4453

November 6, 1987

PAVILION DRAINAGE SUPPLY CO., INC.
"A Native American Business"
Box 219
PAVILION, NEW YORK 14525

PHONE (716) 584-3261
FAX (716) 584-3812

LETTER OF TRANSMITTAL

DATE	JOB NO.
10-15-90	
ATTENTION Allen Elva	
RE:	

TO Stevenson Construction Corp
2749 Lockport Rd
Niagra Falls, N.Y. 14302

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	9-19-90		American Engineering Fabric Certification

RECEIVED
OCT 17 1990
STEVENSON ENVIRONMENTAL SERVICES, INC.

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED: Phil Abad

If enclosures are not as noted, kindly notify us at once.

PRODUCT 240-2 NEBS Inc. Groton Mass. 01471

AMERICAN ENGINEERING FABRICS, Inc.
MANUFACTURERS of GEOTEXTILES
1 Coffin Avenue • New Bedford, Massachusetts 02746 • Tel. (508) 993-9622

September 19, 1990

Pavilion Drainage

RE: SEVENSON CONSTRUCTION

Gentlemen:

This is to certify that AEF Style 1680 shipped to the above meets the following physical properties:

Fabric Style	1680
Fabric oz/yd	16
Weight grams/m	545
Thickness (mils) ASTM D - 1777	175
Grab Strength (Lbs.)ASTM D - 4632-86	435
Elongation (%) ASTM D - 4632-86	100
Puncture Strength 5/16" (Lbs.) ASTM D-3787	220
Mullen Burst Strength (PSI) ASTM D-3786-87	600
Trapezoid Tear Strength (Lbs.) ASTM D 4533-85	190
AOS ASTM D 4751	100-120
Vertical Water Flow (GPM/ft) L.T.M.	290
Air Permeability (Ft3/Ft3/min) ASTM D-737-75	50

AMERICAN ENGINEERING FABRICS, Inc.
MANUFACTURERS of GEOTEXTILES
1 Coffin Avenue • New Bedford, Massachusetts 02746 • Tel. (508) 993-9622

STD. Roll Width(Ft)

STD. Roll Length(Ft.) 200

Very truly yours,

Laurie Coulombe

Laurie Coulombe
Quality Contol

ORDER ACKNOWLEDGMENT

PHILLIPS FIBERS CORPORATION

A SUBSIDIARY OF PHILLIPS 66 COMPANY

P. O. BOX 66

GREENVILLE, S. CAROLINA 29602

Date 88

Order No. 78859

Amendment No.

SHIP FROM NAME	CODE	CUSTOMER CODE A/R NO.	SUFFIX	REGION	SALESMAN	E.U.C.	TERMS	CUSTOMER ORDER NUMBER
DIST CENTER	08	76813	01	4	44	PJGU	NET 30 DAYS	LIVENGOOD

SOLD TO

SEVENSON CONSTRUCTION CORP
95TH & COLVIN BLVD
NIAGARA FALLS, NY 14304

RECEIVED
JUL 15 1988
SEVENSON CONSTRUCTION CORP.

SHIP TO

SAME

ST.	COUNTY	CITY
39	032	60

CRAFTED WITH PRIDE IN USA

SELLER DOES NOT ACCEPT ANY TERMS AND CONDITIONS OTHER THAN THOSE APPEARING HEREON AND ON THE REVERSE SIDE HEREOF. SELLER HEREBY OFFERS TO SELL THE MATERIAL(s) DESCRIBED HEREIN TO BUYER SOLELY UPON THE EXPRESS TERMS AND CONDITIONS OF THIS ACKNOWLEDGEMENT. ACCEPTANCE OF SUCH MATERIAL(s) BY BUYER SHALL CONSTITUTE ASSENT TO SAID TERMS AND CONDITIONS ON THAT BASIS NEVERTHELESS, TO THE EXTENT THIS ORDER IS COVERED BY A SEPARATE WRITTEN CONTRACT BETWEEN SELLER AND BUYER, IT IS ACCEPTED ON THE TERMS AND CONDITIONS SET FORTH IN SUCH CONTRACT

TERMS OF DELIVERY

DISTRICT NO.	P = PREPAID C = COLLECT	ROUTING	PLANT	PRODUCT
	P			SUPAC (R) GEOTEXTILE FABRIC

ITEM NO.	DATE TO SHIP	QUANTITY	MERGE	PACK CODE	SHIP CODE OR ENDS	ITEM DESCRIPTION	UNIT PRICE
.	WE 7-15	LIN YDS 2,970	L17645		144"	FP1 HEATHER 16NP	
	APPROX.	11,880 SY					FOB SENECA S

BILLING INSTRUCTIONS

DOMESTIC PACKING LIST NO. 089159 PAGE 1

-SHIP FROM------ CO	MO-DY-YR	CUST-NO.	ORDER-NO.	CUSTOMER ORDER	BILL LADING
FC DIST. CENTER	--------	27256-41	18958-	NO. 0915	NO. 84375

BC TO:	SHIP TO:
CONBAR MATERIALS, INC.	SEVENSON ENVIRONMENTAL
3813 BROADWAY	RT. 62
	TUSCARORA RD.
BUFFALO NY	NIAGARA FALLS NY

ITEM: 01 COLOR: BLACK

EMERGE/WIDTH = L17800 - 180

ROLL NUMBER	GROSS WGT.	LINEAR YDS.	ROLL NUMBER	GROSS WGT.	LINEAR YDS.	ROLL NUMBER	GROSS WGT.	LINEAR YDS.
R417970	190.0	33.0	R418361	197.0	33.0	R418398	188.0	33.0
R418404	888.0	90.0	0679391	221.0	40.0	0679400	232.0	40.0

TOTAL CONTAINERS 6. POUNDS 1316.0 229.0

-SHIP FROM------ CO	MO-DY-YR	CUST-NO.	ORDER-NO.	CUSTOMER ORDER	BILL LADING
PFC DIST. CENTER	--------	27256-41	16958-	NO. 0915	NO. 24375

SC TO:
COLLAR MATERIALS, INC.
3813 BROADWAY

BUFFALO NY

SHIP TO:
SEVENSON ENVIRONMENTAL
RT. 62
TUSCARORA RD.
NIAGARA FALLS NY

ITEM: 01 COLOR: BLACK

*MERGE/WIDTH = L17800 - 180

ROLL NUMBER	GROSS WGT.	LINEAR YDS.	ROLL NUMBER	GROSS WGT.	LINEAR YDS.	ROLL NUMBER	GROSS WGT.	LINEAR YDS.
R414370	199.0	33.0	R416176	194.0	33.0	R417416	211.0	33.0
R417417	214.0	33.0	0300805	180.0	33.0	0300812	195.0	33.0
0300815	189.0	33.0	0300822	198.0	33.0	0502078	274.0	50.0
0502093	262.0	50.0	0502094	266.0	50.0	0502095	266.0	50.0
0502096	271.0	50.0	0502097	272.0	50.0	0502099	270.0	50.0
0502100	269.0	50.0	0502101	270.0	50.0	0502103	274.0	50.0
0502106	271.0	50.0	0502108	274.0	50.0	0502109	282.0	50.0
0502112	257.0	50.0	0502114	260.0	50.0	0502116	280.0	50.0
0587304	194.0	33.0	0587325	191.0	33.0			

TOTAL CONTAINERS 28, POUNDS 6288.0 1130.0

PACKING LIST SUMMARY PAGE: 3

BY ITEM:

	01	L17800	180	GR. WT.	1,316.0	LIN. YDS.	229.0
	01	L17800	180 150	GR. WT.	6,288.0	LIN. YDS.	1,130.0
TOTAL	32	CONTS.		GR. WT.	7,604.0	LIN. YDS.	1,359.0

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 5.30.90

TO: OLIN CHEMICAL
c/o PROJECT SITE

ATTN: WM BROWN

RE: P&T REMEDIATION
GIBSON SITE
NIAGARA FALLS NY

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☐ other

NO. of COPIES	DRAWING NO.	COMPANY	ITEM
5		PHILLIPS FIBERS	16HP CERTIFICATION
		CORP.	

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed Kim W. Tyler

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS 66 COMPANY

SENECA, SOUTH CAROLINA 29679
P. O. BOX P-66

May 24, 1990
c90.303

Conbar Materials, Inc.
3813 Broadway
Buffalo, NY 14227

RE: Published Certifiable Minimum Physical Properties

Dear Sirs:

Attached are roll numbers with test data taken during production run for Phillips Fibers Supac* 16NP merge L17800 supplied to you on PFC order #18958-001, Customer P. O.#0915 and Bill of Lading #24375.

M. V. Roach/clm
M. V. Roach
Q. A. Lab Supv.

*REG. TM PHILLIPS PETROLEUM COMPANY

c: C. Timberlake
N. Livengood

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS 66 COMPANY

SENECA, SOUTH CAROLINA 29679
P. O. BOX P-66

SUPAC 16 NP — PHILLIPS FIBERS CORPORATION NONWOVEN GEOTEXTILES — ISSUE DATE: DEC 1989

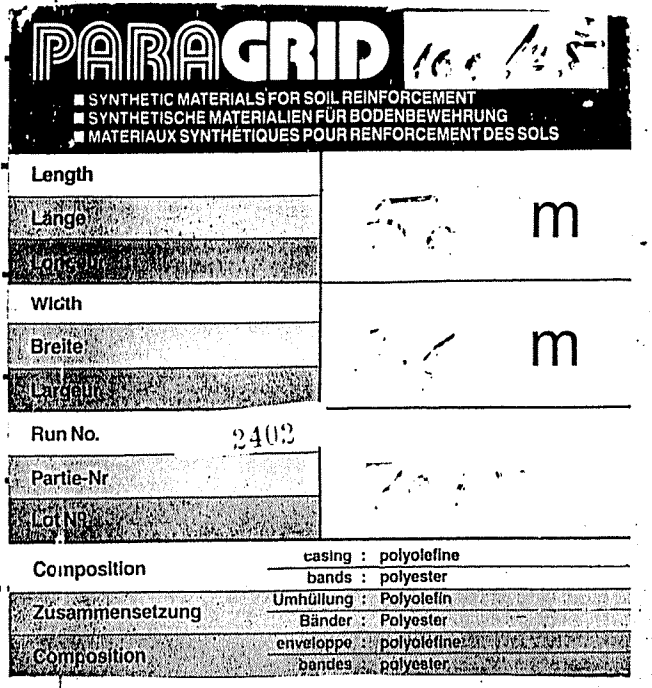
PROPERTY	STANDARD TEST PROCEDURE	WEAKEST DIRECTION VALUE	SPECIAL TEST INFORMATION	SUPAC 16 NP L17800
TENSILE STRENGTH pounds	ASTM D-4632	MINIMUM	CERTIFIABLE	360
ELONGATION percent	ASTM D-4632	MINIMUM	CERTIFIABLE	50
PUNCTURE STRENGTH pounds	ASTM D-4833	MINIMUM	CERTIFIABLE	225
MULLEN BURST STRENGTH,psi	ASTM D-3786	MINIMUM	CERTIFIABLE	650
TRAPEZOIDAL TEAR STRENGTH , pounds	ASTM D-4533	MINIMUM	CERTIFIABLE	160
ABRASION RESISTANCE % strength retained	ASTM D-4886	MINIMUM	CERTIFIABLE	90
COEFFICIENT of PERMEABILITY,cm/sec	ASTM D-4491	MINIMUM	CERTIFIABLE	0.25
FLOW RATE gpm/sf	ASTM D-4491	MINIMUM	CERTIFIABLE	50
PERMITTIVITY per second	ASTM D-4491	MINIMUM	CERTIFIABLE	0.7
APPARENT OPENING SIZE,US Std Sieve	ASTM D-4751	MAXIMUM OPENING	CERTIFIABLE	100
UV STABILITY strength %/hrs.	ASTM D-4355	MINIMUM	CERTIFIABLE	70 150
STANDARD ROLL SIZES	180 INCHES WIDE	LINEAR YARDS SQUARE YARDS		40 200
	150 INCHES WIDE	LINEAR YARDS SQUARE YARDS		48 200

Date 5/24/90 Q. A. Lab Supv. M. V. Roach/cm

ROLL NUMBER		WTH IN	LIN YD	ELONGATN MD	ELONGATN XMD	TENSILE MD	TENSILE XMD	TEAR MD	TEAR XMD	MULN	FUN	AOS	COEF PERM CM/SEC
	805	180	33	102	73	433	598			696	243	140	0.398
03	812	180	33										
03	815	180	33										
03	822	180	33										
05	2078	180	50	97	93	422	654						
05	2093	180	50										
05	2094	180	50										
05	2095	180	50										
05	2096	180	50										
05	2097	180	50										
05	2099	180	50	101	89	427	645						
05	2100	180	50										
05	2101	180	50										
5	2103	180	50										
05	2106	180	50										
05	2108	180	50										
05	2109	180	50										
05	2112	180	50										
05	2114	180	50										
05	2116	180	50										
05	87304	180	33	89	79	444	587						
05	87325	180	33										
06	79391	180	40	86	75	427	542	168	226	723	233		
06	79400	180	40	84	78	431	601	202	256	755	225		
R4	14370	180	33										
R4	16176	180	33										
R4	17416	180	33										
R4	17417	180	33										

ROLL NUMBER	WTH IN	LIN YD	ELONGATN MD	ELONGATN XMD	TENSILE MD	TENSILE XMD	TEAR MD	TEAR XMD	MULN	PUN	AOS	COEF PERM CM/SEC
17970	180	33										
R4 18361	180	33										
R4 18398	180	33										
R4 18404	180	50										

TYPE		100/25S.
COLOUR		BLACK.
WIDTH [MTRS]	3.6	METRES.
LENGTH [MTRS]		1 X 50.
RUN NO		7018/90.
SPEC. NO		7280.



AMOCO FABRICS AND FIBERS COMPANY

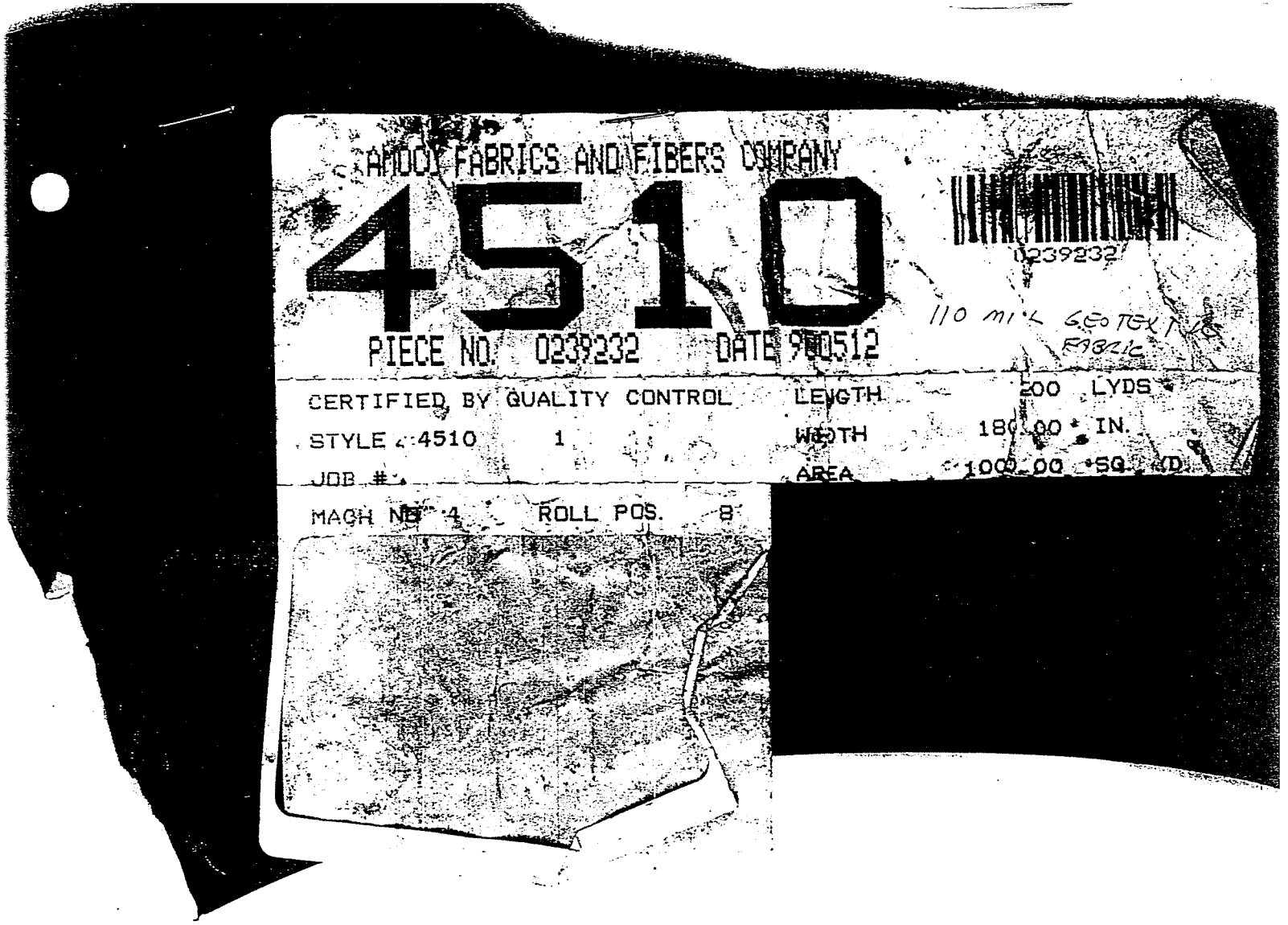
4506

0192668

PIECE NO. 0192668 DATE 900317

CERTIFIED BY QUALITY CONTROL	LENGTH	300	LYDS
STYLE 4506	WIDTH	180.00	IN.
JOB #	AREA	1500.00	SQ. YD.

10 mil GEOTEXTILE FABRIC


AMOCO FABRICS AND FIBERS COMPANY
4510
0239232
110 MIL GEOTEXTILE FABRIC
PIECE NO. 0239232 DATE 900512
CERTIFIED BY QUALITY CONTROL
LENGTH 200 LYDS
STYLE 4510 1
WIDTH 180.00 IN.
JOB #
AREA 1000.00 SQ. YD.
MACH NO 4 ROLL POS. 8

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

TRANSMITTAL INFORMATION SHEET

DATE: 8/30/90

THE FOLLOWING PAGES ARE FOR:

NAME: KIM LICKFIELD

FIRM: SEVENSON

ADDRESS:

FROM: JOE DOINO

FIRM: BUFFALO TESTING LABORATORIES, INC.

TOTAL NUMBER OF PAGES 1 INCLUDING THIS SHEET.

IF YOU HAVE ANY PROBLEMS DURING THE TRANSMISSION OF THESE DOCUMENTS, PLEASE CALL: (716) 873-2302

SUBJECT:

3 SAMPLES - 230, 230, 220 lbs PER INCH WIDTH.

FORMAL REPT. TO FOLLOW

Amoco Fabrics and Fibers Company
Suite 550
900 Circle 75 Parkway
Atlanta, Georgia 30339
(404) 956-9025 - Telex 54-2963

Product Description for Amoco Nonwoven Style 4510

Amoco style 4510 is a 100% polypropylene nonwoven needlepunched fabric. This engineered geotextile is stabilized to resist degredation due to ultraviolet exposure. It is resistant to commonly encountered soil chemicals, mildew, and insects, and is non-biodegradable. Polypropylene is stable within a ph range of 2 to 13 making it one of the most stable polymers available for geotextiles today. The Amoco 4510 conforms to the physical property values listed below:

Property	Unit	Test Method	Typical Value	Minimum Average Roll Value
Weight	oz/yd^2	ASTM D-3776	10.0	BETWEEN HOPE SHEETS
Thickness	Mils	ASTM D-1777	130	110
Grab Tensile (CMD/MD)	lbs.	ASTM D-4632	350/270	235
Grab Tensile Elongation (CMD/MD)	%	ASTM D-4632	70/60	50
Mullen Burst	psi	ASTM D-3786	620	550
Puncture Resistance	lbs.	ASTM D-4833	180	165
Trapezoidal Tear (CMD/MD)	lbs.	ASTM D-4533	140/110	95
Permittivity	$Gal/Min/FT^2$	ASTM D-4491	80	70
Apparent Opening Size (AOS)	Sieve Size	ASTM D-4751	100+	70

CMD - Cross Machine Direction
MD - Machine Direction

Amoco Fabrics and Fibers Company
Suite 550
900 Circle 75 Parkway
Atlanta, Georgia 30339
(404) 956-9025 - Telex 54-2963

Product Description for Amoco Nonwoven Style 4506

Amoco style 4506 is a 100% polypropylene nonwoven needlepunched fabric. This engineered geotextile is stabilized to resist degredation due to ultraviolet exposure. It is resistant to commonly encountered soil chemicals, mildew, and insects, and is non-biodegradable. Polypropylene is stable within a ph range of 2 to 13 making it one of the most stable polymers available for geotextiles today. The Amoco 4506 conforms to the physical property values listed below:

Property	Unit	Test Method	Typical Value	Minimum Average Roll Value
Weight	oz/yd^2	ASTM D-3776	6.0	
Thickness	Mils	ASTM D-1777	85	75 TYP OF LOWER
Grab Tensile (CMD/MD)	lbs.	ASTM D-4632	210/170	150
Grab Tensile Elongation (CMD/MD)	%	ASTM D-4632	60/55	50
Mullen Burst	psi	ASTM D-3786	370	350
Puncture Resistance	lbs.	ASTM D-4833	105	90
Trapezoidal Tear (CMD/MD)	lbs.	ASTM D-4533	85/75	65
Permittivity	$Gal/Min/FT^2$	ASTM D-4491	110	90
Apparent Opening Size (AOS)	Sieve Size	ASTM D-4751	70/140	70

CMD - Cross Machine Direction
MD - Machine Direction

AMOCO FABRICS AND FIBERS COMPANY

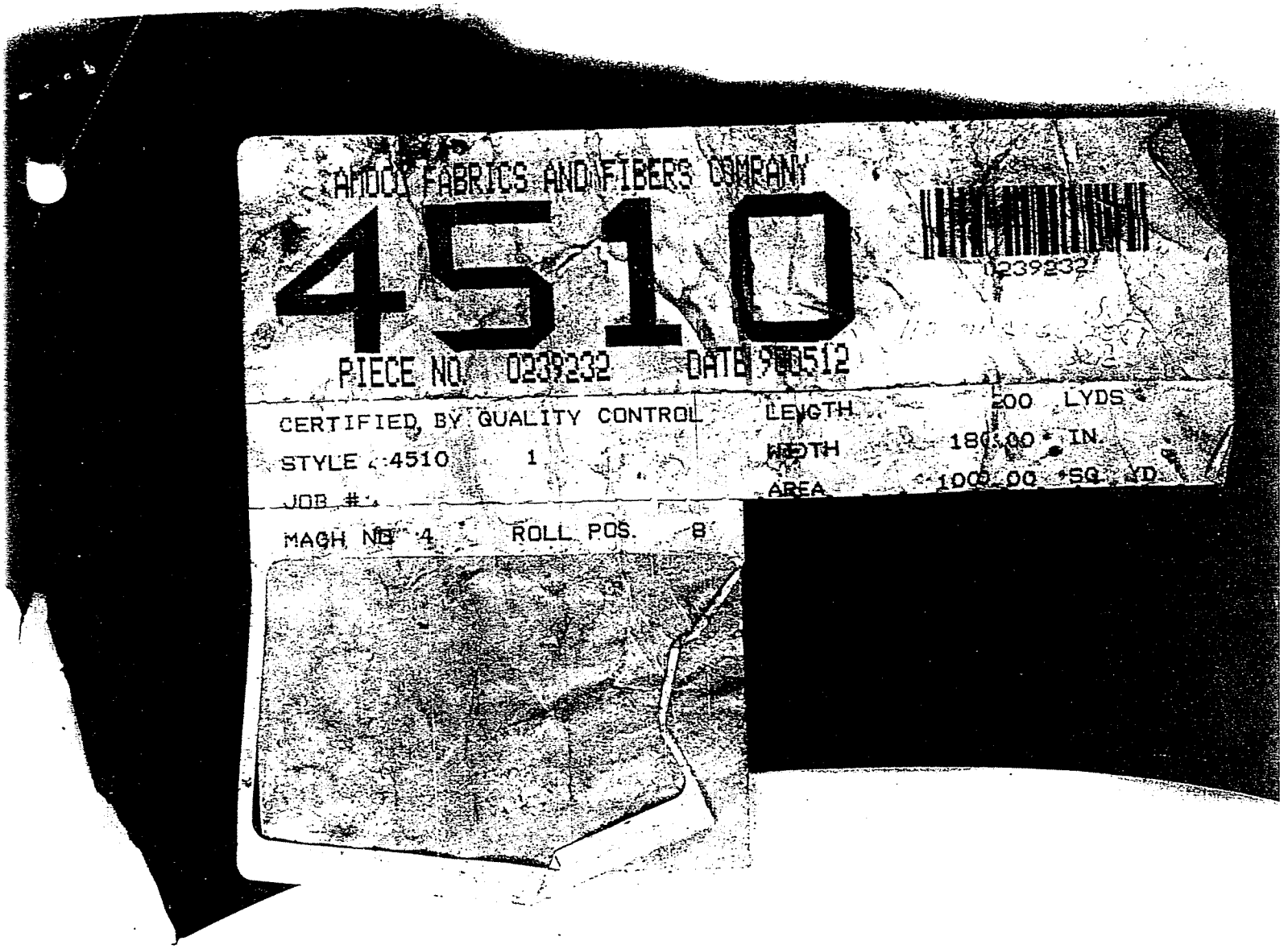
4506

0192668

PIECE NO. 0192668 DATE 900317

CERTIFIED BY QUALITY CONTROL	LENGTH	300	LYDS
STYLE 4506	WIDTH	180.00	IN.
JOB #	AREA	1500.00	SQ. YD.

10 mil GEOTEXTILE FABRIC



110 mil GEOTEXTILE FABRIC

APPENDIX I

APPENDIX I

HDPE Liner Certification

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 7·3·90

TO: OLIN CHEMICALS
C/O SITE

RE: P&T REMEDIATION

ATTN: WM BROWN

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☐ other _____

NO. of COPIES	DRAWING NO.	COMPANY	ITEM
3		GUNDLE LINING	QA, QC CERTS
			LINER

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS _____

Copy to FILE

Sevenson Environmental Services, Inc.

Signed _____

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

Gundle

Quality Control Certificate

RAILCAR : ELTX-344
MATERIAL : HDPE 040 MIL
BATCH # : 041290
ROLL # : 02004567

MANF. DATE : 04/12/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	40	D 1593
Carbon Black (%)	2.0 - 3.0	2.3	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			
T.S. Yield (ppi)	70	100	D638
T.S. Break (ppi)	120	188	Type IV
Elong. Yield (%)	10	14	2 ipm
Elong. Break (%)	500	802	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR	: ELTX-161	MANF. DATE	: 04/09/1990
MATERIAL	: HDPE 040 MIL	PROJECT NAME	: PINE AND TUSCARORA
BATCH #	: 040990	PROJECT NUMBER	: A053
ROLL #	: 03004344	LOCATION	: NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	45	D 1593
Carbon Black (%)	2.0 - 3.0	2.1	D 1603
Density (g/cm3)	.94	.940	D 1505 A
Tensile Properties:			D 638
T.S. Yield (ppi)	70	107	Type IV
T.S. Break (ppi)	120	209	2 ipm
Elong. Yield (%)	10	15	
Elong. Break (%)	500	808	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-1412
MATERIAL : HDPE 040 MIL
BATCH # : 040290
ROLL # : 03004222

MANF. DATE : 04/02/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	44	D 1593
Carbon Black (%)	2.0 - 3.0	2.6	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			
T.S. Yield (ppi)	70	112	D638
T.S. Break (ppi)	120	206	Type IV
Elong. Yield (%)	10	15	2 ipm
Elong. Break (%)	500	847	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Assurance Certificate

RAILCAR	: ELTX-1412	MANF. DATE	: 04/02/1990
MATERIAL	: HDPE 040 MIL	PROJECT NAME	: PINE AND TUSCARORA
BATCH #	: 040290	PROJECT NUMBER	: A053
ROLL #	: 02004221	LOCATION	: NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	45	D 1593
Carbon Black (%)	2.0 - 3.0	2.6	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			D 638
T.S. Yield (ppi)	70	112	Type IV
T.S. Break (ppi)	120	206	2 ipm
Elong. Yield (%)	10	15	
Elong. Break (%)	500	847	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-1015
MATERIAL : HDPE 040 MIL
BATCH # : 040190
ROLL # : 03004208

MANF. DATE : 04/01/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	45	D 1593
Carbon Black (%)	2.0 - 3.0	2.3	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			D 638
T.S. Yield (ppi)	70	112	Type IV
T.S. Break (ppi)	120	207	2 ipm
Elong. Yield (%)	10	16	
Elong. Break (%)	500	815	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-1015
MATERIAL : HDPE 040 MIL
BATCH # : 033090
ROLL # : 03004171

MANF. DATE : 03/30/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	47	D 1593
Carbon Black (%)	2.0 - 3.0	2.3	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			D 638 Type IV 2 ipm
T.S. Yield (ppi)	70	116	
T.S. Break (ppi)	120	234	
Elong. Yield (%)	10	14	
Elong. Break (%)	500	861	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-1015
MATERIAL : HDPE 040 MIL
BATCH # : 033190
ROLL # : 03004189

MANF. DATE : 03/31/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	43	D 1593
Carbon Black (%)	2.0 - 3.0	2.1	D 1603
Density (g/cm3)	.94	.944	D 1505 A
Tensile Properties:			
T.S. Yield (ppi)	70	104	D638
T.S. Break (ppi)	120	209	Type IV
Elong. Yield (%)	10	16	2 ipm
Elong. Break (%)	500	896	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Page 3-90

SOLTEX
Polymer
Corporation
A SOLVAY AMERICA Company

February 12, 1990
FAX

Gundle Lining Systems
Ray McCurdy
19103 Gundle Avenue
Houston, TX 77073

Listed below are the data on K38-20-138 shipments:

Soltex Order Number:	0C1469
Customer PO:	126720
Date Shipped:	02/12/90
Ship To:	WESTFIELD, TX
Lot Number:	C91126L21A
Hopper Car Number:	ELTX 1015
Weight, Lbs.:	185,600

MELT INDEX	0.18
DENSITY	0.940

Sincerely,

White G. Jee

White G. Jee
Quality Control Group Leader

dcw

SOLTEX
Polymer
Corporation
SOLVAY AMERICA Company

December 21, 1989
FAX

Gundle Lining Systems
Ray McCurdy
19103 Gundle Avenue
Houston, TX 77073

Listed below are the data on G36-24-149 shipments:

Soltex Order Number:	0C1185
Customer PO:	126433
Date Shipped:	12/20/89
Ship To:	WESTFIELD, TX
Lot Number:	C90615B06A
Hopper Car Number:	ELTX 1412
Weight, Lbs.:	167,700

Blacr

MELT INDEX	0.27
DENSITY	0.934

Sincerely,

White G. Jee / jb

White G. Jee
Quality Control Group Leader

dcw

1230 Battleground Road / Deer Park, Texas 77536 / TWX: (910) 860-4652 / (713) 479-2381
Mailing Address: P.O. Box 1000 / Deer Park, Texas 77536



SOLTEX
Polymer
Corporation
A SOLVAY AMERICA Company

February 21, 1990
Ref. WGJ-802-90

Gundle Lining Systems
19103 Gundle Road
Houston, TX 77073

Attn: Mr. Ray McCurdy

Dear Sir:

Listed below are the data on K38-20-138 shipments:

Soltex order number:	OC1470
Gundle P. O. no.:	126720
Date shipped:	2-15-90
Shipped to:	Westfield, TX
Lot number:	C91130A11A
Hopper car number:	ELTX-161
Weight, lbs.:	181,900
Melt index:	0.17
Density:	0.941
ESCR:	F0>192

Sincerely,

White G. Jee

White G. Jee
Quality Control Group Leader

dcw

[illegible] 5[illegible] [illegible] [illegible] [

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 3/28/89

TO: [illegible]
9502 Cobbin [illegible]
Niagara Falls, NY 14304

ATTN: Dennis Molenaar

RE: NYSDEC — LOVE CANAL
BLACK & VEATCH [illegible]
CONTRACT NO. D [illegible]
S 100

Job No

We are ☒ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☒ other

NO. of COPIES	DRAWING NO	COMPANY	ITEM
5		GUNDLE	"CERTS" on 80 MIL
			MANUFACTURE DATE
			3/13/1989
			3/14/1989
			3/15/1989
			3/16/1989
Per Section 01400-2, 33			

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit
☒ File and Information
☐ Approved
☐ Approved As Corrected
☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS ENCLOSED, PLEASE FIND "CERTS" FROM GUNDLE LINING CERTIFYING THAT THE PRODUCTS AS IDENTIFIED FOR EACH LOT DELIVERED COMPLY WITH ALL JOB SPECIFICATIONS.

Copy to
file

Sevenson Environmental Services, Inc.

Signed Jerry Castiglione

[illegible] NOTABLE BUSINESS FORMS INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

LETTER OF TRANSMITTAL

Gundle Lining Construction Corp.

Gundle®

19103 Gundle Road
Houston, Texas 77073
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 4620281 GUNDLE HOU
Fax: (713) 875-6010

DATE March 22, 1989
Job No. 02/506
Attention Mr. Beck
Re Love Canal

Stevenson Environmental Services
9502 Colvin Blvd.
Niagra Falls, NY. 14304

TRANSMIT VIA:
- ☒ U.S. Mail ☐ Express Mail
- ☐ Federal Express ☐ Bus
- ☐ Hand Deliver ☐ U.P.S.
- ☐ Other

GENTLEMEN: We are sending you ☒ attached ☐ under separate cover via _____ the following:

- ☐ Shop drawings ☐ Prints ☐ Samples ☐ _____
- ☐ Copy of letter ☐ Plans ☐ Specifications

Copies	Sheet No.	Description
12		Quality Control Certificates

THESE ARE TRANSMITTED AS CHECKED BELOW:

- ☐ For approval
- ☒ For your use
- ☒ As requested
- ☐ For review and comment
- ☐ Approval as Submitted
- ☐ Approved as noted
- ☐ Returned for corrections
- ☐ Return
- ☐ For bids due _____
- ☐ Prints returned after loan to us
- ☐ Resubmit _____ Copies for approval
- ☐ Submit _____ Copies for distribution
- ☐ Return _____ Corrected prints

REMARKS: _____

If enclosures are not as noted kindly notify us at once.

SIGNED Inaci Aalund

CC: _____

DATE 3/22/89

OWNER/CONTRACTOR

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031389
ROLL # : 026914

MANF. DATE : 03/13/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.12	D 1238 E
Density (g/cm3)	.94	.949	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2830	D638
T.S. Break (psi)	1200	2755	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	519	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026927

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2855	D638
T.S. Break (psi)	1200	2257	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	407	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031389
ROLL # : 026917

MANF. DATE : 03/13/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	86	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.12	D 1238 E
Density (g/cm3)	.94	.949	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3062	D638
T.S. Break (psi)	1200	3260	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	519	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026929

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	86	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2831	D638
T.S. Break (psi)	1200	2932	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	528	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026933

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2831	D638
T.S. Break (psi)	1200	2877	Type IV
Elong. Yield (%)	13	14	2 ipm
Elong. Break (%)	300	531	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026918

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	90	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2850	D638
T.S. Break (psi)	1200	3108	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	571	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026920

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	93	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2991	D638
T.S. Break (psi)	1200	1976	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	335	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026922

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2825	D638
T.S. Break (psi)	1200	2506	Type IV
Elong. Yield (%)	13	16	2 ipm
Elong. Break (%)	300	504	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026923

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2832	D638
T.S. Break (psi)	1200	1942	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	419	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026924

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2937	D638
T.S. Break (psi)	1200	3161	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	557	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026925

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3093	D638
T.S. Break (psi)	1200	3357	Type IV
Elong. Yield (%)	13	16	2 ipm
Elong. Break (%)	300	562	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026926

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3067	D638
T.S. Break (psi)	1200	3310	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	568	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 3/28/89

TO: TAMS CONSULTANTS, INC.
9502 Colvin Blvd
Niagara Falls, NY 14304

ATTN: Dennis Molanson

RE: HTSDSC — LOVE CANAL
BLACK & BERGHOLTZ CO.
CONTRACT NO. D 001989

Job No E 109

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☐ drawing ☒ other

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Per Section 01400-2, 33			

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☐ Engineer Approval
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☒ File and Information
☐ Approved
☐ Approved As Corrected
☐ Return of Bid Documents
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Sevenson Environmental Services, Inc.

Signed Jerry Castiglione

FORM 1299 B NOTABLE BUSINESS FORMS, INC.

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

LETTER OF TRANSMITTAL

Gundle Lining Construction Corp.

Gundle®

19103 Gundle Road
Houston, Texas 77073
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 4620281 GUNDLE HOU
Fax: (713) 875-6010

DATE March 22, 1989
Job No. 02/506
Attention Mr. Beck
Re Love Canal

Stevenson Environmental Services
9502 Colvin Blvd
Niagra Falls, NY. 14304

TRANSMIT VIA:
☑ U.S. Mail ☐ Express Mail
☐ Federal Express ☐ Bus
☐ Hand Deliver ☐ U.P.S.
☐ Other

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☐ Copy of letter ☐ Plans ☐ Specifications

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CC: _____

DATE 3/22/89

OWNER/CONTRACTOR

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031389
ROLL # : 026914

MANF. DATE : 03/13/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.12	D 1238 E
Density (g/cm3)	.94	.949	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2830	D638
T.S. Break (psi)	1200	2755	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	519	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026927

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2855	D638
T.S. Break (psi)	1200	2257	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	407	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031389
ROLL # : 026917

MANF. DATE : 03/13/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	86	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.12	D 1238 E
Density (g/cm3)	.94	.949	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3062	D638
T.S. Break (psi)	1200	3260	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	519	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026929

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	86	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2831	D638
T.S. Break (psi)	1200	2932	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	528	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026933

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2831	D638
T.S. Break (psi)	1200	2877	Type IV
Elong. Yield (%)	13	14	2 ipm
Elong. Break (%)	300	531	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026918

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	90	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2850	D638
T.S. Break (psi)	1200	3108	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	571	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026920

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	93	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2991	D638
T.S. Break (psi)	1200	1976	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	335	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026922

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2825	D638
T.S. Break (psi)	1200	2506	Type IV
Elong. Yield (%)	13	16	2 ipm
Elong. Break (%)	300	504	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026923

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2832	D638
T.S. Break (psi)	1200	1942	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	419	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026924

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	2937	D638
T.S. Break (psi)	1200	3161	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	557	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026925

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	88	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3093	D638
T.S. Break (psi)	1200	3357	Type IV
Elong. Yield (%)	13	16	2 ipm
Elong. Break (%)	300	562	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Gundle®

Quality Control Certificate

MATERIAL : HDT 080 MIL
BATCH # : 031489
ROLL # : 026926

MANF. DATE : 03/14/1989
PROJECT NAME : LOVE CANAL
PROJECT NUMBER : 02/506
LOCATION : NIAGARA FALLS, NY

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	80 min	87	
Carbon Black (%)	2- 3	2.6	D 1603
Melt Index (g/10 min)	.3 max	.10	D 1238 E
Density (g/cm3)	.94	.948	D 1505 A
Tensile Properties:			
T.S. Yield (psi)	2100	3067	D638
T.S. Break (psi)	1200	3310	Type IV
Elong. Yield (%)	13	15	2 ipm
Elong. Break (%)	300	568	

CERTIFIED BY:

D. Wilkinson
Quality Manager

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 7.3.90

TO: OLIN CHEMICALS
c/o SITE

RE: P&T REMEDIATION

ATTN: WM BROWN

Job No. E183

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			LINER

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☐ Return of Bid Documents
☐ Request For Bid Documents

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REMARKS

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Sevenson Environmental Services, Inc.

Signed

FORM 129968 NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

Gundle

Quality Control Certificate

RAILCAR : ELTX-344
MATERIAL : HDPE 040 MIL
BATCH # : 041290
ROLL # : 02004567

MANF. DATE : 04/12/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	40	D 1593
Carbon Black (%)	2.0 - 3.0	2.3	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			
T.S. Yield (ppi)	70	100	D638
T.S. Break (ppi)	120	188	Type IV
Elong. Yield (%)	10	14	2 ipm
Elong. Break (%)	500	802	

CERTIFIED BY:

Rodney Crenwelgé
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-161
MATERIAL : HDPE 040 MIL
BATCH # : 040990
ROLL # : 03004344

MANF. DATE : 04/09/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	45	D 1593
Carbon Black (%)	2.0 - 3.0	2.1	D 1603
Density (g/cm3)	.94	.940	D 1505 A
Tensile Properties:			D 638
T.S. Yield (ppi)	70	107	Type IV
T.S. Break (ppi)	120	209	2 ipm
Elong. Yield (%)	10	15	
Elong. Break (%)	500	808	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Control Certificate

RAILCAR : ELTX-1412
MATERIAL : HDPE 040 MIL
BATCH # : 040290
ROLL # : 03004222

MANF. DATE : 04/02/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	44	D 1593
Carbon Black (%)	2.0 - 3.0	2.6	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			
T.S. Yield (ppi)	70	112	D638
T.S. Break (ppi)	120	206	Type IV
Elong. Yield (%)	10	15	2 ipm
Elong. Break (%)	500	847	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

Gundle

Quality Assurance Certificate

RAILCAR : ELTX-1412
MATERIAL : HDPE 040 MIL
BATCH # : 040290
ROLL # : 02004221

MANF. DATE : 04/02/1990
PROJECT NAME : PINE AND TUSCARORA
PROJECT NUMBER : A053
LOCATION : NIAGRA FALLS, NY

TEST PARAMETER	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST METHOD
Thickness (mils)	36 to 44	45	D 1593
Carbon Black (%)	2.0 - 3.0	2.6	D 1603
Density (g/cm3)	.94	.946	D 1505 A
Tensile Properties:			D 638
T.S. Yield (ppi)	70	112	Type IV
T.S. Break (ppi)	120	206	2 ipm
Elong. Yield (%)	10	15	
Elong. Break (%)	500	847	

CERTIFIED BY:

Rodney Crenwelge
Lab Manager

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 95142
P.O. No.:

Attn: Louis Liberatore
Company: Engineering Science

REPORT OF MECHANICAL TESTS

DESCRIPTION	THICK INCHES	WIDTH INCHES	AREA IN SQUARE INCHES	YIELD POINT LBS	YIELD STRENGTH PSI	ULTIMATE LOAD LBS	TENSILE STRENGTH LB/IN WIDTH	ELONGATION ON INCHES	ELONGATION PERCENT	HARDNESS
1	.104	.250	.0260			74.0	296.0			
2	.104	.250	.0260			73.2	292.8			
3	.103	.250	.0258			73.4	293.6			
4	.104	.250	.0260			73.5	294.0			
5	.998	.250	.0295			71.8	287.2			
Avg.							292.7			

TESTS BY: JOSEPH E. DOINO

Note: Test on 80 mil textured HDPE liner obtained from Love Canal and used at Olin Pine & Tuscarora remediation.

STANDARD NUMBER 54

Flexible Membrane Liners



NATIONAL SANITATION FOUNDATION
LISTING SERVICES

NSF STANDARD 54

TABLE 5. MATERIAL PROPERTIES

HIGH DENSITY POLYETHYLENE (HDPE)

Property	Test Method	Unsupported(U) 30	36	40	50	60	80	100
Gauge (nominal)	—	30	36	40	50	60	80	100
Thickness, mils minimum ±10%	ASTM D1593 Para 8.1.3	27	32	36	45	54	72	90
Specific Gravity (minimum)	ASTM D792 Method A	0.940	0.940	0.940	0.940	0.940	0.940	0.940
Minimum Tensile Properties (each direction)	ASTM D638							
1. Tensile Strength Yield (lb./in width)		50	60	70	90	120	140	180
2. Tensile Strength at Break (lb/in width)		90	108	120	150	180	240	300
3. Elongation at Yield (percent)		10	10	10	10	10	10	10
4. Elongation at Break (percent)		500	500	500	500	500	500	500
5. Modulus of Elasticity (lbs/sq in)		80,000	80,000	80,000	80,000	80,000	80,000	80,000
Tear Resistance (lb, minimum)	ASTM D1004 Die C	15	18	20	25	30	40	50
Low Temperature, °F	ASTM D746 Procedure B	-40	-40	-40	-40	-40	-40	-40
Dimensional Stability (each direction, percent change maximum)	ASTM D1204 212°F, 15 min.	±3	±3	±3	±3	±3	±3	±3
Resistance to Soil Burial (percent change maximum in original value)	ASTM D3083 (as modified in Appendix A)							
1. Tensile Strength Yield		10	10	10	10	10	10	10
2. Tensile Strength at Break		10	10	10	10	10	10	10
3. Elongation at Yield		10	10	10	10	10	10	10
4. Elongation at Break		10	10	10	10	10	10	10
5. Modulus of Elasticity		10	10	10	10	10	10	10
Environmental Stress Crack (minimum, hours)	ASTM D1693 (as modified in Appendix A)	500	500	500	500	500	500	500
Factory and Field Seam Requirements[1]								
Bonded Seam Strength (factory seam, breaking factor, ppi width)	ASTM D3083 (as modified in Appendix A)	45	54	63	81	108	108	135
Peel Adhesion (lb/in minimum)	ASTM D413 (as modified in Appendix A)	FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB
Dead Load								
Room Temperature 73°F 50% Bonded Seam Load	See Appendix A	Pass	Pass	Pass	Pass	Pass	Pass	Pas
Elevated Temperature 158°F 25% Bonded Seam Load	See Appendix A	Pass	Pass	Pass	Pass	Pass	Pass	Pas
Resistance to Soil Burial	ASTM D3083 (as modified in Appendix A)							
Peel Adhesion		FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB[2]	FTB
Bonded Seam Strength (percent change maximum in original value)		-10	-10	-10	-10	-10	-20	-20

[1]Factory bonded seam strength is the responsibility of the fabricator. Factory seams are further idscussed in Item 4.2.

[2]FTB - Film Tear Bond

This table provides a reliable and dependable means for industry to furnish such materials of known and consistent qualit
Before selection of any material for an FML, however, the user should consult with appropriate manufacturers, because thes
materials may not be appropriate for every application. Specific information should be obtained from the manufacture
regarding installation requirements, exposure conditions, performance expectations, and experience factor.

Sevenson Environmental Services, Inc.

2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14305
(716) 284-0431

Date 6.21.90

TO: OLIN CHEMICALS
C/O PROJ. SITE

RE: P&T REMEDIATION

ATTN: WM BROWN

Job No. E183

We are ☑ enclosing ☐ forwarding under separate cover — the following

☐ drawing ☑ other

NO of COPIES	DRAWING NO.	COMPANY	ITEM
3		BUFFALO TESTING	SAMPLES DS-01 & DS-02 RESULTS.
			SAMPLES DS-01
			DS-02
			DS-03
			DS-04
			DS-05
			DS-06
			DS-07
			DS-08
			DS-09
			DS-10
			DS-11

PURPOSE OF TRANSMITTAL

☐ Engineer Approval
☐ Architect Approval
☐ Revise and Resubmit

☑ File and Information
☐ Approved
☐ Approved As Corrected

☐ Return of Bid Documents
☐ Request For Bid Documents

Send _____ Copies for our use

REMARKS

Copy to FILE

Sevenson Environmental Services, Inc.

Signed

FORM 12996B NOTABLE BUSINESS FORMS, INC

Sevenson Environmental Services, Inc. is an Equal Employment Opportunity Employer

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 94212
P.O. No.: E1833009

June 20, 1990

Attn: Kim Lickfield
Sevenson Environmental Services
2749 Lockport Road
Niagara Falls, NY 14302

Gentlemen:

Following are the results of the tests performed on the specimens which you submitted to us on June 20, 1990.

Specimens Submitted:
Two (2) 40 mil HDPE liner samples identified as:

Sample No.	Location	Date Seamed	Date Collected
DS-01	50' N. 7166/8244	6/20/90	6/20/90
DS-02	100' N. 7213/8279	6/20/90	6/20/90

Object: Peel and Shear Test.

Method: Ten (10) 1" wide specimens were cut from each liner sample and were tested on our Instron Universal Tester S/N 2529 per ASTM D 4437.

Results:
Please refer to attached data sheet.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

M. W. Timmons

MICHAEL W. TIMMONS

Our letters and reports are for the exclusive use of the client to whom they are addressed and their communication to any others or the use of the name of BUFFALO TESTING LABORATORIES, INC. must receive our prior written approval. Our letters and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The reports and letters and the name of the BUFFALO TESTING LABORATORIES, INC. or its seals or insignia are not to be used in any circumstances in advertising to the general public.

Limitation of Liability-Due diligence was used in rendering the professional opinion, but if it should fail in some regard, the amount of liability will be limited to an amount equal to the fee. By acceptance of this report, the

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.: 94212 PAGE: 2

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION	SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL	97	SE		PEEL	102	SE
	PEEL	99	SE		PEEL	104	SE
DS-01	PEEL	99	SE	DS-02	PEEL	103	SE
	PEEL	111	SE		PEEL	100	SE
	PEEL	96	SE		PEEL	106	SE
	SHEAR	123	BM		SHEAR	128	BM
	SHEAR	124	BM		SHEAR	123	BM
DS-01	SHEAR	126	BM	DS-02	SHEAR	126	BM
	SHEAR	125	BM		SHEAR	127	BM
	SHEAR	123	BM		SHEAR	127	BM
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
992 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 94226
P.O. No.: E1833009

June 21, 1990

Attn: Kim Lickfield
Sevenson Environmental
2749 Lockport Road
Niagara Falls, NY 14302

Gentlemen:

Following are the results of the tests performed on the specimens which you submitted to us on June 21, 1990.

Specimens Submitted:
Three (3) 40 Mil HDPE liner samples identified as:

Sample No.	Location	Date Seamed	Date Collected
DS-03		6/21/90	6/21/90
DS-04		6/21/90	6/21/90
DS-05		6/21/90	6/21/90

Object: Peel and Shear Test.

Method: Ten (10) 1" wide specimens were cut from each liner sample and tested on our Instron Universal Tester S/N 2529 per ASTM D 4437.

Results:
Refer to attached data sheets.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

JOSEPH E. DOINO

Our letters and reports are for the exclusive use of the client to whom they are addressed and their communication to any others or the use of the name of BUFFALO TESTING LABORATORIES, INC. must receive our prior written approval. Our letters and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The reports and letters and the name of the BUFFALO TESTING LABORATORIES, INC. or its seals or insignia are not to be used in any circumstances in advertising to the general public.

Limitation of Liability-Due diligence was used in rendering the professional opinion, but if it should fail in some regard, the amount of liability will be limited to an amount equal to the fee. By acceptance of this report, the client agrees to hold harmless and indemnify BUFFALO TESTING LABORATORIES, INC. from and against all liability, claims and demands of any kind whatsoever, which arise out of or in any manner connected with

BUFFALO TESTING LABORATORIES INC

CHEMISTS · METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS · ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.:94226 PAGE: 2

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION	SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL	: 84	: SE		PEEL	: 102	: SE
	PEEL	: 90	: SE		PEEL	: 80	: SE
: DS-03	PEEL	: 90	: SE	: DS-04	PEEL	: 64	: SE
	PEEL	: 90	: SE		PEEL	: 80	: SE
	PEEL	: 93	: SE		PEEL	: 98	: SE
	SHEAR	: 101	: BM		SHEAR	: 109	: BM
	SHEAR	: 100	: BM		SHEAR	: 107	: BM
: DS-03	SHEAR	: 106	: BM	: DS-04	SHEAR	: 106	: BM
	SHEAR	: 99	: BM		SHEAR	: 109	: BM
	SHEAR	: 101	: BM		SHEAR	: 122	: BM
	PEEL	: 62	: SE		PEEL	:	:
	PEEL	: 54	: SE		PEEL	:	:
: DS-05	PEEL	: 54	: SE	:	PEEL	:	:
	PEEL	: 49	: SE		PEEL	:	:
	PEEL	: 44	: SE		PEEL	:	:
	SHEAR	: 106	: BM		SHEAR	:	:
	SHEAR	: 103	: BM		SHEAR	:	:
: DS-05	SHEAR	: 104	: BM	:	SHEAR	:	:
	SHEAR	: 99	: BM		SHEAR	:	:
	SHEAR	: 106	: BM		SHEAR	:	:

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

NOTE: DS-05 PEEL 44 LBS FAILED. ALL TESTS ON THIS SAMPLE PASSED AT GUARDIAN LAB. A PATCH WAS PUT OVER THE SAMPLE LOCATION AND VACUUM TESTED. AIR PRESSURE TEST WERE [illegible] ON BOTH SIDES OF THE SEAM REPAIR. AIR PRESSURE TESTS PASSED.

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2802

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 94239
P.O. No.: E1833009

June 25, 1990

:tn: Kim Lickfield
evenson Environmental Service
749 Lockport Road
iagara Falls, NY 14302

entlemen:

llowing are the results of the tests performed on the specimens which
ou submitted to us on June 25, 1990.

perimens Submitted:
wc 2) 40 mil HDPE Liner sample identified as:

ample No.	Location	Date Seamed	Date Collected
S06	25' North of South Anchor Trench	6/21/90	6/24/90
S07	75' North of South AT	6/22/90	6/24/90

bject: Sheer and Peel Test.

ethod: Ten (10) 1" wide specimens were cut from each liner sample and were
ested on our Instron Universal Tester S/N 2529 per ASTM D 4437.

esults:
lease refer to the attached data sheet.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

M. W. Timmons

MICHAEL W. TIMMONS

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BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

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Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.: 94239 PAGE: 2

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION	SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL	80	SE		PEEL	99	SE
	PEEL	96	SE		PEEL	106	SE
DS-06	PEEL	95	SE	DS-07	PEEL	105	SE
	PEEL	99	SE		PEEL	108	SE
	PEEL	98	SE		PEEL	97	SE
	SHEAR	116	BM		SHEAR	121	BM
	SHEAR	118	BM		SHEAR	124	BM
DS-06	SHEAR	114	BM	DS-07	SHEAR	119	BM
	SHEAR	118	BM		SHEAR	118	BM
	SHEAR	118	BM		SHEAR	122	BM
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 94240
P.O. No.: E1833009

June 25, 1990

Attn: Kim Lickfield
Sevenson Environmental Services
2749 Lockport Road
Niagara Falls, NY 14302

Gentlemen:

Following are the results of the tests performed on the specimens which you submitted to us on June 25, 1990.

Specimens Submitted:
One (1) 40 mil HDPE liner samples identified as:

Sample No.	Location	Date Seamed	Date Collected
DS-08	50' North of South AT	6/22/90	6/25/90

Object: Peel and Shear Test.

Method: Ten (10) 1" wide specimens were cut from each liner sample and tested on our Instron Universal Tester S/N 2529 per ASTM D 4437.

Results:
Please refer to attached data sheet.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

MICHAEL W. TIMMONS

Our letters and reports are for the exclusive use of the client to whom they are addressed and their communication to any others or the use of the name of BUFFALO TESTING LABORATORIES, INC. must receive our prior written approval. Our letters and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The reports and letters and the name of the BUFFALO TESTING LABORATORIES, INC. or its seals or insignia are not to be used in any circumstances in advertising to the general public.

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CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.: 94240

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
DS-08	PEEL	106	SE
	PEEL	92	SE
	PEEL	97	SE
	PEEL	91	SE
	PEEL	97	SE
DS-08	SHEAR	111	BM
	SHEAR	113	BM
	SHEAR	110	BM
	SHEAR	110	BM
	SHEAR	107	BM
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	PEEL		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		
	SHEAR		

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Report No.: 94255
P.O. No.: E1833009

June 26, 1990

Attn: Kim Lickfield
Sevenson Environmental Services
2749 Lockport Road
Niagara Falls, NY 14302

Gentlemen:

Following are the results of the tests performed on the specimens which you submitted to us on June 26, 1990.

Specimens Submitted:
One (1) 40 mil HDPE liner sample identified as:

Sample #	Location	Date Seamed	Date Collected
DS-09	131' No. of So. Anchor Trench	6/25/90	6/25/90

Object: Peel and Shear Test.

Method: Ten (10) 1 inch wide specimens were cut from each sample and tested on our Instron Universal Tester S/N 2529 per ASTM D4437.

Results:
Please refer to the attached data sheet.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

MICHAEL W. TIMMONS

Our letters and reports are for the exclusive use of the client to whom they are addressed and their communication to any others or the use of the name of BUFFALO TESTING LABORATORIES, INC. must receive our prior written approval. Our letters and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The reports and letters and the name of the BUFFALO TESTING LABORATORIES, INC. or its seals or insignia are not to be used in any circumstances in advertising to the general public.

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BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.: 94255

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION	SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL	84	SE		PEEL		
	PEEL	88	SE		PEEL		
DS-09	PEEL	96	SE		PEEL		
	PEEL	84	SE		PEEL		
	PEEL	90	SE		PEEL		
	SHEAR	108	BM		SHEAR		
	SHEAR	109	BM		SHEAR		
DS-09	SHEAR	107	BM		SHEAR		
	SHEAR	110	BM		SHEAR		
	SHEAR	106	BM		SHEAR		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

RECEIVED
SEP 24 1990
SEVENSON ENVIRONMENTAL SERVICES, INC.

Report No.: 94726
P.O. No.: E1833009

September 19, 1990

Attn: Kim Lickfield
Sevenson Environmental
2749 Lockport Road
Niagara Falls, NY 14302

Gentlemen:

Following are the results of the tests performed on the specimens which you submitted to us on September 18, 1990.

Specimens Submitted:
Two (2) 80 mil HDPE liner samples identified as:

Sple No.	Location	Date Sampled
DOS10	Trial Seam	9/18/90
DOS11	Slope	9/18/90

Object: Peel and Shear Test.

Method: Ten (10) 1 inch wide specimens were cut from each sample and tested on our Instron Universal Tester S/N 2529 per ASTM D4437.

Results:
Refer to the attached data sheet.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

M. W. Timmons

MICHAEL W. TIMMONS

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BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

REPORT NO.: 94726 PAGE: 2

SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION	SAMPLE NO.	TEST TYPE	ULTIMATE LOAD-LBS	FAILURE LOCATION
	PEEL	235	SE		PEEL	110	SE
	PEEL	218	SE		PEEL	115	SE
DOS10	PEEL	208	SE	DOS11	PEEL	114	SE
	PEEL	210	SE		PEEL	114	SE
	PEEL	218	SE		PEEL	127	SE
	SHEAR	298	BM		SHEAR	289	BM
	SHEAR	293	BM		SHEAR	278	BM
DOS10	SHEAR	287	BM	DOS11	SHEAR	281	BM
	SHEAR	276	BM		SHEAR	302	BM
	SHEAR	289	BM		SHEAR	283	BM
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	PEEL				PEEL		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		
	SHEAR				SHEAR		

LEGEND: BM = BASE MATERIAL
SE = SEAM EDGE
PS = PEEL SEPARATION

NOTE: Job Specification for 80 mil
. Shear 171 lb/inch minimum
. Peel 95 lb/inch minimum

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 6-19-90 P.F.# A053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 75° °F Precip. 0 in. Wind: Vel 5-10 mph
Min 90° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	12.5
Technicians	4	50
Laborers	4	50
Operators	1	7.5
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	S-01	B030041710	105'	~~40 mil~~	~~B030041891~~		
	S-02		117'	40 mil	S-08	B030041890	180
	S-03		75'				
	S-04		~~[illegible]~~ 17'				
	S-05		136				
	S-06		146				
	S-07	B030041891	160'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
1	SANG	S-01/S-02	105'	~~105'~~	105'	DS-01
		S-01/S-03	117'	~~117'~~	117'	
		S-01/S-04	~~[illegible]~~ 22'	~~22'~~	22'	
		S03/S-04	~~[illegible]~~	17'	17'	
		S-02/S-05	136'		136'	
		S-05/S-06	146'		146'	DS-02
		S-06/S-07	160'		160'	
		S-07/S-08	180'		180'	DS-05

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
Somsack	S01/S-02	105'		105'
	S01/S-03	15'		15'
	S01/S-03	102'		102'
	S01/S04	~~[illegible]~~	17'	17'
	S03/S04	22'		22'
	S-05/S-05	136'		136'
	S-05/S-06	146'		146'

OTHER PROGRESS: Began Deployment at 1:00 pm.

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS: Meeting w/ Lou, Kim, Marvin, Rex about Trial seam. Results were to use hand Tensionmeter instead of Digital Tensionmeter and test material to failure of 40 mil liner.

SIGNED:

Gundle Representative (WHITE) — Owner/Contractor (YELLOW) — Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 6-20-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 75° °F Min 85° °F
Precip. Brief Drizzle in.
Wind: Vel. 5 mph
Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	12.5
Technicians	4	50
Laborers	4	50
Operators	1	10
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	S-09	B03004189C	178'	40 mil	S-16	B03004222A	16'
↓	S-10	B03004222A	188'	↓	S-17	↓	13'
↓	S-11	↓	200'	↓	S-18	D03004171C	11'
↓	S-12	↓	203'	↓	S-19	B03004221A	46'
↓	S-13	B03004159C	131'	↓	S-20	↓	13'
↓	S-14	B03004222A	55'	↓	S-21	↓	17'
↓	S-15	↓	18'	↓			

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.	Sample No.'s
#	SANG	S-08/S-09	168'		168'	
↓	↓	S-09/S-10	178'		178'	DS-03
↓	↓	S-10/S-11	200'		200'	
↓	↓	S-11/S-12	203'		203'	
↓	↓	S-12/S-13	131'		131'	
↓	↓	S-12/S-14	55'		55'	
↓	↓	S-13/S-18		22'	22'	
↓	↓	S-17/S-18	11'		11'	
↓	↓	S-13/S-17		22'	22'	DS-04
↓	↓	S-16/S-17	13'		13'	

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.
SACK	S06/S07	160'		160'
	S07/S08	180'		180'
	S08/S09	168'		168'
	S09/S10	178'		178'
	S-10/S-11	200'		200'
	S-11/S-12	203'		203'
	S-12/S-13	131'		131'
	S-13/S-18		22'	22'
	S-12/S-14	55'		55'
	S-17/S-18	11'		11'

OTHER PROGRESS: Completed First layer of 40 mil lining.

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS: Jan A. Johnston

SIGNED:

Gundle Representative (WHITE) — Owner/Contractor (YELLOW) — Inspector (PINK)

Gundle®

DAILY PROGRESS REPORT
CONTINUATION SHEET

PROJECT Olin Chemical
LOCATION Niagara Falls, NY
DATE 6-20-90 P.F. # A-053

DEPLOYED				WELD				VACUUM TESTED		
Type	Panel	Roll#	Length	Seam#	Tech	Gun#	Total Lin. Ft.	Seam#	Tech	Total Lin. Ft.
				S-13 / S-16	SANG	W# 19	22'	S13 / S-17	SACK	22'
				S-13 / S-15			22'	S-16 / S-17		13'
				S-15 / S-16			16'	S-13 / S-16		22'
				S-15 / S-19			22'	S-13 / S-15		22'
				S-13 / S-19			40'	S-15 / S-16		16'
				S-19 / S-14			6'	S-15 / S-19		22'
				S-19 / S-20			13'	S-19 / S-14		6'
				S-20 / S-14	↓	↓	22'	S-19 / S-20		13'
				S-14 / S-21			22'	S-20 / S-14		22'
				S13 / S-21	↓	↓	13'	S-14 / S-21		22'
								S-13 / S-21		13'
								S-13 / S-19		40'

Signature _____

Gundle Rep (White) Owner/Contractor (Yellow) Inspector (Pink)

Form No. 04287
Southwest Data Corp. 713-465-4900

INSPECTOR

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls N.Y.
DATE: 6-21-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 88° °F Precip. Sprinkle in. Wind: Vel 10-15 mph
Min 70° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	13.5
Technicians	4	47
Laborers	5	48
Operators	1	8
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	P-01	B03004221A	94'				
	P-02		107'				
	P-03		8'				
	P-04		9'				
	P-05		8'				
	P-06		130'				
	P-07		137'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.	Sample No.'s
#	Sunsack	P-01/P-02	94'		94'	
		P-01/P-03		22'	22'	
		P-01/P-03	10'		10'	
		P-03/P-04	10'		10'	
		P-01/P-04		22'	22'	
		P-04/P-05	10'		10'	
		P-01/P-05		22'	22'	
		P-02/P-06	107'		107'	
		P-06/P-07	130'		130'	

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.
Johnny	P-01/P-02	94'		94'
	P-01/P-03		22'	22'
	P-01/P-03	10'		10'
	P-03/P-04	10'		10'
	P-01/P-04		22'	22'
	P-04/P-05	10'		10'
	P-01/P-05		22'	22'
	P-02/P-06	107'		107'
	P-06/P-07	130'		130'
	5-12/5-21	17'		17'

OTHER PROGRESS: Began to deploy primary liner. Began Vacuum Testing and continued w/ Repairs

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS:

SIGNED:

Gundle Representative (WHITE) — Owner/Contractor (YELLOW) — Inspector (PINK)

Gundle®

DAILY PROGRESS REPORT
CONTINUATION SHEET

PROJECT Olin Chemical
LOCATION Niagara Falls, N.Y.
DATE 6-21-90 P.F. # OA-053

DEPLOYED				WELD				VACUUM TESTED		
Type	Panel	Roll#	Length	Seam#	Tech	Gun#	Total Lin. Ft.	Seam#	Tech	Total Lin. Ft.
								S19/S-21	Johnny	22'
								S12/S-14		55'
								S-14/S-20		22'
								S-13/S-14		22'
								S-13/S-19		40'
								S-14/S-19		6'
								S-19/S-20		13'
								S-15/S-19		18'
								S-13/S-15		20'
								S-15/S-16		16'
								S-13/S-16		22'
								S-17/S-16		13'
								S-13/S-17		22'
								S-17/S-18		11'
								S-13/S-18		22'

Signature [signature] Gundle Rep (White) [signature] Owner/Contractor (Yellow) [signature] Inspector (Pink)

Form No. 04287
Southwest Data Corp. 713-465-4900

INSPECTOR

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, N.Y.
DATE: 6-22-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 85° °F Precip. .20 in. Wind: Vel 10-20 mph
Min 68° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	9.5
Technicians	4	31.0
Laborers	4	36
Operators	1	8
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	P-08	D02-[illegible]	145'	40 mil	Repairs		210'
↓	P-09	↓	158'				
↓	P-10	↓	164'				
↓	P-11	D02-[illegible]	173'				
↓	P-12	↓	187'				
↓	P-13	↓	189'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
#1	Smsack	P-07/P-08	137'		137'	
		P-08/P-09	145'		145'	
		P-09/P-10	158'		158'	
		P-10/P-11	164'		164'	
		P-11/P-12	173'		173'	
		P-12/P-13	187'		187'	
		P-13/P-14	189'		189'	

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
Feliz	Repairs	210'		

OTHER PROGRESS:

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS:

SIGNED:

Gundle Representative (WHITE) Owner/Contractor (YELLOW) Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls N.Y.
DATE: 6-23-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 75° °F Precip. .19 in. Wind: Vel 10-20 mph
Min 65° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	8.5
Technicians	4	32
Laborers	4	30'
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	Repairs		200'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
[illegible]						
#184	Coming	Repairs			130'	
#205	Sonsack	Repairs			70'	

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
Feliz	Repairs		200'	

OTHER PROGRESS: Unable to deploy because of rain Built 1 boot for a piezometer Repaired and Vacuum Tested all day.

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS:

SIGNED:

Ken Kopf
Gundle Representative
(WHITE)

[signature]
Owner/Contractor
(YELLOW)

[signature]
Inspector
(PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls N.Y.
DATE: 6-24-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 67° °F Precip. Sprinkle in. Wind: Vel 5 mph
Min 60° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	7.5
Technicians	2	14
Laborers	2	9.5
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 mil	Repairs		100'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
1	Sang	Repairs		75'		
2	Samsack	Boots		25'		

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
Mike	Repairs		100'	

OTHER PROGRESS: Worked Small crew. Built Boots and did Repairs. Vacuum Tested all Repairs to date

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS:

SIGNED:

Gundle Representative (WHITE)

Owner/Contractor (YELLOW)

Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls N.Y.
DATE: 6-25-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 85° °F Min 62° °F Precip. 0 in. Wind: Vel 5 mph Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	13
Technicians	4	62
Laborers	4	62
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40mil	P-14	D0200456[illegible]	181'	40mil	P-21	D0200[illegible]	26'
2	P-15	D0200[illegible]	30'		P-22		15'
	P-16		14		P-23		10'
	P-17	~~D[illegible]~~	~~40~~				
	P-18	D0200420[illegible]	26'				
	P-19		29'				
	P-20		29'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.	Sample No.'s
[illegible]	Somsack	P-14/P-13	151'		151'	
		P-13/P-15	30'		30'	
		P-14/P-15		22'	22'	
		P-15/P-22		22'	22'	
		P-21/P-22	15'		15'	
		P-22/P-23	10'		10'	
		P-20/P-21	26'		26'	
		P-21/P-15		22'	22'	
		P-20/P-15		8'	8'	
		P-14/P-20		14'	14'	

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	Non Production Weld	Total Lin. Ft.
Johnny	P-14/P-13	151'		151'
	P-13/P-15	30'		30'
	P-14/P-15		22'	22'
	P-15/P-22		22'	22'
	P-21/P-22	15'		15'
	P-22/P-23	10'		10'
	P-20/P-21	26'		26'
	P-21/P-15		22'	22'
	P-20/P-15		8'	8'
	P-14/P-20		14'	14'

OTHER PROGRESS: Blacked out Cap Finish all Pressure Testing

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS:

SIGNED: [signature] Gundle Representative (WHITE) [signature] Owner/Contractor (YELLOW) [signature] Inspector (PINK)

Gundle®

DAILY PROGRESS REPORT
CONTINUATION SHEET

PROJECT Olin Chemical
LOCATION Niagara Falls, NY.
DATE 6-25-90 P.F. # A-053

DEPLOYED				WELD				VACUUM TESTED		
Type	Panel	Roll#	Length	Seam#	Tech	Gun#	Total Lin. Ft.	Seam#	Tech	Total Lin. Ft.
				P20/P14	Somark	White	29'	P-20/P-N	Johnny	29'
				P-14/P-19			22'	P-N/P19		22'
				P-18/P19			29'	P-E/P-M		29'
				P-15/P-14			22'	P-12/P-11		22'
				P-17/P18			20'	P-17/P18		22'
				P-17/P-14			40'	P-17/P-11		40'
				P-17/P16			14'	P-17/P16		14'
				P-16/P14			22'	P-16/P-N		22'
								P-07/P08		137'
								P-08/P-09		145'
								P-09/P-10		155'
								210/P-11		164'
								P-11/P-12		173'
								P-12/P-13		187'
								P-13/P-M		189'

Signature

Gundle Rep (White) Owner/Contractor (Yellow) Inspector (Pink)

Form No. 04287
Southwest Data Corp. 713-465-4900

INSPECTOR

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY.
DATE: 6-26-90 P.F.# A-053

DAILY PROGRESS REPORT

WEATHER: Temp. Max 85° °F Precip. 0 in. Wind: Vel 5 mph
Min 70° °F Dir. N (S) E (W)

LABOR:	No.	Manhours
Supervisors	1	14
Technicians	4	66
Laborers	4	66
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
4	Samcrick	Weld Repairs & Boots	125'			
205	Samuano	Weld Repairs & Boots	125'			

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
[illegible]	[illegible]	[illegible]		
	[illegible]			
Felice	VT	Repairs		208'

OTHER PROGRESS: Completed Boots and all Repairs.

FIELD MEMOS/CHANGE ORDERS ISSUED:

SITE MEETINGS/VISITS: Discussed w/ Allen & Wayne total SqFt to Complete job. Figure was 22,500 need to order 2 more rolls of liner.

SIGNED:

Gundle Representative (WHITE) — Owner/Contractor (YELLOW) — Inspector (PINK) TESTS, WELDS, PROGRESS.

Gundle®

PROJECT: OLIN Chemical
LOCATION: Niagara Falls NY
DATE: 9-10-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max _____ °F Min _____ °F Precip: _____ in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors	1	2
Technicians	2	4
Laborers	1	2
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
80 HDT	A						
	B						
	C						

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
[illegible]	R.KK	A				
		B				
		C				

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
Pat	A			
	B			
	C			

OTHER PROGRESS: welded 6' wide pieces of 80 mil textured to be put under concrete at Toe of slope

FIELD MEMOS/CHANGE ORDERS ISSUED: all hours worked is part of change order

SITE MEETINGS/VISITS: _____

SIGNED: _____
Gundle Representative (WHITE)

_____
Owner/Contractor (YELLOW)

_____
Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls NY
DATE: 9-15-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max 60 °F Min 47 °F Precip. Am drizzle in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors	1	4
Technicians	5	50
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
80 HDT	1		19'	80 HDT	8		16'
	2		17'		9		15'
	3		2'		10		15'
	4		19'		11		15'
	5		19		12		15'
	6		19'				
	7		17'				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
	PHOYAY	1	19			
		2	19			
		3	19			
		4	19			
		5	17			
		6	16			
		7	15			
		8	15			
		9	15			
	PHOYAY	10	15			

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.
PHOYAY	1	19		
	2	19		
	3	19		
	4	19		
	5	17		
	6	16		
	7	15		
	8	15		
	9	15		
PHOYAY	10	15		

OTHER PROGRESS: _____

FIELD MEMOS/CHANGE ORDERS ISSUED: for all hours worked time and a half

SITE MEETINGS/VISITS: _____

SIGNED: _____
Gundle Representative (WHITE)

_____
Owner/Contractor (YELLOW)

_____
Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls NY
DATE: 9-16-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max 50 °F Precip. — in. Wind: Vel — mph
Min 40 °F Dir. N S E W

LABOR:	No.	Manhours
Supervisors		
Technicians	5	40
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
2	Somphone/Phoxay					
21	Cane/Cane					

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: Repair 40 mil weld toe of slope toe in
VT 40 mil Repair

FIELD MEMOS/CHANGE ORDERS ISSUED: for all hours worked double time

SITE MEETINGS/VISITS:

SIGNED: [signature] Gundle Representative (WHITE)

Owner/Contractor (YELLOW)

[signature] Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls NY
DATE: 9-17-90 P.F.# 1

DAILY PROGRESS REPORT

WEATHER: Temp. Max _____ °F Min _____ °F Precip. _____ in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors		
Technicians	#5	60
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
40 HD	13		24				
↓	14		21				
↓	15		15				
↓	16		20				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
[illegible]	[illegible]	11				
217	somphone/phoxy	12				
	↓	13				
	somphone/phoxy	14				

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: 1 Gun work on 40 mil Bottom liner 1 Gun work on 80 mil CAP at 3:30 Patching Top 40 mil liner

FIELD MEMOS/CHANGE ORDERS ISSUED: 8 hrs of work on change order. PERFOMED "MECHANICAL" STRESS TEST on 80 mil SEAMS.

SITE MEETINGS/VISITS:

SIGNED: [signature] Gundle Representative (WHITE) _____ Owner/Contractor (YELLOW) [signature] Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Fall
DATE: 9-18-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max 70 °F Precip. _____ in. Wind: Vel _____ mph
Min 50 °F Dir. N S E W

Secondary 40 mil. HD.

LABOR:	No.	Manhours
FORMAN Supervisors	1	12
Technicians	4	48
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length
1/0 HD		300420	18				
		300420	25				
		300420	38				
		300420	43				
		300420	13				
40 mil HD		300420	22				

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s
2	COLLE/CONT	11				
	↑	12				
		13				
		14				
	↓	15				
1	COLLE/CONT	11A				

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: LAY: 5 section. 40 mil. HD. North. East corner. Secondary ~~PRIMARY~~. EXTRUDER weld, V-T. Completed CHICK GUN WORK. on CAP. 80 mil. HDT of bottom.

FIELD MEMOS/CHANGE ORDERS ISSUED: _____

SITE MEETINGS/VISITS: _____

SIGNED: Joni Johnston

Gundle Representative (WHITE) | Owner/Contractor (YELLOW) | Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Fall
DATE: 9-19-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max 70 °F Min 55 °F Precip. _____ in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors		
Technicians	5	30
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: Work on. 80 mil. Textured. CAP. 30th Gun. Until 1:00PM. and Rain out. VACUM TEST 60 mil. CAP.

FIELD MEMOS/CHANGE ORDERS ISSUED: _____

SITE MEETINGS/VISITS: _____

SIGNED:

Gundle Representative (WHITE) _____ Owner/Contractor (YELLOW) _____ Inspector (PINK) _____

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 9-20-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max _____ °F Min _____ °F Precip. _____ in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors		
Technicians	5	45
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: welded cap at toe of slope 80 mil textured - welded 40 mil to 80 mil textured at Anchor trench VT'd CAP

FIELD MEMOS/CHANGE ORDERS ISSUED: Performed mechanical stress fit at welds.

SITE MEETINGS/VISITS: _____

SIGNED: _____
Gundle Representative (WHITE)

_____
Owner/Contractor (YELLOW)

_____
Inspector (PINK)

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 9-21-90 P.F.# _____

DAILY PROGRESS REPORT

WEATHER: Temp. Max _____ °F Min _____ °F Precip. _____ in. Wind: Vel _____ mph Dir. N S E W

LABOR:	No.	Manhours
Supervisors		
Technicians	5	52.5
Laborers		
Operators		
Other		

DEPLOYED:

Type	Panel	Roll#	Length	Type	Panel	Roll#	Length

WELDED

Welder #	Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.	Sample No.'s

VACUUM TESTED / PRESSURE TEST

Tech.	Seam#	(Linear Feet) Production Weld	(Linear Feet) Non Production Weld	Total Lin. Ft.

OTHER PROGRESS: Work on 80 mil textured in Am at corners of concrete and pipes at 45 mil to top 40 mil liner Completed weld and VACUM TEST.

FIELD MEMOS/CHANGE ORDERS ISSUED: _____

SITE MEETINGS/VISITS: _____

SIGNED:

Gundle Representative (WHITE)

Owner/Contractor (YELLOW)

Inspector (PINK)

Liner 1ST

Panel No.		Roll No.
S-01		D-03004171C
S-02		"
S-03		"
S-04		"
S-05	6-19-90	"
S-06		"
S-07		B03004189C
S-08		"
S-09		"
S-10		B0300422A
S-11		"
S-12		"
S-13		B03004189C
S-14		B03004222A
S-15	6-20-90	"
S-16		B03004221A
S-17		"
S-18		D03004171C
S-19		B03004221A
S-20		"

PANEL width 22 1/2'
3" OVERLAP AT EACH SEAM.

Liner 2nd

Panel No		Roll No.
P-01	6-21-90	B-03004221A
P-02		"
P-03		"
P-04		"
P-05		"
P-06		"
P-07		"
P-08	6-22-90	D-02004567C
P-09		"
P-10		"
P-11		D-03004344C
P-12		"
P-13		"
P-14	6-23-90	D-02004567C
P-15		D-03004344C
P-16		"
P-17		"
P-18		B-03004208A
P-19		"
P-20		"
P-21		"
P-22		"

PANEL WIDTH 22½'
3" OVERLAP AT EACH SEAM.

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls NY
DATE: 6-19-90 P.F.# A053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

STARTED INSTALLATION AT 1:00 P.M.

PASS

Welder # W #119
Welded by: SAM B
Time: 1:00 pm Temp 410

Welder # ~~W #19~~
Welded by: ~~So~~
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls NY
DATE: 6-20-90 P.F.# 90-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # WH 119
Welded by: SANG
Time: 7:30 Am Temp 400°

PASS
Welder # G # 184
Welded by: Somuang
Time: 7:30 Am Temps Nozz 250/220 Ext

PASS
Welder # WH 119
Welded by: SANG
Time: 1:00pm Temp 400°

Welder # G # 184
Welded by: Somuang
Time: 1:00pm Temps Nozz 250/220 Ext

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 6-21-90 P.F.# A-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # G#184
Welded by: Somvang
Time: 7:30Am Temps Ext 215 Mid 235

PASS
Welder # G#184
Welded by: Somvang
Time: 1:00 pm Temps Ext 215 Mid 235

PASS
Welder # G#119
Welded by: Somsack
Time: 1:00Am Temp 41o°

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Welder #
Welded by:
Time:

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, N.Y.
DATE: 6-22-90 P.F.# A-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # W# 119
Welded by: Somsack
Time: 7:30Am Temp 410°

PASS
Welder # G# 184
Welded by: Somvang
Time: 7:30Am Temps 402 Ext 230 215

PASS
Welder # W#119
Welded by: Somsack
Time: 1:30 Pm Temp 410°

PASS
Welder # G #184
Welded by: Somvang
Time: 1:30pm Temps 239/215

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY.
DATE: 6-23-90 P.F.# 4-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

Welder # G #184
PASS Welded by: Somvang
Time: 8:00 Am 215°/245°

Welder # G #205
PASS Welded by: Somsack
Time: 8:00 Am 225°/235°

Welder # G #184
PASS Welded by: Somvang
Time: 1:00 pm 215°/235°

Welder # G #205
PASS Welded by: Somsack
Time: 1:00 pm 215°/230

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY.
DATE: 6-24-90 P.F.# A-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # G#205
Welded by: Somsack
Time: 9:00 Am 225/235

PASS
Welder # G# 184
Welded by: SANG
Time: 9:00Am 215/235

PASS
Welder # G#205
Welded by: Somsack
Time: 1:30pm 225/235

PASS
Welder # G #184
Welded by: SANG
Time: 1:30pm 225/235

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, NY
DATE: 6-25-96 P.F.# A-053
MATERIAL: 40 mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # W#119
Welded by: Somsack
Time: 8:00Am Temp 410°

FAIL
Welder # W#119
Welded by: Somsack
Time: 1:00pm Temp 410°

PASS
Welder # G#205
Welded by: Somvang
Time: 8:00Am Temp 220/230

PASS
Welder # G#205
Welded by: Somvang
Time: 1:00pm Temp 220/230

PASS
Welder # W#119
Welded by: Somsack
Time: 1:30pm Temp 410°

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, N.Y.
DATE: 6-26-90 P.F.# A-053
MATERIAL: 40mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # G#205
Welded by: Johnny
Time: 8:30Am Temp 215/235

PASS
Welder # G#152
Welded by: Somsack
Time: 8:30Am Temp 220/235

PASS
Welder # G#205
Welded by: Somsang
Time: 1:00pm Temp 220/235

PASS
Welder # G#152
Welded by: Somsack
Time: 1:00pm Temp 220/235

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

Gundle®

PROJECT: Olin Chemical
LOCATION: Niagara Falls, N.Y.
DATE: 6-26-90 P.F.# A-053
MATERIAL: 40mil HDPE

PRE-WELD QUALIFICATION

PASS
Welder # G #205
Welded by: Johnny
Time: 8:30Am Temp 215/235

PASS
Welder # G #152
Welded by: Somsack
Time: 8:30Am Temp 220/235

PASS
Welder # G#205
Welded by: Somvang
Time: 1:00pm Temp 220/235

PASS
Welder # G#152
Welded by: Somsack
Time: 1:00pm Temp 220/235

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Welder # _____
Welded by: _____
Time: _____

Gundle Representative

Inspector

APPENDIX J

APPENDIX J

Concrete Testing

CONCRETE FIELD OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T REMEDIATION (PINE & TUSCARORA) Report No. C-1

Client ENGINEERING SCIENCE, INC. Date: 9/12/90

Contractor: SEVENSON ENVIRONMENTAL SERVICES Job No. BT-90-128

Concrete Supplier: CLARENCE MATERIALS CORP. Mix No. 06300 Sheet 1 of 1

Weather: SUNNY Air Temperature: A.M. 78° P.M. _____

General Placement Location: KK-12A; SLAB AT CREEK CHANNEL STATION 0+75 TO 1.25; KK-12B; SLAB AT CREEK CHANNEL STATION 1.75 TO 2.25

Load No.	Ticket No.	Truck No.	Cubic Yards	Time: Batched	Time: Start Discharge	Time: Empty	Water Data (gal.): In Agg.	Water Data (gal.): Added: Plant + Field	Water Data (gal.): Actual Total	Water Data (gal.): Design Total	Slump (in.)	% Air	Concr. Temp.	Specimen Set No., Specific Placement Location and Remarks
1	099	119	9	8:35	8:55	9:45								
2	104	121	9	9:15	9:50	10:15					4		70°	KK-12A
3	111	116	8	9:50	10:20	10:45					4			
4	112	119	8	10:15	10:47	11:25					4		70°	KK-12B

Set No.	Specimen Type and Number
KK-12A	4 -6X12 CYLINDERS
KK-12B	4 -6 X12 CYLINDERS

Cubic Yards Placed: 34 Rejected: 0

Remarks: 4000 PSI

On-Site Time: 9:40-11:30 Technician: KYLE KARMAZYN

Copies to:

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

CHARLES C. KEIPPER, MTS

CONCRETE TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ P.O. BOX 2199, BALLSTON SPA, NY 12020
☐ S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960
☐ MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

Project: P & T REMEDIATION — Report No. CT-1/A

Client ENGINEERING SCIENCE, INC. — Job No. BT-90-128

Contractor: SEVENSON ENVIRONMENTAL SERVICES — Date Molded: 9/12/90

FIELD DATA

Placement Location SLAB AT CREEK STATION 0+75 TO 1.25 PANEL 1.

Quantity Placed: 9 C.Y. Specimens Made By: KYLE KARMAZYN
Truck No. 121 Mix No. 6300 Concrete Temp. 70 ° Air Temp. 78 °
Time Specimens Made: 10:00 Set No. KK-12A Slump: 4 in. Air Content: - %
Remarks:

MIX PROPORTION DATA (per cubic yard)

Concrete Supplier: CLARENCE MATERIALS CORP. Water: _____ gallons
Cement: Brand: _____ Type: _____ Amount: _____ pounds or _____ bags
Aggregate: Fine: Source: _____ Amount: _____ lb.
Coarse: Type: _____ Source: _____ Amount: _____ lb.
Type: _____ Source: _____ Amount: _____ lb.
Air Entraining Agent: Brand: _____ Amount: _____ oz.
Admixture: Brand: _____ Amount: _____ oz.
Remarks: NO MIX INFORMATION SUPPLIED BY CLIENT

COMPRESSIVE STRENGTH DATA

Field Marking	Laboratory Number	Cyl. Wgt.	Date Tested	Age (days)	Compressive Strength (psi)	Report Number
	PE 101		9/15/90	3	3670	CT-1
	PE 102		9/17/90	5	3700	CT-1
	PE 103		9/19/90	7	4050	CT-1
	PE 104		CYLINDER DISCARDED			CT-1/A
Specification Requirement At 28 Days					4000	

Cylinder Size: 6" x 12" unless otherwise noted.
Tested in accord with A. S. T. M. C-39.

Copies to:

Remarks
Field Data
☒ by E.S.I.
☐ by Contractor
Transportation
☒ by E.S.I.
☐ by Contractor
☐ Other _____

Date Received
9/14/90

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.
CHARLES C. KEIPPER, MTS

CONCRETE TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ P.O. BOX 2199, BALLSTON SPA, NY 12020
☐ S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
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☐ 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960
☐ MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

Project: P & T REMEDIATION — Report No. CT-3 /A

Client ENGINEERING SCIENCE, INC. — Job No. BT-90-128

Contractor: SEVENSON ENVIRONMENTAL SERVICES — Date Molded: 9/13/90

FIELD DATA

Placement Location CONCRETE SLAB AT CREEK CHANNEL PANEL #4 STATION 225 TO STATION 275.

Quantity Placed: 8 C.Y. Specimens Made By: S.ROWAN
Truck No. 123 Mix No. 06300 Concrete Temp. - ° Air Temp. 70'S °
Time Specimens Made: 8:15 Set No. NF13-1 Slump: 4 in. Air Content: 5.5 %
Remarks:

MIX PROPORTION DATA (per cubic yard)

Concrete Supplier: EMPIRE — Water: _____ gallons
Cement: Brand: _____ Type: _____ Amount: _____ pounds or _____ bags
Aggregate: Fine: Source: _____ Amount: _____ lb.
Coarse: Type: _____ Source: _____ Amount: _____ lb.
Type: _____ Source: _____ Amount: _____ lb.
Air Entraining Agent: Brand: _____ Amount: _____ oz.
Admixture: Brand: _____ Amount: _____ oz.
Remarks: HIGH-EARLY

COMPRESSIVE STRENGTH DATA

Field Marking	Laboratory Number	Cyl. Wgt.	Date Tested	Age (days)	Compressive Strength (psi)	Report Number
	PE 109		9/16/90	3	3110	CT-3
	PE 110		9/18/90	5	3360	CT-3
	PE 111		9/20/90	7	3250	CT-3
	PE 112		CYLINDER	DISCARDED		CT-3/A
Specification Requirement At 28 Days					4000	

Cylinder Size: 6" x 12" unless otherwise noted.
Tested in accord with A. S. T. M. C-39.

Copies to:

Remarks
Field Data
☒ by E.S.I.
☐ by Contractor
Transportation
☒ by E.S.I.
☐ by Contractor
☐ Other _____

Date Received
9/14/90

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.
CHARLES C. KEIPPER, MTS

CONCRETE TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ P.O. BOX 2199, BALLSTON SPA, NY 12020
☐ S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960
☐ MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

Project: P & T REMEDIATION — Report No. CT-4/A

Client ENGINEERING SCIENCE, INC. — Job No. BT-90-128

Contractor: SEVENSON ENVIRONMENTAL SERVICES — Date Molded: 9/13/90

FIELD DATA

Placement Location: CONCRETE SLAB AT CREEK CHANNEL PANEL #2 STATION 125 TO STATION 175.

Quantity Placed: 8 C.Y. Specimens Made By: S.ROWAN

Truck No. 119 Mix No. 06300 Concrete Temp. - ° Air Temp. 70'S °

Time Specimens Made: 9:20 Set No. NF13-2 Slump: 3½ in. Air Content: 5.0 %

Remarks:

MIX PROPORTION DATA (per cubic yard)

Concrete Supplier: EMPIRE — Water: _____ gallons

Cement: Brand: _____ Type: _____ Amount: _____ pounds or _____ bags

Aggregate: Fine: Source: _____ Amount: _____ lb.

Coarse: Type: _____ Source: _____ Amount: _____ lb.

Type: _____ Source: _____ Amount: _____ lb.

Air Entraining Agent: Brand: _____ Amount: _____ oz.

Admixture: Brand: _____ Amount: _____ oz.

Remarks: NO MIX INFORMATION SUPPLIED BY CLIENT. (HI EARLY)

COMPRESSIVE STRENGTH DATA

Field Marking	Laboratory Number	Cyl. Wgt.	Date Tested	Age (days)	Compressive Strength (psi)	Report Number
	PE 113		9/16/90	3	3400	CT-4
	PE 114		9/18/90	5	3680	CT-4
	PE 115		9/20/90	7	3450	CT-4
	PE 116		CYLINDER DISCARDED			CT-4/A
Specification Requirement At 28 Days					4000	

Cylinder Size: 6" x 12" unless otherwise noted.
Tested in accord with A. S. T. M. C-39.

Copies to:

Remarks
Field Data

☑ by E.S.I.

☐ by Contractor

Transportation

☑ by E.S.I.

☐ by Contractor

☐ Other _____

Date Received

9/14/90

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

CHARLES C. KEIPPER, MTS

OMER

CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

Concrete for SCAS at Creek modification

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO. 0000707

DATE 09/13/90

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#183
FO#10275

DIRECTIONS

TOTAL YARDS DELIVERED 8.00

YARDS	MIX DESCRIPTION
	4000PSI #1 'S / 06300

18322 EWR# 6631
0260-1D

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water. If any cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. **KEEP OUT OF THE REACH OF CHILDREN.**

ADDED ON JOB
TOMER'S REQUEST > GALS _____ CUSTOMER'S SIGNATURE _____

ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
8:00	8:05	8:20	

TRUCK NO. 123

deliveries inside the curb line and on the lot at customer's risk only and accept no responsibility for damages resulting from such deliveries.

RN6011

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO. 0000707

DATE 09.

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#183
FO#10275

DIRECTIONS

TOTAL YARDS DELIVERED 16.00

YARDS	MIX DESCRIPTION
	4000PSI #1 'S / 06300

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin are
cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT O

R ADDED ON JOB
USTOMER'S REQUEST > GALS. 2 CUSTOMER'S SIGNATURE _____

ARRIVED JOB	STARTED DISCHARGE	LEFT JOB
8:30	8:45	

TRUCK NO.

ke deliveries inside the curb line and on the lot at customer's risk only and acce
over for damages resulting from such deliveries.

RN601

JSTOMER

CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPI
285-5757

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO.
0000707

DATE
09/13/90

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#183
FO#10275

DIRECTIONS

TOTAL YARDS DELIVERED
24.00

YARDS	MIX DESCRIPTION
.00	4000PSI #1 S / 06300

EARLY

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

.TUM: _____

mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water. If any
or cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. **KEEP OUT OF THE REACH OF CHILDREN.**

ATER ADDED ON JOB
CUSTOMER'S REQUEST > GALS. 12 CUSTOMER'S SIGNATURE _____

	ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
	9:00	9:20	9:40	

THORIZED
GNATURE _____ TRUCK NO 119

make deliveries inside the curb line and on the lot at customer's risk only and accept no respons
soever for damages resulting from such deliveries.

RN60145

CLARENCE
632-2000

CLARENCE MATERIALS CORP

EMPIRE
285-5757

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO.
0000707

DATE
09/13/90

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#183
FO#10275

DIRECTIONS

DELIVERED
32.00

	MIX DESCRIPTION
	4000PSI #1 S / 06300

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water
es rinse immediately and repeatedly with water and get prompt medical attention. **KEEP OUT OF THE REACH OF CHILD**

GALS. _____ CUSTOMER'S SIGNATURE _____

	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
9:25	9:20		

TRUCK NO 123

inside the curb line and on the lot at customer's risk only and accept no responsibili
nages resulting from such deliveries.

RN60149

USTOMER

CLARENCE
632-2000



CLARENCE MATERIALS CORP.

EMPIRE
285-5757

FIELD PURCHASE ORDER
SEVENSON ENVIRONMENTAL SERVICES
2749 LOCKPORT ROAD
NIAGARA FALLS, N Y 14302

E183 COST CODE 18322 DATE OF THIS ORDE 9/12/90

RA WORK ORT NO _____ EXTRA WORK PERFORMED FOR OLIN

ME OF NDOR EMPIRE

ANTITY	UNIT PRICE	DESCRIPTION ONLY	PRIC
0 yds		HIGH EARLY CONCRETE	
		4000 PSI	

NOT VALID FOR JOBSITE LABOR UNLESS ISSUED TO A SUBCONTRA
NOT VALID FOR PURCHASES OVER $5,000.00

DELIVERY OR FREIGHT COST ☐ INCLUDED ☐ EXCLUDED | SALES TAXES ☐ EXCLUDED ☐ INCLUDED ☐ EXEMPT ☐ NOT EXEMP

ABOVE ITEMS REQUESTED BY WK

BEFORE ISSUING THIS ORDER NUMBE TAINED THE ABOVE PRICES OR RATE THE VENDOR

BY _____ X _____

FIELD PURCHASE ORDER No. 10275

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO. 0000707 DATE 09/13/90

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#153
FO#10275

DIRECTIONS

TOTAL YARDS DELIVERED 40.00

YARDS	MIX DESCRIPTION
.00	4000PSI #1'S 0#000

EARLY

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

LCIUM: _____

mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water. If any t or cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. **KEEP OUT OF THE REACH OF CHILDREN.**

TER ADDED ON JOB CUSTOMER'S REQUEST GALS. 4 CUSTOMER'S SIGNATURE _____

	ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
	1,11	1	1,25	

THORIZED NATURE _____ TRUCK NO. 124

ke deliveries inside the curb line and on the lot at customer's risk only and accept no responsibility er for damages resulting from such deliveries.

RN60153

9/13

TIME DATE
07:44 [illegible] [illegible]

LOAD SIZE MIX #
8.00 YD 11% 123 TK

AGG-ST	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-C-ST	ADX-E-ST	AGG-1	AGG-5
[illegible] LB	[illegible] LB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						11680 LB	25280 LB
						11680-LB	13600-LB
						11680 LB	13520 LB
						[illegible] LB	[illegible] LB

CEM-2	WAT-1	ADX-B-1	ADX-D-1
4384 LB	174.0 GL	[illegible] OZ	[illegible]
4384-LB	174.0-GL	56.0-OZ	800-OZ
4392 LB	174.0 GL	56.0 OZ	800 OZ
4392 LB	174.0 GL	56.0 OZ	800 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-C-ET	ADX-E-ET
[illegible] LB	[illegible] LB	[illegible] OZ	[illegible] OZ	[illegible] OZ	[illegible] OZ

TIME

LOAD SIZE MIX #

124 TM

11680 LB 25280 LB
11680-LB 13600-LB

CEM-2

4384-LB 174.0-GL 56.0-OZ 800-OZ
4392 LB 173.5 GL 56.0 OZ 800 OZ

AGG-ET CEM-ET ADX-A-ET ADX-B-ET ADX-C-ET ADX-E-LI
- LB - LB 0.0 OZ 0.0 OZ .0 OZ 0.0 OZ

TIME DATE

08:47 02/13/20 1480F

LOAD SIZE MIX #

8.00-YD 118

AGG-ST	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-C-ST	ADX-D-ST	ADX-E-ST	AGG-1	AGG-2
0 LB	0 LB	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ	11680 LB	25230 LB
							11680-LB	13600-LB
							11680 LB	13520 LB
							11681 LB	13511 LB

CEM-2	WAT-1	ADX-B-1	ADX-D-1	ADX-D-1
4384 LB	174.0 GL	56.0 OZ	800 OZ	
4384-LB	174.0-GL	56.0-OZ	800-OZ	
4392 LB	174.0 GL	56.0 OZ	800 OZ	
4392 LB	174.0 GL	56.0 OZ	800 OZ	

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-C-ET	ADX-D-ET	ADX-E-ET
0 LB	0 LB	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ

TRK PLT

TIME DATE
05:14 08/13/[illegible] AGG-B

LOAD SIZE MIX #
8.00 YD 11s [illegible]

AGG-BT	CEM-BT	ADX-A-BT	ADX-B-BT	ADX-C-BT	ADX-E-BT	AGG-1	AGG-2
- LB	- LB	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ	[illegible] LB	[illegible] LB

11680 LB 25280 LB
11680-LB 13600-LB
11720 LB 13600 LB
11720 LB 25520 LB

CEM-B	WAT-1	ADX-B-1	ADX-D-1
4384 LB	174.0 GL	56.0 OZ	800 OZ
4384-LB	174.0-GL	56.0-OZ	800-OZ
4392 LB	174.0 GL	56.0 OZ	800 OZ
4392 LB	174.0 GL	56.0 OZ	800 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-C-ET	ADX-E-ET
- LB	- LB	0.0 OZ	0.0 OZ	0.0 OZ	0.0 OZ

ADX [illegible] [illegible]

TIME 09:15 DATE

LOAD SIZE 8.00 YD MIX # 11% 124 TK

AGG-ST - LB	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-C-ST	ADX-D-ST	ADX-E-ST	AGG-1	AGG-2
							11480 LB	25280 LB
							11680-LB	13600-LB
							11680 LB	13360 LB
							11680 LB	25140 LB

CEM-3	WAT-1	ADX-A-1	ADX-B-1
4384 LB	174.0 GL	176.0 OZ	56.0 OZ
4384-LB	174.0-GL	176.0-OZ	56.0-OZ
4392 LB	174.0 GL	176.5 OZ	56.0 OZ
4392 LB	174.0 GL	176.5 OZ	56.0 OZ

AGG-ET - LB	CEM-ET - LB	ADX-A-ET	ADX-B-ET	ADX-C-ET	ADX-E-ET
		0.0 OZ	0.0 OZ	0 OZ	0 OZ

STOMER

FIELD PURCHASE ORDER
SEVENSON ENVIRONMENTAL SERVICES
2749 LOCKPORT ROAD
NIAGARA FALLS, N.Y. 14302

CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

E183 COST CODE 18322 DATE OF THIS ORDER 9/11/90

RA WORK PORT NO _____ EXTRA WORK PERFORMED FOR _____

ME OF NDOR EMPIRE

ANTITY	UNIT PRICE	DESCRIPTION ONLY	PRICE
2 yds		HIGH EARLY - 4000PSI CONCRETE	

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

NOT VALID FOR JOBSITE LABOR UNLESS ISSUED TO A SUBCONTRACTOR
NOT VALID FOR PURCHASES OVER $5,000.00

LIVERY OR EIGHT COST ☐ INCLUDED ☐ EXCLUDED ☒ SALES TAXES ☐ EXCLUDED ☐ INCLUDED ☐ EXEMPT ☐ NOT EXEMPT

OVE ITEMS REQUESTED BY _____ BY _____

BEFORE ISSUING THIS ORDER NUMBER I OBTAINED THE ABOVE PRICES OR RATES FROM THE VENDOR X _____

IELD PURCHASE ORDER
No. 10273

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO. 0000635 DATE 09/12/

SOLD TO
SEVENSON ENVIRONMENTAL SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#E-183
FO#10273

E183
10273
18322
9/13/90

DIRECTIONS

APPROVED BY

TOTAL YARDS DELIVERED 9.00

YARDS	MIX DESCRIPTION
9.00	4000PSI #1'S / 06300

HI EARLY

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

ACCTUM: _____

Freshly mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with cement or cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF THE REACH O

WATER ADDED ON JOB AT CUSTOMER'S REQUEST > GALS. 10 CUSTOMER'S SIGNATURE _____

LEFT PLANT	ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
	850	1055	945	

AUTHORIZED SIGNATURE _____ TRUCK NO. _____

We make deliveries inside the curb line and on the lot at customer's risk only and accept no respon whatsoever for damages resulting from such deliveries.

RN600

CONCRET FOR SLAP AT CREEK modification

TOMER
CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO. 0000635

DATE 09/12/90

SOLD TO SEVENSON ENVIRONMENTAL SERVICES

SHIP TO PINE & TUSCARORA RD.
JOB#E-183
FO#10273

E183
10273
18322
9/13/90

DIRECTIONS

APPROVED By

TOTAL YARDS DELIVERED 6.00

YARDS MIX DESCRIPTION

00 4000PSI #1 'S' / 06300

THE ITEMS PURCHASED HEREBY ARE FOR USE IN A CONSTRUCTION PROJECT OF OLIN CORPORATION

EARLY

CIUM: _____

mixed cement, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water. If any or cement mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF THE REACH OF CHILDREN.

TER ADDED ON JOB CUSTOMER'S REQUEST > GALS. 8 CUSTOMER'S SIGNATURE _____

PLANT	ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
	9 30		10 15	

THORIZED GNATURE _____ TRUCK NO. 121

make deliveries inside the curb line and on the lot at customer's risk only and accept no responsibility soever for damages resulting from such deliveries.

RN60104

ER
CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

EMPIRE
BUILDER'S
SUPPLY

VISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ER NO. 0000635

DATE 09/1

D TO SEVENSON ENVIRONMENTAL SERVICES

P TO PINE & TUSCARORA RD.
JOB#E-183
FO#10273

E183
10273
18322
9/13

TIONS

APPROVED

YARDS DELIVERED 6.00

YARDS MIX DESCRIPTION

4000PSI #1 'S' / 06300

THE ITEMS PURCHASED HEREBY ARE
USE IN A CONSTRUCTION PROJECT
OLIN CORPORATION

at, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas pro
get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF THE

ON JOB REQUEST > GALS. 8 CUSTOMER'S SIGNATURE _____

ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PL
1020	—	10 55	

TRUCK NO.

inside the curb line and on the lot at customer's risk only and accept no
nages resulting from such deliveries.

RN60111

STOMER

CLARENCE
632-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

10

1115

EMPIRE
BUILDER'S
SUPPLY

DIVISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ORDER NO.
0000635

DATE
09/12/90

SOLD TO
SEVENSON ENVIRONMENTAL
SERVICES

SHIP TO
PINE & TUSCARORA RD.
JOB#E-183
FO#10273

E 183
10273
18322
9/13/90

DIRECTIONS

Approved By

TOTAL YARDS DELIVERED
4.00

YARDS | MIX DESCRIPTION

4000PSI #1'S / 06300

RLY

THE ITEMS PURCHASED HEREBY ARE FOR
USE IN A CONSTRUCTION PROJECT OF
OLIN CORP.

UM: _____

ment, mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promptly with water. If any
nt mixtures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF THE REACH OF CHILDREN.

ADDED ON JOB
OMER'S REQUEST > GALS. 10 CUSTOMER'S SIGNATURE _____

ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLANT
1030	1042	1115	

ZED
RE

TRUCK NO. 119

eliveries inside the curb line and on the lot at customer's risk only and accept no responsibility
for damages resulting from such deliveries.

RN60112

ARENCE
2-2000

CLARENCE MATERIALS CORP.

EMPIRE
285-5757

EMPIRE
BUILDER'S
SUPPLY

ISION OF CLARENCE MATERIALS CORP.
P.O. BOX 926
NIAGARA FALLS, N.Y. 14302

ER NO.
0000635

DATE
09/1

D TO
SEVENSON ENVIRONMENTAL
SERVICES

P TO
PINE & TUSCARORA RD.
JOB#E-183
FO#10273

E 183
10273
1832

CTIONS

Approved B

L YARDS DELIVERED
4.00

YARDS | MIX DESCRIPTION

4000PSI #1'S / 06300

THE ITEMS PURCHASED HEREBY ARE F
USE IN A CONSTRUCTION PROJECT O
OLIN CORPORATION

mortar, concrete or grout may cause skin injury. Avoid contact with skin where possible, and wash exposed skin areas promp
tures get into the eyes rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF THE RE

DED ON JOB
ER'S REQUEST > GALS. 8 CUSTOMER'S SIGNATURE _____

	ARRIVED JOB	STARTED DISCHARGE	LEFT JOB	ARRIVED PLA
	1130		1210	

TRUCK NO.

veries inside the curb line and on the lot at customer's risk only and accept no
damages resulting from such deliveries.

RN60116

9/12

TIME DATE

LOAD SIZE MIX # 113 TK

9.00 YD 113

AGG-ST CEM-ST ADX-A-ST ADX-B-ST ADX-D-ST ADX-E-ST AGG-1 AGG-2

0 LB - LB 0.0 OZ 0.0 OZ 0 OZ 0 OZ 0.0% 0.0 %

13160 LB 23440 LB

13160-LB 15280-LB

13120 LB 14840 LB

13120 LB 37960 LB

CEM-3 WAT-1 ADX-B-1 ADX-D-1

4936 LB 195.5 GL 63.0 OZ 900 OZ

4936-LB 195.5-GL 63.0-OZ 900-OZ

4984 LB 36.5 GL 63.0 OZ 900 OZ

4984 LB 136.0 GL 63.0 OZ 900 OZ

AGG-ET CEM-ET ADX-A-ET ADX-B-ET ADX-D-ET ADX-E-ET

- LB 0 LB 0.0 OZ 0.0 OZ 0 OZ 0 OZ

UNLOCK TOL OK MANUAL

TIME DATE
09:13 09/12/90 [illegible]

LOAD SIZE MIX #
9.00 YD 11 121 Tk

AGG-ST	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-D-ST	ADX-E-ST	AGG-1	AGG-5
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ	[illegible]	[illegible]
						13160 LB	28440 LB
						13160-LB	15280-LB
						13080 LB	15240 LB
						[illegible] LB	[illegible] LB

CEM-1	WAT-1	ADX-B-1	ADX-D-1
4936 LB	195.5 GL	63.0 OZ	900 OZ
4936-LB	195.5-GL	63.0-OZ	900-OZ
4952 LB	194.5 GL	63.0 OZ	898 OZ
4952 LB	194.5 GL	63.0 OZ	898 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-D-ET	ADX-E-ET
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ

LOCK TOL OK MANUAL

TIME DATE
10:00 09/12/90 46871

LOAD SIZE MIX #
8.00 YD 11M 11A TK

AGG-ST	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-D-ST	ADX-E-ST	AGG-1	AGG-5
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ	0.00 %	6.00 %

11680 LB 25390 LB
11680-LB 15600-LB
11720 LB 13480 LB
11720 LB 25200 LB

CEM-1	WAT-1	ADX-B-1	ADX-D-1
4384 LB	174.0 GL	56.0 OZ	800 OZ
4384-LB	174.0-GL	56.0-OZ	800-OZ
4392 LB	173.5 GL	56.0 OZ	800 OZ
4392 LB	174.0 GL	56.0 OZ	800 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-D-ET	ADX E-ET
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ

BLOCK TOL OK MANUAL

TIME DATE
10:23 09/12/90 46874

LOAD SIZE MIX #
3.00 YD 11% 119 TK

AGG-ST	CEM-ST	ADX-A-ST	ADX-B-ST	ADX-D-ST	ADX-E-ST	AGG-1	AGG-5
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ	0.00 %	0.00 %

11680 LB 25280 LB
11680-LB 13600-LB
11520 LB 13680 LB
11520 LB 25200 LB

CEM-1	WAT-1	ADX-B-1	ADX-D-1
4384 LB	174.0 GL	56.0 OZ	800 OZ
4384-LB	174.0-GL	56.0-OZ	800-OZ
4344 LB	174.0 GL	56.0 OZ	800 OZ
4344 LB	174.0 GL	56.0 OZ	800 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-D-ET	ADX-E-ET
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ

LOCK TOL OK AUTO

TIME DATE

10:58 08/12/95

LOAD SIZE MIX #

3.00 YD 114 121 TK

AGG-BT	CEM-BT	ADX-A-BT	ADX-B-BT	ADX-C-BT	ADX-E-BT	AGG-1	AGG-5
- LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ	0.0%	6.00 %

11680 LB 25280 LB
11680-LB 13600-LB
11760 LB 13480 LB
11760 LB 25240 LB

CEM-1	WAT-1	ADX-A-1	ADX-B-1
4384 LB	174.0 GL	176.0 OZ	56.0 OZ
4384-LB	174.0-GL	176.0-OZ	56.0-OZ
4392 LB	174.0 GL	176.0 OZ	56.0 OZ
4392 LB	174.0 GL	176.0 OZ	56.0 OZ

AGG-ET	CEM-ET	ADX-A-ET	ADX-B-ET	ADX-C-ET	ADX-E-ET
0 LB	- LB	0.0 OZ	0.0 OZ	0 OZ	0 OZ

LOCK TOL OK AUTO

Steel Deck Material

CYCLOPS

BOWMAN METAL DECK DIVISION

30

BOWMAN HEIDELBERG
MANCUSO STEEL PRODUCTS
LANCASTER NY
10 OF 10

4 9 7 8 8

V3374

BUNDLE AND TAG STOCK

ROOF DECK B COLD ROLL GRAY 0 1
36 IN. X 22 GA

PIECES	FT/IN/16	TOT-INCH	MARK:	PIN	PG#
30	12 3	147.00		10	2
30 TOT PCS		POUNDS 1650			11.03 SQUARES

MFG COIL _____ HEAT# _____

4 9 7 8 8 - 0 1

Construction Chemicals, Inc.
14851 Calhoun Road
Omaha, Nebraska 68152
402/453-6600
FAX 402-453-0244

Curing Compound for Concrete Slab at Creek modification

PRODUCT

Curing Compound

L & M CURE

MANUFACTURER

L & M Construction Chemicals, Inc.
14851 Calhoun Road
Omaha, NE 68152
Phone: (402) 453-6600

DESCRIPTION

L & M CURE is a ready-to-use, non-residual concrete curing agent that penetrates surfaces to cure the concrete from within by forming a barrier against moisture loss without staining concrete surfaces. A water white, sprayable liquid that offers residual free performance. L & M CURE is a non-staining, penetrating curing compound with chemical inertness to which any topping can be later applied.

L & M CURE is odor free and is ideal for use in enclosed areas where odor free products are essential, such as tunnels and chimneys. L & M CURE can also be easily applied to both vertical and horizontal surfaces.

BASIC USE:
L & M has been a basic innovator of concrete chemicals since 1961. The over 25 years experience, supported by rigid QC program, mean trouble-free curing performance on commercial and industrial projects.

Examples of L & M CURE applications are: warehouses, manufacturing plants, water reservoirs, food processing plants, power plants, distilleries, bottling plants, sewage plants, breweries, apartment buildings, office buildings and other areas where non-residual performance is critical and later toppings are desirable and scheduled.

Limitations:
For placement above 40°F. Apply only to frost free surfaces. Do not apply over standing water.

Sizes:
5 gal. pails and 55 gal. drums. Each container is clearly identified with product name and label stating how the product is to be used.

Applicable Standards:
ASTM-C 309 Type 1 and 1D,
ASTM-C 156 - water retention.
USDA approved.

TECHNICAL

L & M CURE is a water-soluable cure that deeply penetrates concrete surfaces. L & M CURE leaves a residual free surface to which concrete, terrazzo, tiles paints, epoxies or other toppings will satisfactorily bond.

L & M CURE Properties:

Solids Volume, min. -	31%
Dry Time	
Max. hours -	4
Penetration, up to -	1/8''
Shelf life (yrs.)	
Sealed containers -	2

INSTALLATION

Apply to fresh concrete surfaces after first troweling when surface water glaze has disappeared.

Application: Uniformly applied directly to the concrete surfaces by spray or roller at the rate specified.

Coverage Rate: Surface porosity determines coverage rate.
Broom finishes - 200 sq. ft./gal.
Steel troweled - 300 sq. ft./gal.
When in an enclosed, highly humid, unvented area, cure with poly or water cure.

Precautions:
Wear protective goggles. Keep from freezing to prevent crystallization and settling. Store above 40°F. Avoid placement in enclosed areas without good air movement to avoid application on super saturated concrete surfaces and assure penetration and non-slip surfaces.

AVAILABILITY & COSTS

Availability:
L & M CURE is readily available from our stocking distributors in factory sealed 5 and 55 gallon drums throughout the USA.

Cost:
Average material cost varies with location. Prices available from your local distributors.

WARRANTY

L & M CURE is guaranteed to be in original sealed containers free of contaminants and when used as instructed will provide positive curing protection for concrete.

The information offered herein is believed to be true and accurate and provided in good faith. However, L & M, its agents and distributors assume no responsibility for risks or liability that may arise from the use or performance of these products since conditions, applications and installer's capabilities are beyond our control.

L&M Construction Chemicals, Inc. May 1988
3p
CONCRETE CURING

APPENDIX K

APPENDIX K

Soils Testing

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

RECEIVED
OCT 13 1989
CLEVELAND ES

October 9, 1989

ɔrdon Melle
ŋgineering Science
9101 Villaview Road, Suite 301
Leveland, OH 44119

ear Mr. Melle:

Enclosed you will find a copy of the water content determination and ɔcation descriptions of soil samples as excavated.

Further test results will follow upon date of completion.

Very truly yours,
BUFFALO TESTING LABORATORIES, INC.

WILLIAM A. KERPKA, JR.
Concrete & Soils Technician

BUFFALO TESTING LABORATORIES INC.

CHEMISTS - METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS - ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

Soil Sample Locations

mple #1:

mposite of top (2) feet of soil at the following locations:

N 7263
E 8177

N 7437
E 8377

op of excavation elevation 564.5 at both locations.

ample #2:

mposite of bottom (1.5) feet of soil at the following locations:

N 7263
E 8177

N 7437
8377

ottom of excavation elevation 561.0 at both locations.

a le #3-A:

omposite of top (9.0) feet of soil at the following locations:

N 7311
E 8491

op of excavation elevation 573.2

ample #3-B:

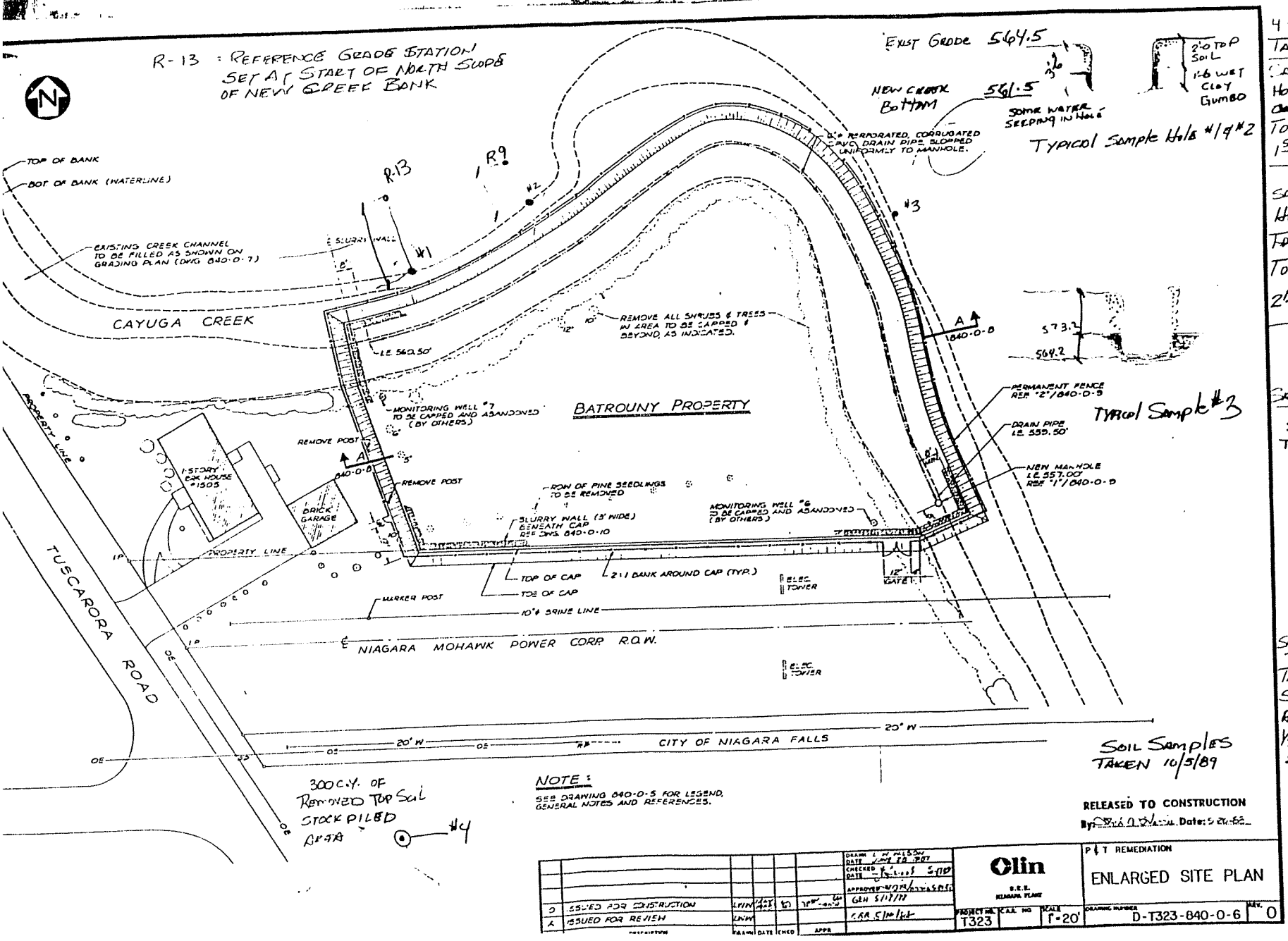
rab sample of soil at the following location:

N 7311
8491

xcavation elevation 564.2

ample #4:

ample of stockpiled borrow soil



4 Soil Samples Taken.

Sample From Hole #1 & #2 Mixed Together for 1st Sample

Sample From Hole #1 & #2 Clay Mixed Together for 2nd Sample

Sample #3

Sample of Clay Taken

Sample #4

Taken from Stockpiled Topsoil approx 1'0 down 1/2 up the East Slope

BUFFALO TESTING LABORATORIES
INCORPORATED

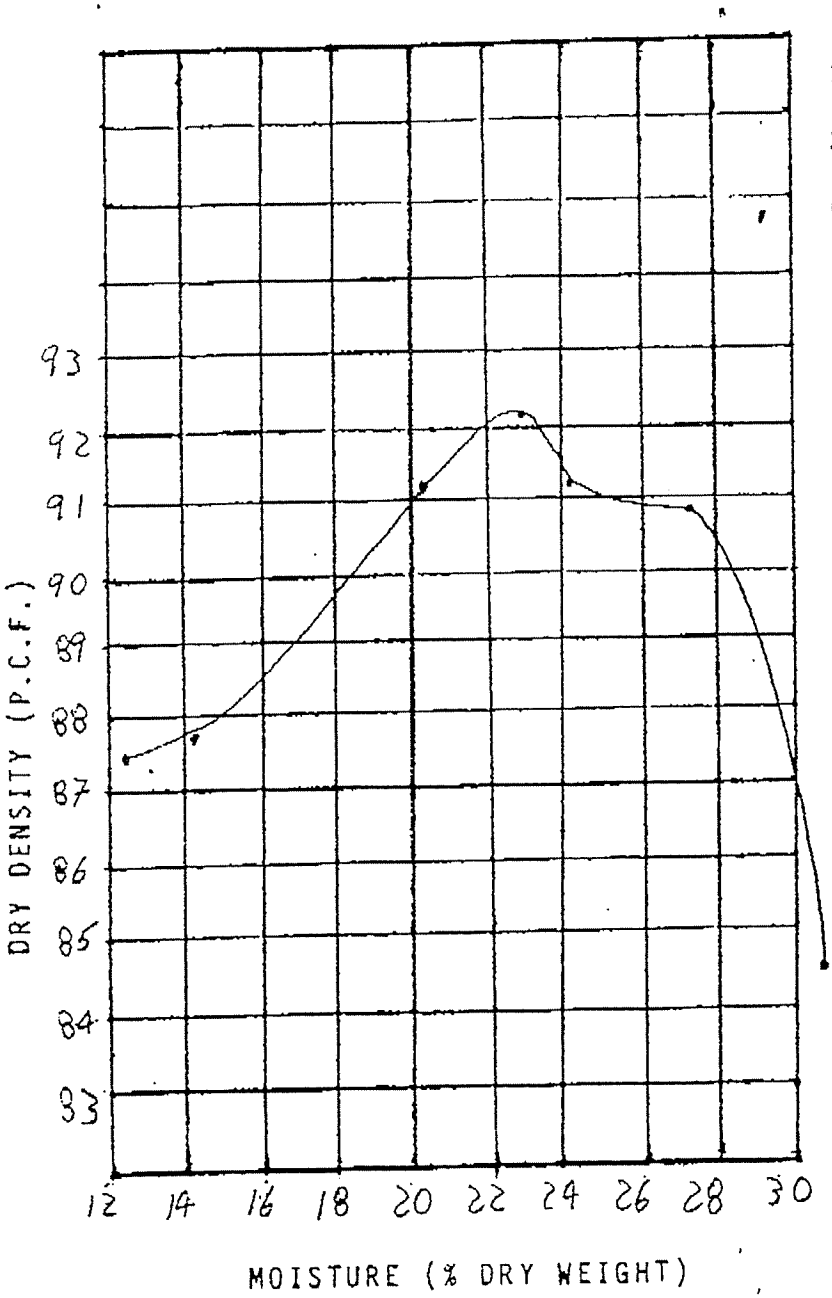
CHEMISTS — METALLURGISTS

BIOLOGISTS — ENGINEERS

902 Kenmore Ave.

Buffalo, N. Y. - 14216

Phone: AC 716—873-2302



Report No. 92363

Date 23 Oct 89

Client ENGINEERING SCIENCE

Project CAYUGA CREEK

Soil Description:

SAMPLE #I

Curve No. (1)

Standard Modified

ASTM # D698-78

Hammer Weight 5.5 Lbs

Blows/Layer 56/3

Mold 1/13.333 ± 0.0009 Cubic Feet

Tests performed on soil passing

3/4 " Sieve.

Max. Dry Density 92.02 PCF

Optimum Moisture 22.99 %

Remarks

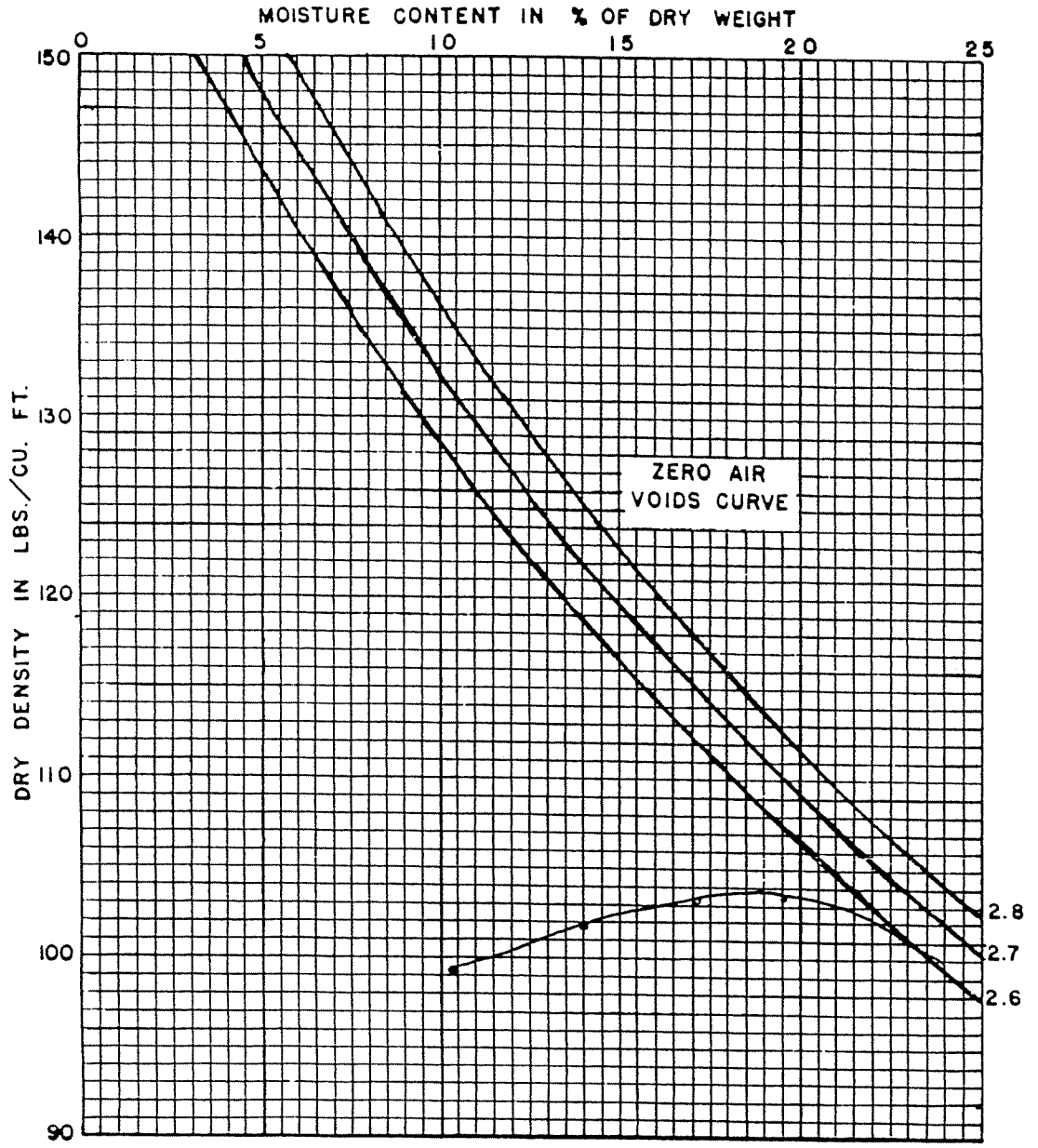
BILL KERPKA

Technician

COMPACTION TEST DATA

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Blvd.
CLIENT: BTL
SAMPLE DESCRIPTION: CL
CONTRACTOR: ---
REPORT BY: JAM/ARH

DATE REPORTED: 10-30-89
PROJECT NO.: 89-0142
SAMPLE NO.: # 2
DATE SAMPLED: --
DEPTH: ---



OPTIMUM MOISTURE CONTENT 19.2 %
MAXIMUM DRY DENSITY 103.8 P.C.F.
METHOD OF COMPACTION ASTM D698-A

10.31.89

BUFFALO TESTING LABORATORIES
INCORPORATED

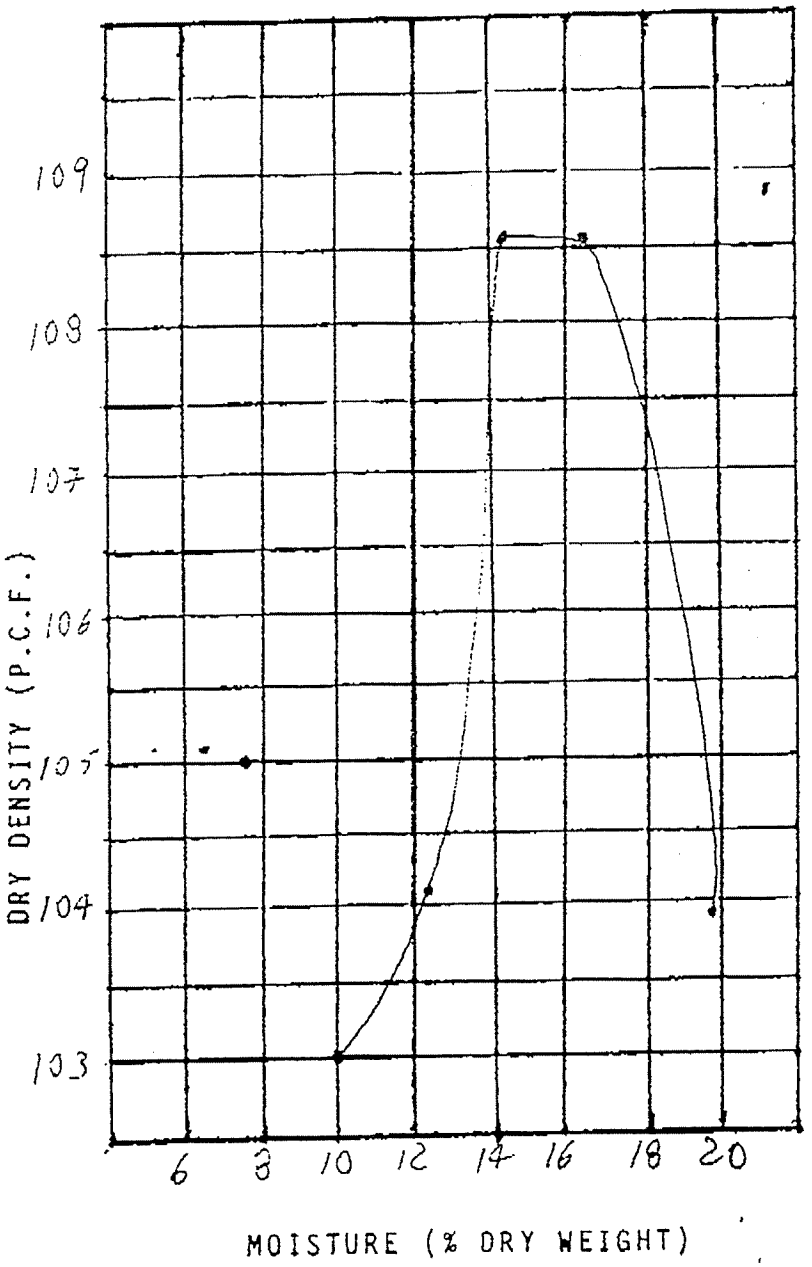
CHEMISTS — METALLURGISTS

BIOLOGISTS — ENGINEERS

902 Kenmore Ave.

Buffalo, N. Y. - 14216

Phone: AC 716—873-2302



Report No. 92363

Date 17 Oct 89

Client ENGINEERING SCIENCE

Project CAYUGA CREEK

Soil Description:

SAMPLE 3-A

Curve No. (1)

(Standard) Modified

ASTM # D698-78

Hammer Weight 5.5 Lbs

Blows/Layer 56/3

Mold 1/13.333 +0.0009 Cubic Feet

Tests performed on soil passing 3/4 " Sieve.

Max. Dry Density 108.53 PCF

Optimum Moisture 16.56 %

Remarks

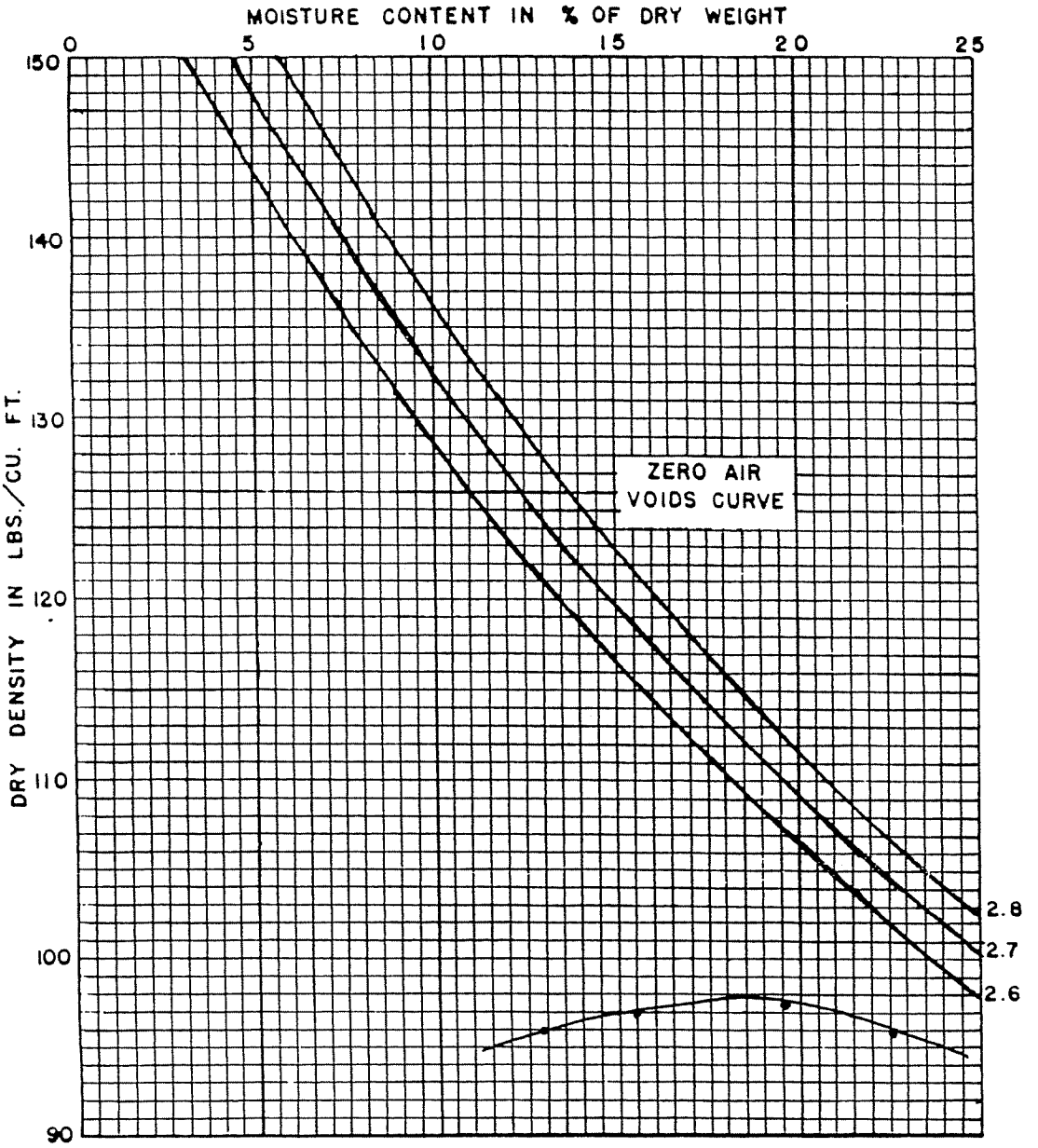
BILL KERPKA

Technician

COMPACTION TEST DATA

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Blvd.
CLIENT: BTL
SAMPLE DESCRIPTION: CL
CONTRACTOR: ---
REPORT BY: JAM/ARH

DATE REPORTED: 10-30-89
PROJECT NO.: 89-0142
SAMPLE NO.: # 3B
DATE SAMPLED: ---
DEPTH: ---



OPTIMUM MOISTURE CONTENT 18.5 %
MAXIMUM DRY DENSITY 98.0 PCF
METHOD OF COMPACTION ASTM D698-A

10.31.89

BUFFALO TESTING LABORATORIES
INCORPORATED

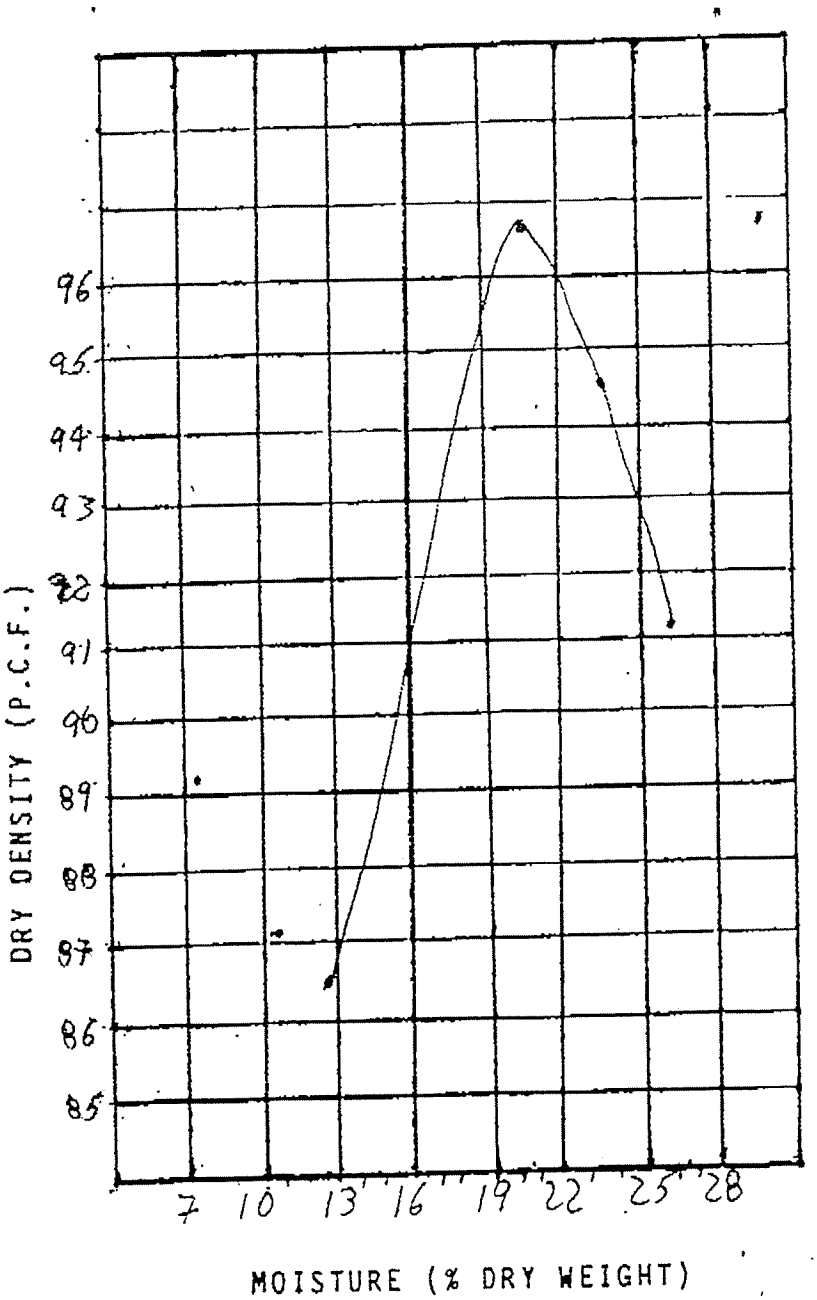
CHEMISTS — METALLURGISTS

BIOLOGISTS — ENGINEERS

902 Kenmore Ave.

Buffalo, N. Y. - 14216

Phone: AC 716—873-2302



Report No. 92363

Date 17 Oct 89

Client ENGINEERING SCIENCE

Project CAYUGA CREEK

Soil Description:

SAMPLE # 4

Curve No. (1)

(Standard) Modified

ASTM # D698-78

Hammer Weight 5.5 Lbs

Blows/Layer 56/3

Mold 1/13.333 ± 0.0007 Cubic Feet

Tests performed on soil passing 3/4 " Sieve.

Max. Dry Density 96.68 PCF

Optimum Moisture 20.37 %

Remarks

BILL KERPKA

Technician

BUFFALO TESTING LABORATORIES INC.

CHEMISTS · METALLURGISTS
902 Kenmore Avenue
Phone (716) 873-2302

BIOLOGISTS · ENGINEERS
Buffalo, NY 14216-1452
FAX (716) 873-9914

LABORATORY WORK SHEET FOR MOISTURE DENSITY

DATE: 9 OCT 89 SERIAL NO: 92263

CLIENT: ENGINEERING SCIENCE CONTRACTOR: IT

PROJECT: CAYUGA CREEK, NIAGARA FALLS, N.Y.

VISUAL CLASSIFICATION: —

TEST ON MATERIAL PASSING — SIEVE

SIEVE OPERATOR: —

SOIL DENSITY						
Can Number	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~
Weight of mold and compacted soil						
Weight of mold (lbs)						
Weight of compacted soil (lbs)						
Wet density (P.C.F.)						
Dry density (P.C.F.)						

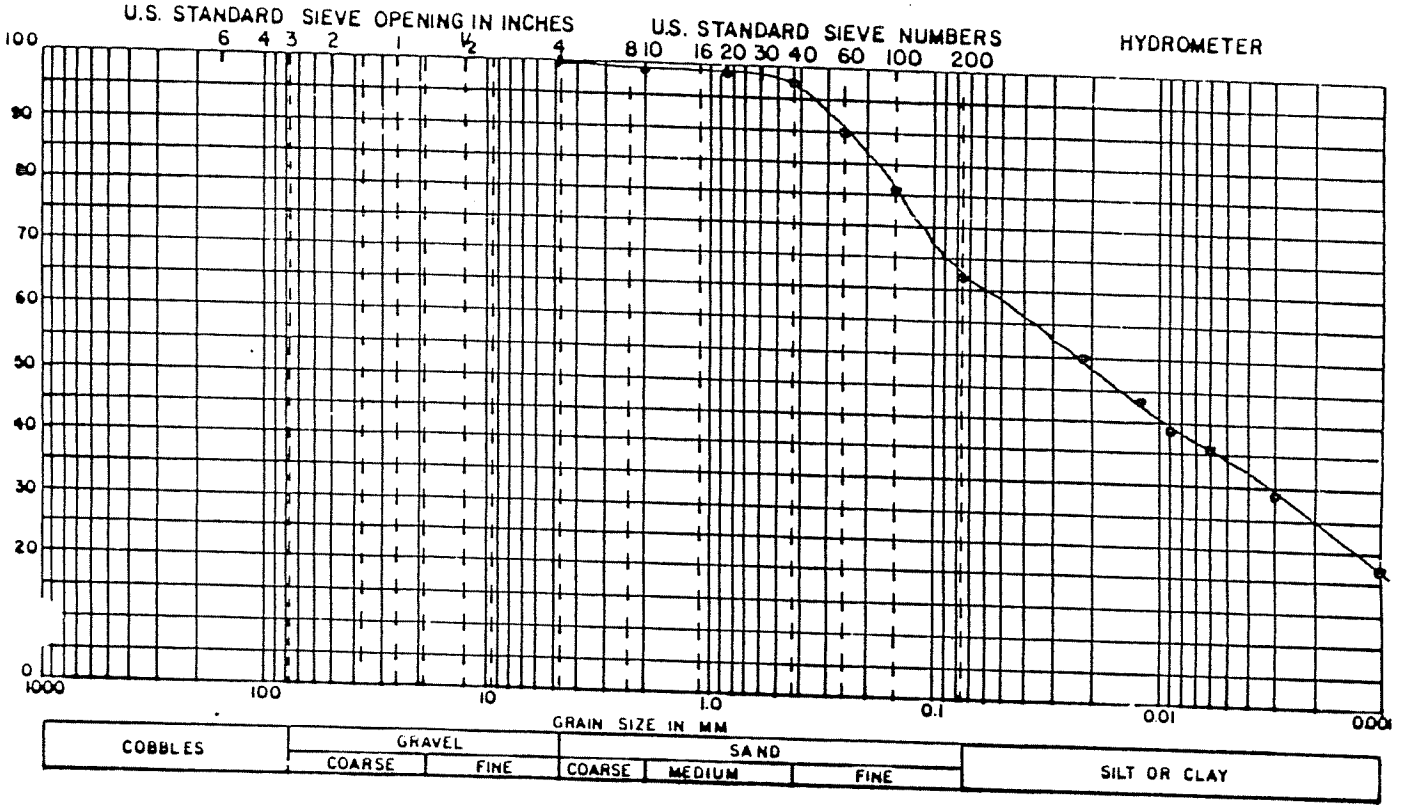
WATER CONTENT DETERMINATION						
Can Number	1	2	3-A	~~4~~ 3-B	~~5~~ 4	~~6~~
Weight of can and wet soil (Gms)	929.80	993.90	1220.06	1521.90	992.10	
Weight of can and dry soil (Gms)	663.00	778.40	1,100.00	1,258.90	770.03	
Weight of water (Gms)	266.80	215.50	120.06	263.0	222.07	
Weight of can (Gms)	134.80	137.20	202.90	227.50	76.70	
Weight of dry soil	528.20	641.20	897.10	1,031.40	915.40	
Water content	50.51%	33.61%	13.38%	25.50%	24.26%	

Remarks: WATER CONTENT DETERMINATION OF SOIL AS REMOVED FROM EXCAVATION.

GRAIN SIZE REPORT

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Boulevard
CLIENT: Buffalo Testing
SAMPLE DESCRIPTION: CL-ML
CONTRACTOR: Louis Liberatore
SPECIFIC GRAVITY 2.58 - Organic Matter Present

DATE REPORTED: 10-31-89
PROJECT NO.: 89-0142
SAMPLE NO.: 1
DATE SAMPLED: ---
DEPTH: ---



SIEVE SIZE	% FINER	REQUIREMENT
3/8 "	100	
# 4	100	
# 10	99	
# 60	90	
# 100	81	
# 200	67	
.002 mm	30	
FINENESS MOD.		

PROCTOR DATA: _____ PCF @ _____ %
TM D698 / ASTM D1557 A B C D

ATTERBERG LIMITS				N.M.C.
L.L. 43	P.L. 36	P.I. 7	SL. ____	3.1

D_{10}	
D_{15}	
D_{30}	
D_{50}	
D_{60}	
C_u $(D_{60} \div D_{10})$	
C_c $(D_{30}^2 \div D_{10} \times D_{60})$	

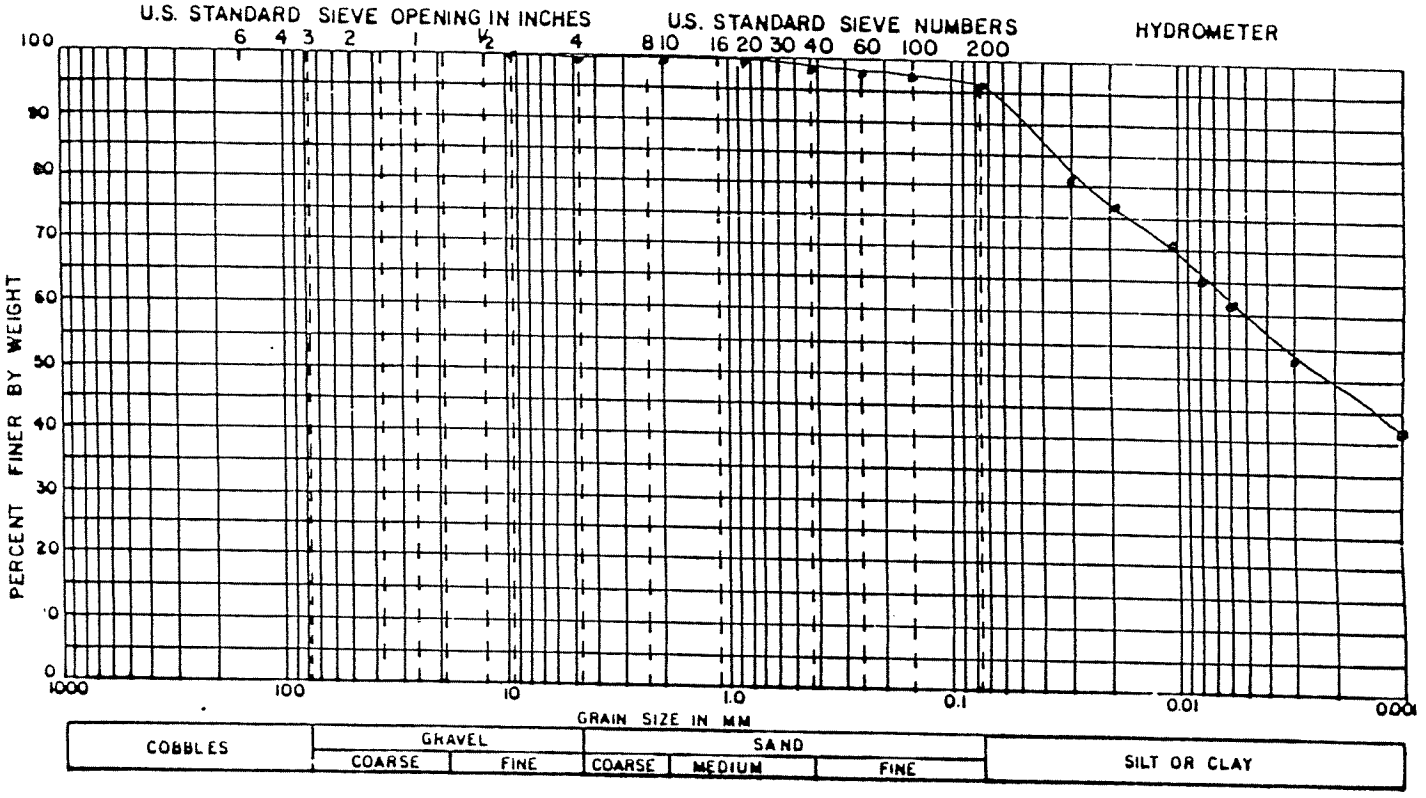
REPORT BY: Alan R. Hopkins
STANDARDS: ASTM D421, (D422)

REVIEWED BY: _____

GRAIN SIZE REPORT

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Boulevard
CLIENT: Buffalo Testing
SAMPLE DESCRIPTION: CL
CONTRACTOR: Louis Liberatore
SPECIFIC GRAVITY 2.41-Organic Matter Present

DATE REPORTED: 10-31-89
PROJECT NO.: 89-0142
SAMPLE NO.: 2
DATE SAMPLED: ---
DEPTH: ---



SIEVE SIZE	% FINER	REQUIREMENT
3/8 "	100	
# 4	99	
# 10	99	
# 60	97	
# 100	97	
# 200	96	
.002 mm	46	
FINENESS MOD.		

PROCTOR DATA: 103.8 PCF @ 19.2 %
ASTM D698 / ASTM D1557 (A) B C D

ATTERBERG LIMITS				N.M.C.
L.L. 29	P.L. 21	P.I. 8	S.L. ___	4.4

D_{10}	
D_{15}	
D_{30}	
D_{50}	
D_{60}	
C_u $(D_{60} \div D_{10})$	
C_c $(D_{30}^2 \div D_{10} \times D_{60})$	

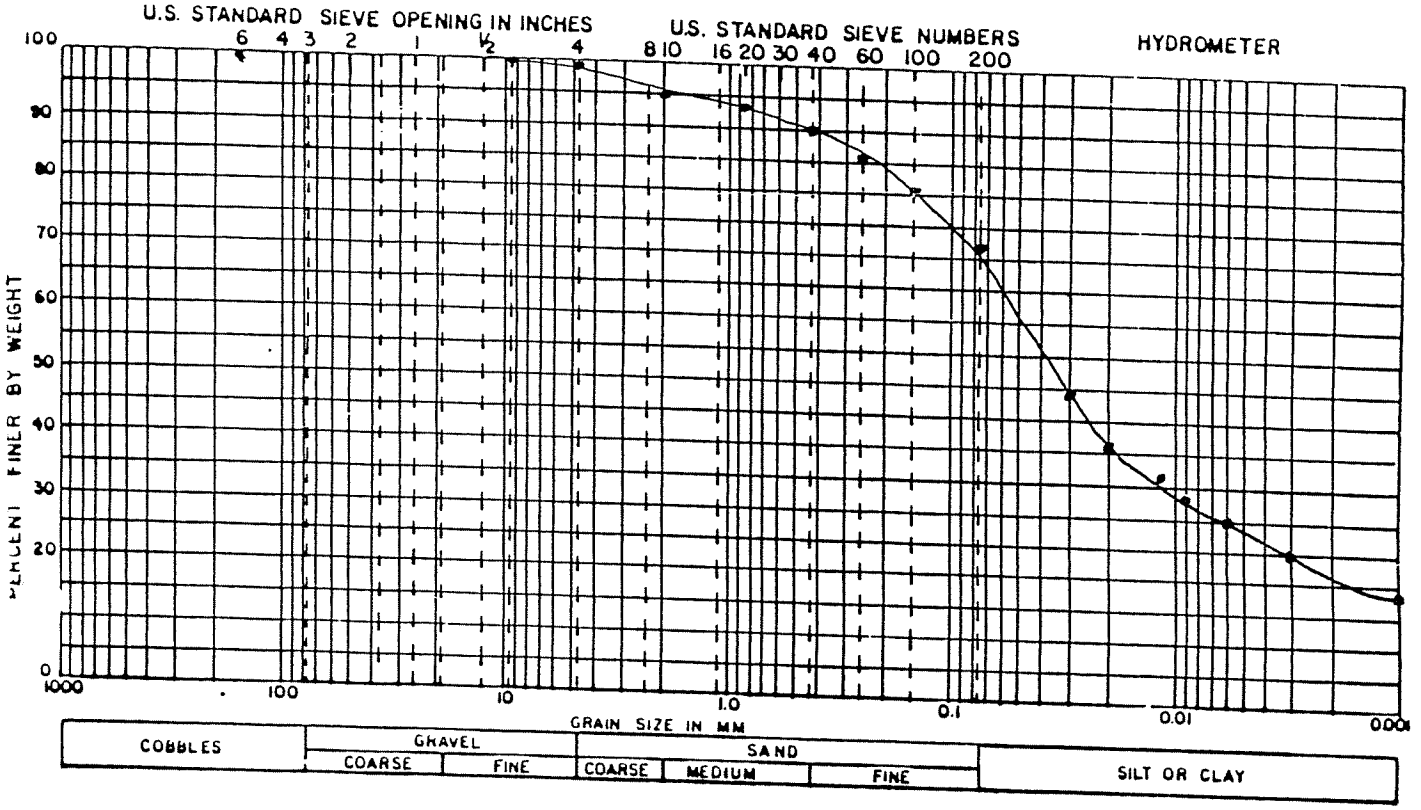
REPORT BY: Alan R. Hopkins
REVIEWED BY: [signature] 10.31.89

STANDARDS: ASTM D421, (D422)

GRAIN SIZE REPORT

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Boulevard
CLIENT: Buffalo Testing
SAMPLE DESCRIPTION: CL-ML
CONTRACTOR: Louis Liberatore
SPECIFIC GRAVITY 2.41 - Organic Matter Present

DATE REPORTED: 10-31-89
PROJECT NO.: 89-0142
SAMPLE NO.: 3 A
DATE SAMPLED: ---
DEPTH: ---



SIEVE SIZE	% FINER	REQUIREMENT
3/8 "	100	
# 4	99	
# 10	95	
# 60	86	
# 100	81	
# 200	72	
.002 mm	22	
FINENESS MOD.		

PROCTOR DATA: _____ PCF @ _____ %
ASTM D698 / ASTM D1557 A B C D

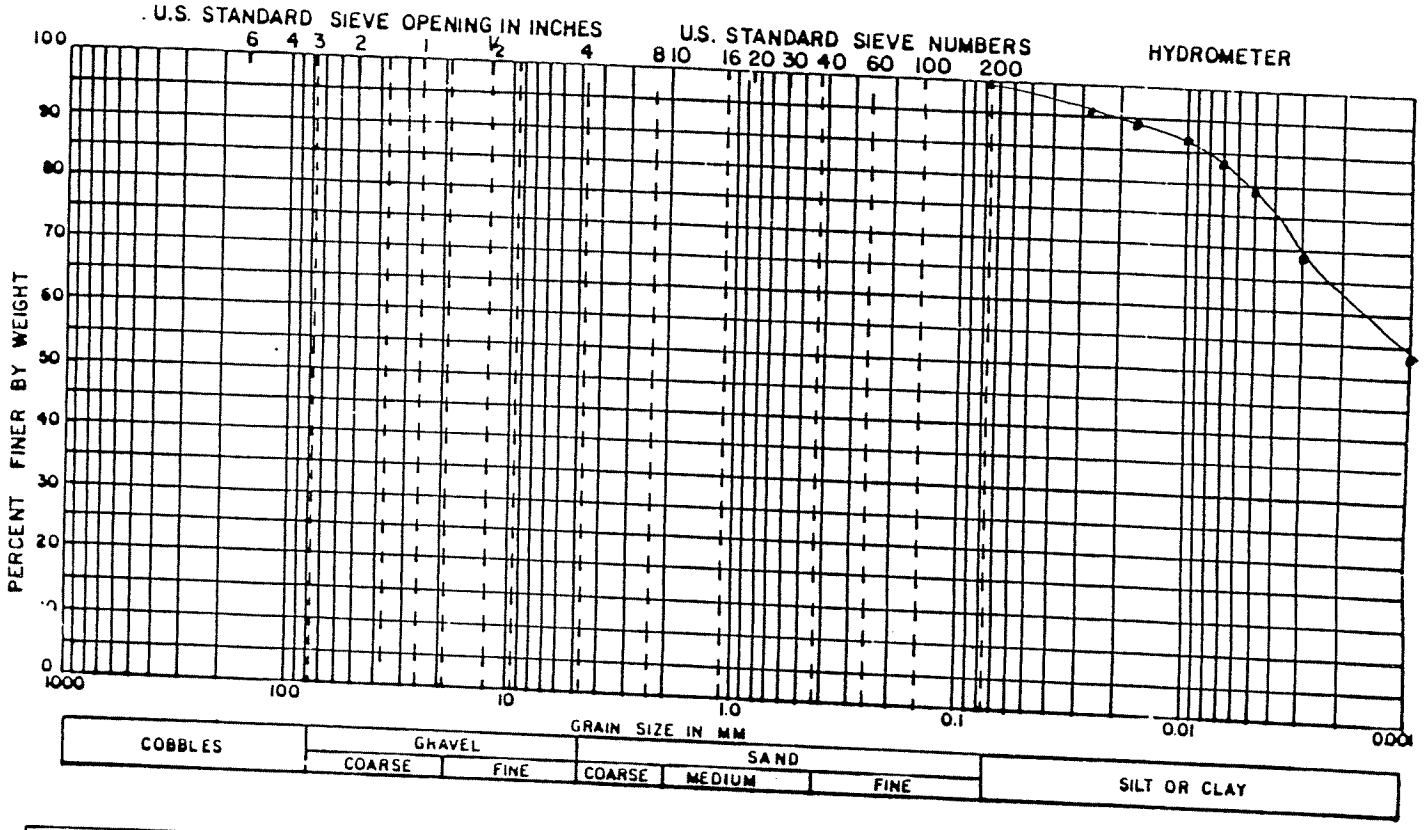
ATTERBERG LIMITS				N. M. C.
L.L. 27	P.L. 20	P.I. 7	SL. ___	2.5
D_{10}				
D_{15}				
D_{30}				
D_{50}				
D_{60}				
C_u ($D_{60} \div D_{10}$)				
C_c ($D_{30}^2 \div D_{10} \times D_{60}$)				

REPORT BY: Alan R. Hopkins
REVIEWED BY: [signature]
STANDARDS: ASTM D 421, (D 422)

GRAIN SIZE REPORT

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Boulevard
CLIENT: Buffalo Testing
SAMPLE DESCRIPTION: CL
CONTRACTOR: Louis Liberatore
SPECIFIC GRAVITY 2.79

DATE REPORTED: 10-31-89
PROJECT NO.: 89-0142
SAMPLE NO.: 3 B
DATE SAMPLED: ---
DEPTH: ---



SIEVE SIZE	% FINER	REQUIREMENT
3/8 "	100	
# 4	100	
# 10	100	
# 60	100	
# 100	100	
# 200	100	
.002 mm	68	
FINENESS MOD.		

PROCTOR DATA: 98.0 PCF @ 18.5 %
(TM D698) / ASTM D1557 (A) B C D

ATTERBERG LIMITS				N.M.C.
L.L. 48	P.L. 33	P.I. 15	S.L.	2.1

D_{10}

D_{15}

D_{30}

D_{50}

D_{60}

C_u
$(D_{60} \div D_{10})$

C_c
$(D_{30}{}^2 \div D_{10} \times D_{60})$

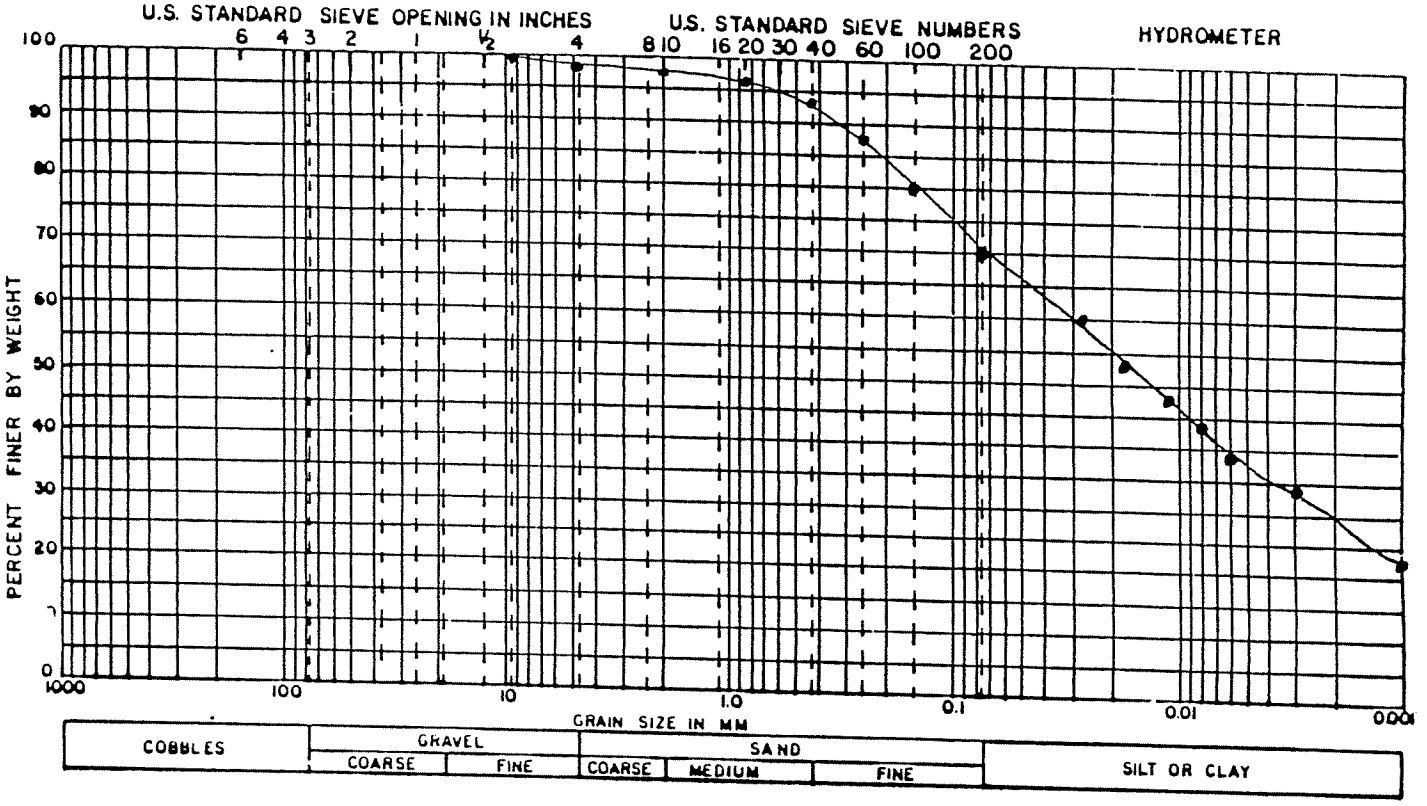
REPORT BY: Alan R. Hopkins
STANDARDS: ASTM D421, (D422)

REVIEWED BY: Alan R. Hopkins

GRAIN SIZE REPORT

PROJECT: Louis Liberatore
LOCATION: Niagara Falls Boulevard
CLIENT: Buffalo Testing
SAMPLE DESCRIPTION: CL
CONTRACTOR: Louis Liberatore
SPECIFIC GRAVITY 2.73

DATE REPORTED: 10-31-89
PROJECT NO.: 89-0142
SAMPLE NO.: 4
DATE SAMPLED: ---
DEPTH: ---



SIEVE SIZE	% FINER	REQUIREMENT
3/8 "	100	
# 4	98	
# 10	97	
# 60	87	
# 100	80	
# 200	70	
.002 mm	30	
FINENESS MOD.		

PROCTOR DATA: _____ PCF @ _____ %
STM D698 / ASTM D1557 A B C D

ATTERBERG LIMITS				N.M.C.
L.L. 41	PL. 31	P.I. 10	SL. ___	4.2

D_{10}

D_{15}

D_{30}

D_{50}

D_{60}

C_u
$(D_{60} \div D_{10})$

C_c
$(D_{30}{}^2 \div D_{10} \times D_{60})$

REPORT BY: Alan R. Hopkins
STANDARDS: ASTM D421, D422

REVIEWED BY: _____

5120 Butler Pike
Plymouth Meeting
Pennsylvania 19462
215-825-3000
Fax 215-834-0234

Woodward-Clyde Consultants

April 10, 1990
89C2857

Olin Chemicals
Lower River Road
Charleston, TN 37310

Attention: Mr. James D. Frye
Project Manager

**RESULTS OF LABORATORY TESTING FOR
PINE AND TUSCARORA REMEDIATION PROJECT**

Gentlemen:

Woodward-Clyde Consultants (WCC) is pleased to present herewith the results of the laboratory soil testing that you requested. Bag samples representative of the on-site clay materials from the proposed excavation were delivered to our Plymouth Meeting, Pennsylvania, laboratory. The bag samples were obtained from a test pit excavated adjacent to Boring WCC-6 at a depth of 5 to 6.5 feet. It is our understanding that this material is intended for fill and compacted clay liner construction at the Pine and Tuscarora Remediation Project.

The soil testing conducted, along with the standards/procedures used, are as follows:

o	Moisture Content	ASTM D 2216
o	Atterberg Limits	ASTM D 4318
o	Unit Weight of Soils	USACE EM 1110-2-1906, Appendix II
o	Specific Gravity	ASTM D 854
o	Grain-Size Distribution	ASTM D 422
o	Unified Soil Classification	ASTM D 2487
o	Moisture-Density Relationship	ASTM D 698, Method A

o Permeability Tests (Hydraulic Conductivity)

1. USACE EM 1110-2-1906 "Permeability Testing with Back-Pressure."
2. Bjerrum & Huder "Measurement of the Permeability of Compacted Clays," Proceeding of the 4th International Conference on Soil Mechanics and Foundation Engineering, Vol. 1, 1957.

PHYSICAL PROPERTY TESTS

Results of the physical property tests are presented below. The grain-size distribution curve is presented as Plate 1.

Liquid Limit	48%
Plastic Limit	25%
Specific Gravity	2.78
USCS Classification	CL

COMPACTION TEST

To determine the optimum water content and corresponding maximum dry density, a Standard Proctor compaction test (ASTM D 698) was performed. The compaction test for the clay sample was used as a baseline for permeability testing. Compaction test results are presented as Plate 2.

PERMEABILITY TESTS

Based on the results of the compaction test, a series of permeability tests was conducted for the clay. Specimens were prepared at various molding water contents and then compacted to about 85 percent, 95 percent, and 105 percent of the maximum Standard Proctor dry density (ASTM D 698). The molding water contents were calculated to equate to between an approximately 80 percent and 95 percent degree of saturation. It should be noted that, according to published data and our own experience, at a constant percent compaction and increasing degree of saturation, the coefficient of permeability tends to decrease. The object of the testing was to develop the "zone or window" where the coefficient of the permeability would be 1×10^{-7} cm/sec or less.

Permeability tests were conducted using a "closed loop, constant volume, variable-head" triaxial permeameter system. Specimens were initially consolidated using 5.0 psi as effective consolidation pressure, and then incrementally back-pressured up to 100.0 psi to facilitate and improve the degree of saturation. A hydraulic gradient of about 21 to 25 was used to initiate the flow of water.

Permeability test results are summarized in Table 1. In addition, a graphical presentation of the "zone or window" described above is included as Plate 3.

RECOMMENDATIONS

WCC recommends that the on-site clay should be compacted to a dry density and water content that fall within the "zone or window" shown on Plate 3, to provide a clay liner that will have a coefficient of permeability equal to or less than 1×10^{-7} cm/sec. The minimum degree of compaction should also be 90 percent of the maximum Standard Proctor density (ASTM D 698) to provide a liner that has adequate strength and low compressibility. A test fill should be conducted at the beginning of the liner construction to verify the number of compaction coverages (passes) that will be required by the selected compaction equipment to achieve the desired compaction and to verify that 90 percent of Standard Proctor compaction achieves a stable liner. Visual observations should also be made to verify that the compacted clay liner is uniformly compacted and free of clay clods or inter-clod voids. The compaction equipment should be a penetrating-foot compactor with a static weight of at least 40,000 pounds or an equivalent dynamic force (such as the compactor specified in the Sevenson Environmental Services Work Plan). If a vibratory compactor is used, the vibrator must be disengaged or operated at a low amplitude when compacting within 100 feet of the new channel slope, and even then only after field observations have been made to assess the effects of the vibratory compactor on the surrounding area. This may require additional compaction coverages to achieve the desired degree of compaction and fill uniformity in the critical zone near the new channel slope.

Woodward-Clyde Consultants

If you have any questions regarding these test results, or if we can be of further service, please do not hesitate to contact us.

Very truly yours,

WOODWARD-CLYDE CONSULTANTS

Richard T. Roe

Richard T. Roe, P.E.
Project Engineer

Frank S. Waller

Frank S. Waller, P.E.
Senior Managing Principal

RTR/tjr/24D

cc: Mr. G. Blaine Butaud
Enrique N. Manuel, WCC

Tables

TABLE 1

SUMMARY OF PERMEABILITY TEST RESULTS
PINE AND TUSCARORA REMEDIATION PROJECT

Test No.	M.C.$_i$ %	γ_d pcf	S_o %	% Compact.	M.C.$_f$ %	K cm/sec
1	29.4	85.7	79.9	84.9	31.5	6.64×10^{-8}
2	31.5	85.8	85.3	85.0	32.2	2.85×10^{-8}
3	35.1	85.6	95.1	84.8	34.1	2.02×10^{-8}
4	23.5	95.6	80.3	94.7	27.5	6.50×10^{-8}
5	24.8	95.6	84.8	94.7	27.3	1.89×10^{-8}
6	28.0	95.5	95.4	94.6	28.3	1.06×10^{-8}
7	16.3	105.6	70.3	104.7	26.3	1.64×10^{-8}
8	18.2	105.9	79.5	105.0	25.2	1.42×10^{-8}
9	20.7	105.7	90.0	104.8	24.9	1.02×10^{-8}
10	21.9	105.7	95.0	104.8	24.6	9.89×10^{-9}

where:

M.C. = Initial or final water content

γ_d = Compacted dry density

S_o = Initial degree of saturation

% Compact = Ratio of compacted dry density to maximum dry density (ASTM D 698)

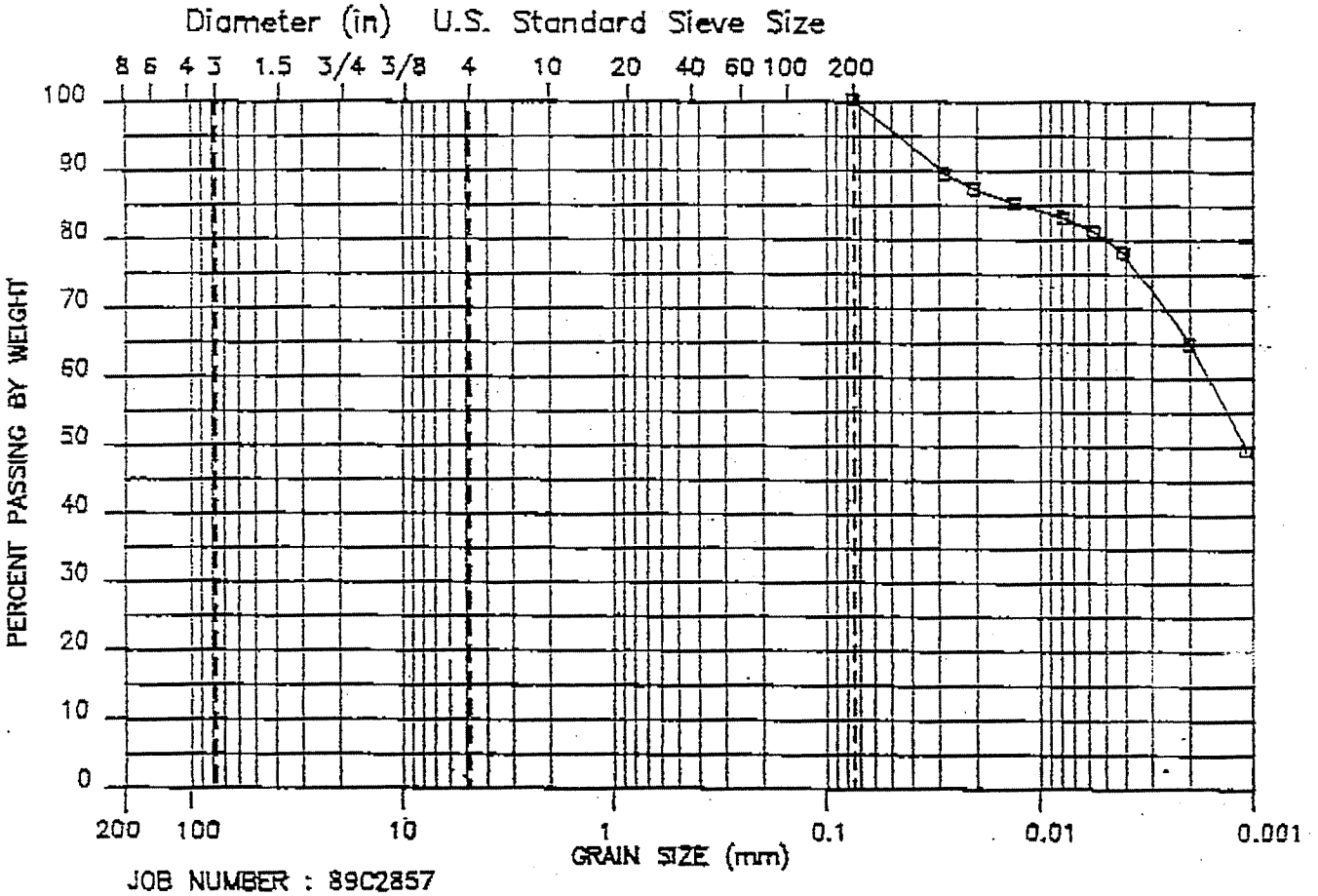
K = Coefficient of permeability corrected to 20°C

24D

Plates

WOODWARD–CLYDE CONSULTANTS
PLYMOUTH MEETING LABORATORY
PARTICLE–SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



JOB NUMBER : 89C2857
JOB NAME : OLIN CHEMICAL

SYM	BORING#	SAMPLE#	DEPTH	DESCRIPTION	W(%)	W_L (%)	I_P (%)
□	OLIN			RED–BROWN SILTY CLAY. (CL)		43	25

Plate 1

LABORATORY COMPACTION TEST

Project: Pine and Tuscarora Remediation Project *Project No.:* 89C2857

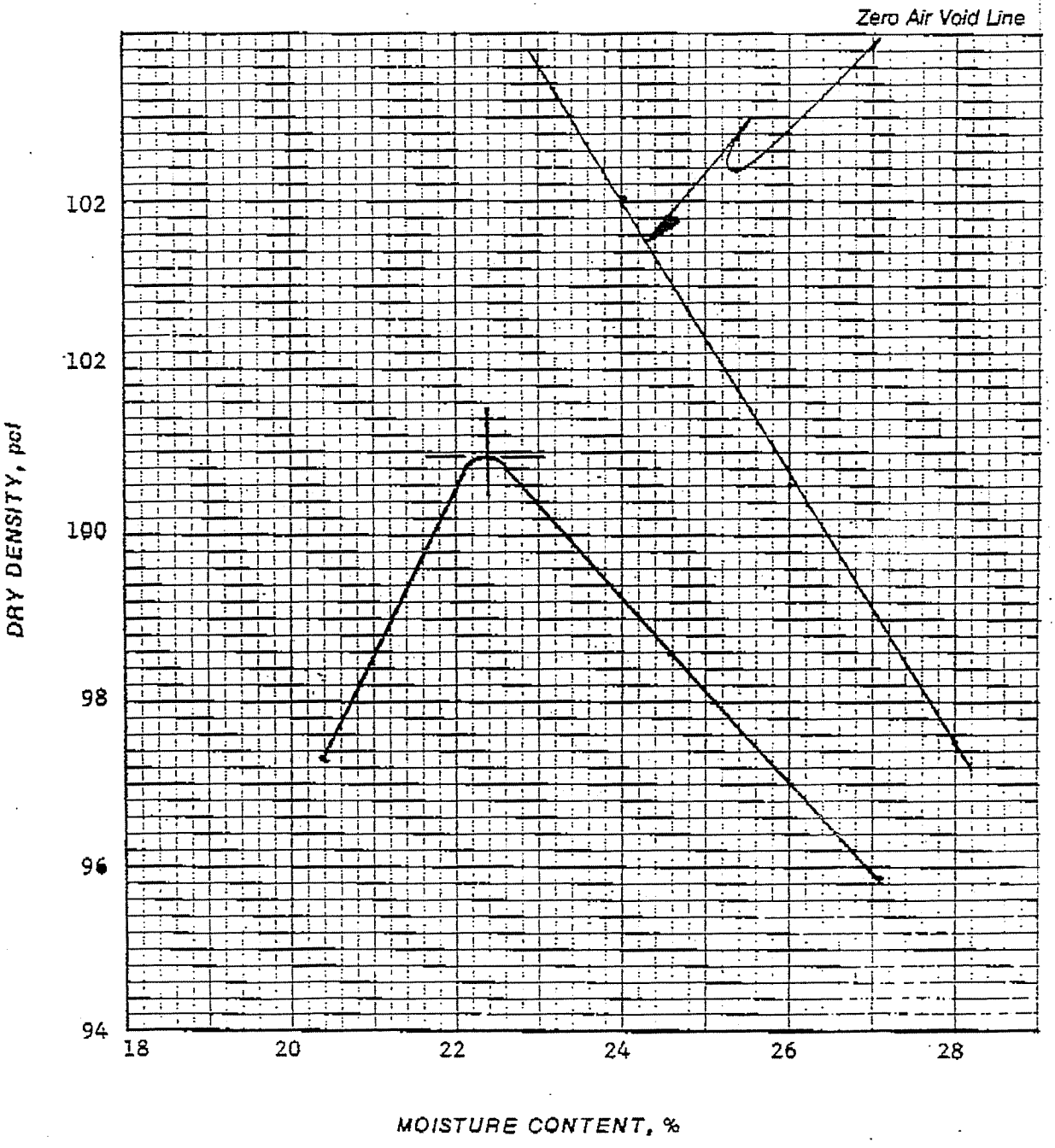
Boring or Test Pit No.: Bag Sample (Adjacent to WCC-6) *Sample No.:* On-Site Clay *Depth:* 5 to 6.5 ft.

Description: Brown silty clay (CL)

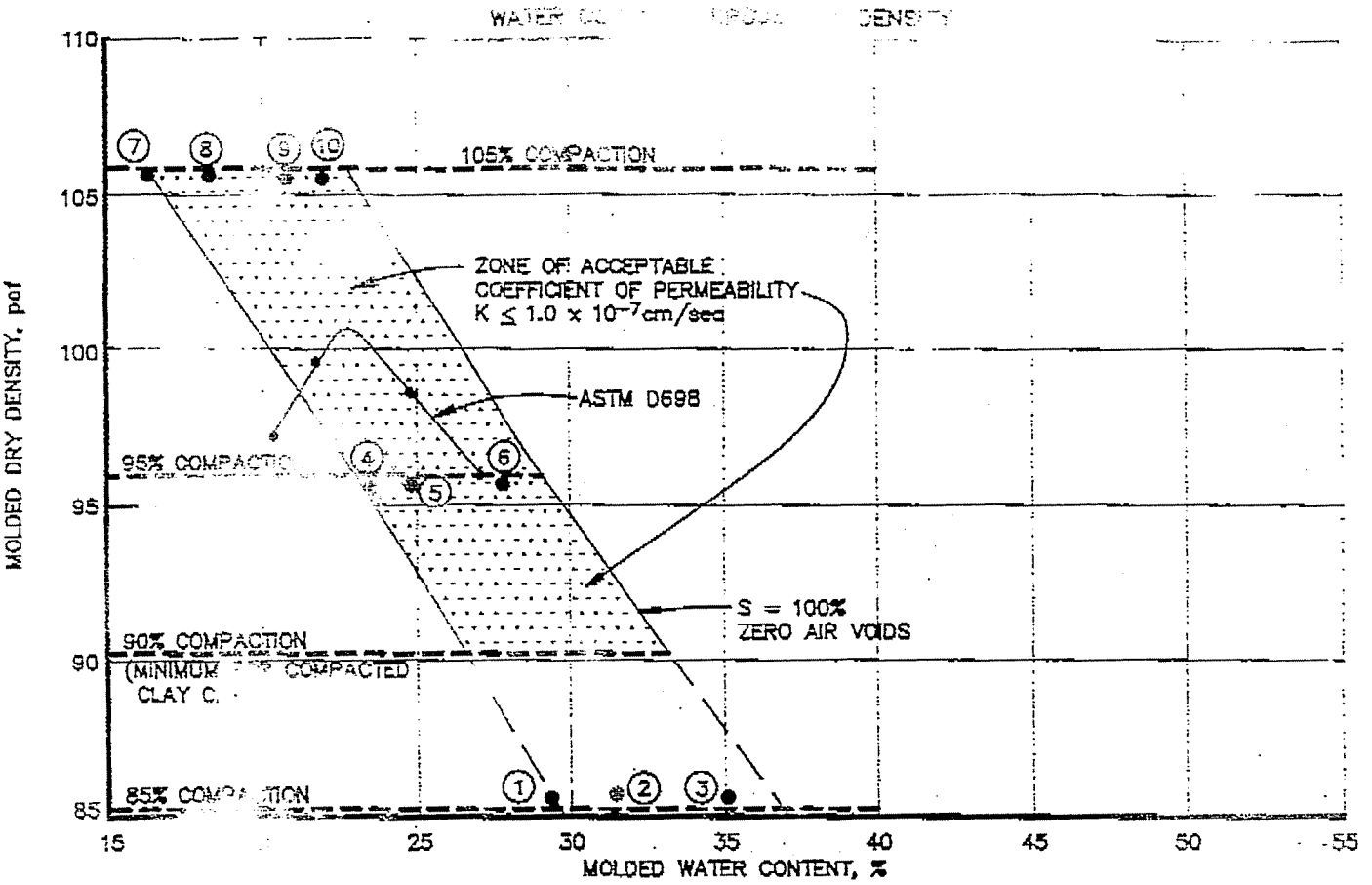
Optimum Moisture Content: 22.4 % *Maximum Dry Density:* 100.9 pcf

Liquid Limit: 48 % *Plastic Limit:* 25 % *Specific Gravity:* 2.78

Natural Moisture Content: % ☒ ASTM D 698, Method: A ☐ ASTM D 1557, Method:



Woodward-Clyde Consultants



OLIN CHEMICAL

WCC PROJECT NO.: 89C2857

ASTM D 698
MAX. γ_d = 100.9 pcf
OPTIMUM MOISTURE CONTENT = 22.3%

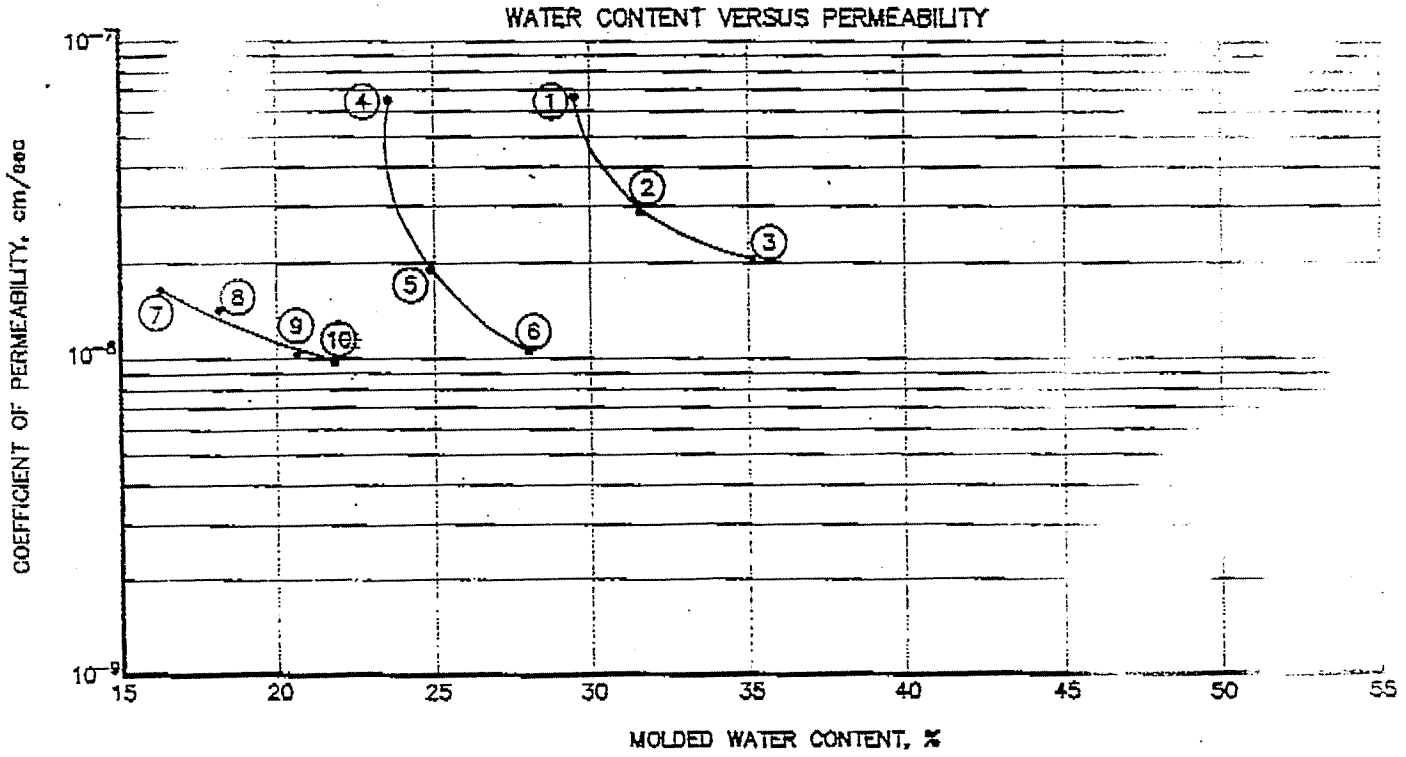
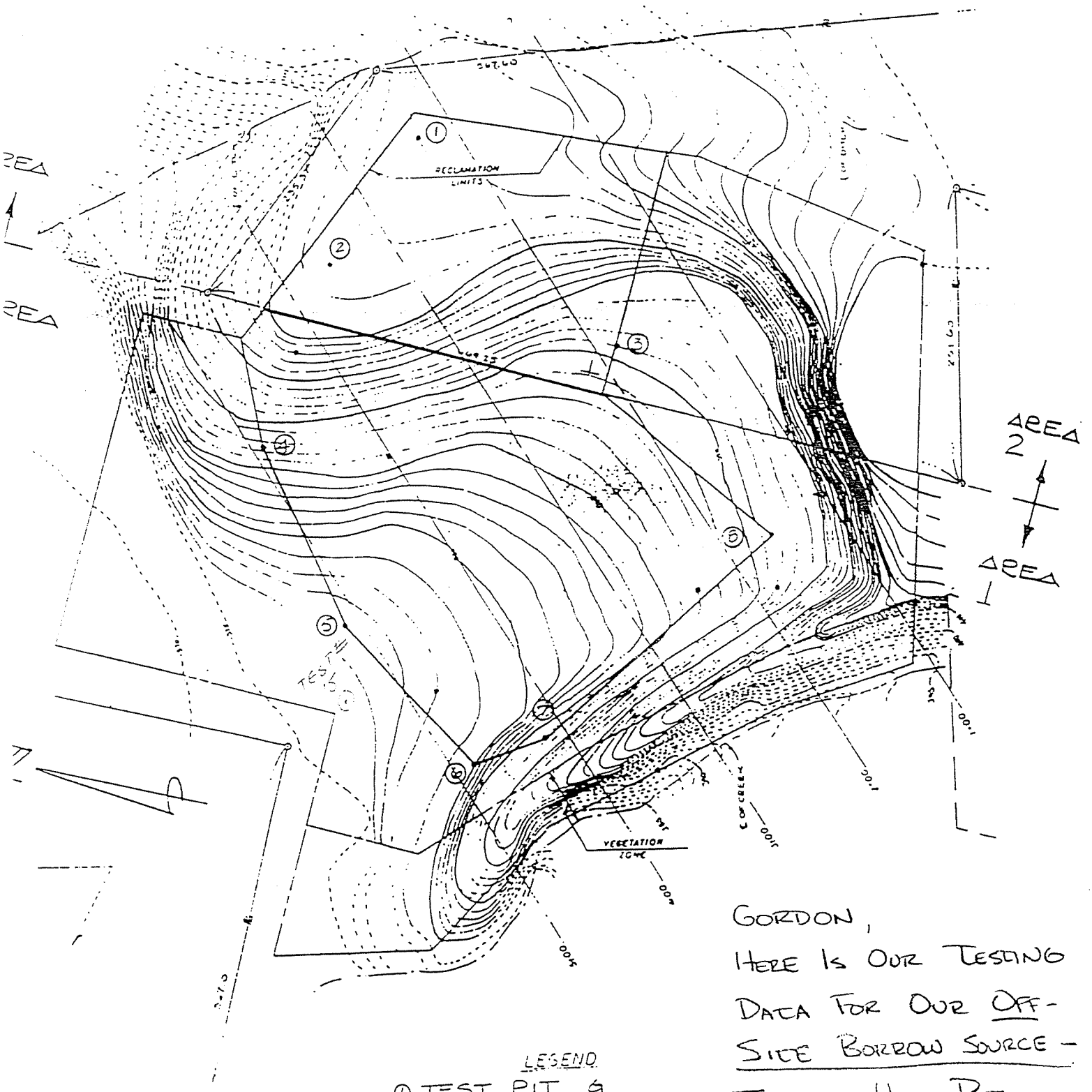


PLATE 3



LEGEND

①	TEST	PIT	A
②	"	"	F
③	"	"	H
④	"	"	C
⑤	"	"	A
⑥	"	"	D
⑦	"	"	TP-2
⑧	"	"	E

SEVENSON'S SOIL REPORT FOR OFF-SITE BORROW SOURCE

GORDON,
HERE IS OUR TESTING DATA FOR OUR OFF-SITE BORROW SOURCE - INDIAN HILL PIT.
ANY QUESTIONS, JUST CALL
ALAN ELIA

INDIAN HILL CLAY SOURCE

EMPIRE SOILS INVESTIGATIONS INC

PROJECT: Love Canal - Black and Bergholtz Creeks Remediation

CLIENT: Sevenson Environmental Services, Inc.

DATE: September 12, 1988

PROJECT NO: BT-88-54

REPORT NO: L-42

REPORT OF MATERIAL TESTING

Material: Project sample #96 of Proposed Clay material collected by Empire Soils Investigations, Inc. on August 24, 1988 from the Indian Hill Borrow Pit at Test Pit #2, Station 3+00 x 310' left at -7.5'.

Mechanical Analysis: ASTM D-422, Note #1.

Component	Percent of Sample
Gravel	0.5
Sand	8.0
Silt	38.8
Clay	52.7

Water Content of Soil - ASTM D-2216.

Natural Water Content = 20.2%.

Atterberg Limits - ASTM D-4318.

Liquid Limit	37
Plastic Limit	21
Plasticity Index	16

Maximum Density/Optimum Moisture - ASTM D1557(Note #1).

Maximum Density = 115.9 pcf.

Optimum Moisture = 13.9%.

Triaxial Permeability - Note #2.

Note #1: For details concerning these tests, please see the attached laboratory data forms.

Note #2: Tests are pending material approval.

If you have any further questions, please feel free to contact our office.

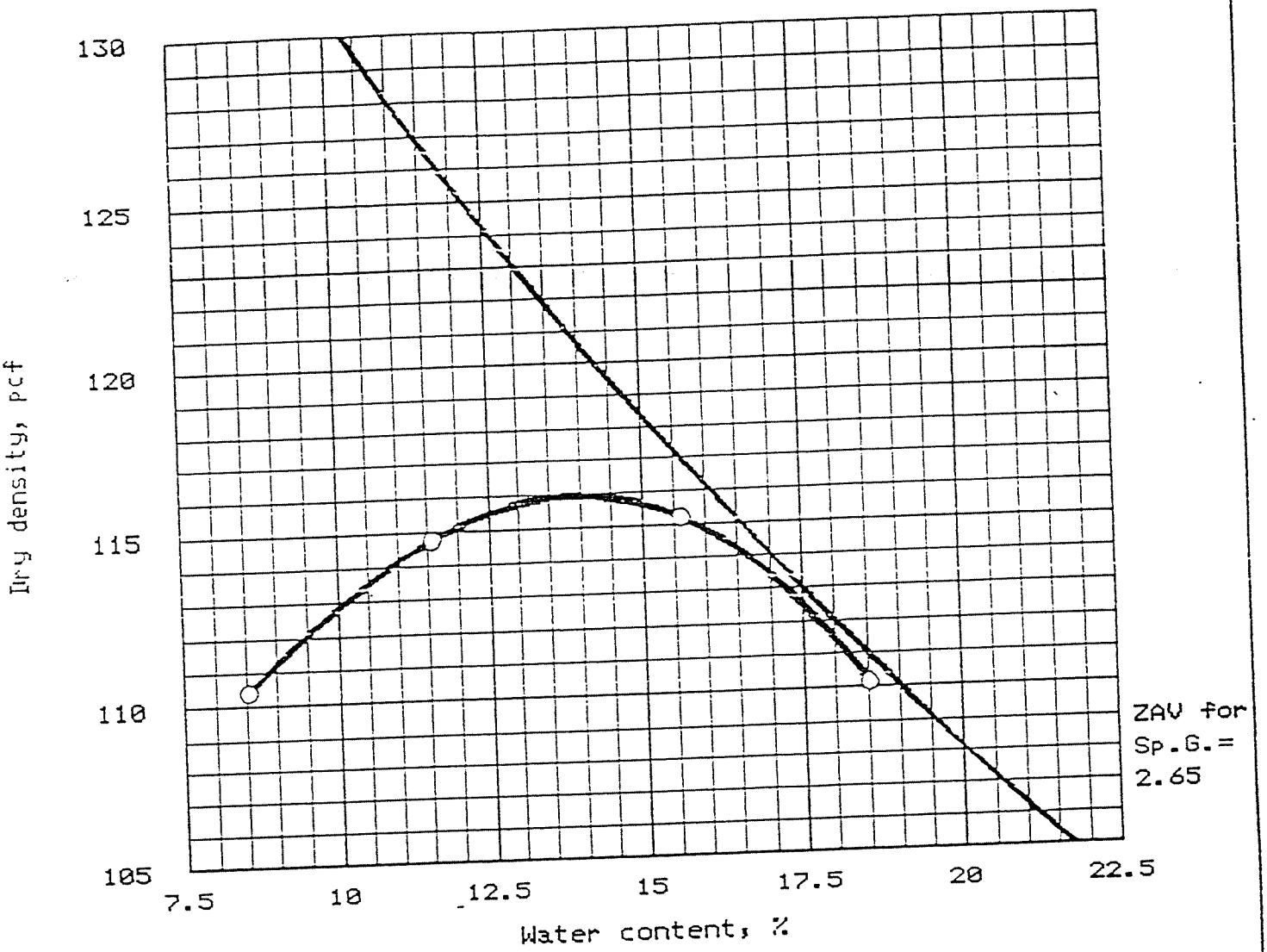
Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper
Manager of Testing Services

Edward J. Barbiero
Civil/Materials Engineer

PROCTOR TEST REPORT



"Modified" Proctor, ASTM D 1557-78, Method A

Sample/ Depth	Classification USCS	Classification AASHTO	Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
7.5	CL		20.2 %	2.65	37	16	.5 %	91.5 %

TEST RESULTS

Optimum moisture = 13.9 %
Maximum dry density = 115.9 pcf

MATERIAL DESCRIPTION

CLAY AND SILT TRACE SAND
TRACE GRAVEL

Project No.: BT-88-54
Project: LOVE CANAL BLACK AND BERGHOLTZ CREEKS REM
Location: INDIAN HILL BORROW PIT, PIT # 2
STA. 3+00 X 310' LEFT

Date: 9-22-1988

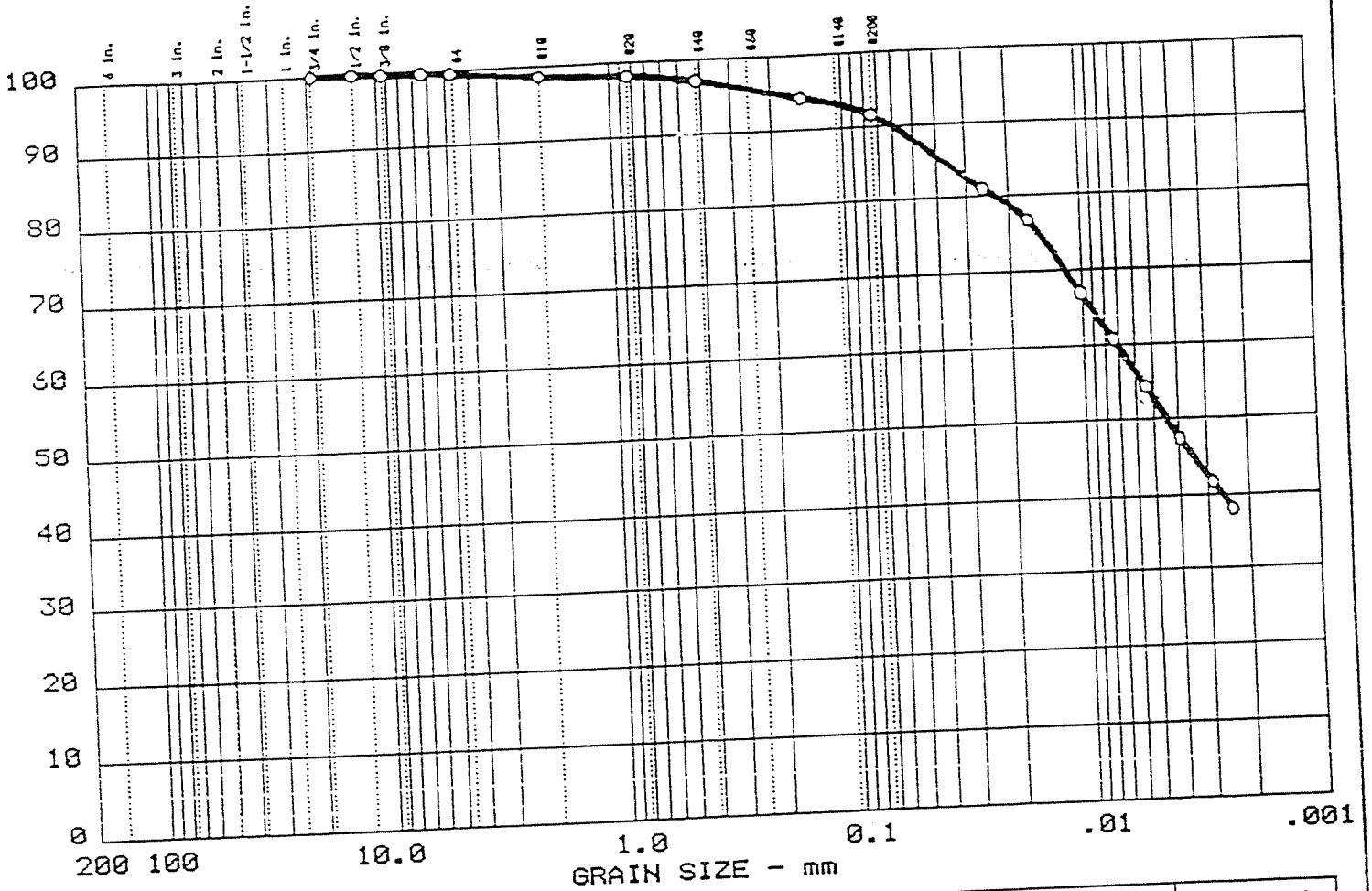
Remarks:
SAMPLE COLLECTED BY ESI
ON 8-24-88
REPORT NO: L-42A

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

Fig. No. ____

GRAIN SIZE DISTRIBUTION TEST REPORT



Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
10	0.0	0.5	8.0	38.8	52.7

LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
37	16			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
) CLAY AND SILT TRACE SAND TRACE GRAVEL	CL	

>roject No.: BT-88-54
oject: LOVE CANAL-BLACK AND BERGHOLTZ CREEKS REM.
) Location: INDIAN HILL, TEST PIT #2 @ -7.5'

Date: 9-9-88

GRAIN SIZE DISTRIBUTION TEST REPORT

Remarks:
SAMPLE COLLECTED BY ESI
ON 8-24-88 FROM
STATION 3+00 X 310' LEFT
N.W.C. = 20.2 %
REPORT NO: L-42A

Fig. No. 2

EMPIRE
SOILS INVESTIGATIONS INC

PROJECT: Love Canal - Black and Bergholtz Creeks Remediation

CLIENT: Sevenson Environmental Services, Inc.

DATE: September 12, 1988

PROJECT NO: BT-88-54

REPORT NO: L-44

REPORT OF MATERIAL TESTING

Material: Project sample #98 of Proposed Clay material collected by Empire Soils Investigations, Inc. on August 24, 1988 from the Indian Hill Borrow Pit at Test Pit #4, Station 4+90 x 100' left at -6'.

Mechanical Analysis: ASTM D-422, Note #1.

Component	Percent of Sample
Gravel	2.2
Sand	11.6
Silt	28.7
Clay	57.5

Water Content of Soil - ASTM D-2216.

Natural Water Content = 16.5%.

Atterberg Limits - ASTM D-4318.

Liquid Limit	39
Plastic Limit	22
Plasticity Index	17

Maximum Density/Optimum Moisture - ASTM D-1557(Note #1).

Maximum Density = 121.1 pcf.
Optimum Moisture= 12.1%.

Triaxial Permeability - Note #2.

Note #1: For details concerning these tests, please see the attached laboratory data reports.

Note #2: Tests are pending material approval.

If you have any further questions, please feel free to contact our office.

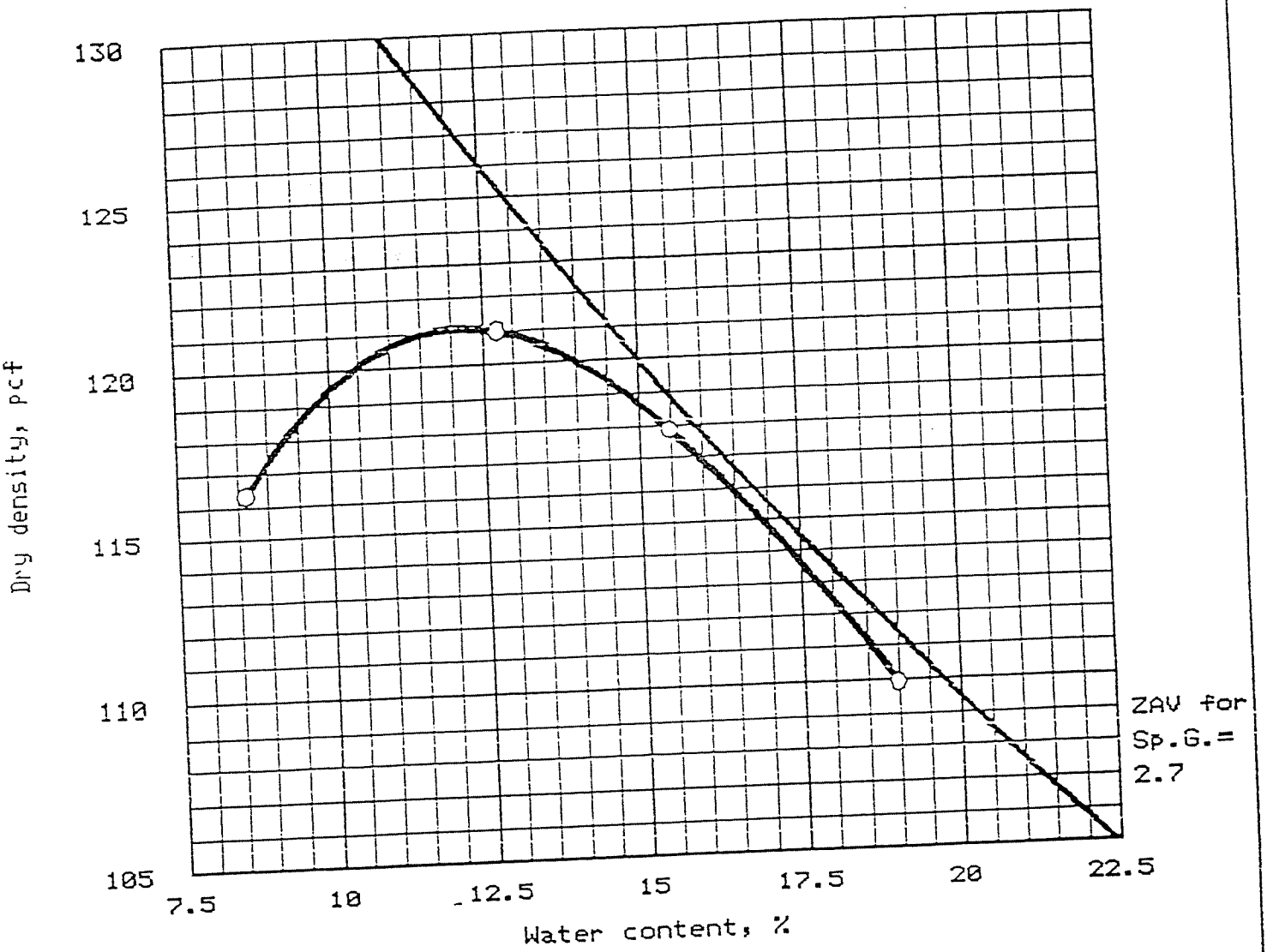
Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper
Manager of Testing Services

Edward J. Barbiero
Civil/Materials Engineer

PROCTOR TEST REPORT



"Modified" Proctor, ASTM D 1557-78, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
- 6.0	CL		16.4 %	2.7	39	17	2.2 %	86.2 %

TEST RESULTS

Optimum moisture = 12.1 %
Maximum dry density = 121.1 pcf

MATERIAL DESCRIPTION

CLAY SOME SILT LITTLE SAND TRACE GRAVEL

Project No.: BT-88-54
Project: LOVE CANAL BLACK AND BERGHOLTZ CREEKS REM
Location: INDIAN HILL BORROW PIT, TEST PIT #4
STA. 4+90 X 100' LEFT

Date: 9-22-1988

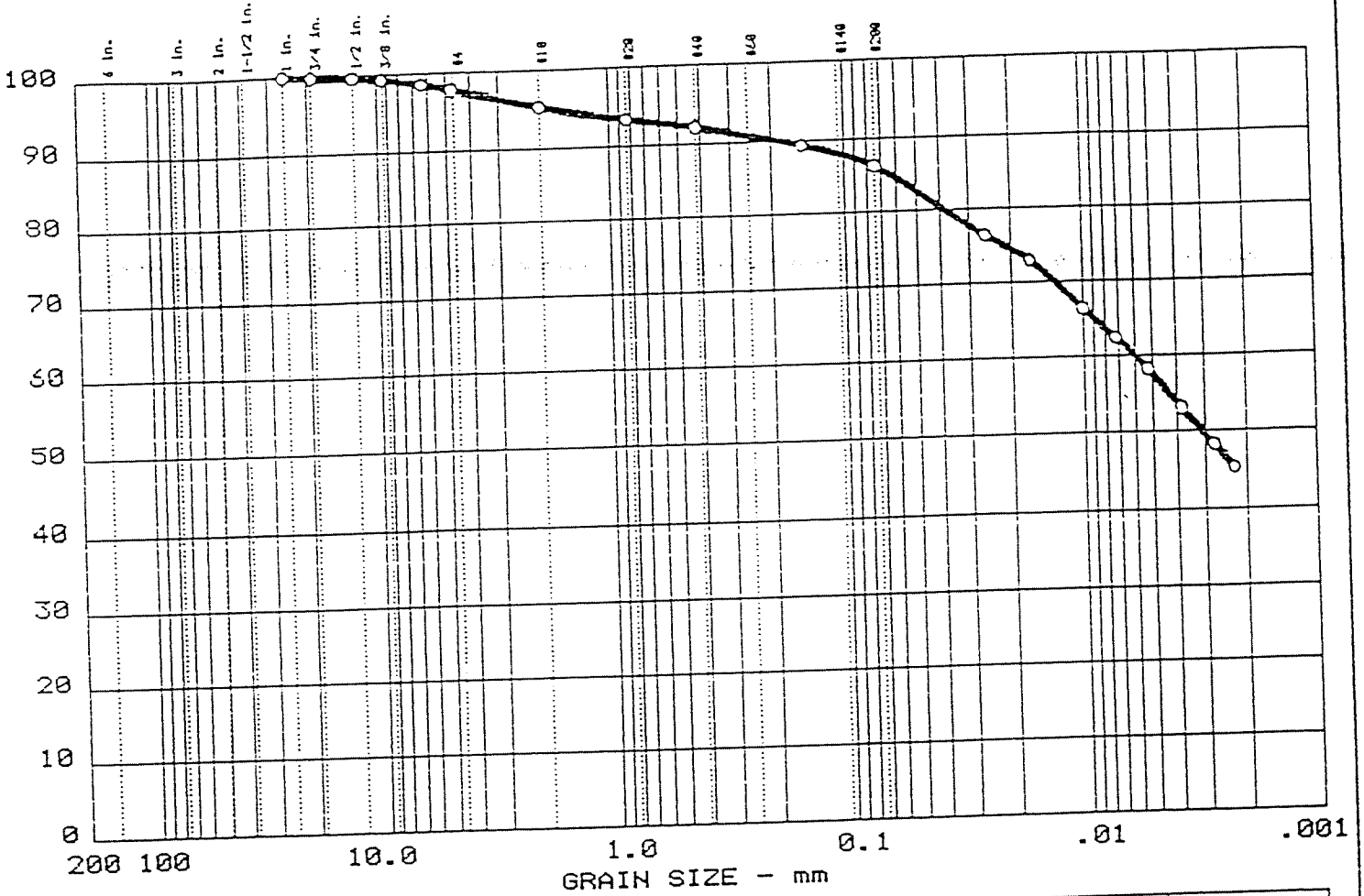
Remarks:
COLLECTED BY ESI ON 8-24-88

REPORT NO: L-44A

PROCTOR TEST REPORT

Fig. No.

GRAIN SIZE DISTRIBUTION TEST REPORT



Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
12	0.0	2.2	11.6	28.7	57.5

LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
39	17			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
CLAY SOME SILT LITTLE SAND TRACE GRAVEL	CL	

roject No.: BT-88-54
. ject: LOVE CANAL-BLACK AND BERGHOLTZ CREEKS REM.
Location: INDIAN HILL TEST PIT # 4 @ -6'

ate: 9-9-88

GRAIN SIZE DISTRIBUTION TEST REPORT

Remarks:
SAMPLE COLLECTED BY ESI
ON 8-24-88 FROM
STATION 4+90 X 100' LEFT
N.W.C. = 16.5 %
REPORT NO: L-44A

EMPIRE
SOILS INVESTIGATIONS INC

PROJECT: Love Canal - Black and Bergholtz Creeks Remediation

CLIENT: Sevenson Environmental Services, Inc.

DATE: September 12, 1988

PROJECT NO: BT-88-54

REPORT NO: L-45

- -

REPORT OF MATERIAL TESTING

Material: Project sample #99 of Proposed Clay material collected by Empire Soils Investigations, Inc. on August 24, 1988 from the Indian Hill Borrow Pit at Test Pit #5, Station 5+90 x 30' left at -7'.

Mechanical Analysis: ASTM D-422, Note #1.

Component	Percent of Sample
Gravel	1.6
Sand	9.9
Silt	27.0
Clay	61.5

Water Content of Soil - ASTM D-2216.

Natural Water Content = 18.6%.

Atterberg Limits - ASTM D-4318.

Liquid Limit	42
Plastic Limit	24
Plasticity Index	18

Maximum Density/Optimum Moisture - ASTM D-1557 - Note #1.

Maximum Density = 116.2 pcf.
Optimum Moisture = 13.6%.

Triaxial Permeability - Note #2.

Note #1: For details concerning these tests, please see the attached laboratory data reports.

Note #2: Tests are pending material approval.

If you have any further questions, please feel free to contact our office.

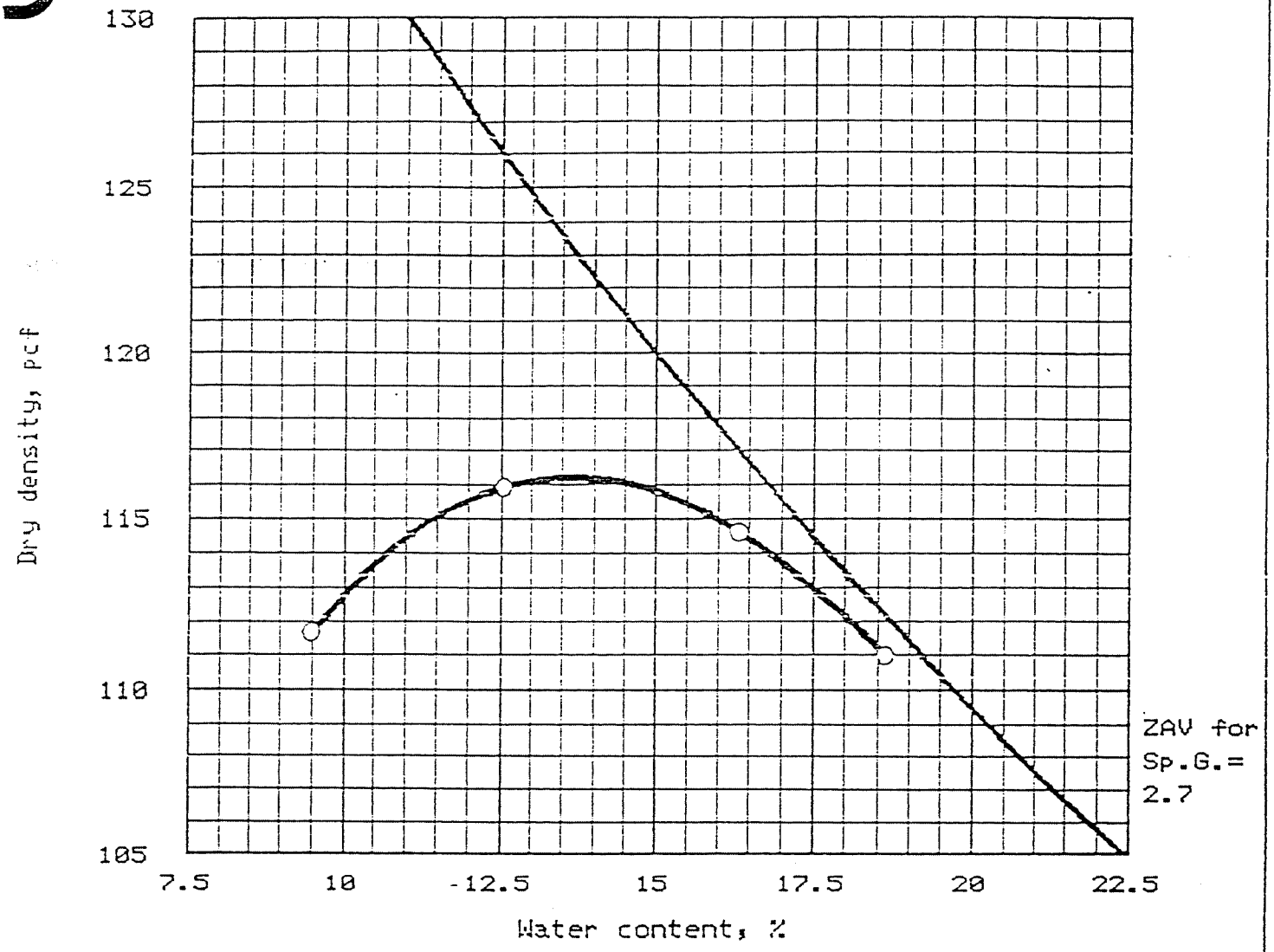
Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper
Manager of Testing Services

Edward J. Barbiero
Civil/Materials Engineer

PROCTOR TEST REPORT



"Modified" Proctor, ASTM D 1557-78, Method A

Elev/ Depth	Classification USCS	Classification AASHTO	Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
7.0	CL		18.6 %	2.7	42	18	1.6 %	88.5 %

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 13.6 % Maximum dry density = 116.2 pcf	CLAY SOME SILT TRACE SAND TRACE GRAVEL

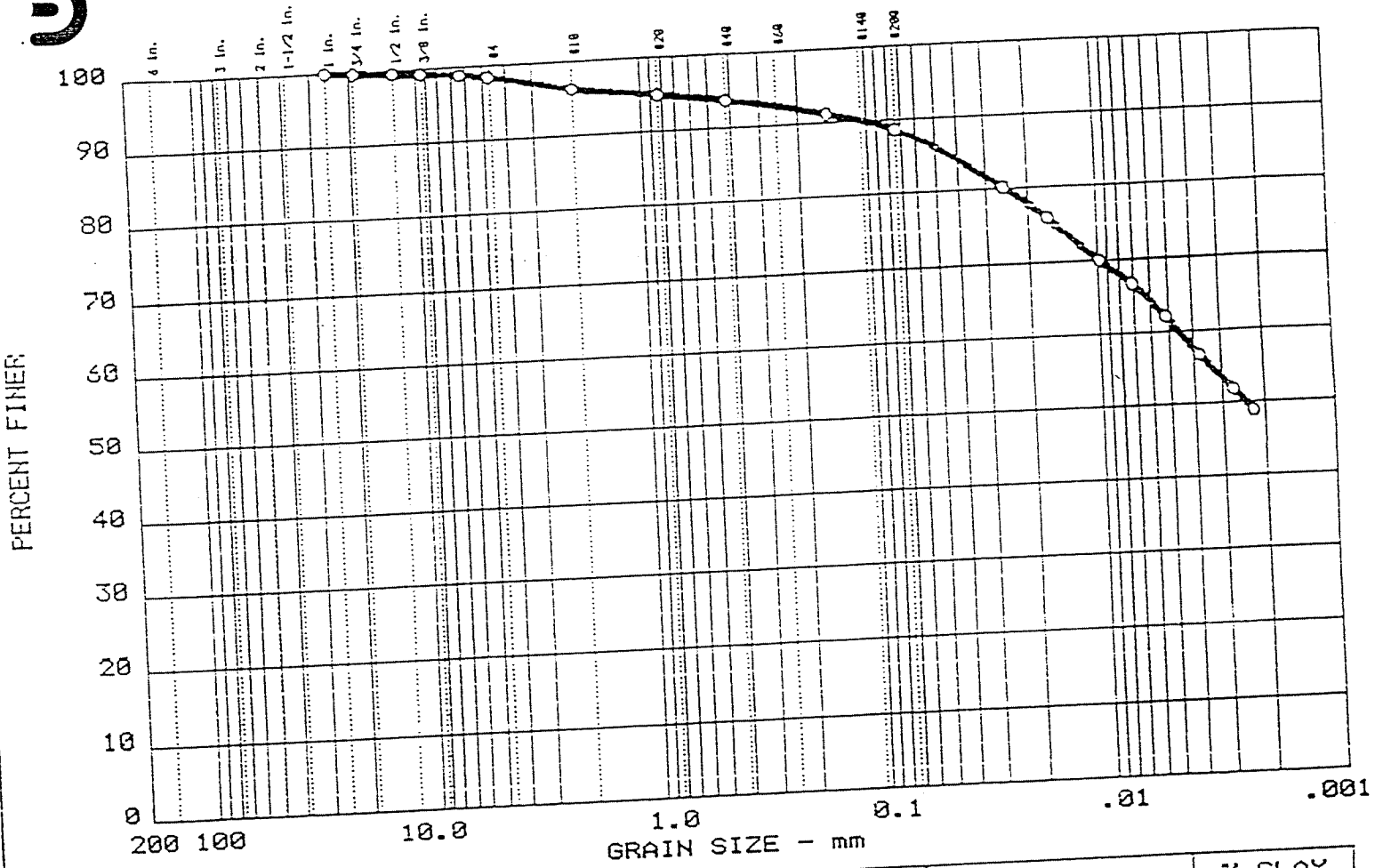
Project No.: BT-88-54
Project: LOVE CANAL BLACK AND BERGHOLTZ CREEKS REM
Location: INDIAN HILL BORROW PIT, TEST PIT # 5
STA. 5+90 X 30' LEFT
Date: 9-22-1988

Remarks:
COLLECTED BY ESI ON 8-24-88
REPORT NO: L-45A

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
O	13	0.0	1.6	9.9	27.0	61.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	42	18			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
O CLAY SOME SILT TRACE SAND TRACE GRAVEL	CL	

Project No.: BT-88-54
Project: LOVE CANAL-BLACK AND BERGHOLTZ CREEKS REM.
O Location: INDIAN HILL, TEST PIT #5 @ -7'

Date: 9-9-88

GRAIN SIZE DISTRIBUTION TEST REPORT

Remarks:
SAMPLE COLLECTED BY ESI
ON 8-24-88 FROM
STATION 5+90 X 30' LEFT
N.W.C. = 18.6 %
REPORT NO: L-45A

Fig. No. 5

EMPIRE INVESTIGATIONS INC.

RESULTS OF FIELD TEST PATCH NO. 3
INDIAN HILL BORROW SOURCE
LOVE CANAL
BLACK AND BERGHOLTZ CREEKS REMEDIATION
NIAGARA FALLS, NEW YORK

For

Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, New York 14302

Attention: Mr. Bill Beck

BT-88-54
October, 1988

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110

EMPIRE SOILS INVESTIGATIONS INC.

October 19, 1988

Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, New York 14302

Attention: Mr. Bill Beck

Reference: Love Canal - Black and Bergholtz Creeks Remediation
Site Number 932020
Niagara Falls, New York

Gentlemen:

As required by the specifications for the above referenced project (Section 01400 5.1.1.b.7) we have prepared this report summarizing the results of the field test patch at the Indian Hill site. On September 30 and October 1, 1988, a senior engineering technician from our office was present at the Indian Hill site to monitor construction of the field test patch by Sevenson Environmental Services, Inc. (SES) and collect Shelby tube samples for laboratory testing.

The field test patch, measuring approximately 35-feet wide by 65-feet long by 2-feet thick, was constructed using clay fill placed in 8 to 10-inch loose lifts and compacted to minimum in-place densities of 90-percent of the maximum dry density determined by ASTM D-1557. All in-place moisture contents (as measured in the field by the Troxler 3411B) were between the optimum moisture content and two-percent above the optimum moisture content determined by ASTM D-1557. The maximum dry density and optimum moisture content used to control compaction in the field were based on tests performed by Empire Soils Investigations, Inc. (ESI) for SES. The values used to control compaction in the field (117.1 pcf and 13.2-percent) were determined by SES based on the ESI laboratory test data. The in-place density and moisture content were measured at six (6) locations per lift as required by the specifications. The clay fill was compacted to the minimum specified density using up to 15 passes of a vibratory sheepsfoot roller. Additional details regarding the construction of the field test patch are presented in Appendix A on the "Daily Site Observation Reports" and "Field In-Place Density Test Reports" prepared by our engineering technician on-site at the time of construction.

EMPIRE SOILS INVESTIGATIONS INC

Following construction of the field test patch, a total of six (6) Shelby tube samples were collected from various locations across the test patch for permeability testing. A description of the sampling locations is given on the site reports in Appendix A. The ends of the tube samples were covered with paraffin wax and plastic caps and shipped to our Middleport, New York soils laboratory for testing.

All permeability testing was performed in accordance with the procedures described by the U.S. Army Corps of Engineers in their laboratory manual for soils testing (EM1110-2-1906, Appendix VII). We also note that the dry density and moisture content were determined for each sample before and after permeability testing. All permeability tests were performed using confining pressures of 105 psi, back pressures of 99.6 to 100 psi and differential pressures of 2.8 to 3.1 psi. Skempton's "B" parameter ranged between 95 and 99-percent for the samples tested. A summary of permeability test results is presented in Table 1. Additional details regarding the permeability testing are presented on the data sheets in Appendix B.

We anticipate that this letter report satisfies your requirements for a summary of the test patch construction and permeability test results. It is our understanding that SES intends to use a maximum density of 118.5 pcf and an optimum moisture content of 13.5-percent for field control. We point out that these values were determined by SES on the basis of available test data. These values have not been independently verified by ESI.

Respectfully,
EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper

Charles C. Keipper
Testing Services Manager

Steve R. Pulley

Steve R. Pulley, P.E.
Senior Engineer
Engineering Services Manager

STATE OF NEW YORK
STEVE R. PULLEY
No. 062395
LICENSED PROFESSIONAL ENGINEER

slw

TABLE 1

SUMMARY OF PERMEABILITY TEST RESULTS
INDIAN HILL TEST PATCH #3

SAMPLE NUMBER	LOCATION	DRY DENSITY (pcf) BEFORE TESTING	DRY DENSITY (pcf) AFTER TESTING	MOISTURE CONTENT (%) BEFORE TESTING	MOISTURE CONTENT (%) AFTER TESTING	SKEMPTON'S "B" PARAMETER (%)	DIFFERENTIAL PRESSURE (psi)	PERCENT COMPACTION (%)	PERMEABILITY (cm/sec)
1	10 ft. east of west edge, 12 ft. south of north edge	99.2	95.2	16.7	28.6	97.0	3.1	84.7	6.30×10^{-8}
2	14 ft. east of west edge, 12 ft. north of south edge	113.3	106.4	14.4	21.2	98.0	3.0	96.8	1.00×10^{-7}
3	On north-south centerline, 12 ft. north of south edge	107.7	107.3	15.6	23.3	98.0	3.4	92.0	2.56×10^{-8}
4	10 ft. west of east edge, 12 ft. north of south edge	115.6	109.9	15.2	21.5	95.0	2.8	98.7	2.50×10^{-8}
5A	On north-south centerline, 12 ft. south of north edge	115.0	108.6	15.5	22.2	99.0	3.0	98.2	2.39×10^{-8}
6	12 ft. west of east edge 12 ft. south of north edge	109.9	105.3	15.1	22.3	96.0	3.8	93.9	6.27×10^{-8}

NOTES:

(1) Testing was performed in accordance with U.S. Army Corps EM1110-2-1906, Appendix VII (Flexible wall permeameter)
(2) Percent compaction values are reported for "before" testing dry density
(3) ASTM D-1557 maximum dry density = 117.1 pcf, OMC = 13.2%

APPENDIX A

DAILY SITE OBSERVATION REPORTS FOR
SEPTEMBER 30, 1988 AND OCTOBER 1, 1988

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.
☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, P.O. BOX 459, HENRIETTA, NY 14467 716-359-1960

Project: Love Canal - Black and Bergholtz Creeks Remediation Location: N. Falls, NY

Client: Sevenson Environmental Services, Inc. Contractor: Sevenson

Report No.: DS-13 REVISED Project No.: BT-88-54 Date: 9/30/88

Weather & Temperature: Sunny, 55°F AM, Sunny 74°F PM

Arrived at Site: 7:00 Left Site: 5:30

This Empire Soils Investigations Technician was present at the above referenced site to perform In-Place Density tests on the reddish-brown silty clay placed today. The material was taken from test pit locations 1, 2, 3, and 4 and placed in a test patch measuring 65±' by 35±'. A Komatsu D755 track loader was used to excavate and haul the material to the test patch area. A leveling lift was placed and compacted prior to placing the 24" of material. The 8" lifts were placed in two 4" lifts, and water was applied on each lift with a 2" pressurized fire hose from the water truck. The material was then leveled with a Kumatsu D68P dozer and compacted with single drum. Vibratory sheepsfoot roller(Ingersoll-Rand SD-100F). A minimum of 7 passes were made with the sheepsfoot roller before In-Place Density tests were taken. Test results ranged from 85 to 90.2% compaction, with moistures all over optimum moisture greater than the 2.0% allowed. The material was scarafied and allowed to dry 15 to 20 minutes. The material was then compacted again with the sheepsfoot roller and retested. Test results ranged from 89.9 to 94.2% compaction, with moistures ranging from 14.8% to 17.8%. Bill Beck said that he would let the material dry and retest it tomorrow morning.

For more information on todays activities, refer to the In-Place Density report filled out on this date.

by Ray Kron

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, P.O. BOX 459, HENRIETTA, NY 14467 716-359-1960

Project: Love Canal - Black and Bergholtz Creeks Remediation

Report No. DT-64 REVISED 10/20/88

Date: 9/30/88

Client Sevenson Environmental Services, Inc.

Job No. BT-88-54

Contractor: Sevenson

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	9/30	1st. Lift	107.0	17.7	91.3	*	15' West of East edge, 9' South of North edge
2	9/30	"	108.1	17.8	92.3	*	South centerline, 10' South of North edge
3	9/30	"	110.4	15.5	94.2	*	12' West of East edge, 10' South of North edge
4	9/30	"	109.5	14.8	93.5	*	16' West of East edge, 9' North of South edge
5	9/30	"	105.3	15.9	89.9	*	South centerline, 10' North of South edge
6	9/30	"	106.3	15.6	90.7	*	10' East of West edge, 12' North of South edge

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	117.1	13.2	Reddish-brown Silty Clay - on-site borrow material

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Nuclear method used.

Max. Density & Optimum Moisture - supplied by Sevenson

Technician Time: 7:00 - 5:30

Ray Kron

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
535 SUMMIT POINT DRIVE, P.O. BOX 459, HENRIETTA, NY 14467 716-359-1960

Project: Love Canal - Black and Bergholtz Creeks Remediation Location: N. Falls, N.Y.

Client: Sevenson Environmental Services, Inc. Contractor: Sevenson Environmental

Report No.: DS-14 REVISED Project No.: BT-88-54 Date: 10/1/88

Weather & Temperature: Overcast, 60°F, sunny 77°F

Arrived at Site: 7:00 AM Left Site: 7:30 PM

This Empire Technician was present at the above referenced site to observe and perform In-Place Density tests on the reddish-brown Silty Clay placed for the test patch today. The materials was taken from test pit locations 1, 2, 3, and 4 on site. The material was excavated with a Komatsu D755 track loader and taken to the test patch area measuring 65± by 35±. The first lift that did not pass yesterday was reworked and rolled with the Ingersoll-Rand SO-100F single drum vibratory roller. The material Northwest corner was still to moist, so the material was removed and drier material was placed. After the first lift met compaction and the moisture was in tolerance, the surface was scarafied and the second lift was placed. A replacement roller, Ingersoll Rand SPF-56 was then used to complete the compaction of the second and third lifts. The second lift was placed in two smaller lifts measuring approximately 4". The material was rolled with the sheepsfoot roller at least three passes between lifts. Test results on the second lift after 15± passes ranged from 91.1 to 94.9% compaction, with moistures ranging from 13.3 to 15.2%. Again, the surface was scarafied with the Komatsu D755 front end loader, using the bucket teeth, before the third lift was placed. The third lift was placed and compacted until it met the 90% compaction and the moisture was between 13.2 to 15.2%. The top was tracked in with the Komatsu D755 track loader and six shelby tubes were taken. The tubes were pushed with the Kumatsu D68P dozer. Locations as follows:

Shelby Tube Number	Location
#1	Taken near I.P.D. Test #13
#2	Taken near I.P.D. Test #18
#3	Taken near I.P.D. Test #17
#4	Taken near I.P.D. Test #16
#5	Taken near I.P.D. Test #14
#6	Taken near I.P.D. Test #15

The tubes were taken back to the office for testing. For more information, refer to the In-Place Density report filled out on this date.

by Ray Kron

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, P.O. BOX 459, HENRIETTA, NY 14467 716-359-1950

Project: Love Canal-Black and Bergholtz Creeks Remediation Report No. CT-65

Client Sevenson Environmental Services, Inc. Date: 10-1-88

Contractor: Sevenson Environmental Services, Inc. Job No. BT-88-54

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	10-1	1st lift	106.6	14.7	91.1	*	Retest of test #6 taken on 9-30-88
2	"	"	110.3	15.0	94.1	*	Retest of test #5 taken on 9-30-88
3	"	"	104.4	14.4	89.1	*	Retest of Test #1 taken on 9-30-88
4	"	"	107.6	15.2	91.8	*	Retest of test #2 taken on 9-30-88
5	"	"	106.1	14.3	90.6	*	Retest of test #3 after further compaction
6	"	"	108.9	14.5	93.0	*	Retest of test #3 taken on 9-30-88
7	"	"	107.3	13.6	91.6	*	10' E. of W. edge - 12' S. of N. edge
8	"	"	107.1	15.0	91.5	*	N.S. ℄ - 10' S. of N. edge
9	"	"	109.0	13.3	93.0	*	14' W. of E. edge - 12' S. of N. edge
10	"	"	106.8	15.2	91.1	*	12' W. of E. edge - 10' N. of S. edge
11	"	"	110.0	13.5	93.8	*	N.S. ℄ - 10' N. of S. edge
12	"	"	107.7	14.9	92.0	*	12' E. of W. edge - 10' N. of S. edge

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	117.1	13.2	Reddish-brown Silty Clay, on-site borrow material

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Nuclear Method Used

Technician Time: 7:00 a.m. to 7:30 p.m.

Ray Kron

Ray Kron

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, P.O. BOX 459, HENRIETTA, NY 14467 716-359-1960

Project: Love Canal - Black and Bergholtz Creeks Remediation

Report No. DT-65 Page 2 REVISED

Client Sevenson Environmental Services Inc.

Date: 10/1/88

Contractor: Sevenson

Job No. BT-88-54

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
13	10/1	3rd. Lift	108.4	14.7	92.6	*	10' E. of W. edge, 12' S. of N. edge
14	10/1	"	107.7	15.3	92.0	*	North-South centerline, 12' S. of N. edge
15	10/1	"	108.7	13.2	92.8	*	12' W. of E. edge, 12' S. of N. edge
16	10/1	"	107.3	15.2	91.6	*	10' W. of E. edge, 12' N. of S. edge
17	10/1	"	111.2	14.6	95.0	*	North-South centerline, 12' N. of S. edge
18	10/1	"	108.2	14.3	92.4	*	14' E. of W. edge, 12' N. of S. edge

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	117.1	13.2	Reddish-brown Silty Clay, on-site borrow material

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Nuclear method used.

* Numbers as per Sevenson

Technician Time: 7:00 - 7:30

Ray Kron

APPENDIX B

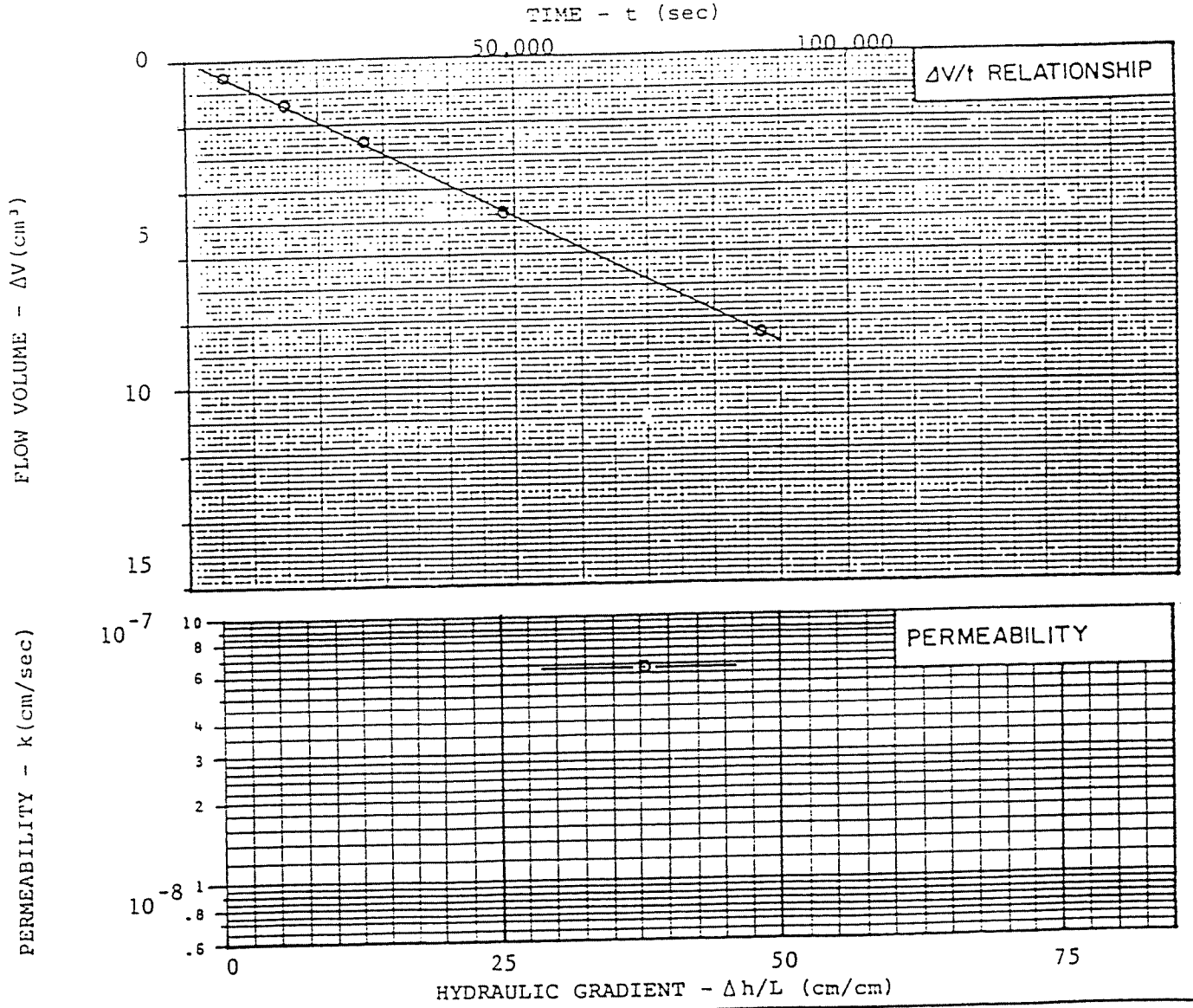
PERMEABILITY TEST RESULTS

TEST DATA:

Specimen Height (cm):	6.26
Specimen Diameter (cm):	7.25
Dry Unit Weight (pcf):	99.2
Moisture Content Before Test (%):	16.7
Moisture Content After Test (%):	28.6
Cell Confining Pressure (psi):	105.0
Test Pressure (psi):	103.1
Back Pressure (psi):	100.0
Differential Head (psi):	3.1
Flow Rate ($\Delta V/t$) (cm^3/sec) O	9.80×10^{-5} Δ
Permeability (cm/sec): O	6.30×10^{-8} Δ

SAMPLE DATA:

Sample Identification:	Tube No. 1
	taken at IPD #13
Visual Description:	Brown silt & clay
	some sand, little gravel
Remarks:	Pore pressure response, B=97%
	Dry Density After Test 95.2 pcf
Maximum Dry Density (ASTM D 1557) (pcf):	117.1
Optimum Moisture Content (%):	13.2
Percent Compaction:	84.7
Permeameter Type:	Flexible wall



EMPIRE SOILS INVESTIGATION INC.

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Bergholtz Creeks Remediation
Niagara Falls, New York

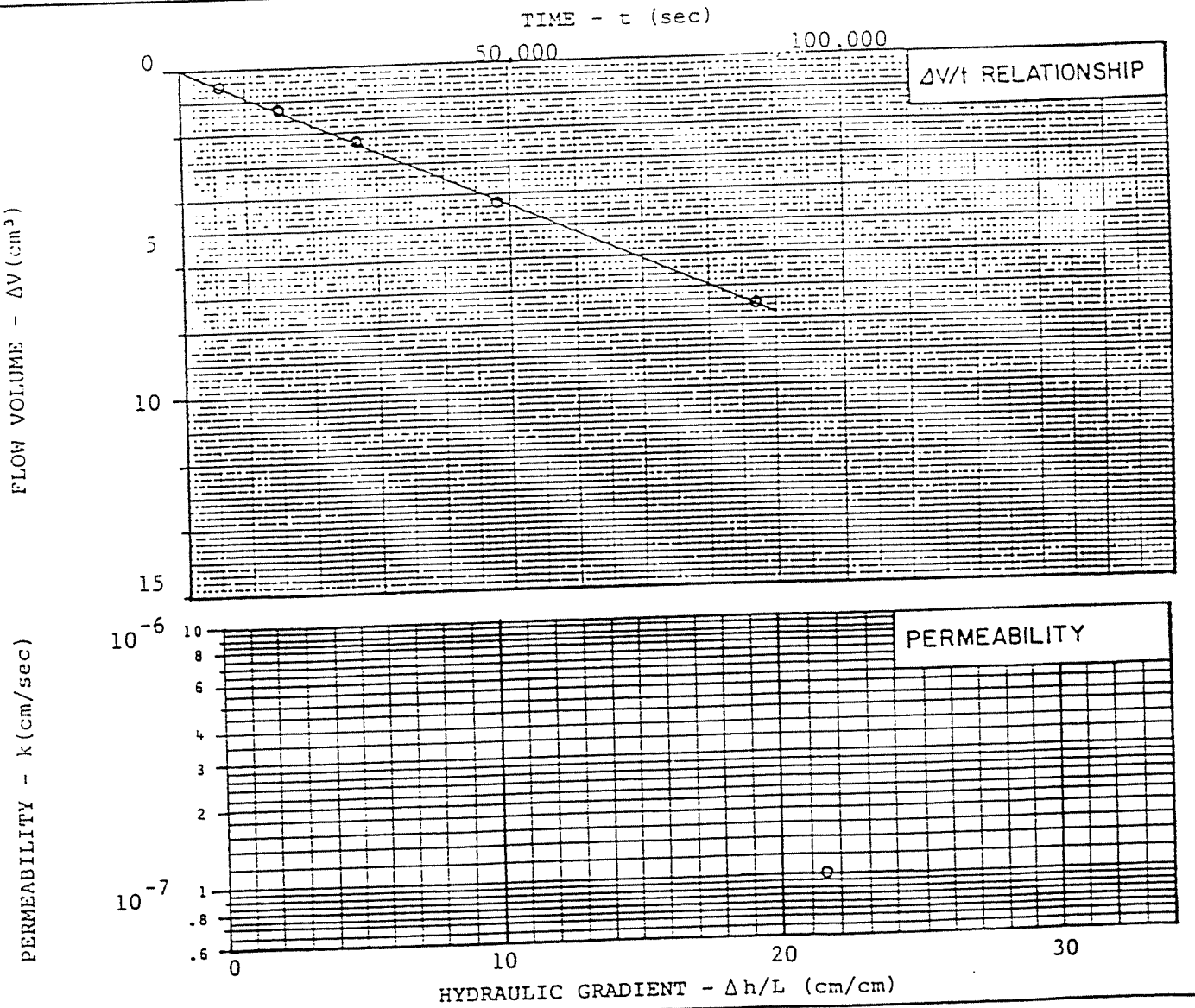
DRWN	CKD	DATE	PROJ.NO.

TEST DATA:

Specimen Height (cm): 10.77
Specimen Diameter (cm): 7.18
Dry Unit Weight (pcf): 113.3
Moisture Content Before Test (%): 14.4
Moisture Content After Test (%): 21.2
Cell Confining Pressure (psi): 105.0
Test Pressure (psi): 103.0
Back Pressure (psi): 100.0
Differential Head (psi): 3.0
Flow Rate ($\Delta V/t$) (cm^3/sec) O 8.73×10^{-5} Δ
Permeability (cm/sec): O 1.00×10^{-7} Δ

SAMPLE DATA:

Sample Identification: Tube No. 2
taken at 1PD #18
Visual Description: Brown silt & clay
little sand, trace gravel
Remarks: Pore pressure response, R=987
Dry Density After Test 106.4 pcf
Maximum Dry Density
(ASTM D 1557) (pcf): 117.1
Optimum Moisture Content (%): 13.2
Percent Compaction: 96.8
Permeameter Type: Flexible wall



EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Bergholtz Creeks Remediation
Niagara Falls, New York

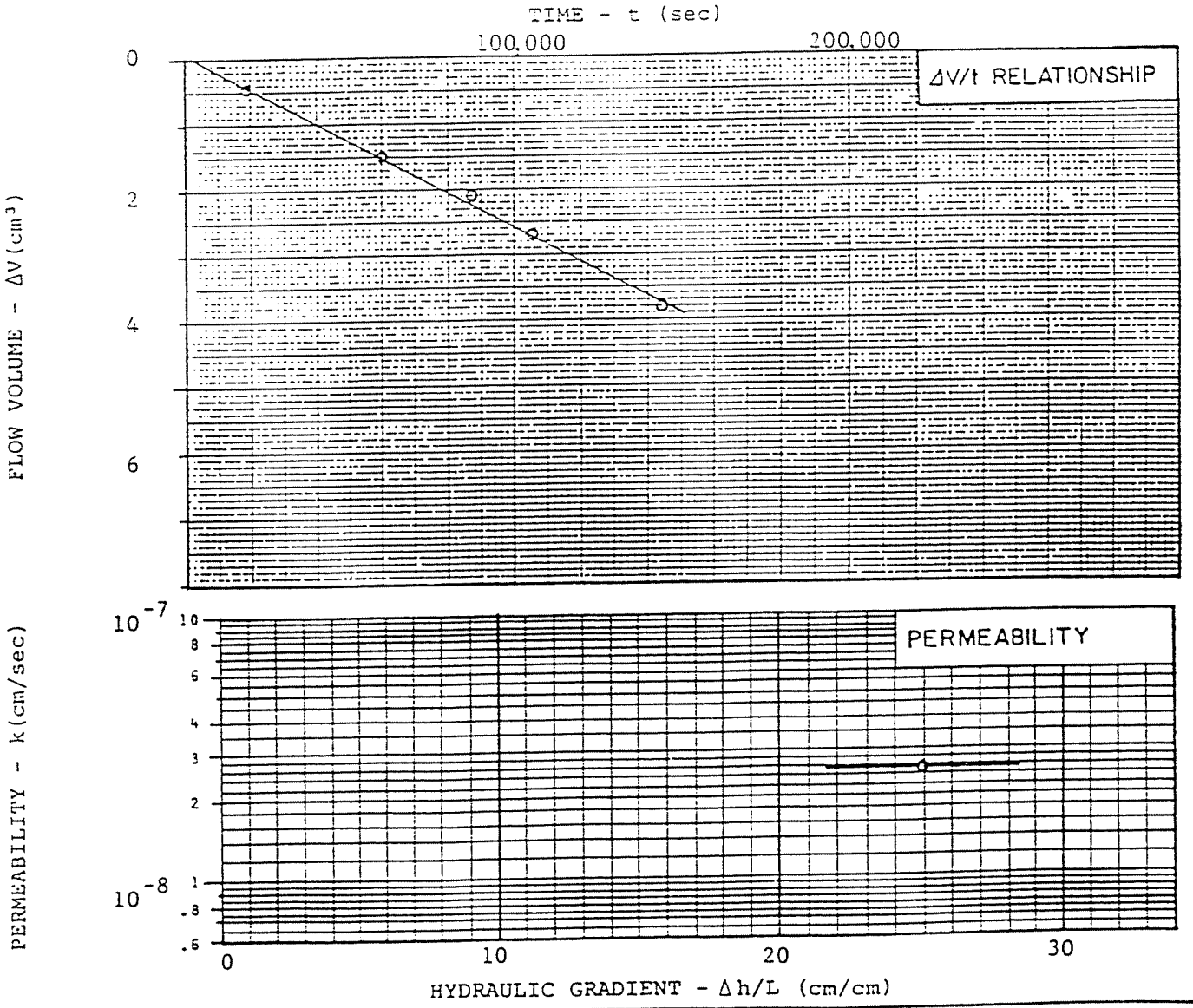
DR BY: JFC	CK'D. JFC	DATE: Oct. 1988	PROJ.NO. BT-88-54

TEST DATA:

Specimen Height (cm):	10.60
Specimen Diameter (cm):	7.21
Dry Unit Weight (pcf):	107.7
Moisture Content Before Test (%):	15.6
Moisture Content After Test (%):	23.3
Cell Confining Pressure (psi):	105.0
Test Pressure (psi):	103.0
Back Pressure (psi):	99.6
Differential Head (psi):	3.4
Flow Rate ($\Delta V/t$) (cm^3/sec) O	2.61×10^{-5} Δ
Permeability (cm/sec): O	2.56×10^{-8} Δ

SAMPLE DATA:

Sample Identification:	Tube No 3
	Taken at IPD #17
Visual Description:	Brown silt & clay
	some sand, trace gravel
Remarks:	Pore pressure response, B=98%
	Dry Density After Test 107.3 pcf
Maximum Dry Density (ASTM D 1557) (pcf):	117.1
Optimum Moisture Content (%):	13.2
Percent Compaction:	92.0
Permeameter Type:	Flexible Wall



EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Bergholtz Creeks Remediation
Niagara Falls, New York

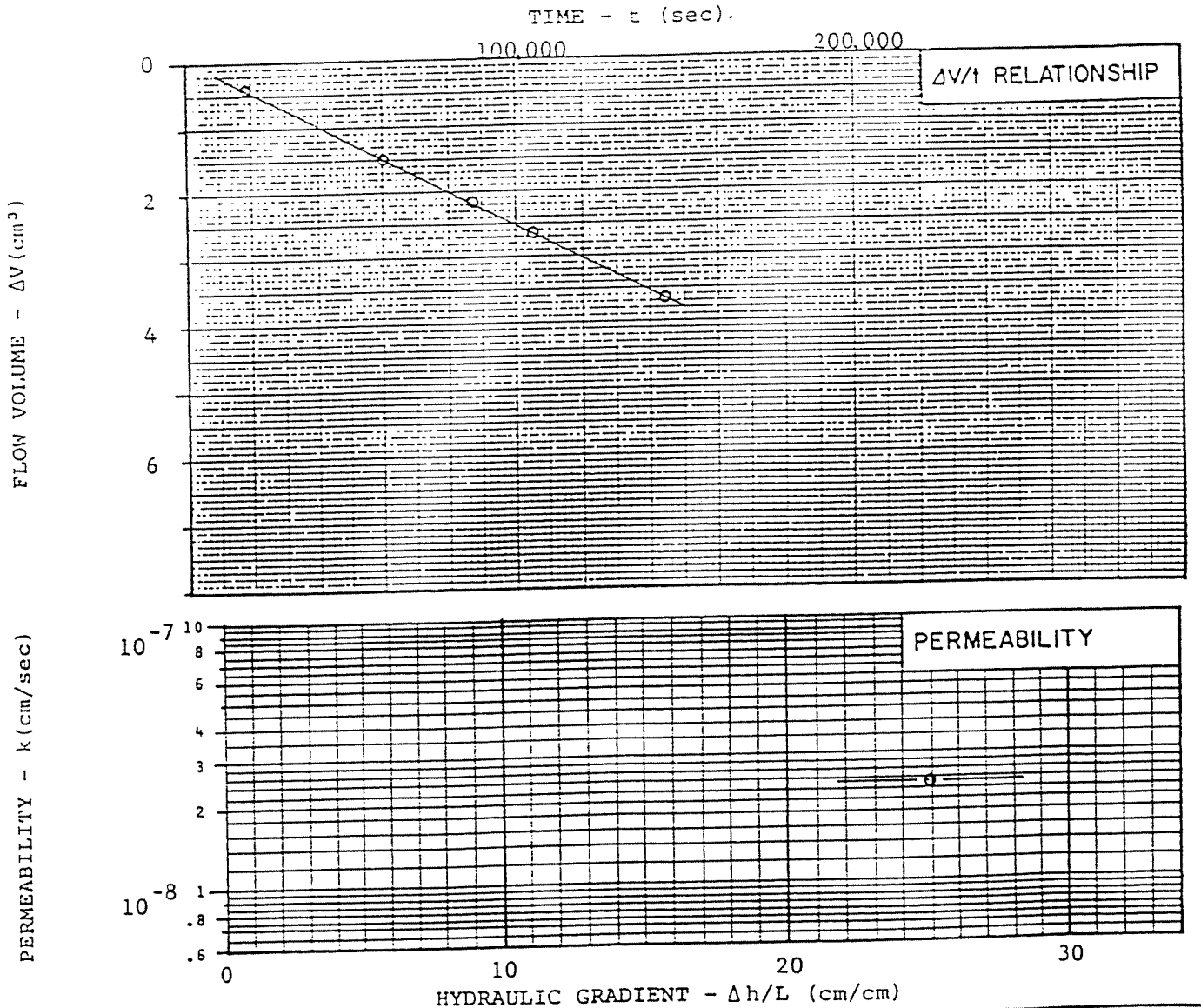
DR BY:	CK'D.	DATE:	PROJ. NO.
JFC	JFC	Oct. 1988	BT-88-54

TEST DATA:

Specimen Height (cm): 8.86
Specimen Diameter (cm): 7.28
Dry Unit Weight (pcf): 115.6
Moisture Content Before Test (%): 15.2
Moisture Content After Test (%): 21.5
Cell Confining Pressure (psi): 105.0
Test Pressure (psi): 102.8
Back Pressure (psi): 100.0
Differential Head (psi): 2.8
Flow Rate ($\Delta V/t$) (cm^3/sec) O 2.55×10^{-5} Δ
Permeability (cm/sec): O 2.50×10^{-8} Δ

SAMPLE DATA:

Sample Identification: Tube No. 4
Taken at IPD #16
Visual Description: Brown silt and clay some sand, trace gravel
Remarks: Pore pressure response, B=95%. Dry Density After Test 109.9 pcf
Maximum Dry Density (ASTM D 1557) (pcf): 117.1
Optimum Moisture Content (%): 13.2
Percent Compaction: 98.7
Permeameter Type: Flexible wall



EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Berqholtz Creeks Remediation
Niagara Falls, New York

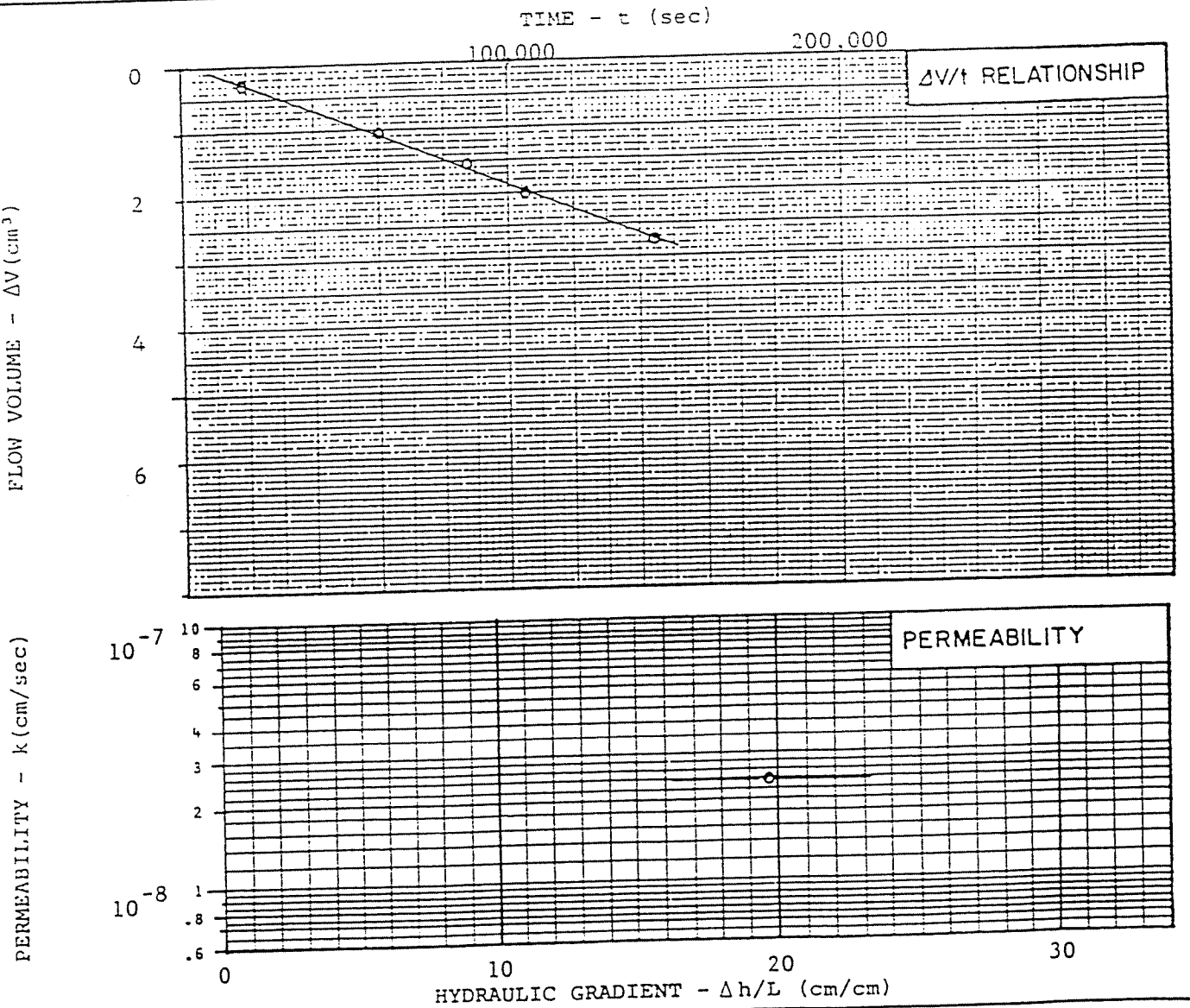
DR BY: JFC	CK'D. JFC	DATE: Oct. 1988	PROJ.NO. BT-88-54

TEST DATA:

Specimen Height (cm): 12.26
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 115.0
Moisture Content Before Test (%): 15.5
Moisture Content After Test (%): 22.2
Cell Confining Pressure (psi): 105.0
Test Pressure (psi): 103.0
Back Pressure (psi): 100.0
Differential Head (psi): 3.0
Flow Rate ($\Delta V/t$) (cm^3/sec) O 1.92×10^{-5} Δ
Permeability (cm/sec): O 2.39×10^{-8} Δ

SAMPLE DATA:

Sample Identification: Tube No. 5A
Taken at IPD #14
Visual Description: Red-Brown silt & Clay trace gravel
Remarks: Pore pressure response, B=99%
Dry Density After Test 108.6 pcf
Maximum Dry Density (ASTM D 1557) (pcf): 117.1
Optimum Moisture Content (%): 13.2
Percent Compaction: 98.2
Permeameter Type: Flexible wall



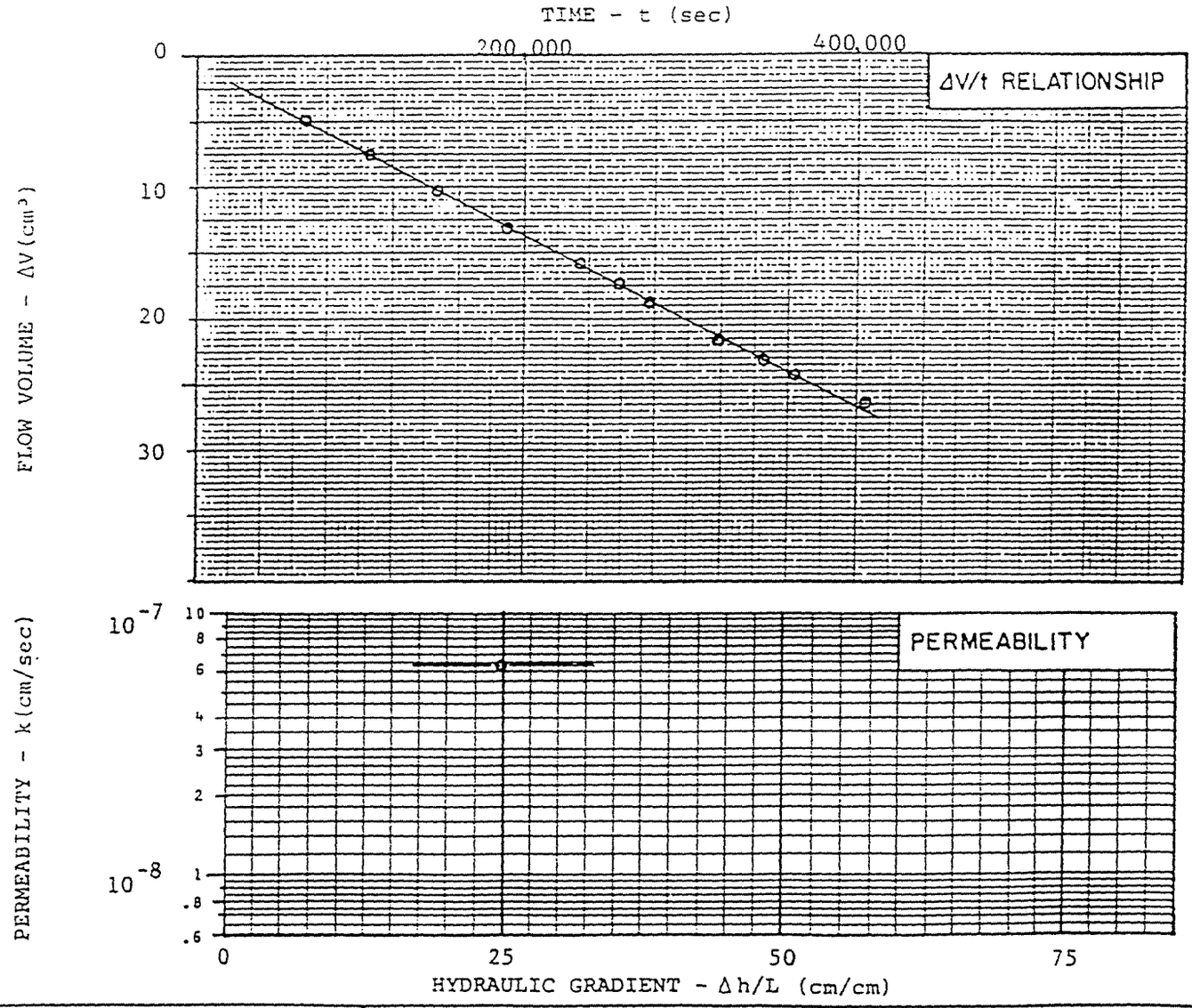
EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Bergholtz Creeks Remediation
Niagara Falls, New York

DR BY: JFC	CK'D. JFC	DATE: Oct. 1988	PROJ. NO. BT-88-54

TEST DATA:			SAMPLE DATA:
Specimen Height (cm):	11.44		Sample Identification: Tube No. 6
Specimen Diameter (cm):	7.21		taken at IPD #15
Dry Unit Weight (pcf):	109.9		Visual Description: Brown silt and clay
Moisture Content Before Test (%):	15.1		trace sand and gravel
Moisture Content After Test (%):	22.3		Remarks: Pore pressure response, B=96%
Cell Confining Pressure (psi):	105.0		Dry Density After Test 105.3 pcf
Test Pressure (psi):	103.4		Maximum Dry Density
Back Pressure (psi):	99.6		(ASTM D 1557) (pcf): 117.1
Differential Head (psi):	3.8		Optimum Moisture Content (%): 13.2
Flow Rate ($\Delta V/t$) (cm^3/sec) O	6.37×10^{-5}	Δ	Percent Compaction: 93.9
Permeability (cm/sec): O	6.27×10^{-8}	Δ	Permeameter Type: Flexible wall



EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Field Test Patch No. 3 - Indian Hill
Love Canal, Black and Berqholtz Creeks Remediation
Niagara Falls, New York

DR BY: JFC	CK'D JFC	DATE: OCT. 1988	PROJ. NO. BT-88-54

EMPIRE
SOILS INVESTIGATIONS INC

June 26,1990

Engineering Science, Inc
290 Elwood Davis Road
Suite 312
Liverpool, New York 13088

Attention: Lou Liberatore

Reference: Pine & Tuscarora Remediation
ESI Job #BT-90-128

Dear Lou:

In response to your recent request for calibration records for equipment utilized on the above referenced project we are supplying the following submittals.

1) Source Certificate and Calibration charts for Nuclear Densitometers #10734 & #13429

2) Nuclear Gauge Training Certificates for;

A) Don Wartinger
B) Larry Blas
C) Eric Wilson
D) Pete Romano

In addition for the record ,our laboratory is regularly inspected by both the Cement and Concrete Reference Laboratory and The AASHTO Materials Reference Laboratory for compliance with applicable testing standards. In addition, all equipment is calibrated by either independent services or in house through our own Quality Assurance program.

If you should require any further information please feel free to contact our office at any time.

Respectfully Submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper
Testing Services Manager

Edward J. Barbiero
Director of Technical Services

cck/encl.

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

LAWRENCE BLAS

of

EMPIRE SOILS INVESTIGATIONS

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

Radiological Safety

1. *Principles and practices of radiation protection.*
2. *Leak testing procedures.*
3. *Mathematics and calculations basic to the use and measurement of radioactivity.*
4. *Biological effects of radiation.*
5. *Radioactivity measurement standardization and monitoring techniques and instruments.*
6. *Accident and incident procedures.*
7. *Procedures for nuclear gauge storage and transportation.*
8. *General safety precautions.*

Gauge Operation

1. *Instrument theory*
2. *Operating procedures*
3. *Maintenance*
4. *Field application*
5. *Gauge calibration*

INSTRUCTOR

4/26/84
DATE

W.F. TROXLER
PRESIDENT

№ 6959

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

PETER J. ROMANO, JR.

of

EMPIRE SOILS INVESTIGATION, INC.

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

Radiological Safety

1. *Principles and practices of radiation protection.*
2. *Leak testing procedures.*
3. *Mathematics and calculations basic to the use and measurement of radioactivity.*
4. *Biological effects of radiation.*
5. *Radioactivity measurement standardization and monitoring techniques and instruments.*
6. *Accident and incident procedures.*
7. *Procedures for nuclear gauge storage and transportation.*
8. *General safety precautions.*

Gauge Operation

1. *Instrument theory*
2. *Operating procedures*
3. *Maintenance*
4. *Field application*
5. *Gauge calibration*

Michael E. Nunley
INSTRUCTOR

01/27/87
DATE

W.F. Troxler
PRESIDENT

№ 18488

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

ERIC WILSON

of

EMPIRE SOILS INVESTIGATIONS, INC.

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

Radiological Safety

1. *Principles and practices of radiation protection.*
2. *Leak testing procedures.*
3. *Mathematics and calculations basic to the use and measurement of radioactivity.*
4. *Biological effects of radiation.*
5. *Radioactivity measurement standardization and monitoring techniques and instruments.*
6. *Accident and incident procedures.*
7. *Procedures for nuclear gauge storage and transportation.*
8. *General safety precautions.*

Gauge Operation

1. *Instrument theory*
2. *Operating procedures*
3. *Maintenance*
4. *Field application*
5. *Gauge calibration*

Philip C. Fabella
INSTRUCTOR

2-28-89
DATE

W. F. Troxler
PRESIDENT

№ 25241

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

DON WARTINGER

of

EMPIRE SOILS INVESTIGATIONS, INC.

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

Radiological Safety

1. *Principles and practices of radiation protection.*
2. *Leak testing procedures.*
3. *Mathematics and calculations basic to the use and measurement of radioactivity.*
4. *Biological effects of radiation.*
5. *Radioactivity measurement standardization and monitoring techniques and instruments.*
6. *Accident and incident procedures.*
7. *Procedures for nuclear gauge storage and transportation.*
8. *General safety precautions.*

Gauge Operation

1. *Instrument theory*
2. *Operating procedures*
3. *Maintenance*
4. *Field application*
5. *Gauge calibration*

Philip C Padilla
INSTRUCTOR

2-28-89
DATE

W. F. Troxler
PRESIDENT

№ 25234

Troxler Electronic Laboratories, Inc.

Gauge model -3411B
Serial- 10734

Ref standard count: density - 2891
moisture- 513

Calib date: 2-9-1988 Bay- 45

Source type- Cs-137 Am-241/Be

Serial- 40 8211 46 2156

Print date: 02-16-1988

*** Density calibration count data ***

Depth (in)	Magnes 111.4	Mag/Al 137.6	Alumin 169.3
BS	1290	871	590
2	4550	2980	1856
4	4667	2876	1656
6	3793	2160	1145
8	2635	1372	670
10	1697	801	363
12	1002	434	190

*** Density performance parameters ***

Pos	A	B	C	'Y'	Slope	Prec
BS	4.140	0.02254	-0.09932	137.6	16.1	0.49
2	13.012	0.02015	-0.15653	137.6	61.1	0.24
4	17.078	0.02205	-0.10595	137.6	69.1	0.21
6	20.546	0.02557	-0.07970	137.6	62.1	0.21
8	22.872	0.02988	-0.05737	137.6	47.2	0.22
10	25.310	0.03484	-0.03976	137.6	32.7	0.25
12	25.645	0.03986	-0.02740	137.6	20.3	0.30

*** Moisture calibration count data ***

Mag 0.0	Mag/poly 37.2	S R
18	321	310

*** Moisture performance parameters ***

E	F	Rat	Prec	S R	Exerr
0.03509	0.01587	3.08	0.37	-1.4	1.1

TROXLER ELECTRONIC LABORATORIES, INC.

GAUGE MODEL - 3411 B
SERIAL- 10734

CALIB DATE: 9 FEB, 1988
PRINT DATE: 16 FEB, 1988

*** US CUST TEST VALUES ***

FOR MOISTURE CORRECTION OF 0

DEPTH	WD	DD	M	%M
BS	64.6	3.9	60.8	0.0*
2	132.8	72.0	60.8	84.5
4	130.7	69.9	60.8	86.9
6	118.4	57.6	60.8	105.5
8	103.7	42.9	60.8	141.7
10	90.9	30.1	60.8	202.1
12	79.0	18.3	60.8	332.8

FOR MOISTURE CORRECTION OF 99

DEPTH	WD	DD	M	%M
BS	64.6	3.5	61.1	0.0*
2	132.8	65.5	67.3	102.7
4	130.7	63.6	67.1	105.4
6	118.4	52.4	66.0	125.8
8	103.7	39.0	64.7	165.6
10	90.9	27.4	63.5	232.0
12	79.0	16.6	62.4	375.7

FOR MOISTURE CORRECTION OF -99

DEPTH	WD	DD	M	%M
BS	64.6	4.3	60.4	0.0*
2	132.8	79.9	52.9	66.2
4	130.7	77.6	53.1	68.4
6	118.4	64.0	54.5	85.1
8	103.7	47.6	56.1	117.7
10	90.9	33.4	57.5	172.2
12	79.0	20.3	58.8	290.0

* INDICATES A VALUE WHICH WILL OVERFLOW THE 3411B DISPLAY

TROXLER ELECTRONIC LABORATORIES, INC.

GAUGE MODEL - 3411 B
SERIAL- 10734

CALIB DATE: 9 FEB, 1988
PRINT DATE: 16 FEB, 1988

*** METRIC TEST VALUES ***

FOR MOISTURE CORRECTION OF 0

DEPTH	WD	DD	M	%M
BS	1035	62	974	0.0*
2	2127	1153	974	84.5
4	2094	1120	974	86.9
6	1897	923	974	105.5
8	1661	687	974	141.7
10	1455	482	974	202.1
12	1266	293	974	332.8

FOR MOISTURE CORRECTION OF 99

DEPTH	WD	DD	M	%M
BS	1035	56	979	0.0*
2	2127	1049	1078	102.7
4	2094	1019	1075	105.4
6	1897	840	1057	125.8
8	1661	625	1036	165.6
10	1455	438	1017	232.0
12	1266	266	1000	375.7

FOR MOISTURE CORRECTION OF -99

DEPTH	WD	DD	M	%M
BS	1035	69	967	0.0*
2	2127	1280	847	66.2
4	2094	1243	851	68.4
6	1897	1025	872	85.1
8	1661	763	898	117.7
10	1455	535	921	172.2
12	1266	325	942	290.0

* INDICATES A VALUE WHICH WILL OVERFLOW THE 3411B DISPLAY

Troxler Electronic Laboratories, Inc.

Gauge model -3411B
Serial - 13429

Ref standard count:density - 2824
moisture- 663

Cs-137 Am-241/Be

Calib date: 5-13-1986 Day-5

Serial - 50 1256 47 8620

Print date: 05-13-1986

*** Density calibration count data ***

Depth (in)	Magnes 111.7	Mag/Al 138.7	Alumin 169.8
DS	1370	897	608
2	4643	2977	1873
4	4740	2557	1688
6	3844	2137	1171
8	2686	1359	[illegible]
10	1684	[illegible]	[illegible]
12	997	[illegible]	[illegible]

*** Density performance parameters ***

Pos	A	B	C	Y'	Slope	Prec
DS	5.316	0.02407	-0.11171	138.7	17.8	0.46
2	14.698	0.02094	-0.18618	138.7	63.4	[illegible]
4	19.894	0.02331	-0.15998	138.7	71.0	[illegible]
6	24.033	0.02682	-0.11730	138.7	63.6	0.28
8	27.417	0.03125	-0.07894	138.7	48.7	[illegible]
10	29.820	0.03626	-0.05077	138.7	32.8	[illegible]
12	31.924	0.04171	-0.03307	138.7	20.5	[illegible]

*** Moisture calibration count data ***

Mag 0.0	Mag/poly 40.6	S R
22	445	430

*** Moisture performance parameters ***

E	F	Rat	Prec	S R	Exerr
0.03318	0.01572	3.11	0.33	-1.4	1.0

TROXLER ELECTRONIC LABORATORIES, INC.

CALIB DATE: 13 MAY, 1986
PRINT DATE: 13 MAY, 1986

GAUGE MODEL - 3411 B
SERIAL- 13429

*** METRIC TEST VALUES ***

FOR MOISTURE CORRECTION OF 0

DEPTH	WD	DD	M	%M
BS	1142	157	985	629.3
2	2164	1179	985	83.5
4	2125	1140	985	86.4
6	1923	938	985	105.0
8	1690	705	985	139.6
10	1474	489	985	201.6
12	1294	309	985	319.1

FOR MOISTURE CORRECTION OF 99

DEPTH	WD	DD	M	%M
BS	1142	142	999	[illegible]
2	2164	1073	1071	101.7
4	2125	1037	1080	[illegible]
6	1923	834	1069	122.6
8	1690	642	1049	163.4
10	1474	445	1029	[illegible]
12	1294	281	1013	[illegible]

FOR MOISTURE CORRECTION OF -99

DEPTH	WD	DD	M	%M
BS	1142	174	945	[illegible]
2	2164	1305	859	[illegible]
4	2125	1263	862	[illegible]
6	1923	1041	882	[illegible]
8	1690	783	907	[illegible]
10	1474	542	931	[illegible]
12	1294	343	951	[illegible]

* INDICATES A VALUE WHICH WILL OVERFLOW THE 4111U DISPLAY

TROXLER ELECTRONIC LABORATORIES, INC.

GAUGE MODEL - 3411 B
SERIAL- 13429

CALIB DATE: 13 MAY, 1986
PRINT DATE: 13 MAY, 1986

*** US CUST TEST VALUES ***

FOR MOISTURE CORRECTION OF 0

DEPTH	WD	DD	M	%M
BS	71.3	9.8	61.5	629.3
2	135.1	73.6	61.5	83.5
4	132.7	71.2	61.5	86.4
6	120.1	58.6	61.5	105.0
8	105.5	44.0	61.5	139.6
10	92.0	30.5	61.5	201.6
12	80.8	19.3	61.5	319.1

FOR MOISTURE CORRECTION OF 9%

DEPTH	WD	DD	M	%M
BS	71.3	8.9	62.4	701.5
2	135.1	73.6	61.5	101.7
4	132.7	71.2	61.5	104.9
6	120.1	58.6	61.5	125.3
8	105.5	40.1	61.5	163.4
10	92.0	27.8	64.2	231.4
12	80.8	17.6	63.2	360.2

FOR MOISTURE CORRECTION OF 9%

DEPTH	WD	DD	M	%M
BS	71.3	8.9	62.4	701.5
2	135.1	73.6	61.5	83.5
4	132.7	71.2	61.5	86.4
6	120.1	58.6	61.5	105.0
8	105.5	44.0	61.5	139.6
10	92.0	30.5	61.5	201.6
12	80.8	19.3	61.5	319.1

* INDICATES A VALUE WHICH WILL OVERFLOW THE WIDTH DISPLAY

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering-Science

DATE: May 14, 1990

PROJECT NO: BT-90-128

REPORT NO: L-1

REPORT OF MATERIAL TESTING

MATERIAL: Project Sample #PT-1 of Clay, some Silt, little Sand; trace Gravel from Indian Hill, collected by Empire Soils Investigations, Inc. on May 1, 1990 from an on-site stockpile.

MECHANICAL ANALYSIS: ASTM D-422.

Component	Percent of Sample
Gravel	7.5
Sand	11.4
Silt	27.2
Clay	53.9

MAXIMUM DENSITY - OPTIMUM MOISTURE: ASTM D-698

Maximum Density	105.2 pcf.
Optimum Moisture	19.2 %

FOR DETAILS CONCERNING THESE TESTS, PLEASE SEE THE ATTACHED LABORATORY DATA FORMS.

If you have any further questions, please feel free to contact our office at any time.

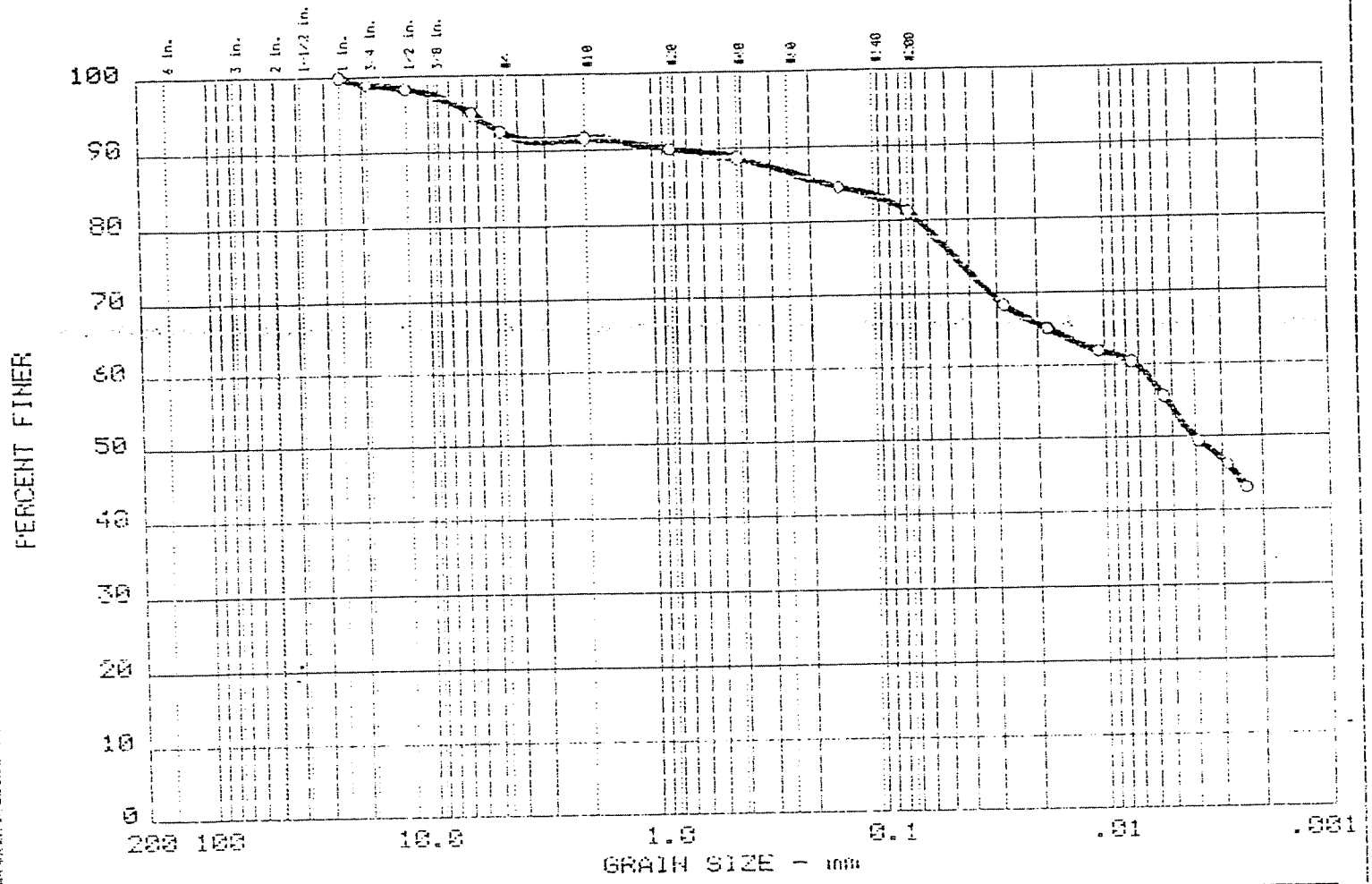
Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Euern
Manager Laboratory Services
ll

Charles C. Keipper
Manager Testing Services

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110, TELEFAX 716-649-8051

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
○	19	0.0	7.5	11.4	27.2	53.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.17		0.08					

MATERIAL DESCRIPTION	USCS	AASHTO
○ CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL	ML	

Project No.: BT-90-128
Project: PINE AND TUSCARORA REMEDIATION
○ Location: INDIAN HILL

Date: 5-14-90

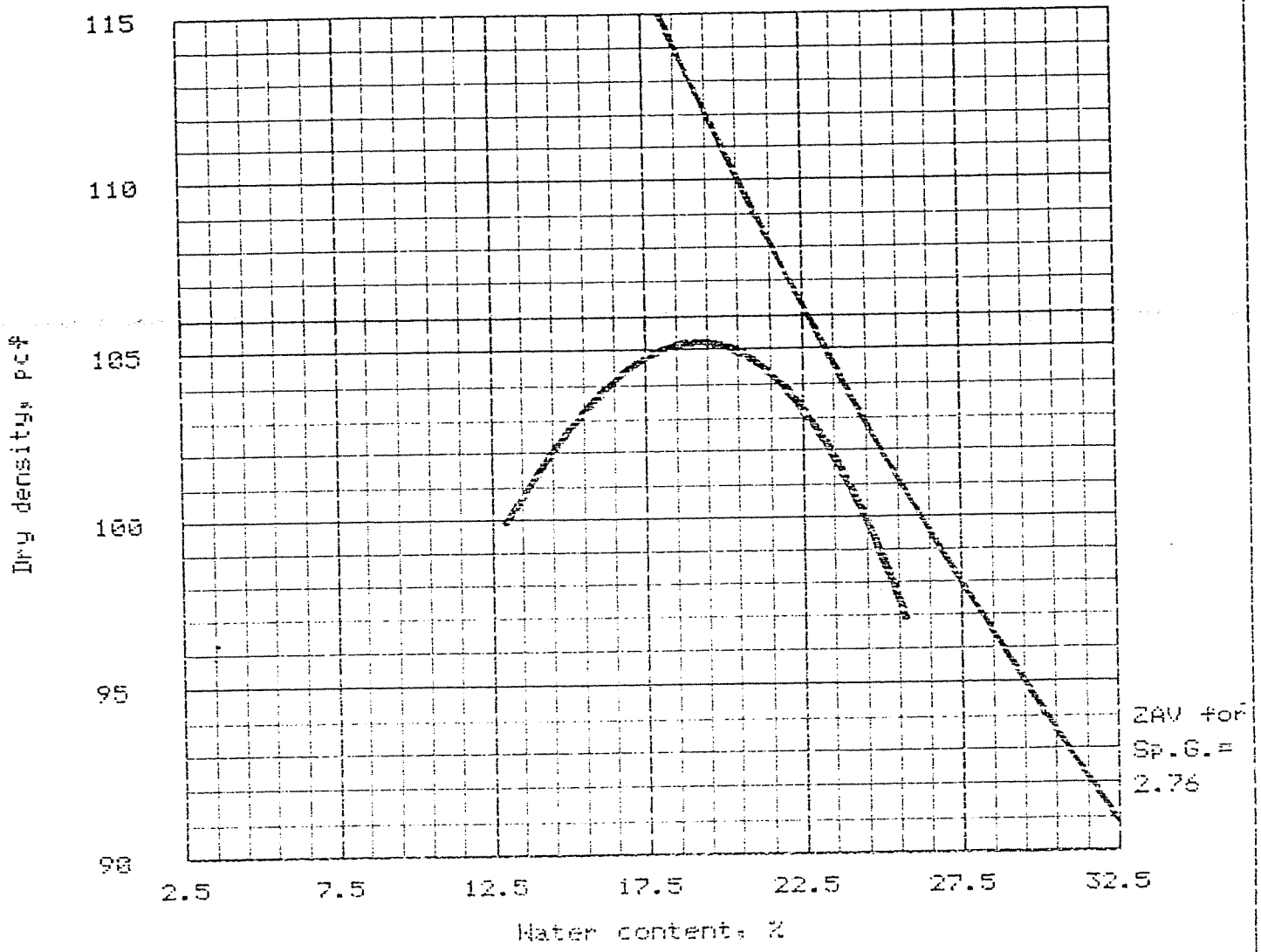
Remarks:
COLLECTED BY ESI
ON 5-01-90 FROM
ON-SITE STOCKPILE
PROJECT SAMPLE # PI-1

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

L-1A Fig. No.

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698-78, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	ML			2.76			7.5 %	81.1 %

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 19.2 % Maximum dry density = 105.2 pcf	CLAY; SOME SILT; LITTLE SAND; TRACE GRAVEL

Project No.: BT-90-128
Project: PINE & TUSCARORA REMEDIATION
Location: INDIAN HILL

Date: 5-15-1990

Remarks:
COLLECTED BY ESI ON 5-1-90 FROM ON-SITE PROJECT SAMPLE #PT-1

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

L-1B

Fig. No. _____

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering Science, Inc.

DATE: May, 1990

PROJECT NO: BT-90-128

REPORT NO: L-2

REPORT OF MATERIAL TESTING

MATERIAL: Two (2) Undisturbed Samples, Shelby Tube, collected by Empire Soils Investigations, Inc. from the above referenced project, as follows:

SAMPLE #	LOCATION
TP-1	Test Pad, N. 7142, E. 8299, 3rd Lift
TP-2	Test Pad, N. 7150, E. 8284, 3rd Lift

CONSTANT HEAD TRIAXIAL PERMEABILITY (UNDISTURBED)

SAMPLE#	DATE SAMPLED	PERMEABILITY	DIFFERENTIAL HEAD
TP-1	5/02/90	1.16×10^{-8} cm/sec	5.1 psi
TP-2	5/02/90	1.05×10^{-8} cm/sec	4.7 psi

Please see the attached permeability test reports for details.

If you have any further questions, please feel free to contact our office.

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Zuern
Laboratory Services Manager
ll

Edward J. Barbiero
Director of Technical Services

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110, TELEFAX 716-649-8051

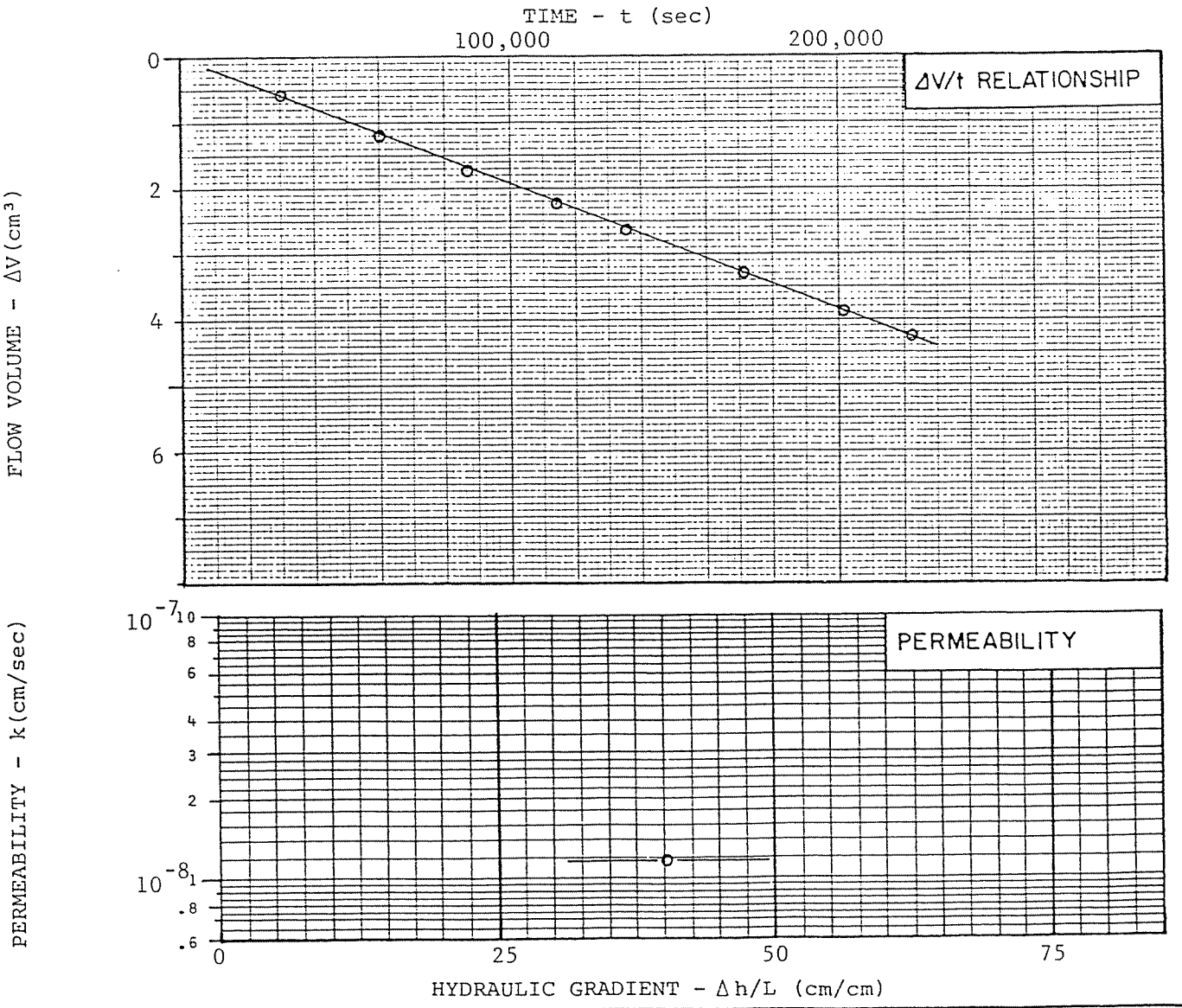
329.001

TEST DATA:

Specimen Height (cm): 9.48
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 104.2
Moisture Content Before Test (%): 24.1
Moisture Content After Test (%): 23.6
Cell Confining Pressure (psi): 95.0
Test Pressure (psi): 85.2
Back Pressure (psi): 80.1
Differential Head (psi): 5.1
Flow Rate ($\Delta V/t$) (cm^3/sec) O 1.92×10^{-5} Δ
Permeability (cm/sec): O 1.16×10^{-8} Δ

SAMPLE DATA:

Sample Identification: Sample No. 90-452
TP-1, N 7142, E 8299, 3rd lift.
Visual Description: Brown clay, some silt, trace gravel.
Remarks:
Maximum Dry Density (ASTM D ____) (pcf):
Optimum Moisture Content (%):
Percent Compaction:
Permeameter Type: Flexible wall



EMPIRE SOILS INVESTIGATIONS INC.

PERMEABILITY TEST REPORT

PINE & TUSCARORA REMEDIATION
NIAGARA FALLS, NEW YORK

DR BY: JFC	CK'D. JFC	DATE: May, 1990	PROJ.NO. BT-90-128

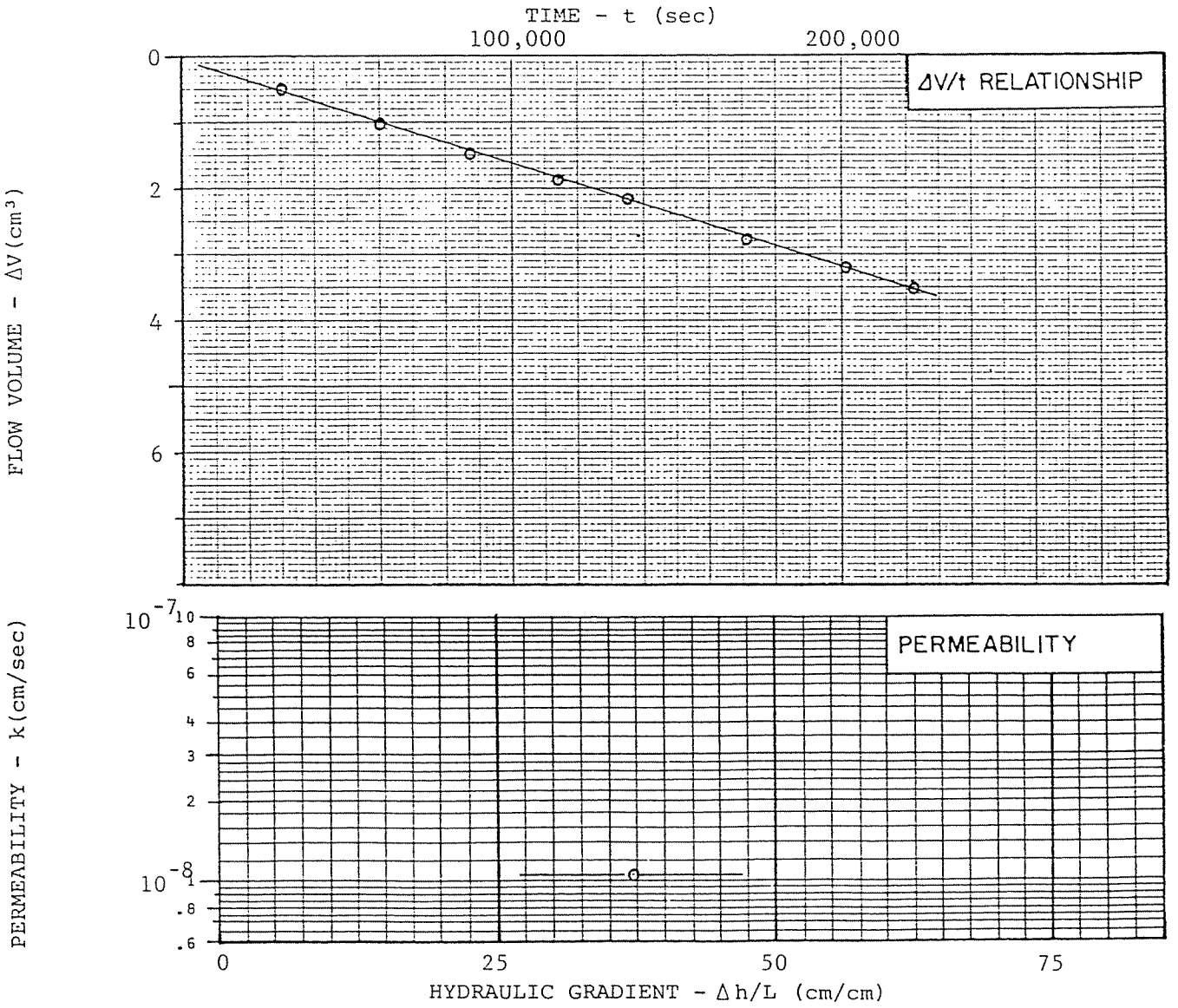
329.002

TEST DATA:

Specimen Height (cm): 9.52
Specimen Diameter (cm): 7.18
Dry Unit Weight (pcf): 101.9
Moisture Content Before Test (%): 25.3
Moisture Content After Test (%): 25.3
Cell Confining Pressure (psi): 95.0
Test Pressure (psi): 84.8
Back Pressure (psi): 80.1
Differential Head (psi): 4.7
Flow Rate ($\Delta V/t$) (cm^3/sec) O 1.58×10^{-5} Δ
Permeability (cm/sec): O 1.05×10^{-8} Δ

SAMPLE DATA:

Sample Identification: Sample No. 90-453
TP-2, N 7150, E 8284, 3rd lift
Visual Description: Brown clay, some silt, trace gravel.
Remarks:
Maximum Dry Density (ASTM D ____) (pcf):
Optimum Moisture Content (%):
Percent Compaction:
Permeameter Type: Flexible wall



EMPIRE SOILS INVESTIGATIONS INC.

PERMEABILITY TEST REPORT

PINE & TUSCARORA REMEDIATION
NIAGARA FALLS, NEW YORK

DR BY: JFC	CK'D. JFC	DATE: May, 1990	PROJ.NO. BT-90-128

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering-Science

DATE: May 21, 1990

PROJECT NO: BT-90-128

REPORT NO: L-3

REPORT OF MATERIAL TESTING

MATERIAL: Project Sample #PT-3 of Clay, some Silt, trace Sand, collected by Empire Soils Investigations, Inc. on May 2, 1990 from an on-site stockpile.

MECHANICAL ANALYSIS: ASTM D-422.

Component	Percent of Sample
Gravel	0.0
Sand	6.9
Silt	27.0
Clay	66.1

WATER CONTENT OF SOIL: ASTM D-2216.

As Received	29.2 %

ATTERBERG LIMITS: ASTM D-4318.

Liquid Limit	42
Plastic Limit	22
Plasticity Index	20

MAXIMUM DENSITY - OPTIMUM MOISTURE: ASTM D-698

Maximum Density	105.1 pcf.
Optimum Moisture	19.5 %

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EMPIRE
SOILS INVESTIGATIONS INC

FOR DETAILS CONCERNING THESE TESTS, PLEASE SEE THE ATTACHED LABORATORY DATA FORMS.

If you have any further questions, please feel free to contact our office at any time.

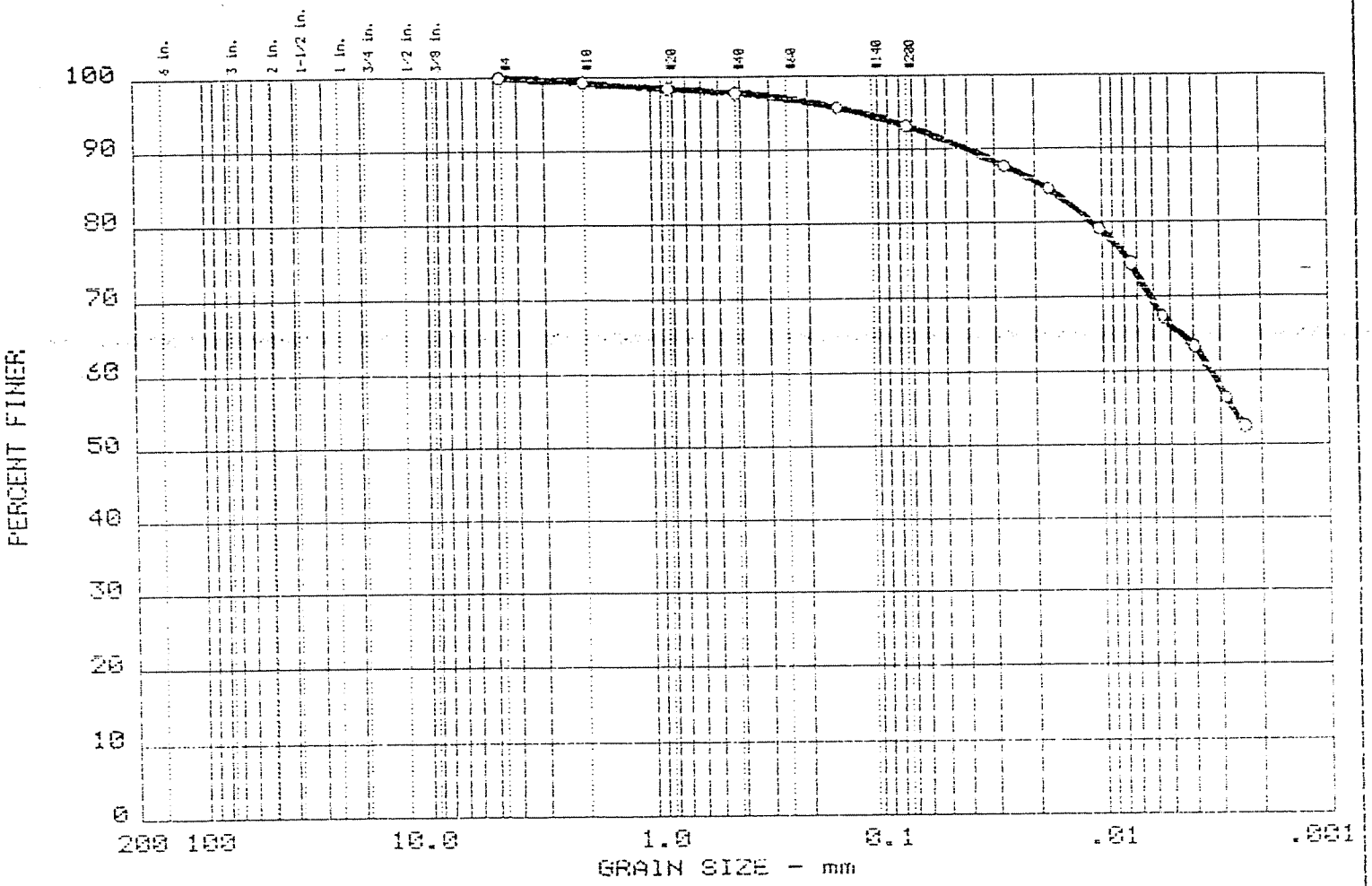
Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Zuern
Laboratory Services Manager

Edward J. Barbiero
Technical Services Director

ll

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
○	2	0.0	0.0	6.9	27.0	66.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	42	20								

MATERIAL DESCRIPTION	USCS	AASHTO
○ CLAY, SOME SILT, TRACE SAND	CL	

Project No.: BT - 90 - 128
Project: PINE AND TUSCARORA REMEDIATION
○ Location: ON-SITE STOCKPILE

Date: 5-21-90

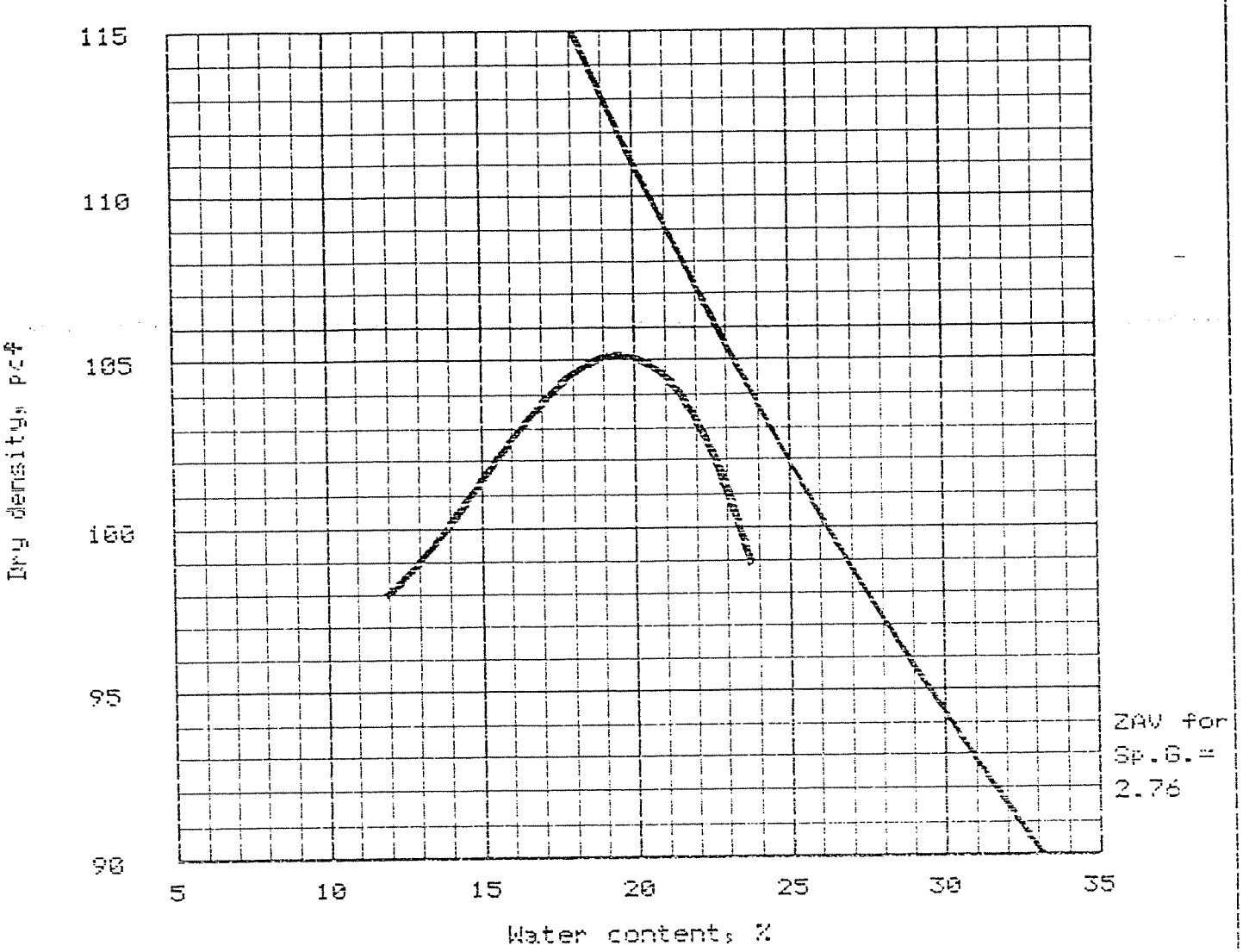
Remarks:
COLLECTED BY ESI ON 5-02-90 FROM ON-SITE STOCKPILE P.S.# PT-3
N.W.C.= 29.2 %

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

L-3A Fig. No.

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698-78, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	CL		29.2 %	2.76	42	20	0 %	93.1 %

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 19.5 % Maximum dry density = 105.1 pcf	CLAY, SOME SILT, TRACE SAND

Project No.: BT-90-128
Project: PINE AND TUSCARORA REMEDIATION
Location: ON-SITE STOCKPILE

Date: 5-21-1990

Remarks:
COLLECTED BY ESI ON 5-02-90 FROM ON-SITE STOCKPILE P.S.# PT-3

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

L-3B Fig. No. _____

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering-Science

DATE: May 25, 1990

PROJECT NO: BT-90-128

REPORT NO: L-4

REPORT OF MATERIAL TESTING

MATERIAL: Project Sample #PT-2 of Clay, little Silt, trace Sand, collected by Empire Soils Investigations, Inc. on May 2, 1990 from elevation 659.50 south of New Channel Station 2 + 35.

MECHANICAL ANALYSIS: ASTM D-422.

Component	Percent of Sample
Gravel	0.0
Sand	1.0
Silt	15.1
Clay	83.9

WATER CONTENT OF SOIL: ASTM D-2216.

As Received	40.3 %

ATTERBERG LIMITS: ASTM D-4318.

Liquid Limit	40
Plastic Limit	23
Plasticity Index	17

MAXIMUM DENSITY - OPTIMUM MOISTURE: ASTM D-698

Maximum Density	106.2 pcf.
Optimum Moisture	19.9 %

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EMPIRE
SOILS INVESTIGATIONS INC.

FOR DETAILS CONCERNING THESE TESTS, PLEASE SEE THE ATTACHED LABORATORY DATA FORMS.

If you have any further questions, please feel free to contact our office at any time.

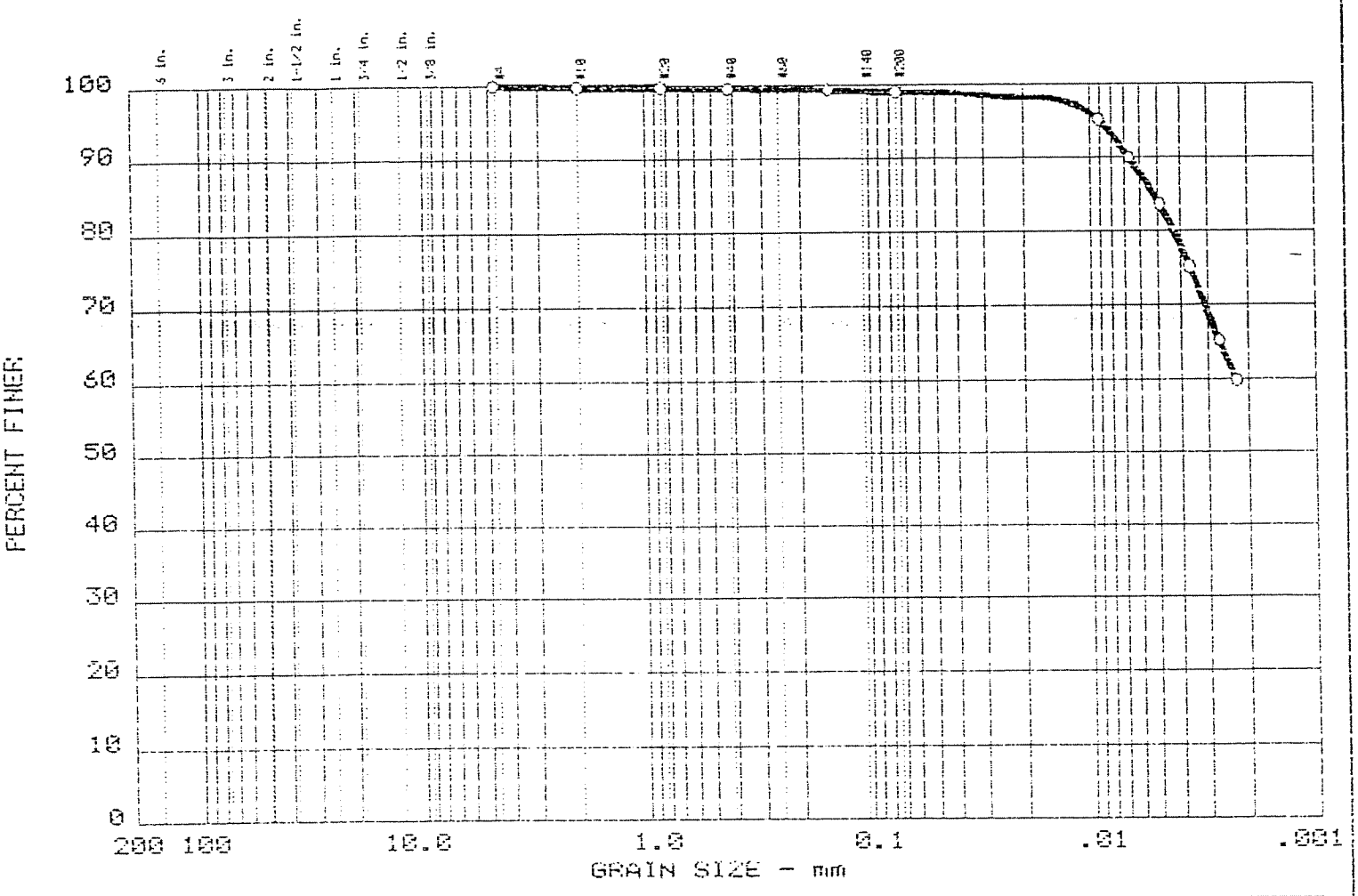
Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Niel W. Zuern
Laboratory Services Manager

Edward J. Barbiero
Technical Services Director

ll

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
○	7	0.0	0.0	1.0	15.1	83.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	40	17								

MATERIAL DESCRIPTION	USCS	AASHTO
○ CLAY, LITTLE SILT, TRACE SAND	CL	

Project No.: BT-90-128

Project: PINE AND TUSCARORA REMEDIATION

Location: ELEV. 659.50 S OF NEW CHANNEL STA 2+35

Date: 5-25-90

Remarks:

COLLECTED BY ESI

ON 5-02-90 FROM

ON-SITE STOCKPILE

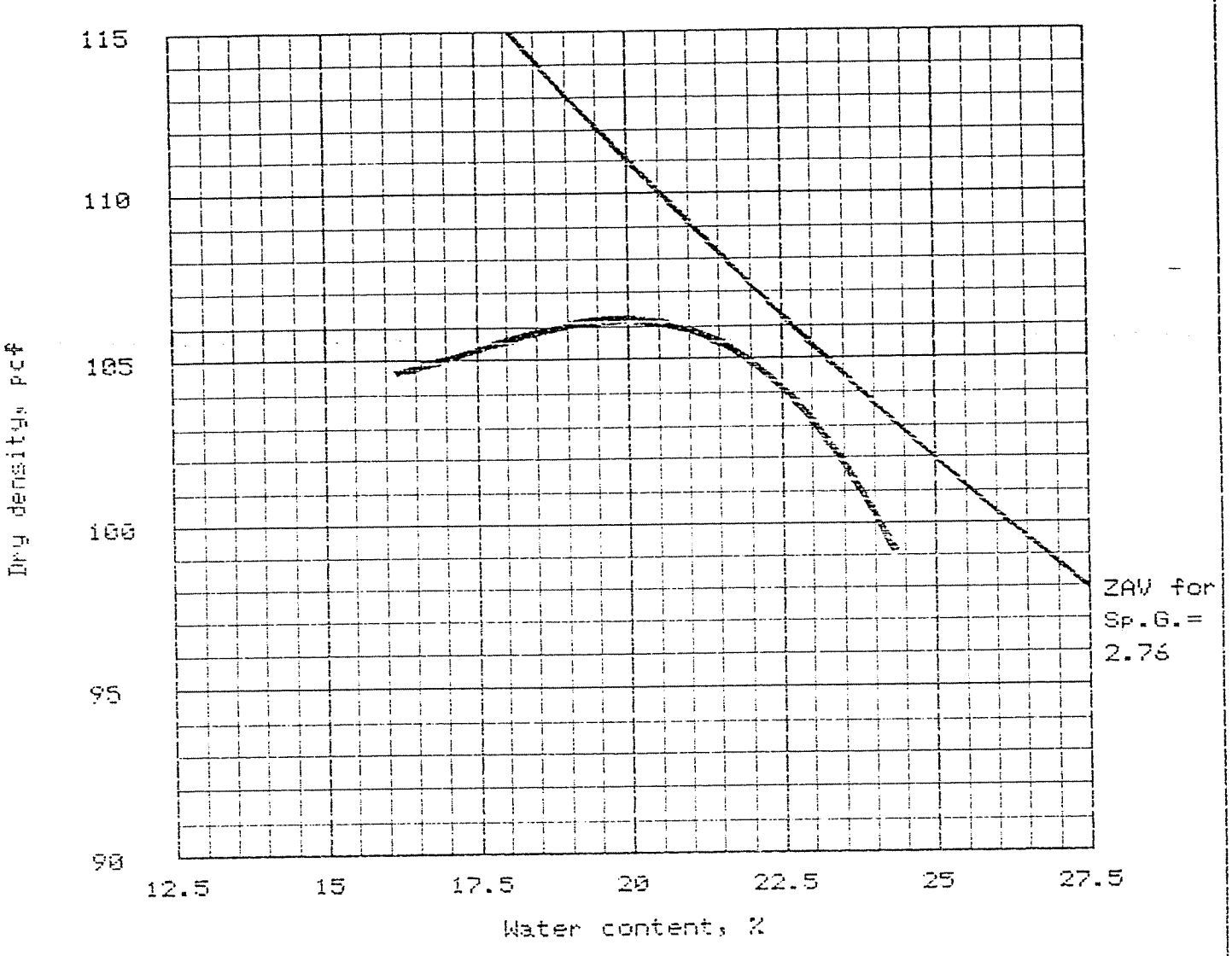
N.W.C.= 40.3% P.S.# PT-2

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

Fig. No. 1-4A

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698-78, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	CL		40.3 %	2.76	49	17	0 %	99.0 %

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 19.9 % Maximum dry density = 106.2 pcf	CLAY, LITTLE SILT, TRACE SAND

Project No.: BT-90-128
Project: PINE AND TUSCARORA REMEDIATION
Location: ELEV.659.50 S OF NEW CHANNEL
STA 2+35
Date: 5-25-1990

Remarks:
COLLECTED BY ESI ON
5-02-90 FROM ON-SITE
PROJECT SAMPLE # PT-2

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

L-4B

Fig. No. _____

EMPIRE
SOILS INVESTIGATIONS INC.

PROJECT: P & T Remediation (Pine & Tuscarora)

CLIENT: Engineering Science, Inc.

DATE: October 26, 1990

PROJECT NO.: BT-90-128

REPORT NO.: L-5 (REVISED 11/15/90)

REPORT OF MATERIAL TESTING

MATERIAL: One sample of Soil Bentonite slurry prepared from materials supplied from the above referenced project as follows:
Soil- Indian Hills Borrow area
Bentonite- Baroid 90
Permeate- On-site Leachate from Piezometer #6

Six and Half (6.5%) Bentonite Slurry was mixed with soil to a consistency of 5" "slump" then permeated with on-site leachate.

CONSTANT HEAD TRIAXIAL PERMEABILITY (Remolded)

	RUN #1	RUN #2	RUN #3
Permeability (cm/sec)	2.22×10^{-8}	2.37×10^{-8}	3.00×10^{-8}
Differential Head (psi)	3.2	3.2	2.8

Please see the attached Permeability test report for details of test.

If you have any questions regarding the data as presented, please feel free to contact our office at any time.

Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

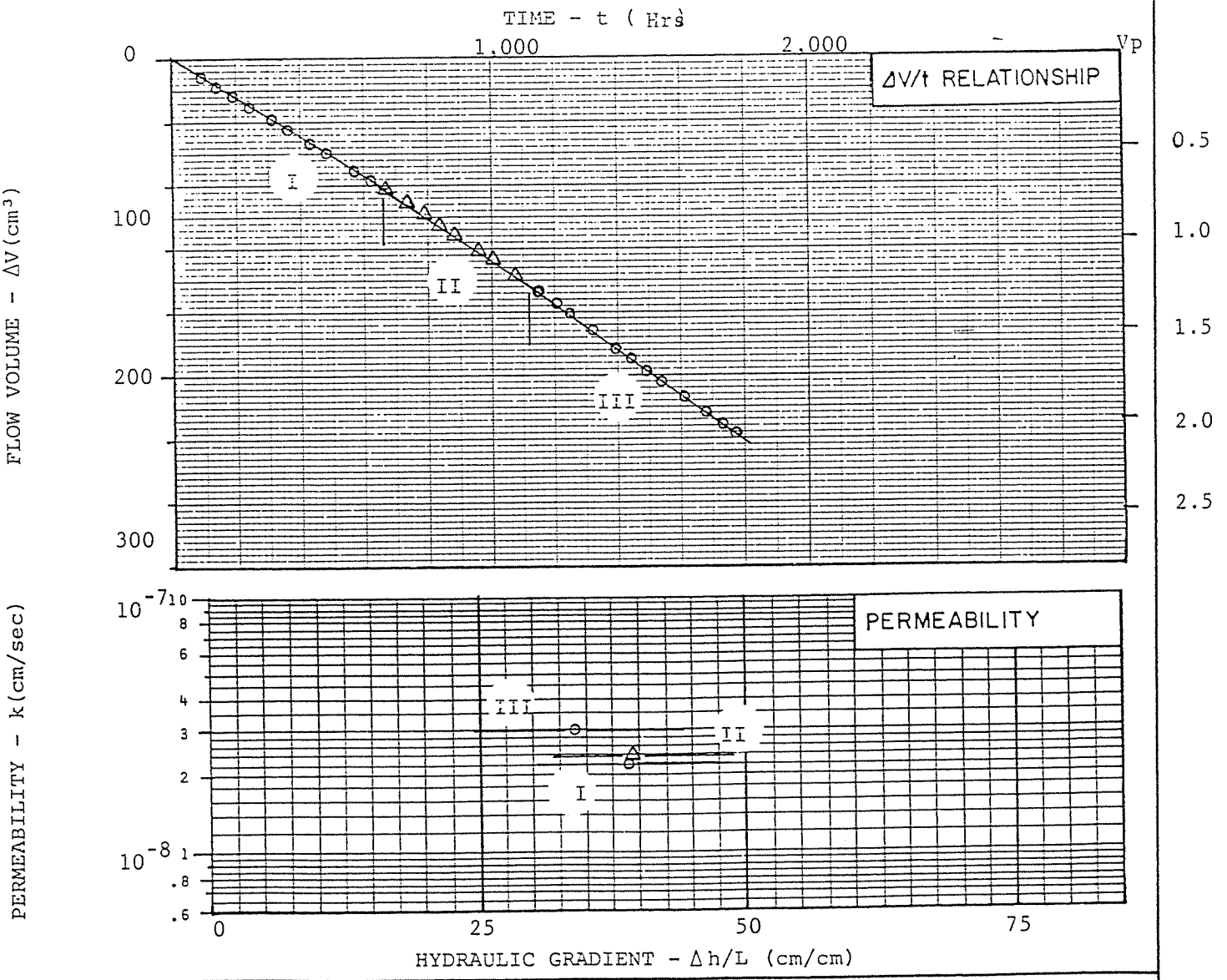
Charles C. Keipper
Manager of Testing Services

Niel W. Zuern
Laboratory Services Manager

cck
encl.

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110, TELEFAX 716-649-8051

TEST DATA:			SAMPLE DATA:
Specimen Height (cm):	6.10		Sample Identification: Lab No. 405.001
Specimen Diameter (cm):	7.09		Soil-Bentonite Backfill, Permeant Site GW
Dry Unit Weight (pcf):	89.6		Visual Description: Indian Hills Borrow
Moisture Content Before Test (%):	33.4		Mixed w/6.5% Bentonite Slurry to 5" Slump.
Moisture Content After Test (%):	30.9		Remarks: Specific Gravity, G=2.74
Cell Confining Pressure (psi):	85.0		Pore Volume, Vp=114.4 cm^3
Test Pressure (psi):	82.2	82.0	Maximum Dry Density
Back Pressure (psi):	79.0	78.8	(ASTM D ____) (pcf): ____
Differential Head (psi):	3.2	3.2	Optimum Moisture Content (%): ____
Flow Rate ($\Delta V/t$) (cm^3/sec)	O 3.42×10^{-5}	Δ 3.70×10^{-5}	Percent Compaction: ____
Permeability (cm/sec):	O 2.22×10^{-8}	Δ 2.37×10^{-8}	Permeameter Type: Flexible Wall



EMPIRE SOILS INVESTIGATIONS INC.

PERMEABILITY TEST REPORT

Pine & Tuscarora Remediation
Niagara Falls, New York

DR BY: JFC	CK'D. JFC	DATE: Oct 1990	PROJ. NO. BT-90-128

TEST DATA:

Specimen Height (cm):	6.10
Specimen Diameter (cm):	7.09
Dry Unit Weight (pcf):	89.6
Moisture Content Before Test (%):	33.4
Moisture Content After Test (%):	30.9
Cell Confining Pressure (psi):	85.0
Test Pressure (psi):	81.9
Back Pressure (psi):	79.1
Differential Head (psi):	2.8
Flow Rate ($\Delta V/t$) (cm^3/sec) O	4.01×10^{-5} Δ
Permeability (cm/sec): O	3.00×10^{-8} Δ

SAMPLE DATA:

Sample Identification: Lab No. 405.001

Soil-Bentonite Backfill, Permeant Site G.W.

Visual Description: Indian Hills Borrow

Mixed w/6.5% Bentonite Slurry to 5" Slump

Remarks:

Maximum Dry Density

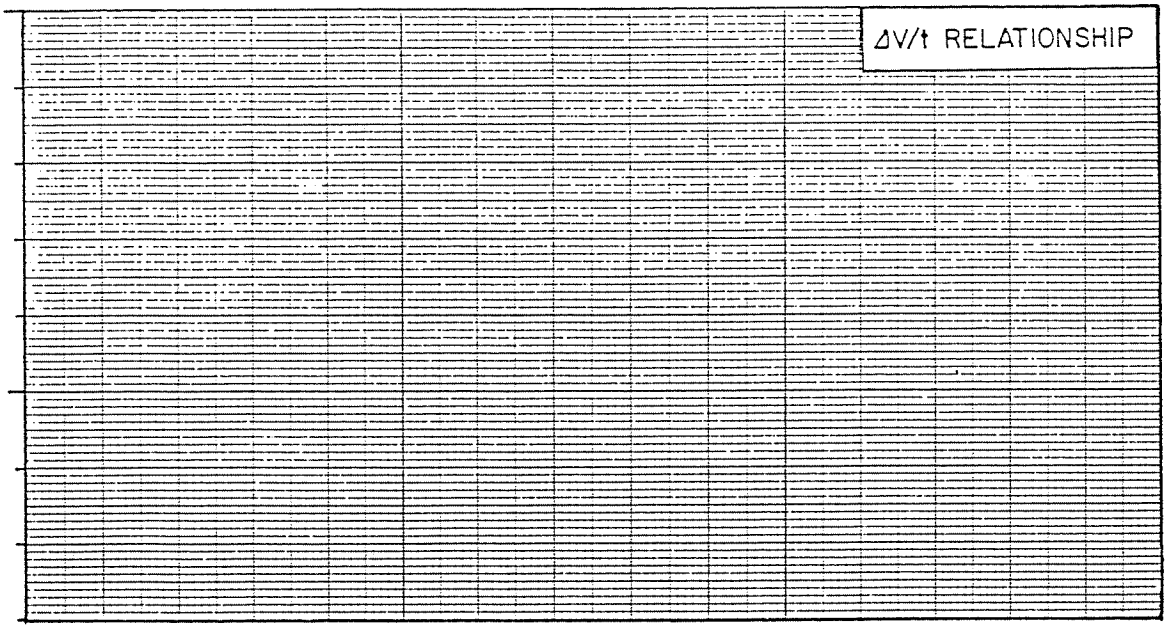
(ASTM D ____) (pcf):

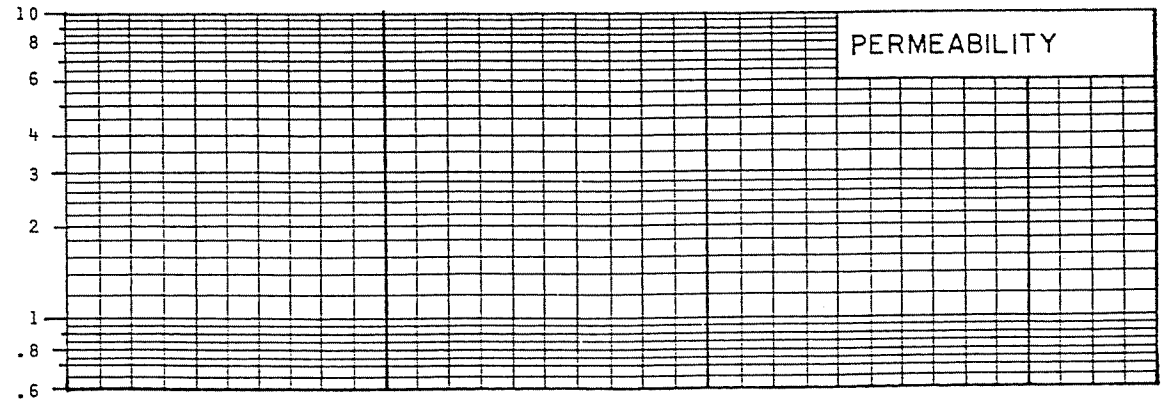
Optimum Moisture Content (%):

Percent Compaction:

Permeameter Type: Flexible Wall

TIME - t (sec)
See Sheet 1 of 2





HYDRAULIC GRADIENT - Δh/L (cm/cm)

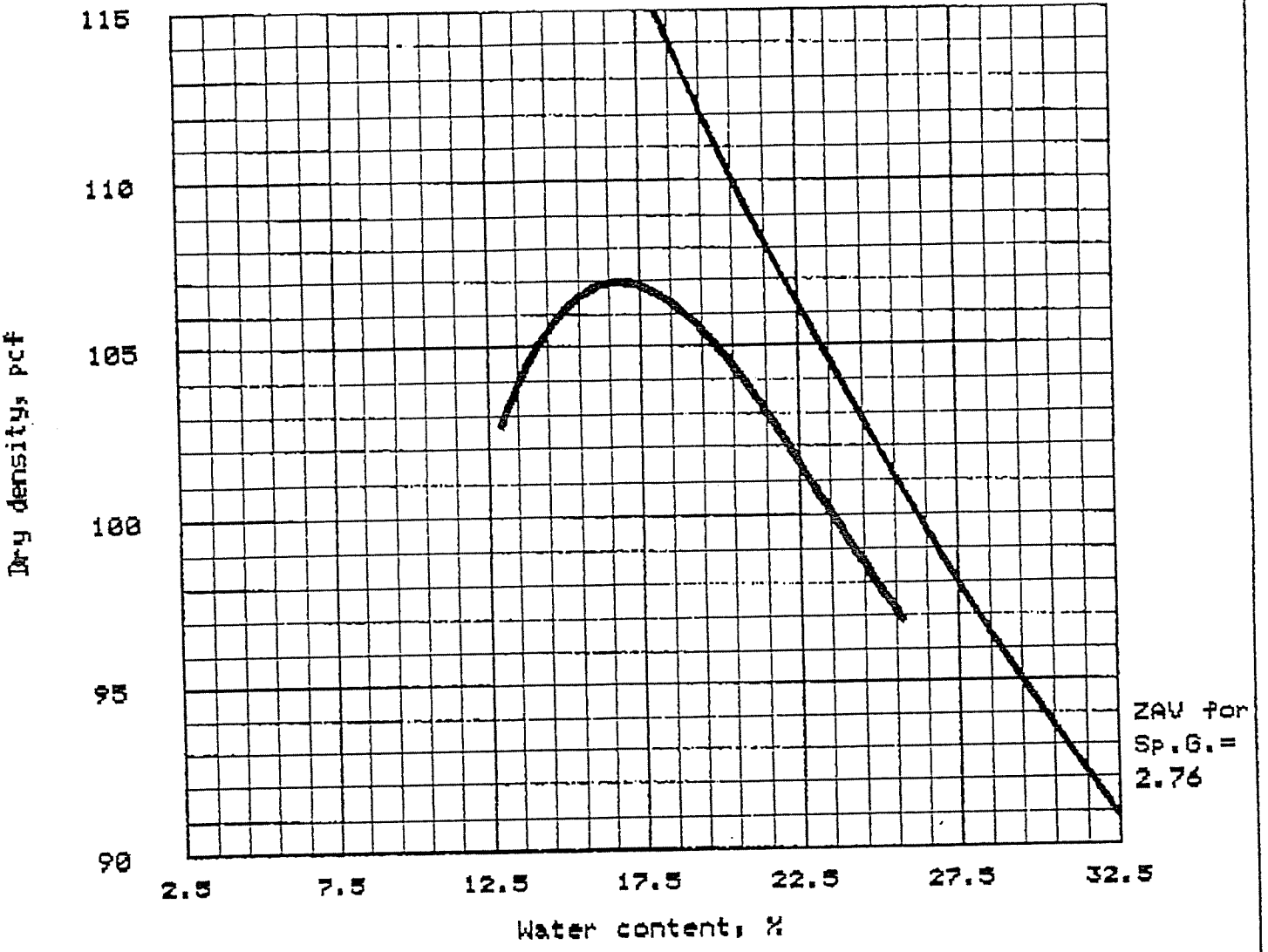
EMPIRE SOILS INVESTIGATIONS INC

PERMEABILITY TEST REPORT

Pine & Tuscarora Remediation
Niagara Falls, New York

DR BY: JFC	CK'D. JFC	DATE: OCt 1990	PROJ. NO. BT-90-128

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698-78, Method A

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	ML ✓			2.76			7.5 %	81.1 %

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 16.8 % Maximum dry density = 107.0 pcf	CLAY; SOME SILT; LITTLE SAND; TRACE GRAVEL

Project No.:

Project: PINE & TUSCARORA REMEDIATION

Location: INDIAN HILL EASTERLY PILE OF STAGED SOIL.

Date: 5-14-1990

Remarks:

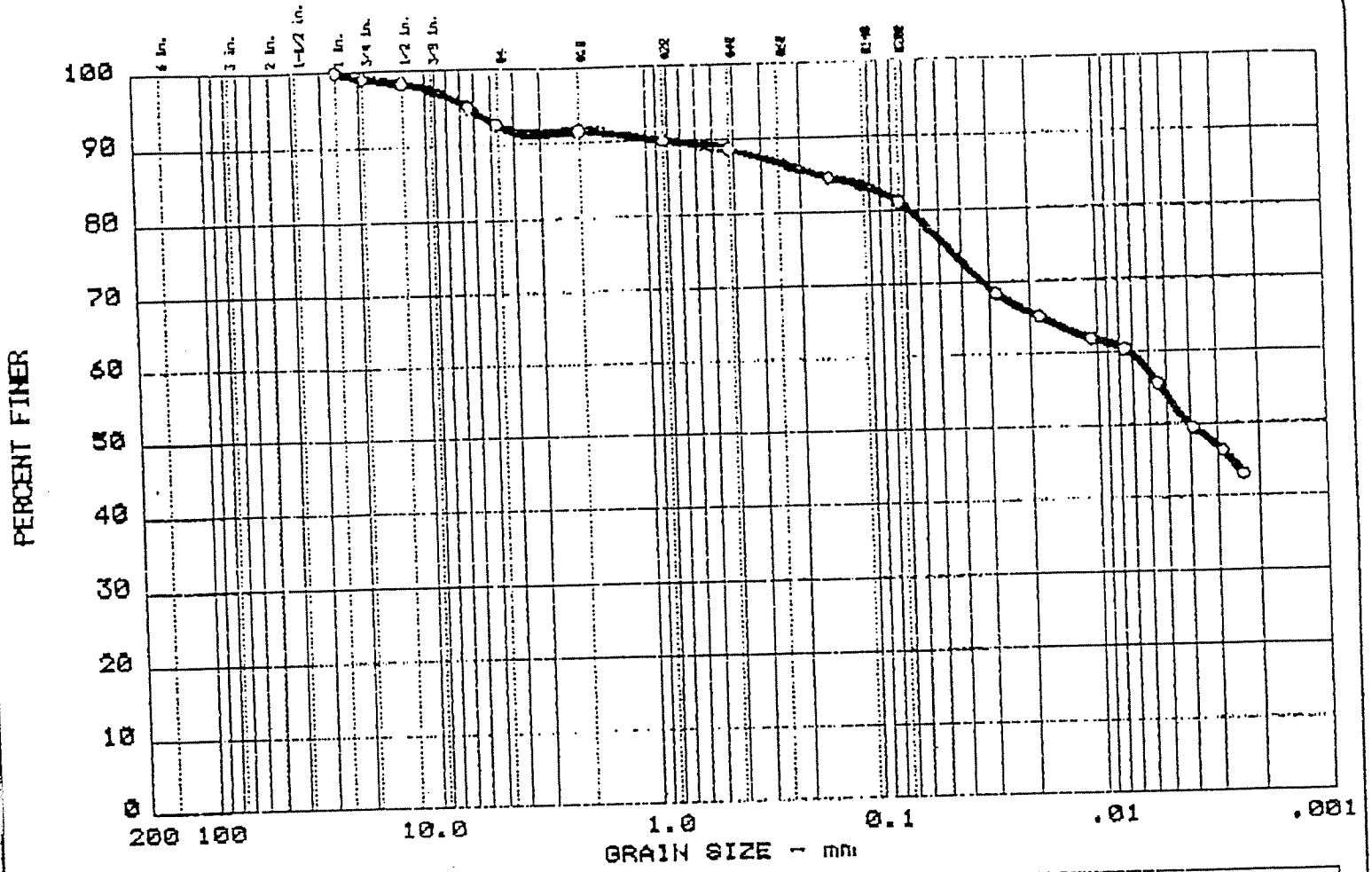
COLLECTED BY ESI ON 5-1-90 FROM ON-SITE PROJECT SAMPLE #PT-1

PROCTOR TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

Fig. No. ____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
○	19	0.0	7.5	11.4	27.2	53.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.17		0.00					

MATERIAL DESCRIPTION

○ CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL

USCS: ML

AASHTO:

Project No.:

Project: PINE AND TUSCARORA REMEDIATION

○ Location: INDIAN HILL

Remarks:

COLLECTED BY ESI

ON 5-01-90 FROM

ON-SITE STOCKPILE

PROJECT SAMPLE # PT-1

Date: 5-14-90

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

Fig. No.

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation; Tuscarora Road — Report No. DT-1

Client Engineering Science — Date: 4/28/90

Contractor: Sevenson Environmental Services — Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	4/28	1st 6" Lift	106.7	17.6	92.1	L-42	N 71+47 E 83+40
2	"	"	104.7	15.7	90.3	"	N 71+90 E 83+42
3	"	"	105.7	17.6	91.2	"	N 72+25 E 83+50
4	"	"	111.0	16.1	95.7	"	N 71+45 E 83+45
5	"	"	108.3	15.7	93.4	"	N 71+80 E 84+00
6	"	"	104.5	17.8	90.1	"	N 72+50 E 83+90
7	"	564.0	111.9	17.0	96.5	"	Station 2+50 (Berm)
8	"	564.5	117.2	13.8	100	"	Station 1+90 (Berm)
9	"	564.0	115.8	15.7	99.9	"	Station 1+70 (Berm)

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-42	115.9	13.9	Clay - Indian Hill
			Proctor value used is as supplied by client from
			previous project.

Remarks: Nuclear method used

Technician Time: 12:30 - 4:00 pm

Technician: Larry Blas

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation — Report No. DT-2

Client: Engineering Science — Date: 4/30/90

Contractor: Sevenson Environmental — Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	4/30	1st 6" Lift	100.7	21.0	99.8	*	E 8269 N 7129
2	"	"	103.4	19.0	100	*	E 8219 N 7163
3	"	"	101.3	18.4	100	*	E 8265 N 7172
4	"	"	102.3	23.5	100	*	E 8303 N 7149
5	"	2nd Lift	96.2	20.6	95.4	*	E 8350 N 7139
6	"	"	101.6	22.1	100	*	E 8330 N 7175
7	"	"	95.7	24.4	94.9	*	E 7250 N 8346
8	"	"	97.2	21.1	96.3	*	E 7225 N 8385
9	"	"	98.9	24.0	98.1	*	E 8425 N 7150
10	"	1st 6" Lift	96.7	23.4	95.8	*	RETEST OF TEST LOCATION #3
11	"	"	91.3	24.2	90.5	*	RETEST OF TEST LOCATION #2

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	On-Site Clay
	PROCTOR VALUE DETERMINED BY WOODWARD CLYDE CONSULTANTS		
			AS PROVIDED BY THE CLIENT

Respectfully submitted,

Remarks: Nuclear Method Used

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 4:30 - 6:00 pm

Technician: Larry Blas

Charles C. Keipper

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation Location: Niagara Falls

Client: Engineering-Science Contractor: S.E.S.

Report No.: DS-1 Project No.: BT-90-128 Date: 5/02/90

Weather & Temperature: Clear; 40's am Clear; 50's pm

Arrived at Site: 8:30 am Left Site: 1:30 pm

This Empire Soils Investigations, Inc. Technician was present at the above referenced site to perform In-Place Density Tests on Clay placed by Sevenson Environmental Services for test pad.

Sevenson constructed 34' (North - South) x 39' (East - West) test pad using Clay excavated from site. Three lifts (approximately 6" - 8") of Clay were placed by contractor using D68P Dozer. Upon arriving, first lift was placed and compacted with Ingersol-Rand SPF-56 (Sheepsfoot) Roller (Vibratory). In-Place Density Tests were performed on first lift with results given to Engineering-Science representative. Because of moisture requirement, area was re-worked and re-tested. Second lift was placed and compacted using same equipment. Roller made 4 passes in vibratory mode. In-Place Density Tests showed less than 90% compaction so 4 more passes were done with In-Place Density Test results meeting moisture and compaction requirements (as per Engineering-Science). Third lift was placed and compacted with 4 passes. In-Place Density Tests met moisture and compaction requirement. Maximum Density-Optimum Moisture (100.9 pcf @ 22.4%) used for Clay in pad was given to Empire Soils by the Client (performed by Woodward-Clyde). Two Shelby Tube samples were extracted upon completion of test pad at the following locations: Tube #1: (T.P.1) North 7142, East 8299; Tube #2 (T.P.2) North 7150, East 8284. Tubes were waxed and transported back to Empire Soils' Lab for appropriate testing.

For more information please refer to the attached In-Place Density Test Report.

R:T Form D7

by Larry Blas

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation — Report No. DT-3

Client Engineering-Science — Date: 5/02/90

Contractor: Sevenson Environmental Services — Job No. BT-90-128

TEST PAD

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/02	1st Lift	103.3	20.7	100	*	N 7141, E 8309 Test Pad
2	"	"	96.6	20.5	95.8	*	N 7144, E 8290 Test Pad
3	"	"	102.1	22.4	100	*	RETEST OF TEST #1 AFTER MATERIAL RE-WORKED
4	"	"	102.6	20.8	100	*	RETEST OF TEST #2 AFTER MATERIAL RE-WORKED
5	"	2nd Lift	88.9	24.3	88.1	*	N 7141, E 8310 Test Pad
6	"	"	94.5	25.9	93.7	*	(8 PASSES) RETEST OF TEST #5 AFTER FURTHER COMPACTION
7	"	"	96.3	25.8	95.5	*	N 7147, E 8281 Test Pad
8	"	3rd Lift	95.8	25.4	95.0	*	Shelby Tube TP-1 N 7142, E 8299 Test Pad - 4 passes,18"rec'd
9	"	"	94.5	26.4	93.7	*	Shelby Tube TP-2 N 7150, E 8284 Test Pad - 4 passes,18"rec'd

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	Clay - On-Site (ASTM D698)
	PROCTOR VALUE DETERMINED BY WOODWARD CLYDE CONSULTANTS		
			AS PROVIDED BY THE CLIENT

Respectfully submitted,

Remarks: Nuclear method used

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 8:30 am - 1:30 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation Report No. DT-4

Client Engineering-Science Date: 5/03/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/03	3rd Lift	95.9	26.3	95.1	*	N 7175, E 8215
2	"	"	103.5	22.3	100	*	N 7190, E 8260
3	"	"	100.3	21.9	99.4	*	N 7200, E 8310
4	"	"	98.0	20.9	97.1	*	N 7226, E 8350
5	"	"	96.8	21.3	96.0	*	N 7181, E 8360
6	"	"	103.4	21.4	100	*	N 7186, E 8320
7	"	"	95.5	24.9	94.7	*	N 7132, E 8365
8	"	"	98.9	22.8	98.0	*	N 7129, E 8320
9	"	"	101.4	22.8	100	*	N 7130, E 8275

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	Clay - On-Site (ASTM D698)
	PROCTOR VALUE DETERMINED BY WOODWARD CLYDE CONSULTANTS		
			AS PROVIDED BY THE CLIENT

Respectfully submitted,

Remarks: NUCLEAR METHOD USED

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 5:00 - 6:00 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation — Report No. DT-4

Client Engineering-Science — Date: 5/03/90

Contractor: Sevenson Environmental Services — Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/03	3rd Lift	95.9	26.3	95.1	*	N 7175, E 8215
2	"	"	103.5	22.3	100	*	N 7190, E 8260
3	"	"	100.3	21.9	99.4	*	N 7200, E 8310
4	"	"	98.0	20.9	97.1	*	N 7226, E 8350
5	"	"	96.8	21.3	96.0	*	N 7181, E 8360
6	"	"	103.4	21.4	100	*	N 7186, E 8320
7	"	"	95.5	24.9	94.7	*	N 7132, E 8365
8	"	"	98.9	22.8	98.0	*	N 7129, E 8320
9	"	"	101.4	22.8	100	*	N 7130, E 8275

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	Clay - On-Site (ASTM D698)
	PROCTOR VALUE DETERMINED BY WOODWARD CLYDE CONSULTANTS		
			AS PROVIDED BY THE CLIENT

Respectfully submitted,

emarks: NUCLEAR METHOD USED

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 5:00 - 6:00 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation Report No. DT-5

Client Engineering-Science Date: 5/03/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/03	TOB	102.5	14.6	100+	*	Sta. 1+00 South side new channel top of berm
2	"	MOB	91.6	25.9	90.8	*	Sta. 1+00 South side new channel middle of berm
3	"	TOB	98.0	17.4	97.2	*	Sta. 1+50 South side new channel top of berm
4	"	MOB	88.2	22.3	87.4	*	Sta. 1+50 South side new channel middle of berm
5	"	TOB	100.7	20.5	99.8	*	Sta. 2+00 South side new channel top of berm
6	"	MOB	84.4	24.7	83.7	*	Sta. 2+00 South side new channel middle of berm
7	"	MOB	91.3	29.9	90.5	*	RETEST OF #2
8	"	MOB	86.2	22.8	85.5	*	RETEST OF #4
9	"	MOB	86.2	28.6	85.5	*	RETEST OF #8
10	"	MOB	93.2	23.0	92.4	*	RETEST OF #6
11	"	3/4 MED	90.8	24.5	90.0	*	Sta. 2+00 South side new channel 3/4 up the berm

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	Clay - On-Site
	PROCTOR VALUE DETERMINED BY WOODWARD CLYDE CONSULTANTS		
			AS PROVIDED BY THE CLIENT

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: TOB-Top of Berm

MOB-Middle of Berm, All results verbally transmitted to Eng.Science Rep.Lou Libortore

Technician Time: 10:30 - 12:30

Technician: P.Romano

Charles C. Keipper

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation (Pine & Tuscarora) Location: Niagara Falls

Client: Engineering Science Contractor: S.E.S.

Report No.: DS-2 Project No.: BT-90-128 Date: 5/15/90

Weather & Temperature: Clear; 70

Arrived at Site: 2:00 Left Site: 3:30

This Empire Soils Investigations, Inc. Technician was present at the above referenced site to take moisture contents on material stockpiled on site. Readings were taken at the following locations:

LOCATION	ELEVATION	MOISTURE CONTENT
East Stockpile	1.5' below top	31.0%
East Stockpile	1.5' below top	27.4%
East Stockpile	Top of Pile	19.8%
West Stockpile	6"-8" below top	17.9%
West Stockpile	6"-8" below top	18.6%

All moisture contents were given to the Engineering Science Representative.

R/T Form D7

by Larry Blas

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation (Pine & Tuscarora) Location: Niagara Falls

Client: Engineering Science Contractor: Sevenson

Report No.: DS-3 Project No.: BT-90-128 Date: 5/19/90

Weather & Temperature: Rain; 50

Arrived at Site: 7:00 Left Site: 7:30

This Empire Soils Investigations, Inc. Technician was present at the above referenced site to perform In-Place Density tests. The project was cancelled for today due to inclement weather. Work will resume tomorrow, weather pending.

R/T Form D7

by Don Wartinger

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-6

Client Engineering Science Date: 5/23/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/23	1st Lift	95.2	28.7	94.4	*	Old Creek Channel, Station 0 + 70
2	"	"	88.8	25.5	88.8	*	Old Creek Channel, Station 1 + 30
3	"	"	101.7	23.6	100	*	5' south of MH B
4	"	2nd Lift	104.1	21.3	100+	PS PT-1	Old Creek Channel, station 2 + 25
5	"	"	100.2	23.6	100+	PS PT-1	Old Creek Channel, station 0 + 65

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	100.9	22.4	Clay - On-site (adj. to WCC-6)
	PROCTOR RUN BY WOODWARD CLYDE		
PS PT-1	100.0	22.4	Clay; some Silt, little Sand, trace Gravel - On-site W.Stockpile

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: nuclear method used

proctors given to ESI by Engineering Science

Technician Time: 7:00 am - 5:30 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-7

Client Engineering Science Date: 5/24/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/24	3rd Lift	101.0	21.6	100+	PS PT-1	Old Creek Channel Station 2 + 75
2	"	1st Lift	102.1	19.5	95.4	"	Old Creek Channel Station 3 + 90
3	"	3rd Lift	101.2	23.0	94.5	"	Old Creek Channel Station 0 + 55
4	"	1st Lift	104.9	18.9	98.0	"	Old Creek Channel Station 5 + 20
5	"	2nd Lift	103.5	19.7	96.7	"	Old Creek Channel Station 3 + 20
6	"	"	104.5	18.8	97.6	"	Old Creek Channel Station 4 + 30
7	"	"	100.1	21.5	93.5	"	Old Creek Channel Station 5 + 90
8	"	3rd Lift	104.1	21.0	97.3	"	Old Creek Channel Station 1 + 90
9	"	"	101.7	21.9	95.0	"	Old Creek Channel Station 3 + 65
10	"	"	98.9	24.6	98.9	"	Old Creek Channel Station 4 + 70
11	"	"	100.2	22.9	100+	"	Old Creek Channel Station 5 + 80

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
PS PT-1	100.0	22.4	Clay, some Silt, little Sand, trace Gravel - On-site (West) Stockpile

Respectfully submitted,

Remarks: Nuclear method used

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 7:00 am - 5:30 pm

Technician: Larry Blas/Don Wartinger

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-8 pg. 1 of 2

Client Engineering Science Date: 5/25/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/25	3rd Lift	98.8	20.6	98.8	PS PT-1	Old Creek Channel (Construction Dam) Station 0 + 50
2	"	4th Lift	107.9	16.6	100	L-3	Bench, North Half Creek Channel Station 1 + 50
3	"	"	113.8	17.4	100	L-3	Old Creek Channel Station 5 + 50
4	"	"	104.4	18.9	99.2	L-3	Old Creek Channel Station 4 + 60
5	"	"	96.6	18.9	91.8	L-3	Bench, North Half Creek Channel Station 2 + 50
6	"	"	103.9	18.0	98.7	L-3	Bench, North Half Creek Channel Station 3 + 60
7	"	3rd Lift	95.8	18.5	91.1	L-3	Old Creek Channel Station 5 + 85
8	"	5th Lift	109.3	19.7	100	L-3	Bench, North Half Creek Channel Station 1 + 30
9	"	"	102.6	20.3	97.5	L-3	Bench, North Half Creek Channel Station 2 + 25
10	"	"	102.2	18.2	97.1	L-3	Bench, North Half Creek Channel Station 3 + 00
11	"	"	106.3	18.7	100	L-3	Bench, North Half Creek Channel Station 4 + 10
12	"	6th Lift	104.1	17.5	98.9	L-3	Bench, North Half Creek Channel Station 5 + 00
13	"	"	103.1	17.5	97.9	L-3	Bench, North Half Creek Channel Station 4 + 00

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
PS PT-1	100.0	22.4	Clay, some Silt, little Sand, trace Gravel - On-site Stockpile (West)
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

Remarks: nuclear method used

EMPIRE SOILS INVESTIGATIONS, INC.

Proctors used determined by Engineering Science

Technician Time: 7:00 am - 4:30 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-8 pg. 2 of 2

Client Engineering Science Date: 5/25/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
14	5/25	6th Lift	100.8	17.9	92.8	L-3	Bench, North Half Creek Channel Station 3 + 25
15	"	4th Lift	100.9	17.8	95.9	L-3	Cap, North 7164 East 8265 **
16	"	"	104.4	18.1	99.2	L-3	Cap, North 7135 East 8268 **
17	"	"	106.9	17.2	100	L-3	RETEST OF TEST LOCATION #5 TESTED ON 5/3/90
18	"	"	94.7	17.8	90.0	L-3	RETEST OF TEST LOCATION #4 TESTED ON 5/3/90
19	"	6th Lift	105.3	18.2	100	L-3	Bench, North Half Creek Channel Station 2 + 00
20	"	7th Lift	102.3	18.5	97.2	L-3	Bench, East Half Creek Channel Station 5 + 00
21	"	4th Lift	99.9	17.3	94.9	L-3	Cap, North 7140 East 8410 **
22	"	"	98.0	17.6	93.2	L-3	Cap, North 7164 East 8415 **
23	"	7th Lift	105.1	20.1	99.9	L-3	Bench, East Side Creek Channel Station 4 + 00
24	"	"	105.3	18.9	100	L-3	Bench, North Half Creek Channel Station 3 + 00
25	"	"	102.3	18.8	97.2	L-3	Bench, North Half Creek Channel Station 2 + 25
							H-6" of unsuitable material removed
							**NOTE: from cap prior to placement of this lift

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Nuclear method used
Proctors determined by Engineering Science Representative

Technician Time: 7:00 am - 4:30 pm

Technician: Larry Blas

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-9

Client Engineering-Science Date: 5/30/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	5/30	4th Lift	107.9	16.2	100	L-3	Old Creek Channel Sta. 1 + 00
2	"	"	105.8	19.3	100	L-3	Old Creek Channel Sta. 5 + 95
3	"	5th Lift	104.7	22.4	99.5	L-3	Old Creek Channel Sta. 0 + 95
4	"	"	107.1	17.5	100	L-3	Old Creek Channel Sta. 5 + 30 East Bench
5	"	"	110.5	17.7	100	L-3	Old Creek Channel Sta. 6 + 00
6	"	6th Lift	107.4	18.9	100	L-3	Old Creek Channel Sta. 0 + 97
7	"	"	108.2	16.9	100	L-3	Old Creek Channel Sta. 5 + 50
8	"	7th Lift	111.1	16.4	100	L-3	Old Creek Channel Sta. 1 + 05

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

Remarks: Nuclear method used

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 7:00 a m - 4:00 p m

Technician: Don Wartinger

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-10 pg. 1 of 2

Client Engineering-Science Date: 5/31/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks OLD CREEK CHANNEL
1	5/31	7th Lift	112.0	16.1	100	L-3	Sta. 6 + 05
2	"	8th Lift	108.3	16.6	100	L-3	Sta. 0 + 90
3	"	9th Lift	112.2	15.4	100	L-3	Sta. 0 + 96
4	"	1st Lift	113.7	16.2	100	L-3	Sta. 5 + 90, east bench, creek dam
5	"	8th Lift	103.5	17.6	98.4	L-3	Sta. 2 + 20, north bench
6	"	2nd Lift	109.4	15.9	100	L-3	Sta. 6 + 00, east bench, creek dam
7	"	3rd Lift	110.0	16.5	100	L-3	Sta. 6 + 05, east bench, creek dam
8	"	7th Lift	107.5	16.2	100	L-3	Sta. 5 + 00, east bench
9	"	8th Lift	109.5	16.8	100	L-3	Sta. 3 + 10, north bench
10	"	4th Lift	112.2	12.9	100	L-3	Sta. 6 + 00, east bench, creek dam
11	"	9th Lift	106.9	15.3	100	L-3	Sta. 3 + 00, north bench
12	"	"	111.4	15.3	100	L-3	Sta. 2 + 00, north bench
13	"	5th Lift	108.9	15.6	100	L-3	Sta. 5 + 90, east bench, creek dam

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

emarks: Nuclear Method Used

EMPIRE SOILS INVESTIGATIONS, INC.

hnician Time: 7:00 am - 5:30 pm

nician: Don Wartinger

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-10 pg. 2 of 2

Client Engineering-Science Date: 5/31/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
							OLD CREEK CHANNEL
14	5/31	6th Lift	106.8	15.8	100	L-3	Sta. 5 + 80, east bench, creek dam
15	"	7th Lift	101.8	19.3	96.7	L-3	Sta. 6 + 00, east bench
16	"	1st Lift	112.1	14.9	100	L-3	Sta. 1 + 70, between N. bench & fill area
17	"	10th Lift	107.2	17.7	100	L-3	Sta. 1 + 00
18	"	8th Lift	105.6	15.8	100	L-3	Sta. 5 + 85, east bench
19	"	2nd Lift	109.0	18.8	100	L-3	Sta. 1 + 60, between N. bench & fill area
20	"	9th Lift	108.6	16.0	100	L-3	Sta. 6 + 25
21	"	8th Lift	108.2	15.8	100	L-3	Sta. 5 + 10, east bench
22	"	9th Lift	106.1	14.7	100	L-3	Sta. 5 + 50, east bench
23	"	3rd Lift	110.8	16.6	100	L-3	Sta. 1 + 05, between N. bench & fill area

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

emarks: Nuclear method used

Technician Time: 7:00 am - 5:30 pm

Technician: Don Wartinger

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

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☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-11

Client Engineering Science Date: 6/11/90

Contractor: Sevenson Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	6/11	2' CUT	97.1	17.7	90.7	L-3	STA 6+00: 15' NE of MH B
2	"	"	92.2	23.7	86.1	"	STA 5+00: between MH A and B
3	"	"	93.1	21.7	87.0	"	STA 4+25: 25' S of MH A
4	"	"	99.2	19.8	92.7	"	9' W of MH A
5	"	"	90.7	18.0	84.7	"	STA 2+50: 45' W of MH A
6	"	"	97.0	27.4	90.7	"	STA 1+60: 100' W of MH A
7	"	"	105.7	14.5	98.8	"	STA 1+25: SW Corner*
							*check on moisture

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	107.0	16.8	Clay, some Silt, with little Sand
	PROCTOR VALUE GIVEN TO ESI BY LOU LIBERATORE OF ENGINEERING SCIENCE		

Respectfully submitted,

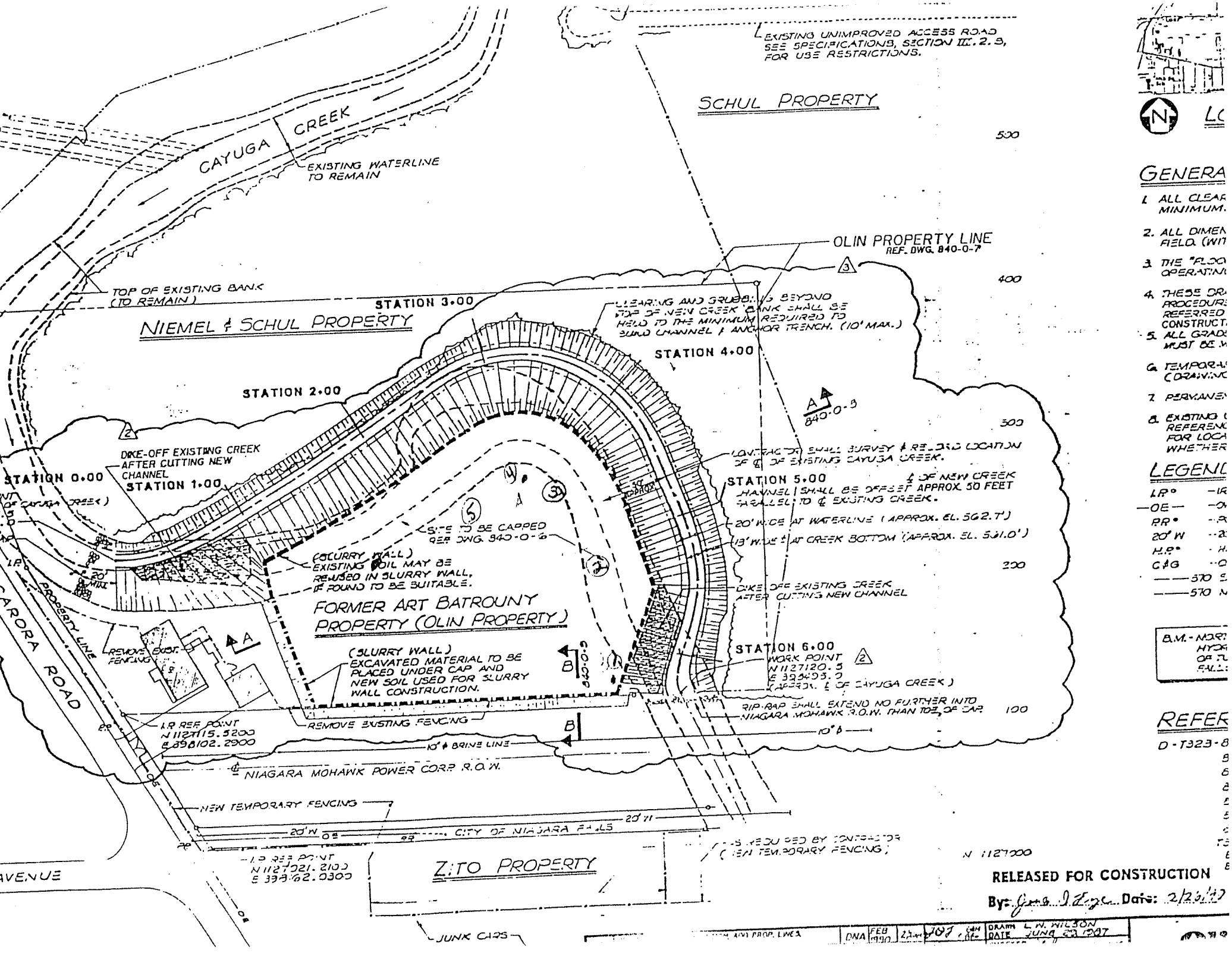
EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Used Nuclear Method
All results verbally transmitted to
Lou Liberatore of Engineering Science

Technician Time: 9:30 am - 3:30 pm

Technician: Andrew C. Ellis

Charles C. Keipper



EXISTING UNIMPROVED ACCESS ROAD SEE SPECIFICATIONS, SECTION III. 2. B, FOR USE RESTRICTIONS.
SCHUL PROPERTY
CAYUGA CREEK
EXISTING WATERLINE TO REMAIN
OLIN PROPERTY LINE
REF. DWG. 840-0-7
TOP OF EXISTING BANK (TO REMAIN)
STATION 3+00
NIEMEL & SCHUL PROPERTY
CLEARING AND GRUBBING BEYOND TOP OF NEW CREEK BANK SHALL BE HELD TO THE MINIMUM REQUIRED TO BUILD CHANNEL & ANCHOR TRENCH. (10' MAX.)
STATION 4+00
STATION 2+00
DIKE-OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
STATION 0+00
STATION 1+00
CONTRACTOR SHALL SURVEY & RECORD LOCATION OF ℄ OF EXISTING CAYUGA CREEK.
STATION 5+00
℄ OF NEW CREEK CHANNEL SHALL BE OFFSET APPROX. 50 FEET PARALLEL TO ℄ EXISTING CREEK.
20' WIDE AT WATERLINE (APPROX. EL. 562.7')
13' WIDE ± AT CREEK BOTTOM (APPROX. EL. 561.0')
SITE TO BE CAPPED REF. DWG. 840-0-6
(SLURRY WALL) EXISTING SOIL MAY BE REUSED IN SLURRY WALL, IF FOUND TO BE SUITABLE.
FORMER ART BATROUNY PROPERTY (OLIN PROPERTY)
DIKE OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
STATION 6+00
WORK POINT N 1127120.5 E 398495.0 (APPROX. ℄ OF CAYUGA CREEK)
REMOVE EXIST. FENCING
(SLURRY WALL) EXCAVATED MATERIAL TO BE PLACED UNDER CAP AND NEW SOIL USED FOR SLURRY WALL CONSTRUCTION.
RIP-RAP SHALL EXTEND NO FURTHER INTO NIAGARA MOHAWK R.O.W. THAN TOE OF CAP
CARORA ROAD
PROPERTY LINE
I.P. REF. POINT N 1127115.5200 E 398102.2900
REMOVE EXISTING FENCING
10" ϕ BRINE LINE
NIAGARA MOHAWK POWER CORP. R.O.W.
NEW TEMPORARY FENCING
20' W
CITY OF NIAGARA FALLS
I.P. REF. POINT N 1127021.2100 E 398162.0300
ZITO PROPERTY
AVENUE
JUNK CARS
N 1127000
500
400
300
200
100
GENERA
1. ALL CLEAR MINIMUM.
2. ALL DIMEN FIELD. (WIT
3. THE "FLOO OPERATIN
4. THESE DR PROCEDURE REFERRED CONSTRUCT
5. ALL GRADE MUST BE M
6. TEMPORA (DRAWING
7. PERMANEN
8. EXISTING REFERENC FOR LOCA WHETHER
LEGEND
I.P.
OE
P.R.
20' W
H.P.
C&G
570
570
B.M. - NORT HYDR OF TU FALL
REFER
D-T323-8
RELEASED FOR CONSTRUCTION
By: Date: 2/26/97
DRAWN L. W. WILSON
DATE JUNE 23 1987
DNA
FEB 1990

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- ☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- ☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
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- ☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation (Pine & Tuscarora) Location: Niagara Falls, NY

Client: Engineering Science Contractor: SES

Report No.: DS-4 Project No.: BT-90-128 Date: 6/12/90

Weather & Temperature: Sunny; 75

Arrived at Site: 12:45 Left Site: 2:15 pm

This Empire Soils Investigations, Inc. Engineering Technician was present at the above referenced site to perform In-Place Density Tests.

Two tests were taken when it was decided by Engineering Science that the clay was out of specifications for moisture. The clay will be re-worked and moisture added. Testing will resume tomorrow.

R/T Form D7

by Don Wartinger

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

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REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-12

Client Engineering Science Date: 6/12/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	6/12	FINAL LIFT	112.7	12.1	100	L-3	7135 N, 8247 E CAP
2	"	"	114.5	13.3	100	L-3	NO LOCATION

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Clay - Indian Hill

Respectfully submitted,

Remarks: Nuclear Method Used

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 12:45 - 2:15 pm

Technician: Don Wartinger

Charles C. Keipper

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
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Project: P&T Remediation (Pine & Tuscarora) Location: Niagara Falls, NY

Client: Engineering Science Contractor: S.E.S.

Report No.: DS-5 Project No.: BT-90-128 Date: 6/13/90

Weather & Temperature: Sunny; Windy

Arrived at Site: 8:00am Left Site: 3:00pm

This Empire Soils Investigations, Inc. Senior Technician was present at the above mentioned site to perform In-Place Density Tests.

Upon arrival to the site this technician met with Lou Liberatore of Engineering Science. Mr. Liberatore pointed out several locations to find out the percent of moisture in the clay cap. The clay cap was found to be too dry. The crew from Sevenson worked throughout the day to wet the clay and work it to compaction and moisture specification. No In-Place Density Tests were taken.

R/T Form D7

by Mark Full

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation - (Pine & Tuscarora) Location: Niagara Falls, NY

Client: Engineering-Science Contractor: S.E.S.

Report No.: DS-6 Project No.: BT-90-128 Date: 6/15/90

Weather & Temperature: Sunny & Humid; high 80s

Arrived at Site: 8:00 am Left Site: 2:45 pm

This Empire Soils Investigations, Inc. Technician was at the above mentioned site to perform In-Place Density Tests.

Upon arrival to the site, this technician met with Lou Liberatore of Engineering Science.

Sevenson Environmental Services had placed the Indian Hill Clay prior to this technician's arrival. The contractor compacted the material using a smooth drum roller with vibratory and a Jumping Jack. Areas with low moisture contents were scarified. Water was added and areas were re-compacted. Elevations, locations, depth and number of tests as per Lou Liberatore of Engineering Science. All areas tested were compacted to the required 95% and contained the specified moisture content.

For any additional information, please refer to the attached Density Report.

R/T Form D7

by Eric Wilson

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-13 pg. 1 of 2

Client Engineering Science Date: 6/15/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	6/15	LAST LIFT	107.4	17.2	100+	L-3	71.25 north & 82.25 east
2	"	"	110.1	17.7	100+	"	71.75 north & 82.25 east
3	"	"	102.5	18.8	97.4	"	72.25 north & 82.25 east
4	"	"	103.8	16.6	98.6	"	72.25 north & 82.50 east
5	"	"	107.3	16.9	100+	"	RETEST OF TEST #4
6	"	"	111.7	15.9	100+	"	82.75 east & 71.75 north
7	"	"	111.8	11.0	100+	"	72.25 north & 82.75 east
8	"	"	104.7	19.8	99.5	"	RETEST OF TEST #4
9	"	"	104.6	19.8	99.5	"	83.25 east & 72.50 north
10	"	"	108.7	19.3	100+	"	72.75 east & 93.25 north
11	"	"	100.6	20.8	95.6	"	83.75 east & 73.15 north
12	"	"	105.9	20.7	100+	"	84.25 east & 71.75 north
13	"	"	103.0	20.1	97.8	"	84.75 east & 71.40 north

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Indian Hill - Clay

Respectfully submitted,

Remarks: Nuclear method used, #13429

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 8:00 am - 2:45 pm

Technician: Eric Wilson

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

REVISED 12/19/90

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-13 pg. 2 of 2

Client Engineering Science Date: 6/15/90

Contractor: Sevenson Environmental Services Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
14	6/15	LAST LIFT	106.2	17.2	100+	L-3	72.25 north & 84.25 east
15	"	"	100.9	19.6	95.8	"	72.75 north & 84.25 east
16	"	"	109.3	18.5	100+	"	RETEST OF TEST #7
17	"	"	105.0	20.1	99.7	"	RETEST OF TEST #6
18	"	"	101.8	19.9	100+	"	71.75 north & 83.75 east
19	"	"	110.5	19.7	100+	"	71.80 north & 83.75 east
20	"	"	113.2	17.3	100+	"	72.50 north & 83.75 east
21	"	"	108.8	20.9	100+	"	72.75 north & 83.75 east
22	"	"	111.9	15.0	100+	"	71.75 north & 83.50 east
23	"	"	108.1	17.8	100+	"	RETEST OF TEST #22
24	"	"	107.1	19.3	100+	"	71.75 north & 83.50 east

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	Indian Hill - Clay

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: Nuclear method used, #13429

Technician Time: 8:00 am - 2:45 pm

Technician: Eric Wilson

Charles C. Keipper

DAILY SITE OBSERVATION REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation (Pine & Tuscarora) Location: Niagara Falls, NY

Client: Engineering-Science, Inc. Contractor: SES

Report No.: DS-7 Project No.: BT-90-128 Date: 6/26/90

Weather & Temperature: Clear & Windy, high 70's

Arrived at Site: 2:00pm Left Site: 6:30

This Empire Soils Investigations, Inc. Technician was at the above mentioned site for in-place density tests.

Upon arrival to the site this technician met with Lou Libratore of Engineering Science.

Sevenson was placing the first 12" lift of structural fill on top of clay cap liner. They placed the fill using a Komatsu D31 Dozer and compacted the material to the 90% required using a Ingersoll-Rand SD-100D Smooth Drum Roller with vibratory.

Locations, elevations, number and depth of tests as per Lou Libratore of Engineering Science.

For any additional information, please see the attached Density Report.

R/T Form D7

by Eric Wilson

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
☐ S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
☐ 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P & T Remediation (Pine & Tuscarora) Report No. DT-14

Client Engineering Science, Inc. Date: 6/26/90

Contractor: Sevenson Environmental Services, Inc. Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	6/26	1st Lift of	103.7	20.2	96.9	*	71.25 North & 82.43 East
2	"	Clay Cap	99.3	24.0	92.8	"	71.91 North & 82.79 East
3	"	Liner on	99.1	23.5	92.6	"	71.74 North & 82.41 East
4	"	HDPE "	101.1	20.5	94.4	"	71.38 North & 82.79 East
5	"	"	100.2	20.5	93.6	"	72.16 North & 83.30 East
6	"	"	103.7	17.1	96.9	"	71.70 North & 83.19 East
7	"	"	108.7	18.3	100+	"	71.40 North & 83.30 East
8	"	"	92.6	28.3	86.5	"	72.04 North & 83.53 East
9	"	"	100.5	21.6	93.9	"	71.27 North & 83.20 East
10	"	"	103.8	18.5	97.0	"	71.33 North & 83.68 East
11	"	"	103.6	22.4	96.8	"	71.75 North & 83.68 East
12	"	"	98.2	24.3	91.8	"	Retest of #8

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	107.0	16.8	On-Site Material; Clay; some Silt, little Sand; trace Gravel

Remarks: Nuclear Method Used #10734

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 2:00pm to 6:30pm

Technician: Eric Wilson

Charles C. Keipper, MTS

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 585 TROY-SCHENECTADY RD., LATHAM, NY 12110 518-783-1555
- S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 303 CLEVELAND AVENUE, HIGHLAND PARK, NJ 08904 201-846-5200
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960

Project: P&T Remediation (Pine & Tuscarora) Report No. DT-15

Client Engineering Science Date: 7/02/90

Contractor: Sevenson Environmental Services Job No. BT-90-123

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	7/02	*	110.4	17.3	100+	L-*	Coordinates N7130, E8375
2	"	"	107.6	18.5	100+	L-*	Coordinates N7180, E8375
3	"	"	105.6	18.7	98.7	L-*	Coordinates N7230, E8425
4	"	"	104.0	20.0	97.1	L-*	Coordinates N7230, E8425
5	"	"	105.7	19.0	98.7	L-*	Coordinates N7180, E8425
6	"	"	108.0	19.0	100+	L-*	Coordinates N7135, E8420

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-*	107.0	16.8	Clay with some Sand and Silt
	PROCTOR VALUE GIVEN TO ESI BY LOU LIBERATORE OF ENGINEERING SCIENCE		

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

emarks: Nuclear method used, #13429

*First lift of Clay on lines

Technician Time: 12:30 - 1:45 pm

Technician: Andrew C. Ellis

Charles C. Keipper

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 5 KNABNER ROAD, P.O. BOX 2199, BALLSTON SPA, NY 12020 518-899-7491
☐ S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-898-5581
☐ 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960
☐ MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

REVISED 12/19/90

Project: P & T REMEDIATION (PINE & TUSCARORA) Report No. DT-16

Client ENGINEERING SCIENCE, INC. Date: 9/6/90

Contractor: SEVENSON ENVIRONMENTAL Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	9/6	569.0	108.0	17.0	100+	L-3	STATION 1+50
2	"	569.0	99.6	17.0	94.7	"	STATION 1+10
3	"	570.0	103.6	16.0	98.5	"	STATION 1+90
4	"	567.0	98.2	18.0	93.3	"	STATION 2+65
5	"	568.0	104.2	17.1	99.0	"	STATION 1+00
6	"	568.0	106.4	17.4	100+	"	STATION 1+50
7	"	568.0	109.3	17.8	100+	"	STATION 2+00

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	CLAY, SOME SILT, LITTLE SAND; TRACE GRAVEL -INDIAN HILL

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: NUCLEAR METHOD USED

90% REQUIRED

Technician Time: 1:30-4:30

Technician: JAMES HANDZLIK

CHARLES C. KEIPPER, MTS

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

☐ 5 KNABNER ROAD, P.O. BOX 2199, BALLSTON SPA, NY 12020 518-899-7491
☐ S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
☐ 105 CORONA AVENUE, GROTON, NY 13073 607-895-5881
☐ 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1960
☐ MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6557

REVISED 12/19/90

Project: P & T REMEDIATION (PINE & TUSCARORA) Report No. DT-17

Client ENGINEERING SCIENCE, INC. Date: 9/7/90

Contractor: SES Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	9/7	568.00	101.7	22.5	96.7	L-3	NORTH EMBANKMENT; STA 0+95
2	"	569.00	106.1	20.2	100	"	" " ; STA 1+51
3	"	569.00	104.3	20.4	99.1	"	" " ; STA 2+00
4	"	570.00	106.9	18.5	100	"	" " ; STA 2+51
5	"	569.00	104.7	19.2	99.5	"	" " ; STA 3+00
6	"	570.00	105.1	19.6	99.9	"	" " ; STA 3+50

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
L-3	105.2	19.2	CLAY - INDIAN HILL

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

emarks: NUCLEAR METHOD USED

Technician Time: 1:30-4:00

Technician: LARRY BLAS

CHARLES C. KEIPPER, MTS

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 5 KNABNER ROAD, P.O. BOX 2199, BALLSTON SPA, NY 12020 518-899-7491
- S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1950
- MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

Project: P & T REMEDIATION (PINE & TUSCARORA) Report No. DT-18

Client ENGINEERING SCIENCE, INC. Date: 9/27/90

Contractor: SEVENSON ENVIRONMENTAL SERVICES Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	9/27	LAST LIFT	98.1	22.2	91.6	*	71+50 N & 84+50 E
2	"	"	113.9	14.9	100+	*	72+00 N & 84+ 00 E
3	"	"	107.2	17.8	100+	*	72+50 N & 84+00 E
4	"	"	105.3	19.1	98.4	*	73+00 N & 84+50 E
5	"	"	106.2	16.6	99.2	*	72+50 N & 83+50 E
6	"	"	11.4	15.3	100+	*	72+00 N & 83+50 E
7	"	"	118.0	14.8	100+	*	71+50 N & 83+50 E
8	"	"	110.2	16.1	100+	*	71+30 N & 83+85 E
9	"	"	99.5	15.5	92.9	*	71+30 N & 84+30 E
10	"	"	111.1	14.5	100+	*	71+30 N & 83+35 E
11	"	"	95.8	24.0	89.5	*	71+30 N & 82+85 E
12	"	"	101.8	15.1	95.1	*	71+30 N & 82+35 E
13	"	"	108.8	15.7	101.6	*	71+80 N & 82+35 E

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	107.0	16.8	CLAY; SOME SILT; LITTLE SAND(EAST STOCKPILE, ON-SITE)

Respectfully submitted,

Remarks: 90% REQUIRED

EMPIRE SOILS INVESTIGATIONS, INC.

NUCLEAR METHOD USED #10653

Technician Time: 9:30AM TO 2:30PM

Technician: ERIC WILSON

CHARLES C. KEIPPER, MTS

FIELD IN-PLACE DENSITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS INC.

- 5 KNABNER ROAD, P.O. BOX 2199, BALLSTON SPA, NY 12020 518-899-7491
- S-5167 SOUTH PARK AVENUE, HAMBURG, NY 14075 716-649-8110
- 105 CORONA AVENUE, GROTON, NY 13073 607-898-5881
- 35 NATIONAL ROAD, EDISON, NJ 08817 201-287-2224
- 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14467 716-359-1950
- MORGANTOWN IND. PARK, P.O. BOX 189, MORGANTOWN, PA 19543 215-286-6657

Project: P & T REMEDIATION (PINE & TUSCARORA) Report No. DT-18 PG.2

Client ENGINEERING SCIENCE, INC. Date: 9/27/90

Contractor: SEVENSON ENVIRONMENTAL Job No. BT-90-128

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
14	9/27	LAST LIFT	109.7	16.4	100+	*	71 + 80 N & 82 + 85 E
15	"	"	105.9	17.2	98.9	*	71 + 80 N & 83 + 35 E
16	"	"	116.6	13.9	100+	*	71 + 80 N & 83 + 50 E
17	"	"	102.9	19.9	96.2	*	71 + 80 N & 82 + 75 E
18	"	"	101.7	19.6	95.1	*	71 + 75 N & 82 + 75 E
19	"	"	104.0	16.1	97.2	*	72 + 00 N & 82 + 50 E
0	"	"	96.3	14.3	90.0	*	72 + 25 N & 82 + 75 E
21	"	"	104.5	15.3	97.7	*	72 + 35 N & 83 + 25 E
22	"	"	114.4	18.1	94.6	*	RETEST OF #11

Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source
*	107.0	16.8	CLAY; SOME SILT; LITTLE SAND (EAST STOCKPILE ON -SITE)

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Remarks: 90% REQUIRED

NUCLEAR METHOD USED #10653

Technician Time: 9:30 AM TO 10653

Technician: ERIC WILSON

CHARLES C. KEIPPER, MTS

APPENDIX L

APPENDIX L

Daily Inspection Reports

P&T Remediation Gibson Site

All Weather Rain Gauge

WARNING: FREEZING RAIN OR SUB-ZERO WEATHE
CAN CAUSE THIS GAUGE TO CRACK.

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks — Severe Weather — Storm Damage
1	Z	Z	Z				
2	Z	Z	Z				
3	Z	Z	Z				
4	Z	Z	.36				
5		.25	.03				
6	.41	.55	.16				
7		Z	Z				
8		Z	Z				
9	Z	Z	.04				
10	Z	Z	.19				
11	Z	Z	Z				
12	Z	1.5	Z				
13	Z	.53	Z				
14	.76	Z	.70				
15		Z	T				
16	Z	.27	Z				
17	Z	Z	Z				
18	Z	Z	.05				
19	Z	Z	.14				
20	X	Z	Z				
21	1.69	Z	.12				
22		.55	Z				
23	.04	Z	.03				
24	Z	Z					
25	Z	Z					
26	Z	T					
27	Z	.63					
28	Z	T					
29	Z	Z					
30	0.1	Z					
31	Z	Z					
Total	2.91"	4.28"					

Additional Daily Precipitation Logs covering an entire year (.50 each) and additional All-Weather Rain Gauges are available directly from:

Lake Region Rehab. Industries, Inc.
Box 404, Dept. B
Fergus Falls, Minnesota 56537

All Weather Rain Gauge

WARNING: FREEZING RAIN OR SUB-ZERO WEATHER CAN CAUSE THIS GAUGE TO CRACK.

SEVENSON ENVIRONMENTAL

NA P&T REMEDIATION

G.B.S. TIME | SECTION | RANGE | YEAR

ADDRESS | COUNTY | TOWNSHIP

	Jan.	Feb.	Mar.	Apr.	May	June
1						Z
2						.61"
3						OF RAIN
4						T
5						.02"
6						Z
7						Z
8						.33"
9						Z
10						Z
11						Z
12						Z
13						Z
14						Z
15						Z
16						Z
17						.38"
18					.51"	.15
19					OF	Z
20					RAIN	.05"
21					.02"	Z
22					Z	.27"
23					Z	19"
24					Z	.05
25					Z	Z
26					Z	.11"
27					Z	Z
28					.31"	.11"
29					.20"	Z
30					Z	.04
31					Z	Z
total					1.04"	2.34"

Remarks – Severe Weather – Storm Damage

5/21 RAIN CEASED AFTER 7 STRAIGHT DAYS OF DOWNFALL

TOTAL FROM MAY 18TH - MAY 31ST 1.04"

TOTAL FOR JUNE - 2.34"

Instructions:

1. Try to record precipitation each day at the same time.
2. Record precipitation to the nearest 1/100 of an inch. (.01, .31, 1.31 etc.)
3. If precipitation is less than .01", record "T" for trace.
4. Use the remarks column to list any unusual or severe weather, (expl. Jan. 2 Blizzard, roads blocked for 2 days)

EQUIPMENT LOG.

5-1-90	LOADER, COMPRESSOR, WATER TRUCK, FARM DISC. BACKHOE, SHEEPSFOOT, 3 BULLDOZERS, SMOOTH DRUM ROLLER, 4 DUMP TRUCKS, PUMP
5-2-90	LOADER, COMPRESSOR, WATER TRUCK, FARM DISC. BACKHOE, SHEEPSFOOT, 3 BULLDOZERS, SMOOTH DRUM ROLLER, 4 DUMP TRUCKS, PUMP.
5-3-90	LOADER, COMPRESSOR, WATER TRUCK, PUMP BACKHOE, 2 BULLDOZERS, SMOOTH DRUM ROLLER FARM DISC.
5-4-90	LOADER, SHEEPSFOOT ROLLER, 2 BACKHOES, 5 TRUCKS, SMOOTH DRUM ROLLER, WATER TRUCK, FARM DISC, FARM TRACTOR AND BROOM.
5-5-90	LOADER, 3 BACKHOES, SMOOTH DRUM ROLLER, SHEEPSFOOT ROLLER, 2 BULLDOZERS, WATER TRUCK, 8 DUMP TRUCKS, PUMP, FARM TRACTOR AND BROOM.
5-6-90	LOADER, 1 BACKHOE, SHEEPSFOOT ROLLER SMOOTH DRUM ROLLER, 2 BULLDOZERS WATER TRUCK, 4 DUMP TRUCKS, FARM TRACTOR AND STREET BROOM.
5-8-90	LOADER, 3 BACKHOES, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 4 DUMP TRUCKS, 2 PUMPS, FARM DISC, FARM TRACTOR AND STREET BROOM.
5-9-90	LOADER, 2 BACKHOES, 2 BULLDOZERS, WATER TRUCK, FARM DISC, FARM TRACTOR AND STREET BROOM, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER,

EQUIPMENT LOG.

5-10-90	LOADER, 2 BACKHOES, 2 BULLDOZERS, WATER TRUCK, 2 PUMPS, FARM DISC. MULCHING MACHINE, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER
5-11-90	LOADER, 2 BACKHOES, 2 BULLDOZERS, WATER TRUCK, 3 PUMPS, FARM DISC, BALE CHOPPER, DUMP TRUCK, SLURRY MIXING MACHINE.
5-14-90	LOADER, 2 BACKHOES, 2 BULLDOZERS, WATER TRUCK, 4 PUMPS, FARM DISC., SLURRY MIXING MACHINE, DUMP TRUCK,
5-15-90	LOADER, 3 BACKHOES, SHEEPSFOOT ROLLER, WATER TRUCK, DUMP TRUCK, 4 PUMPS, FARM DISC, SLURRY MIXER BALE CHOPPER.
5-16-90	LOADER, 3 BACKHOES, 2 BULLDOZERS WATER TRUCK, 4 PUMPS, FARM DISC, SLURRY MIXER, BALE CHOPPER SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER.
5-17-90	LOADER, 3 BACKHOES, 2 BULLDOZERS, WATER TRUCK, 4 PUMPS, FARM DISC. SLURRY MIXER, BALE CHOPPER SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER.
5-21-90	LOADER, 3 BACKHOES, 1 SHEEPSFOOT SMOOTH DRUM ROLLER, 1 BULLDOZER. 4 PUMPS, FARM DISK, SLURRY MIXER, BALE CHOPPER. a WOOD CHIPPER

EQUIPMENT LOG.

5-22-90	LOADER, 3 BACKHOES, BULLDOZER, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, DUMP TRUCK, FARM DISC 4 PUMPS, HOE PAC, SLURRY MIXER, WATER TRUCK, BALE CHOPPER.
5-23-90	LOADER, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 3 BACKHOES, FARM DISC, 2 PUMPS, HOE PAC, 2 DUMP TRUCKS, SLURRY MIXER, BALE CHOPPER & WATER TRUCK.
5-24-90	SLURRY MIXER, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 3 BACKHOES HOE PAC, BALE CHOPPER & FARM DISC WATER TRUCK, 2 DUMP TRUCKS
5-25-90	SHEEPS FOOT ROLLER, SMOOTH DRUM ROLLER, WATER TRUCK, 3 BACKHOES, 2 BULLDOZERS, 20 DUMP TRUCKS, FARM DISC, HOE PAC, SLURRY MIXER BALE CHOPPER & WOOD CHIPPER.
5-30-90	SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, WATER TRUCK, 3 BACKHOES, 2 BULLDOZERS, FARM DISC, HOE PAC, SLURRY MIXER BALE CHOPPER & WOOD CHIPPER.

EQUIPMENT LOG.

5-31-90	WATER TRUCK, FARM DISC, BALE CHOPPER, 2 BACKHOES, 6 DUMP TRUCKS, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, SLURRY MIXER,
6/1/90	WATER TRUCK, 2 BACKHOES, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 5 DUMP TRUCKS, PUMP, FORK LIFT, 2 FARM DISCS, SLURRY MIXER, WOOD CHIPPER AND BALE CHOPPER.
6/2/90	WATER TRUCK, 2 BACKHOES, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 5 DUMP TRUCKS, PUMP, FORK LIFT, 2 FARM DISCS, SLURRY MIXER, WOOD CHIPPER AND BALE CHOPPER.
6/4/90	WATER TRUCK, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 2 BACKHOES, DUMP TRUCK, PUMP, FORK LIFT, GENERATOR, 2 FARM DISCS, SLURRY MIXER, BALE CHOPPER AND WOOD CHIPPER.
6/5/90	WATER TRUCK, FORKLIFT, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 2 BULLDOZERS, 3 BACKHOES, 1 DUMP TRUCK, 2 PUMPS, (6" & 3"), SLURRY MIXER, BALE CHOPPER AND WOOD CHIPPER.

EQUIPMENT LOG.

6-6-90	WATER TRUCK, FORK LIFT, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 2 BULLDOZERS, 3 BACKHOES, 6" PUMP, FORK LIFT, GENERATOR, 2 FARM DISCS, SLURRY MIXER, BALE CHOPPER
6-7-90	WATER TRUCK, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 2 BULLDOZERS, 3 BACKHOES, 6" PUMP, FORKLIFT. 3 DUMP TRUCKS, 2 FARM DISCS, SLURRY MIXER, WOOD CHIPPER & BALE CHOPPER.
6/8/90	WATER TRUCK, SMOOTH DRUM ROLLER SHEEPSFOOT, 5 DUMP TRUCKS, 2 FARM DISCS, SLURRY MIXER, BALE CHOPPER & WOOD CHIPPER.
6/11/90	SHEEPSFOOT ROLLER, WATER TRUCK, 5 DUMP TRUCKS 2 FARM DISCS, SLURRY MIXER, SMOOTH DRUM ROLLER, 2 BULLDOZERS, 3 BACKHOES, LOADER,
6/12/90	WATER TRUCK, SHEEPSFOOT, SMOOTH DRUM ROLLER, BULLDOZER, 2 BACKHOES, 2 FARM DISCS. DUMP TRUCK, WOOD CHIPPER & BALE CHOPPER.
6/13/90	WATER TRUCK, BALE CHOPPER & WOOD CHIPPER. SHEEPSFOOT ROLLER, BULLDOZER, 2 BACKHOES, LOADER, WATER TRUCK, 2 FARM DISCS.

Equipment Log.

6-14-90	SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 2 BACKHOES, LOADER, 2 FARM DISCS, BALE CHOPPER + WOOD CHIPPER, DUMP TRUCK, 2 BULLDOZERS.
6-15-90	2 BACKHOES, 2 BULLDOZERS, SMOOTH DRUM ROLLER, SHEEPSFOOT ROLLER, 2 FARM DISKS, BALE CHOPPER, CHIPPER,
6-18-90	2 BULLDOZERS, SHEEPSFOOT ROLLER, SMOOTH DRUM ROLLER, 3 BACKHOES, 2 FARM DISCS, BALE CHOPPER AND WOOD CHIPPER.
6/19/90	2 BULLDOZERS, 3 BACKHOES, SHEEPSFOOT ROLLER, 2 FARM DISKS, BALE CHOPPER SCREENING MACHINE FOR SOILS.
6/20/90	2 BULLDOZERS, 3 BACKHOES, LOADER, 2 FARM DISS, BALE CHOPPER, CHIPPER AND SCREENING MACHINE FOR SOILS,
6/21/90	SMOOTH DRUM ROLLER, SHEEPSFOOT, 2 BULLDOZERS, 3 BACKHOES, 2 FARM DISCS, BALE CHOPPER, SCREEN MACHINE FOR SOILS.
6/22/90	SHEEPSFOOT, SMOOTH DRUM ROLLER, 2 BACKHOES, LOADER, 2 FARM DISCS, CHIPPER, AND SCREEN MACHINE FOR SOILS.

Equipment Log

6/25/90	2 BACKHOES, LOADER, Smooth drum ROLLER, DISC, BALE CHOPPER dump TRUCK SHEEPSFOOT ROLLER. FARM DISC,
6/26/90	2 BACKHOES, LOADER, SHEEPSFOOT ROLLER, Smooth drum ROLLER, BALE CHOPPER, DUMP TRUCK FARM DISC
6/27/90	2 BACKHOES, BULLDOZER, SHEEPSFOOT ROLLER, Smooth drum ROLLER, BULLDOZER, dump TRUCK, BALE CHOPPER, SOILS DISC.
6/28/90	2 BACKHOES, BULLDOZER, SHEEPSFOOT ROLLER, Smooth drum ROLLER, soils discs 2 dump TRUCKS
6/29/90	2 BACKHOES, BULLDOZER, SOIL DISC, SHEEPSFOOT ROLLER, Smooth drum ROLLER, DUMP TRUCK
7/2/90	2 BACKHOES, BULLDOZER, LOADER, Smooth drum ROLLER, SOIL DISC.

AFTER THIS DATE, EQUIPMENT USED AT THE FIVE AND TUSCARORA REMEDIATION IS NOTED ON DAILY REPORTS.

DAILY INSPECTION REPORT

REPORT NO. 001
DATE SEPT 21, 1989
DAY S M T W TH ✓ F S

PROJECT Pine + Tuscarora Rd., Niagara Falls, N.Y.
JOB NO. SY 028 03
CLIENT Olin Chemical
CONTRACTOR IT Corporation.
PROJECT MANAGER Pat Bigelow / Jim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I ARRIVED AT THE PINE & TUSCARORA REMEDIATION PROJECT AT 12:30 P.M. AND MET MR. JIM FRY OF OLIN CHEMICAL. DURING MY SITE VISIT, I WITNESSED IT CORPORATION CLEARING AND EXCAVATING THE NORTH SIDE OF THE CREEK CHANNEL. I MET WITH IT'S SURVEYOR AND VERIFIED THE LIMITS NORTH OF THE CREEK CHANNEL THAT WERE TO HAVE TREES REMOVED. THE STAGING AREA FOR THE EXCAVATED TOPSOIL FROM THE NORTH SIDE OF THE CREEK CHANNEL WAS LOCATED ON THE SITE PROPERTY BEHIND THE USED CAR LOT AND EAST OF THE ACCESS ROAD. SILT FENCES AT THE EAST AND WEST ENDS OF THE CREEK CHANNEL WERE INSTALLED. CLEARING OF TREES IN THE CAP AREA WAS IN PROGRESS. PREPERATIONS FOR PUMPING WATER AROUND THE CAYUGA CREEK CHANNEL WERE BEING MADE. IT'S SURVEYOR IS PLANNING TO ESTABLISH WHERE THE 12" PVC LINE WILL BE LOCATED NEXT

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Joe Johnston TITLE O/C

DAILY INSPECTION REPORT

REPORT NO. 001
DATE SEPT 21, 1989
DAY | S | M | T | W | TH | F | S |

PROJECT PIKE & TUSCARORA REMEDIATION
JOB NO. SV07E.02
CLIENT OLIN CHEMICAL
CONTRACTOR IT CORPORATION
PROJECT MANAGER PAT BIGELOW / JIM FLYE

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: WEEK IT CORPORATION HAD THREE CONSTRUCTION TRAILERS ON SITE. I RETURNED TO CLEVELAND AT 4:30 P.M.

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BY Jan Abenton TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 002
DATE OCTOBER 6, 1989

DAY | S | M | T | W | TH | F ✓ | S |

PROJECT PINE & TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR IT CORPORATION
PROJECT MANAGER Jim FRY

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I VISITED THE OLIN PROJECT TODAY IN ORDER TO VERIFY THE RELOCATION POINTS OF THE NEW CREEK CHANNEL ESTABLISHED BY IT'S SURVEYOR. AFTER REVIEWING POINTS SURVEYED IN THE FIELD WITH BOB YANKAUNUS, IT WAS DETERMINED THAT THE LOCATIONS INDICATED FOR THE NEW CHANNEL WERE CORRECT.

IN ADDITION TO VERIFYING THE FIELD SURVEY, I OBTAINED SOIL SAMPLES FROM THREE LOCATIONS ON SITE.

LOCATION #1 N 7437, E 8337 EL 564.5 EXCAVATION 3' DEEP
LOCATION #2 N 7263, E 8177 EL. 564.5 EXCAVATION 3' DEEP

TOPSOIL	2'	SAMPLE #1 COMPOSITE OF TOPSOIL FROM BOTH LOCATIONS - WET TOPSOIL, DARK BROWN.
CLAY	1'	SAMPLE #2 COMPOSITE OF CLAY FROM BOTH LOCATIONS — WET CLAY, DARK BROWN.

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3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 002
DATE OCTOBER 6, 1989
DAY S M T W TH F ✓ S

PROJECT PINE AVE & TUSCARORA RD., NIAGARA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR ITT CORPORATION
PROJECT MANAGER VIN FLY.

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

LOCATION #3. N 7311, E 8491 ELEVATION 573.2
EXCAVATION 9' DEEP

SAMPLE #3A COMPOSITE OF TOP 9' OF BROWN CLAY.

SAMPLE #3B GRAB SAMPLE OF BOTTOM OF EXCAVATION.
DARK BROWN CLAY - DRY.

SOIL SAMPLES WERE PICKED UP BY BUFFALO TESTING LABORATORIES FOR ANALYSIS.

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3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 003
DATE 4-27-90

DAY | S | M | T | W | TH | F ✓ | S |

PROJECT OLIN CHEMICAL PINE + TUSCARORA SITE
JOB NO. 54078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRON. SERVICES
PROJECT MANAGER KIM LICKFIELD

Weather	BRIGHT SUN ✓	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85 ✓	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL SERVICES	7	2	E-S ARRIVE SITE 0700 LEAVE SITE 1730

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
3 BULLDOZERS, 3 DUMPTRUCKS, 1 BACKHOE, 1 WATER TRUCK

CONSTRUCTION ACTIVITIES:

CONSTRUCTION ACTIVITIES CONSISTED OF EXCAVATION OF CLAY FROM THE AREA IDENTIFIED AS THE NEW CAYUGA CREEK CHANNEL. MATERIAL EXCAVATED WITH KOMATSU BACKHOE; 3 TRUCKS RUNNING LOADS TO THE STAGING AREA IN THE MIDDLE OF THE SITE. WIDE-TRAC DOZER UTILIZED TO SPREAD, DRY, AND STOCKPILE MATERIAL. EXCAVATION BEGINS NEAR STATIONS 4+00 AND 5+00 ON EAST BANK OF CREEK.
SOME MINOR BRUSH AND SLASH REMOVAL CONDUCTED BY LABORERS WITHIN THE EXCLUSION ZONE ON TOP OF THE OLD DISPOSAL AREA.
CONDUCTED SITE VISIT OF INDIAN HILL CLAY BORROW AREA AND IDENTIFIED AREAS OF PLANNED EXCAVATION.
REVIEWED PLANS + SPECIFICATIONS FOR FUTURE WORK AND RECEIVED INFO REGARDING PLANNED DEFOLIANT AGENT APPLICATION TO BE CONDUCTED TOMORROW.

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3. Inspector
4. Client
5. File

BY Jacky W. Youngman TITLE GEOLOGIC TECHNICIAN

ENGINEERING-SCIENCE ES

DAILY CONSTRUCTION REPORT

REPORT NO. 003 DATE: 4/27, 1990

CONTRACTOR OR SUBCONTRACTOR	DESCRIPTION OF DAY'S WORK
SEVENSON ENVIRONMENTAL SERVICES	- TODAYS CONSTRUCTION PROGRESS CONSISTED OF THE BEGINNING OF EXCAVATION OF THE NEW CAYUGA CR. CHANNEL. - EXCAVATION BEGAN AT STATIONS 4+00 AND 5+00 ON EAST SIDE OF CREEK BANK. - EXCAVATED MATERIAL WAS SPREAD BY DOZER AND STOCKPILED IN THE CENTRAL STAGING AREA. - E-S CONDUCTED SITE INSPECTION OF BORROW AREA (INDIAN HILL) AND ESTABLISHED THE LOCATION OF EXCAVATION TO CORRESPOND WITH THE LOCATION OF AN EMPIRE SOILS ~~A~~SOIL ANALYSIS/CHARACTERIZATION. - SOME REMOVAL OF CUT BRUSH FROM THE DISPOSAL AREA WAS CONDUCTED WITHIN THE EXCLUSION ZONE - SEVENSON HEALTH + SAFETY INSPECTION CONDUCTED THROUGHOUT THE WORKDAY. - HAUL ROAD REPAIR/MAINTENANCE CONDUCTED AT END OF WORKDAY - WATER TRUCK APPLIED WATER TO HAUL ROAD SEVERAL TIMES DURING THE DAY.

AUTHORIZED SIGNATURE Paul J. Youngman

DAILY INSPECTION REPORT

REPORT NO. 004
DATE 4/28/90
DAY S M T W TH F S✓

PROJECT OLIN CHEMICAL ; PINE + TUSCALOOSA SITE
JOB NO. 54078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRON. SERVICES
PROJECT MANAGER KIM LICKFIELD

Weather
Temp.
Wind
Humidity

BRIGHT SUN ✓	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85 ✓	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL SERVICES		E-5	ARRIVE SITE 0730 LEAVE SITE 1630

VISITORS

TIME	NAME	REPRESENTING	REMARKS
12:56	LARRY BLAS	EMPIRE SOILS	SOILS TESTING

EQUIPMENT AT THE SITE:
3 BULLDOZERS, 1 BACKHOE, 16 DUMPTRUCKS, WATER TRUCK

CONSTRUCTION ACTIVITIES:

CLAY EXCAVATED FROM THE INDIAN HILL BORROW AREA WAS TRUCKED TO THE SITE AND APPLIED OVER THE OLD DISPOSAL AREA. 16 TRUCKS RAN CLAY UNTIL 1:00 PM.

BORROW AREA SITE INSPECTED DURING EXCAVATION. EXCAVATION OBSERVED TO BE CONDUCTED NEAR LOCATIONS OF SOIL BORINGS/ANALYSIS CONDUCTED BY EMPIRE SOILS. NEAREST SOIL CHARACTERIZATION TO PRESENT EXCAVATION IS EMPIRE SOILS TEST PITS #4 AND #5

HI-VAR DEFOLIATING AGENT APPLICATION CONDUCTED ON TOP OF OLD DISPOSAL AREA DIRECTLY AHEAD OF CLAY SOIL APPLICATION. MIXTURE, APPLICATION IN ACCORDANCE WITH SPECIFIED TECHNIQUES.

ENTIRE EAST HALF OF THE DISPOSAL AREA COVERED WITH CLAY AND COMPACTED WITH SMOOTH DRUM VIBRATORY ROLLER FROM THE TOP OF THE EAST BANK TO PT. N7225-E9300.

SOIL COMPACTION MEASUREMENTS CONDUCTED AND RECORDED BY EMPIRE SOILS. (SEE PROJECT FILES)

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3. Inspector
4. Client
5. File

BY [signature] TITLE GEOLOGIC TECHNICIAN

ENGINEERING-SCIENCE ES

DAILY CONSTRUCTION REPORT

REPORT NO. 004 DATE: 4/28/, 1990

CONTRACTOR OR SUBCONTRACTOR	DESCRIPTION OF DAY'S WORK
SEVENSON ENVIRONMENTAL SERVICES	- CLAY WAS EXCAVATED AND HAULED FROM THE INDIAN HILL BORROW AREA TO THE SITE FROM 0700 TO 1300. - CLAY WAS APPLIED IN A SINGLE ≈6" LIFT OVER THE EAST HALF OF THE OLD DISPOSAL AREA. - VIBRATORY COMPACTION WAS APPLIED, AFTER GRADING, WITH A SMOOTH DRUM ROLLER. - CLAY MATERIAL WAS OBSERVED TO BE QUITE UNIFORM AND WITHOUT ROCKS, PEBBLES OR DETECTABLE SAND. - COMPACTION/MOISTURE TESTING WAS CONDUCTED AT END OF WORKDAY BY EMPIRE SOILS. - SOME CLAY HAULED ON SITE WAS APPLIED TO THE BERM CONSTRUCTION ON THE EAST SIDE OF THE NEW CAYUGA CREEK CHANNEL TO BRING THIS AREA UP TO GRADE. COMPACTION ON THIS BERM MATERIAL WAS APPLIED WITH THE BULLDOZER ONLY, NO ATTEMPT WAS MADE WITH VIBRATORY ROLLER.

AUTHORIZED SIGNATURE [signature]

DAILY INSPECTION REPORT

REPORT NO. 005
DATE 4/30/90
DAY S M T W TH F S

PROJECT OLIN CHEMICAL PINE + TUSCARORA SITE
JOB NO. 54078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL SERVICES
PROJECT MANAGER KIM LICHFIELD

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL SERVICES		E-5	ARRIVE SITE 0745 LEAVE SITE 1600

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
D8 BULLDOZERS, 1 BACKHOE, 4 DUMPTRUCKS

CONSTRUCTION ACTIVITIES:

CLAY MATERIAL EXCAVATED FROM THE NEW CREEK CHANNEL CONSTRUCTION ON EAST SIDE OF CAYUGA CREEK BEING APPLIED AS CAP MATERIAL OVER THE WEST HALF OF THE OLD DISPOSAL AREA.
1 ST LIFT ≈6" COMPLETED OVER OLD DISPOSAL AREA BY 11:00 AM AND SECOND LIFT APPLICATION BEGINS ON EAST HALF OF WORK AREA.
ALL CLAY MATERIAL PLACED WAS COMPACTED WITH THE SMOOTH DRUM VIBRATORY ROLLER.
OBSERVE CAP CONSTRUCTION AROUND SITE OF DE-CON PAD ON WEST PERIMETER OF OLD DISPOSAL AREA. NO CAP UNDER THE DE-CON PAD AT THIS TIME.
ALL AREAS COMPACTED TODAY WITH SMOOTH DRUM VIBRATORY ROLLER WERE TESTED BY EMPIRE SOILS (SEE PROJECT FILES FOR TEST RESULTS)

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Terry W. Youngman TITLE GEOLOGIC TECHNICIAN

ENGINEERING-SCIENCE ES

DAILY CONSTRUCTION REPORT

REPORT NO. 005 DATE: 4/30/, 1980

CONTRACTOR OR SUBCONTRACTOR	DESCRIPTION OF DAY'S WORK
SEVENSON ENVIRONMENTAL SERVICES	CLAY MATERIAL WAS EXCAVATED FROM THE SITE OF NEW CREEK CHANNEL CONSTRUCTION. THIS MATERIAL WAS THEN APPLIED AS THE 1ST LIFT ON THE WEST HALF OF THE OLD DISPOSAL AREA AND AS SECOND LIFT OVER THE ENTIRE DISPOSAL AREA, GRADED, COMPACTED, AND TESTED BY END OF WORKDAY. OBSERVE THAT NO CAP PLACEMENT OCCURRED UNDER THE EXISTING DE-CON PAD ON THE WEST PERIMETER OF THE DISPOSAL AREA.

AUTHORIZED SIGNATURE [signature]

DAILY INSPECTION REPORT

REPORT NO. 007
DATE MAY 1, 1990
DAY S M T✓ W TH F S

PROJECT PINE AND TUSCARORA Rd REMEDIATION
JOB NO. SY 02E.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN ✓	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER.	HIGH 20 s 11			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	6	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	SOILS TECHNICIAN	EMPIRE SOILS	SOIL SAMPLE FROM ON SITE MATERIAL.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: EXCAVATE CLAY ON WEST SIDE OF EXISTING CHANNEL. CLAY (TOP 10') WAS REMOVED AND PLACED IN THE CAP AREA AND IN THE STAGING AREA. CLAY AT CAP AREA WAS PLACED IN 8" LIFTS AND COMPACTED WITH A SHEEPS FOOT ROLLER AND A SMOOTH DRUM ROLLER.

AIR MONITORING TESTS WERE PERFORMED ON AN HOURLY BASIS.

EXCAVATION AT NEW CREEK CHANNEL FROM STA 4+50 TO 6+00 WAS STABILIZED BY REMOVING THE BOTTOM SIX INCHES OF SOFT CLAY AND REPLACING IT WITH DRIER CLAY. NEW CLAY BLADED INTO PLACE WITH A DOZER.

START CONSTRUCTION OF TEST PAD FOR CLAY CAP.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY [signature] TITLE QC

DAILY INSPECTION REPORT

REPORT NO. 007
DATE MAY 1, 1994
DAY S M T W TH F S (T)

PROJECT PIKE & TUSCARORA RD REMEDIATION
JOB NO. 5V07E.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN ENVIRONMENTAL
PROJECT MANAGER MARK STORM

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	✓					
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER.	HIGH ✓			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: ESE ON SITE TODAY IN ORDER TO OBTAIN 2 SAMPLES OF SOIL FROM ONSITE STOCKPILES. ONE SAMPLE IS FROM INDIAN HILL CLAY, THE OTHER IS CLAY EXCAVATED FROM THE NEW RIVER CHANNEL BOTTOM (EAST STOCKPILE OF SOIL ON SITE). STANDARD PROCTORS AND GRAIN DISTRIBUTION SIZE ANALYSIS FOR EACH SAMPLE SHALL BE MADE. WHILE OBTAINING SOILS SAMPLES FROM THE EAST STOCKPILE ENTIRE SOILS TECHNICIAN AND MYSELF COMPOSITED SOIL FROM SEVERAL LOCATIONS FOR ANALYSIS.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Jan Johnston TITLE QC

DAILY INSPECTION REPORT

REPORT NO. 008
DATE MAY 2, 1990
DAY S M T W TH F S (W ✓)

PROJECT Pine & Hyde Park Rd Niagara Falls, NY.
JOB NO. SY07E.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN ✓	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓ 58	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 A.M.	Lacey Blas	Empire Soils	Test at clay cap soil samples.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson continued excavation of the new creek channel. Stations 2+75 to 4+00. Excavated soils were placed at the staging area.

Complete construction of test pad for clay cap. Field measurements: 39' x 34'. Lifts of clay were placed in 6"-8" with a Komatzu D-68 Bulldozer. Compaction Equipment: In house Sand sheepsfoot with 7' wide roller. 8 passes second lift. 4 passes 3rd & 4th lift. ESI took two compaction tests for each lift of clay placed with a nuclear densitometer. Reference in place density reports. Rework of the second lift was necessary to obtain adequate compaction.

ESI Technician obtained a clay sample from the south side of the new channel excavation. Station 2+35. EL 559.6. Reuse of excavated

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BY Jan Johnston TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 008
DATE MAY 2, 1990

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT Pine & Tuscarora Rd., Niagara Falls, NY
JOB NO. SY 078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN ✓	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓ 58	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
8:00 A.M	Larry Blas	Empire Soils	Test at clay cap soil samples.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Soils will most likely need rework.

Problem with berm located at the intersection of the old and new river channel - upstream. The south wall is having trouble maintaining stability due to soft underlying clay. Marvin Brown asked Sevenson to excavate and rebuild the berm with adequate compaction.

Sevenson delivered two HDPE manholes to the site. Dimensions: #1, 42" x 20.5, #2, 42# inches x 17.9'. 6" inlet pipe 2½' from base. Material identification on manholes. ASTM 714, SDR 32.5 Poly pipe, PE 3408. 63.

Sevenson performed air monitoring on an hourly basis.

PAGE 2 OF 2

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BY [signature] TITLE 9/A

DAILY INSPECTION REPORT

REPORT NO. 009
DATE MAY 3, 1990
DAY S M T W TH F S

PROJECT PIVE & TUSCARORA Rd, NIAGRA FALLS N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN STONE

Weather: BRIGHT SUN / CLEAR / OVERCAST / FOG / RAIN / SNOWY
Temp.: TO 32 / 32-55 / 55-70 / 70-85 / 85 UP
Wind: STILL / MODER. / HIGH
Humidity: DRY / MODER. / HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 A.M. 5:30 P.M.	LARRY BIAS	Enviro Soils	TEST AT CLAY CAP AREA NUCLEAR DENSITOMETER SOIL SAMPLES. WEST DIKE.

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: SEVERSON COMPLETED MAJOR EXCAVATION AT THE NEW RIVER CHANNEL. FINE GRADING STILL HAS TO BE PERFORMED. ALL EXCAVATED MATERIAL WAS PLACED AT THE STAGING AREA AND AT THE CLAY CAP.

CLAY PLACED AT THE CLAY CAP WAS DISTRIBUTED IN 6" TO 8" LIFTS. PRIOR TO PLACEMENT, THE AREA WAS SPRAYED WITH WATER. COMPACTION TESTS OF PLACED CLAY WERE TAKEN BY ESI. TWO AREAS (N7226-E8350, N7181-E8360) INDICATED LOW MOISTURE CONTENT. ALL CLAY PLACED AT THE CAPPING AREA WAS FREE OF ROCKS, DEBRIS AND FOREIGN MATTER. AREAS INDICATING LOW MOISTURE WILL BE REWORKED AT A LATER DATE.

MARVIN BROWN, ALAN ELIA, AND MYSELF WENT TO NIAGRA STONE AND FRONTIER STONE CO. IN ORDER TO INSPECT RIP RAP FOR THE NEW CHANNEL. NIAGRA STONE

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 009
DATE MAY 3, 1990
DAY S M T W TH F S

PROJECT PINE & TUSCARORA, NIAGARA FALLS, N.Y.
JOB NO. 57078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERDOL ENVIRONMENTAL
PROJECT MANAGER MARVIN STONE

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOW?
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERDOL ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 A.M. 5:30 P.M.	LARRY BLAS	ENVIRE SOILS	COMPACTION TESTS SOILS SAMPLES & WEST PIC.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Could not provide an adequate stockpile of supply of small rip rap specified. Frontier Stone Co. did have a stockpile and supply of small rip rap, while inspecting one pile was rejected because it appeared to have a small stone and fine content greater than 10%. An approved stockpile had a stone seperated and screened, and appeared to have adequate sizing for work to be performed. This pile met the intent of the specifications and was approved for placement.

Additional compaction tests were obtained on the south berm of the new channel. Stations 1+50, 1+00, 2+00. All tests taken on the top of the berm passed. Tests taken 1/2 the distance down the north slope passed at stations 1+00 and 2+00, station 1+50 had 85% compaction

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis USERATOLE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 004
DATE MAY 3, 1990
DAY S M T W TH ✓ F S

PROJECT PINE & TUSCARORA NIAGARA FALLS, NY.
JOB NO. SY07502
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN ENVIRONMENTAL
PROJECT MANAGER MARVIN STONE

Weather: BRIGHT SUN ✓ | CLEAR | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 ✓ | 55-70 | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY ✓ | MODER. | HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERN ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 AM 5:30 P.M.	LARRY SOLS	EMPIRE SOILS	TEST AT CLAY CAP AREA NUCLEAR DENSITOMETER SOILS SAMPLES - WEST PIPE.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: IT WAS DECIDED TO LEAVE THIS AREA ALONE AS FURTHUR COMPACTION WOULD DISTURB SOFT UNDERLYING CLAY AND CREATE MORE OF A PROBLEM.

SOILS SAMPLES FROM THE STAGING AREA (WEST STOCKPILE) WERE GIVEN TO LARRY BLAS OF EMPIRE SOILS. LARRY AND I COMPOSITED SOIL FROM SEVERAL LOCATIONS OF THE WEST PILE FOR STANDARD PROCTOR AND GRAIN DISTRIBUTION ANALYSIS

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 010

DATE MAY 4, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT PINE & TUSCARORA RD, NIAGARA FALLS, NY.

JOB NO. SY 079.02

CLIENT OLIN CHEMICAL

CONTRACTOR SEVENSON

PROJECT MANAGER MARK STOWE

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70	70-85	85 UP	
Temp.		✓	✓		✓	
Wind	STILL	MODER.	HIGH			
		✓				
Humidity	DRY	MODER.	HUMID			
			✓			

RAIN - INTERMITT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON, ENVIRONMENTAL	5	15	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: SEVENSON PLACED 5 LAPS OF NON-WOVEN NEEDLE PUNCHED GEOTEXTILE IN THE NEW CREEK CHANNEL. GEOTEXTILE FILTER FABRIC WAS MANUFACTURED BY PHILLIPS FIBERS CORPORATION (FPI HEATHER 16 N.P.) AND IS WITHIN THE MATERIAL SPECIFICATIONS OF THE PROJECT. GEOTEXTILE WAS PLACED WITH 3' OVERLAPS, WITHOUT WRINKLES, AND ANCHORED IN PLACE WITH 6" STAPLES.

SEVENSON WAS DELAYED IN PLACING ADDITIONAL MATERIAL BECAUSE 32 CONTAINERS DID NOT REACH THE SITE UNTIL 9:00 P.M.

I MET WITH SEVENSON'S SURVEYERS AND AGREED ON THE SURVEYED LOCATION OF THE NEW CHANNEL. I ALSO AGREED TO ADDITIONAL SURVEY INFORMATION PERTAINING TO CUT AND FILL MARKS FOR FINAL GRADING. INFORMATION CALCULATED APPEARED TO BE ACCURATE

IN THE NEW CHANNEL. LAC

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BY LOUIS LISERATO-CE TITLE

DAILY INSPECTION REPORT

REPORT NO. 011
DATE MAY 5, 1990
DAY S M T W TH F S ✓

PROJECT PIPE & TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY073.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

RAIN-MOLING SUNNY P.M.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	16	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: I REPORTED TO THE JOBSITE TODAY IN ORDER TO MONITOR PLACEMENT OF GEOTEXTILE FABRIC AND RIP RAP OF THE NEW CREEK CHANNEL. ALL ROLLS OF DELIVERED GEOTEXTILE FABRIC WERE IN GOOD CONDITION AND WERE WRAPPED WITH A PLASTIC LINER. RIP RAP DELIVERED TO THE PROJECT WAS WITHIN PROJECT SPECIFICATIONS. PLACEMENT OF RIP RAP PROCEEDED WITH TRUCKS DUMPING INTO THE NEW CREEK CHANNEL AT ONE DISTRIBUTION POINT, AND WAS SPREAD THROUGHOUT THE COVERED AREAS WITH A SMALL DOZER AND TWO BACKHOES. PLACEMENT OF RIP RAP STARTED AT THE BOTTOM OF THE CHANNEL AND WAS PLACED ON THE SLOPES WITH BACKHOES. NO DAMAGE HAD BEEN DONE TO THE UNDERLYING GEOTEXTILE FABRIC. APPROXIMATELY 50% TO 60% OF THE CHANNEL WAS COVERED WITH STONE. — OLIN CORPORATION DOES NOT HAVE PERMITS TO OPEN THE NEW CREEK CHANNEL

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3. Inspector
4. Client
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BY LOUIS LIBERATORE TITLE

ES DAILY INSPECTION REPORT

REPORT NO. 012
DATE MAY 7, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT Pine & Tuscarora Rd Niagara Falls, N.Y.
JOB NO. SY 077.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN 1	CLEAR ✓	OVERCAST	FOG	RAIN ✓	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

Light Rain - morning

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	13	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log

CONSTRUCTION ACTIVITIES: I continued monitoring the geotetile placement and stone placement at the new river channel. All work on this item progressed within the scope of the specifications. Measurements of stone placement on the south wall of the channel indicated 18" of placement. I cautioned Sevenson to check the subgrade elevations at station 5+50 line along the new river channel. Regrading of this area may be necessary before additional stone placement may occur.

Marvin Brown, Alan Elia, and myself inspected stone for the drainage system around the 4" PVC pipe. It was decided to change the type of stone immediatly surrounding the PVC pipe from #4 to #2 stone. It is our opinion that this will provide better bedding for the pipe and still allow drainage to flow. Type #4A stone was changed

PAGE 1 OF 1

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3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE

DAILY INSPECTION REPORT

REPORT NO. 012
DATE MAY 9, 1990
DAY S M ✓ T W TH F S

PROJECT PINE & TOSCA RD., NIAGRA FALLS, N.Y.
JOB NO. SY 075-02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARK BRAUN

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN ✓ | SNOWY
Temp.: TO 32 | 32-55 ✓ | 55-70 | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY | MODER. | HUMID ✓

RAIN - MORNING

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	13	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: FROM #4A TO #4 AND #5 STONE MIX. AFTER INSPECTING THIS MIX, IT WAS FELT THAT THIS WOULD ALLOW PROPER DRAINAGE AND MEET THE INTENT OF THE SPECIFICATIONS.

4A STONE	3"	2 1/2"	1 1/2"
	100%	90-100%	0-20%
	4"	3"	2"
#4 & #5 MIX	100%	90-100%	0-15%

DISTRIBUTION:
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3. Inspector
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BY LOUIS LIBERATORE TITLE

DAILY INSPECTION REPORT

REPORT NO. 013
DATE MAY 8, 1990
DAY S M T ✓ W TH F S

PROJECT PINE & TUSCARORA RD NIAGARA FALLS, N.Y.
JOB NO. SYOTE. 02
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERSON ENVIRONMENTAL.
PROJECT MANAGER MARVIN BOWEN.

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 ✓ | 70-85 | 85 UP |
Wind: STILL | MODER. ✓ | HIGH |
Humidity: DRY ✓ | MODER. | HUMID |

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL.	5	9.	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
2:00 P.M.	JAMES TUK	NYDEC.	CONCURRED WITH PROGRESS AND QUALITY OF WORK.

EQUIPMENT AT THE SITE:
EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: SEVERSON CONSTRUCTION CONTINUED PLACEMENT OF GEOTEXTILE FABRIC AND STONE AT THE NEW CHANNEL. PLACEMENT OF FABRIC CONTINUED WITH 3' OVERLAPS AND FREE OF WRINKLES. I MEASURED PLACEMENT OF STONE ON THE NORTH AND SOUTH WALLS OF THE NEW CHANNEL. FIELD MEASUREMENTS ON SLOPES MEASURED 18" OVER THE NORTH/EAST CHANNEL SLOPES AND 12" ON THE SOUTH SLOPE. THERE IS A SOILS DUMPING PROBLEM BETWEEN STATIONS 5+00 AND 6+00 ON THE NEW CREEK CHANNEL BOTTOM. FIELD MEASUREMENTS OF THE CHANNEL FLOOR BOTTOM INDICATE 12" OF STONE PLACEMENT WHERE MEASUREMENTS WERE ABLE TO BE MADE. THE NEW CHANNEL FLOOR BETWEEN STATIONS 1+00 AND 2+00 WAS SOFT WHILE EXCAVATING MACHINE PLACEMENT OF STONE IS CURRENTLY IN THIS AREA.
SEVERSON ENVIRONMENTAL PLACED A NEW SILT BARRIER

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BY LOUIS UBERTAZZI TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 013
DATE MAY 8, 1990
DAY S M T✓ W TH F S

PROJECT Pine & Tuscarora Rd., Niagara Falls, NY.
JOB NO. SY07T.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARK BROWN

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: MANUFACTURED BY AMERICAN BOOM AND BARRIER AT THE SOUTH END OF THE CHANNEL OUTSIDE THE NEW DIVERSION.
I REQUESTED A SURVEY OF THE CHANNEL FLOOR BOTTOM PRIOR TO OPENING THE NEW CHANNEL. THIS SHOULD TAKE PLACE TOMORROW.

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3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE N/A

DAILY INSPECTION REPORT

REPORT NO. 014
DATE MAY 9, 1990

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT TUSCARORA Rd NIAGARA FALLS, NY.
JOB NO. SY 07E.02
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERSON ENVIRONMENTAL.
PROJECT MANAGER MARVIN BROWN.

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	6	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: SEVERSON CONSTRUCTION COMPLETED PLACEMENT OF GEOTEXTILE FABRIC AND STONE AT THE NEW CHANNEL. KIM LICKFIELD, WAYNE KOSTUK AND MYSELF SURVEYED THE CHANNEL BOTTOM IN ORDER TO SEE IF THE DATA GATHERED WAS IN CONFORMANCE WITH THE WORK POINT ELEVATIONS ON THE DRAWINGS. WHILE SURVEYING, IT WAS DETERMINED THAT FLOOR ELEVATIONS MEASURED WERE TO BE THE AVERAGE ELEVATION OF AREAS AND POINTS MEASURED. AND THAT NO READINGS WOULD BE ON TOP OF STONES THAT MAY HAVE INDICATED HIGH SPOTS OR BELOW STONES THAT WOULD PROVIDE LOW SPOTS OR ELEVATIONS. READINGS TAKEN WERE TO INDICATE THE AVERAGE DEPTH OF STONE PLACEMENT ON THE CHANNEL FLOOR. STONE SIZES IN THE CHANNEL MAY VARY FROM 6" TO 18" AND IRREGULARITIES IN MEASUREMENT COULD BE TAKEN BY IMPROPER ROD READINGS. ELEVATIONS AGREED UPON AT THE FOLLOWING

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3. Inspector
4. Client
5. File

BY LOUIS GERATOSE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 014
DATE MAY 9, 1990
DAY S M T W TH F S

PROJECT TUSCARORA Rd. NIAGARA FALLS. N.Y.
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN ENVIRONMENTAL
PROJECT MANAGER MARK STOWE

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERN ENVIRONMENTAL		6	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: LOCATIONS ARE:

STATION	NORTH SIDE OF CHANNEL EL.	MIDDLE EL.	SOUTH SIDE OF CHANNEL EL.
1+00	560.65	560.70	561.10
2+00	560.55	560.70	561.00
3+00	560.35	560.50	560.75
4+00	560.20	560.35	560.50
5+00	560.10	560.15	560.35

WHILE PERFORMING FINAL GRADING OF STONE ON THE CHANNEL FLOOR IT WAS NOTICED THAT TWO AREAS OF THE NEW CREEK CHANNEL FLOOR HAD A SOILS PUMPING PROBLEM. SOFTER UNDERLYING SOILS BEGAN TO PUMP AND ELEVATIONS OF SUBGRADE WERE DISTURBED BETWEEN STATIONS 1+00 AND 1+75, AND BETWEEN STATIONS 5+00 AND 5+50. SOFT CLAY ON THE CHANNEL FLOOR PUMPED UP TOWARD THE

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LISEGATURE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 014
DATE MAY 9, 1990

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT TUSCARORA Rd. NIAGARA FALLS, NY
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	C	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: CENTER OF THE CHANNEL. A THINNER LAYER OF STONE WAS PLACED OVER THESE AREAS. ADDITIONAL EFFORTS IN MEETING THE 12" OF STONE PLACEMENT REQUIRED IN THE SPECIFICATIONS COULD NOT BE PERFORMED WITHOUT PERFORMING MAJOR REWORK OF THESE AREAS. FINISH FLOOR ELEVATIONS WITHIN THESE LIMITS WERE MAINTAINED. RIP RAP PLACEMENT IS DEEMED TO BE ADEQUATE.

SEVENSON CONSTRUCTION COMPLETED INSTALLATION OF THE ANCHOR TRENCH ON THE NORTH SLOPE OF THE CHANNEL. GEOTEXTILE FABRIC AND STONE WERE EXTENDED TO THE TOP OF THE NORTH SLOPE.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE Q/A

F.G. RIP/RAP

EL-1 & LENKER ROD

WK
KWL
LL.

STA	NO	ELEV	So ELEV
5+00	560.10	560.15	560.35
	No.		So
4+00	60.20	60.35	60.50
3+00	60.35	60.50	60.75
TBM 561.30			
2+00	60.55	60.70	61.00
1+00	60.65	60.70	61.10

[illegible] [illegible]
[illegible]

DAILY INSPECTION REPORT

REPORT NO. 015
DATE MAY 10, 1990
DAY | S | M | T | W | TH ✓ | F | S |

PROJECT TUSCARORA Rd. NIAGRA FALLS, N.Y.
JOB NO. SY 678.02
CLIENT OLIN CHEMICALS
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MALVIN BROWN

Weather
Temp. 58°
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	6	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES:

- SEVENSON CONSTRUCTION OPENED BOTH ENDS OF THE NEW CHANNEL AND CONSTRUCTED TEMPORARY PLUGS THAT WOULD DIVERT CREEK FLOW FROM THE OLD CREEK.
- STARTED PUMPING ENTRAPED WATER FROM THE OLD CREEK INTO THE NEW CHANNEL.
- GRADE SLOPES OF CAP AREA - NORTH SIDE.
- RECIEVED THE MIXING CHAMBER FOR THE BENTONITE SLURRY WALL MIX.
- REMOVED SEDIMENTATION FENCE AT THE EAST AND WEST ENDS OF THE CHANNEL.

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE, TITLE 9/1

DAILY INSPECTION REPORT

REPORT NO. 016
DATE MAY 11, 1990
DAY | S | M | T | W | TH | F ✓ | S |

PROJECT TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICALS
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	12	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

SEVENSON CONSTRUCTION REBUILT TEMPORARY CONSTRUCTION PLUGS USED FOR DIVERTING WATER AT THE UPSTREAM AND DOWNSTREAM LOCATIONS OF THE CREEK.

- CONTINUE TO DEWATER THE OLD CHANNEL.
- CONTINUE GRADING OF THE NORTH SLOPE OF THE CAP AREA
- PLACED SHOT ROCK AND RIP RAP ON OLD CHANNEL FLOOR IN ORDER TO STABILIZE THE SOILS.
- SURVEY FOR 6" PVC DRAIN PIPE AND TWO MANHOLES

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE

DAILY INSPECTION REPORT

REPORT NO. 017
DATE MAY 14, 1990
DAY S M ✓ T W TH F S

PROJECT TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I MEASURED THE QUANTITY OF STAGED GUMBO CLAY ON SITE (MOST WESTERLY PILE ON SITE) WITH KIM LICKFIELD AND ALAN ELIA. ESTIMATED QUANTITY 1100 CY.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE

DAILY INSPECTION REPORT

REPORT NO. 017
DATE MAY 14, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT TUSCALORA Rd., NIAGRA FALLS, NY.
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CONVERSATION AT 7:30 P.M. WITH MR. FRANK WALLER OF WOODRUFF + CLYDE IN REGARD TO BACKFILL FOR OLD CHANNEL. RESULTS OF CONVERSATION: BACKFILL IN THIS AREA IS NOT REQUIRED TO HAVE ML OR CL CLASSIFICATION. MAY USE ON SITE STAGED SOILS THAT WERE EXCAVATED AT NEW CHANNEL. SOFT CLAYS EXCAVATED MUST BE COMPACTED TO 85% STANDARD PROCTOR ON FIRST TWO LIFTS AND 90% STANDARD PROCTOR, ASTM 698, ON HIGHER LIFTS. CLAY SHOULD ALLOW ADEQUATE SUPPORT FOR MACHINERY THAT WILL BE USED FOR PLACING SLURRY MIX.

TELEPHONE CONVERSATION WITH CHARLES KIEPPER, ESI, — STANDARD PROCTORS FOR SOIL TESTED ON SITE AND STANDARD PROCTOR ASTM 698 FOR OFF SITE CLAY SHOULD BE ON SITE AT 2:00 PM ON 5/15/90. SCHEDULED AN INSPECTOR TO MEASURE MOISTURE CONTENT OF STAGED SOILS AT THIS TIME.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE

DAILY INSPECTION REPORT

REPORT NO. 017
DATE MAY 14, 1990
DAY | S | M ✓ | T | W | TH | F | S |

PROJECT TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY079.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MALVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: INSTALLED 6" PVC DRAIN PIPE FOR MANHOLE A. PIPE MATERIAL: 6" PVC 20 SPS I @ 73°F ASTM F441. GLUE ON JOINT COUPLINGS - NO BELLS ON PIPE. GLUE MATERIAL: PS WELD ON PRIMER P-70-C™ FOR PVC, PS WELD ON PLASTIC PIPE CEMENT 714 C PVC. PIPE BEDDED IN 1' OF #2 STONE AND COVERED WITH 10"-12" OF SAME. PVC PIPE AND #2 STONE ENVELOPED WITHIN GEOTEXTILE FABRIC 60 MIL. PLACED #4+5 MIX ON GROUND STABILIZATION FABRIC MIRAFI #700 FILTER FABRIC. EXCAVATED FOR MANHOLE AND PLACED 1' OF 12% BENTONITE / CLAY MIX AT BOTTOM OF MANHOLE. MACHINE COMPACTED - SOFT UNDERLYING CLAY. PLACED PREFABRICATED CONCRETE BASE ON BENTONITE FILL AND BACKFILLED EXCAVATION TO TOP OF PRECAST BASE WITH 12% BENTONITE CLAY MIX. ADDITIONAL LIFTS COMPACTED WITH HAND TAMPER.
VIN FRY AND ALAN ELIA HAD A TELEPHONE

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE

DAILY INSPECTION REPORT

REPORT NO. 018
DATE MAY 15, 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT TUSCARORA Rd & PINE AVE. NIAGARA FALLS, NY
JOB NO. 5Y07E.01
CLIENT OLIN CORP.
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LSQ.

CONSTRUCTION ACTIVITIES: SET 65' OF PVC UNDERDRAIN PIPE FOR MANHOLE B. PIPE MATERIALS: 6" PVC SCH 80 20 8PSI @ 73°F ASTM F441. GLUE ON COUPLINGS - NO BELLS. GLUE MATERIAL: PS WELD ON PRIMER P-70-C T M FOR PVC, PS WELD ON PLASTIC PIPE CEMENT FOR 714 C PVC. PIPE BEDDED IN 1/2" OF #2 STONE AND COVERED WITH 1' OF SAME. PIPE SLUEYED PRIOR TO COVER. PVC PIPE AND #2 STONE ENVELOPED WITHIN GEOTEXTILE 60 MIL FABRIC. EXCAVATED FOR MANHOLE A AND PLACED 1" OF 12% BENTONITE/CLAY MIX AT BOTTOM OF MANHOLE. MACHINE COMPACTED - SOFT UNDERLYING CLAY. PLACED PREFABRICATED CONCRETE BASE ON BENTONITE/CLAY FILL AND SET DRISCO PIPE MANHOLE ON 1½" OF NON-SHRINK GROUT. MANHOLE ANCHORED IN PLACE WITH 3/4" STAINLESS EXPANSION BOLTS. EXCAVATION FOR MANHOLE BASE BACKFILLED WITH 12% BENTONITE/CLAY MIX AND COMPACTED IN PLACE WITH MACHINE DRIVEN HAND TAMPER. ALL WORK PERFORMED TO DATE

DISTRIBUTION
1 Proj Mgr.
2 Const. Dept.
3 Inspector
4 Client
5 File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 018
DATE MAY 15, 1990

DAY

S	M	T	W	TH	F	S
		✓				

PROJECT TUSCAROLA RD. & PINE NIAGARA FALLS N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERNSVILLE ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT Log.

CONSTRUCTION ACTIVITIES: ON MANHOLES A AND B ALONG WITH THE UNDERDRAIN SYSTEM IS DEEMED ADEQUATE AND WITHIN THE SCOPE OF THE PLANS AND SPECIFICATIONS

ESI INSPECTOR ONSITE TODAY IN ORDER TO MEASURE THE MOISTURE CONTENT OF STAGED SOILS ON SITE. READINGS ON THE EAST STOCKPILE WERE 27-31% MOISTURE CONTENT 1½' BELOW THE SURFACE. READINGS ON THE WEST STOCKPILE WERE 17.9 - 18.6% MOISTURE CONTENT 6"-8" BELOW SURFACE. SOILS AT BOTH LOCATIONS WERE COMPACTED IN PLACE WITH A HAND TAMPER PRIOR TO TESTING

AIR MONITORING WAS PERFORMED ON SITE TODAY.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LISENSTOCK TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 019
DATE MAY 16, 1990

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT Pine & Tuscarora Rd. Niagra Falls, N.Y.
JOB NO. SY 078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
1:30	Jerry Reynolds	Sevenson Const.	Review site & set up for work on slurry wall
1:30	Gordon Melle	Engineering Science	Review site work - concurred with quality of work.

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES: Rain and overcast today Sevenson Construction suspended work due to weather conditions at 12:00 P.M. Continued work and placement of 60' of PVC perforated underdrain leading to manhole B. Complete tie in of PVC underdrain leading to manhole A. Rain slowed progress.

Jerry Reynolds on site today in order to start set up of slurry wall. He discussed work methods and procedures with Marvin Brown Rex Griffith and myself

Gordon Melle on site today in order to review work on site and inspect daily reports and variances. Comments: Be sure to review design mix of slurry walls and make sure no additional permeability tests are required.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE

DAILY INSPECTION REPORT

REPORT NO. 019
DATE MAY 16 1990
DAY S M T W✓ TH F S

PROJECT PINE & TUSCARORA RD. NIAGARA FALLS, N.Y.
JOB NO. 57-078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	8.	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT Log.

CONSTRUCTION ACTIVITIES: AT APPROXIMATELY 7:00 P.M WATER FLOWING THROUGH THE CAYUGA CREEK OVERFLOWED THE CONSTRUCTION DAM AT THE UPSIDE SIDE OF THE DIVERSION AT 1700 LINE PERSONEL FROM SEVERSON CAME TO WORK AND RECONSTRUCTED THE PORTION OF THE DAM THAT WATER WAS FLOWING OVER. PUMPING OPERATIONS WERE IMPLIMENTED IN ORDER TO REMOVE WATER FROM THE OLD CREEK CHANNEL. ORIGINAL CONSTRUCTION OF THE DAM WAS CONSTRUCTED 2' OVER THE WATER LEVEL. IT IS SUSPECTED THAT FLOODING WAS DUE TO CONTROL OF THE FLOOD GATES FOR RIVER CONTROL.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE

ES DAILY INSPECTION REPORT

REPORT NO. 19A.
DATE MAY 17, 1990

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT PINE & TUSCARORA RD. NIAGRA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL.
PROJECT MANAGER MARVIN BROWN

	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
Weather	TO 32	32-55 ✓	55-70	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER.	HUMID. ✓			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	2	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: NO WORK WAS PERFORMED TODAY DUE TO RAIN.

SEVENSON WAS ON SITE AT 3:00 A.M IN ORDER TO RESPOND TO THE CREEK OVERFLOWING THE NEW CONSTRUCTED BERM AT STATION 0+50. OPERATORS AND LABORERS REPAIRED THE CONSTRUCTED BERM AND PUMPED WATER FROM THE TERMINATED CREEK CHANNEL TO THE NEW CREEK CHANNEL. LABOR FOREMAN AND SUPT. MONITORED PUMPS DURING THE DAY.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 1 OF 1

BY LOUIS LIBERATORE. TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 020
DATE MAY 11 1990
DAY | S | M | T | W | TH | F ✓ | S |

PROJECT PINE & TUSCARORA RD. NIAGARA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN ✓	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT Log

CONSTRUCTION ACTIVITIES: NO WORK WAS PERFORMED TODAY DUE TO RAIN I RECIEVED MATERIAL TICKETS DESCRIBING THE MAKE UP OF BENTONITE DELIVERED TO THE SITE. THE ORIGINAL DESIGN STUDY WRITEN BY WOODRUFF AND CLYDE INDICATED BAROID #325 BENTONITE WAS USED WITH A CLAY SOURCE FROM MACK HASELEY, HASELEY TRUCKING CO. NIAGRA FALLS N.Y. FOR AN ADEQUATE CLAY/BENTONITE BACKFILL MIX BAROID #90 BENTONITE FROM THE SAME MANUFACTURER WAS DELIVERED TO THE SITE. SEVENSON INTENDS TO USE CLAY OBTAINED FROM INDIAN HILL. THIS DESIGN IS A DIFFERENT MIX. THE PERCENTAGE OF BENTONITE TO WATER MIX IN THE SLURRY WILL BE CHANGED FROM 5% TO 6.5%-7%. INFORMATION REGARDING THE NEW DESIGN WAS FORWARDED TO FRANK WALLER OF WOODRUFF AND CLYDE. MR. WALLER WILL FORWARD HIS COMMENTS TO SEVENSON CONSTRUCTION. IT IS IMPORTANT TO NOTE THE ORIGINAL DESIGN STUDY REQUIRES ADDITIONAL

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 020
DATE MAY 18, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT PINE & TUSCARORA Rd, NIAGRA FALLS, N. Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEQUOYAH ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEQUOYAH ENVIRONMENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: PERMIABICITY TESTING OF NEW DESIGN MIXES.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LEGRANDE TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 021
DATE 5/21/90

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE AVE & TUSCARORA Rd. NIAGARA FALLS, NY
JOB NO. SY078 02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARIE BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.						
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON COMPLETED INSTALLATION OF THE UNDERDRAIN SYSTEM. I REVIEWED ELEVATIONS OF THE PVC UNDERDRAIN PIPE WITH WAYNE KOSTUCK. PIPE IS INSTALLED AS SHOWN ON THE DRAWINGS. CONTRACTOR CONTINUED PLACEMENT OF #2 STONE ENCASED IN DRAINAGE FABRIC

O I TRAVELED TO THE INDIAN HILL BORROW AREA WITH KIM LICKFIELD AND ALAN ELIA IN ORDER TO OBTAIN A CLAY SAMPLE FOR A PERMIABILITY TEST ON SEVENSON'S DESIGN MIX FOR THE SLURRY WALL. THIS SAMPLE WAS TAKEN FROM AREA #5. E S I ON SITE AT 2:00 P.M. IN ORDER TO PICK UP CLAY SAMPLE AND ONE BAG OF BAROID #90

AMMENDMENT TO FIRST PARA: ONE FOOT OF #2 STONE COVER SURROUNDS THE PVC UNDERDRAIN PIPE AS DESCRIBED IN VARIANCE #1.

DISTRIBUTION
1. Proj Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE Q/A

ES DAILY INSPECTION REPORT

REPORT NO. 022
DATE 5/22/90

DAY	S	M	T	W	TH	F	S
			✓				

PROJECT DIVE + TUSK ARORA Rd NIAGRA FALLS, NY.
JOB NO. SY079.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	9.	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: PLACE #2 STONE AROUND LEACHEATE COLLECTION SYSTEM FROM MANHOLE A TO MANHOLE B. 6" PVC UNDERDRAIN PIPE BEDDED IN 5" OF #2 STONE AND 1' OF COVER WITH SAME MATERIAL. #4 AND #5 STONE MIX PLACED OVER #2 STONE AND SHOT ROCK. AGGREGATE STONE WAS ENVELOPED IN GEOFABRIC

PLACE #4 AND #5 STONE MIX OVER SHOT ROCK AND LEACHEATE COLLECTION SYSTEM.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 1 OF 1

BY LOUIS LIBERATORE TITLE G/A

DAILY INSPECTION REPORT

REPORT NO. 024
DATE 5/23/90

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT PINE & TUSCARORA Rd, NIAGARA FALLS N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARK SCOTT

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL.	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 5:30	LARRY BIAS.	ENTIRE SOIL	COMPACTION TESTS AT OLD CREEK CHANNEL - STRUCTURAL FILL

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT CO.

CONSTRUCTION ACTIVITIES: I CALLED FRANK MILLER OF WOODWARD AND CLYDE CONSULTANTS IN REGARDS TO THE NEED OF A LEACHEATE COMPATABILITY TEST ON THE NEW DESIGN MIX SEVERSON ENVIRONMENTAL WAS GOING TO USE ON SITE. HE STATED THAT HE WAS GOING TO GIVE INFORMATION ON THE NEW MIX DESIGN TO THE PEOPLE IN HIS COMPANY THAT WROTE THE DESIGN STUDY ON THIS SITE AND HAVE THEM MAKE THE DECISION ON WHETHER IT HAD TO BE PERFORMED OR NOT. I ALSO SPOKE WITH HIM IN REGARDS TO THE MOISTURE REQUIREMENTS FOR ON SITE CLAY THAT WAS GOING TO BE USED AS STRUCTURAL FILL IN THE OLD CREEK CHANNEL. REFERENCE RESULTS OF LABORATORY TESTING FOR PINE & TUSCARORA REMEDIATION PROJECT, APRIL 10, 1990. HIS RECOMMENDATIONS FOR A MOISTURE RANGE WERE 22.4% OPTIMUM - 2% + 6% OR 20.4% TO 28.4%

SEVERSON CONTINUED PLACEMENT OF GROUND STABILIZATION FABRIC WITHIN THE OLD CREEK CHANNEL.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS L. BERNATOWICZ TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 024
DATE 5/23/90

DAY	S	M	T	W	TH	F	S

PROJECT Pine + Tuscarora Remediation
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 5:30	Larry Blas	Empire Soils	Compaction tests at old creek channel. - Structural fill

EQUIPMENT AT THE SITE:
Reference equipment log.

CONSTRUCTION ACTIVITIES: #2, and #4 and #5 stone were enveloped within ground stabilization fabric as indicated on the drawings and specifications. 2' to 2½' of #4 and #5 mix were placed above shot rock that was used to stabilize the old creek bottom. Marafi geofabric was as a cover over the #4 & #5 stone mix (Photographs taken.)

Sevenson removed stones that could be visually seen within the 5½' limit of the slurry wall from 1+00 line to 4+00 line. After this was complete, backfill operations within this area of the old creek channel began. Soil that was staged on site (west pile) was used for this operation. Reference standard proctor included in Woodward-Clyde study dated April 10, 1990 and standard proctor for west pile of on site clay. All soils placed during backfill operations were tracked in place with a Komatzu D-31 wide track dozer.

DISTRIBUTION:
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BY Louis Liberatore TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 624
DATE 5/23/90

DAY	S	M	T	W	TH	F	S

PROJECT Pine & Tuscarora Rd, Niagara Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70	70-85	85 UP	
Temp.	STILL	MODER.	HIGH			
Wind	DRY	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 5:30	Larry Blas	Empire Soils	Compaction tests at old creek channel - structural fill

EQUIPMENT AT THE SITE: Reference Equipment Log.

CONSTRUCTION ACTIVITIES: The second lift of soils was compacted in place with a smooth drum roller. After compactive efforts were complete, nuclear density readings were taken. In place density tests indicate compactive efforts met or exceeded contract requirements.

It was noted that during backfill operations soils located toward the New River channel within 5 1/2' of the slurry wall were starting to pump. It is anticipated this problem will correct itself as backfill operations continue.

Sevenson Construction had one truck with a broken back up alarm - Marvin Brown requested it be repaired A.S.A.P.

On site monitoring performed by Sevenson every 2 hrs

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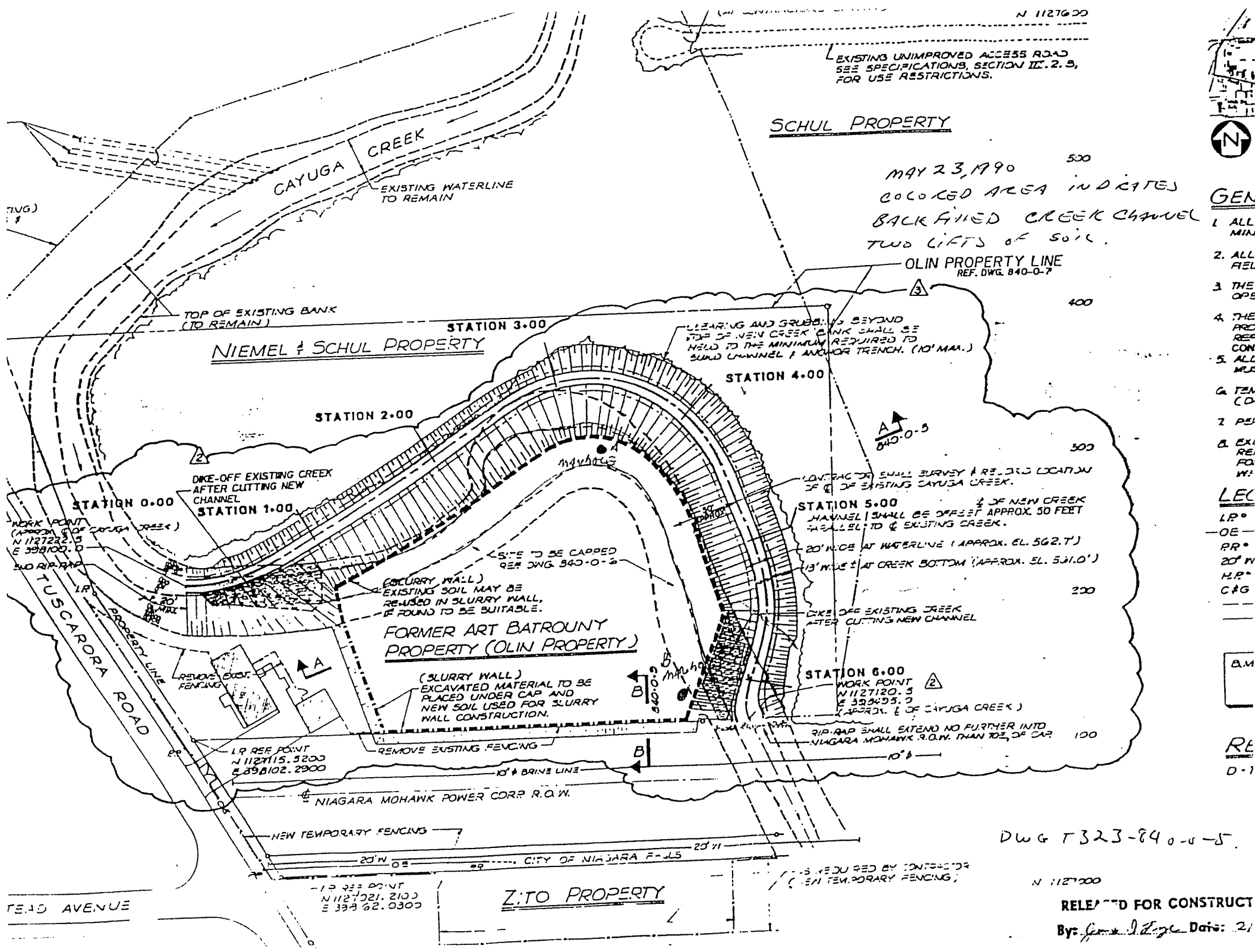
BY Louis Liberatore TITLE QA



N 1127600
EXISTING UNIMPROVED ACCESS ROAD SEE SPECIFICATIONS, SECTION III.2.B, FOR USE RESTRICTIONS.
SCHUL PROPERTY
CAYUGA CREEK
EXISTING WATERLINE TO REMAIN
MAY 23, 1990
COLORED AREA INDICATES
BACKFILLED CREEK CHANNEL
TWO LIFTS OF SOIL.
OLIN PROPERTY LINE
REF. DWG. 840-0-7
TOP OF EXISTING BANK (TO REMAIN)
STATION 3+00
NIEMEL & SCHUL PROPERTY
CLEARING AND GRUBBING BEYOND TOP OF NEW CREEK BANK SHALL BE HELD TO THE MINIMUM REQUIRED TO BUILD CHANNEL & ANCHOR TRENCH. (10' MAX.)
STATION 4+00
STATION 2+00
840-0-5
DIKE-OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
STATION 0+00
STATION 1+00
WORK POINT (APPROX. ℄ OF CAYUGA CREEK)
N 1127222.5
E 398100.0
END RIP-RAP
CONTRACTOR SHALL SURVEY & RECORD LOCATION OF ℄ OF EXISTING CAYUGA CREEK.
STATION 5+00
℄ OF NEW CREEK CHANNEL SHALL BE OFFSET APPROX. 50 FEET PARALLEL TO ℄ EXISTING CREEK.
20' WIDE AT WATERLINE (APPROX. EL. 562.7')
13' WIDE ± AT CREEK BOTTOM (APPROX. EL. 561.0')
SITE TO BE CAPPED REF. DWG. 840-0-6
(SLURRY WALL) EXISTING SOIL MAY BE REUSED IN SLURRY WALL, IF FOUND TO BE SUITABLE.
DIKE OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
FORMER ART BATROUNY PROPERTY (OLIN PROPERTY)
TUSCARORA ROAD
PROPERTY LINE
REMOVE EXIST. FENCING
(SLURRY WALL) EXCAVATED MATERIAL TO BE PLACED UNDER CAP AND NEW SOIL USED FOR SLURRY WALL CONSTRUCTION.
840-0-9
STATION 6+00
WORK POINT
N 1127120.5
E 398495.0
(APPROX. ℄ OF CAYUGA CREEK)
RIP-RAP SHALL EXTEND NO FURTHER INTO NIAGARA MOHAWK R.O.W. THAN TOE OF CAP
I.R. REF. POINT
N 1127115.5200
E 398102.2900
REMOVE EXISTING FENCING
10" ⌀
10" ⌀ BRINE LINE
℄ NIAGARA MOHAWK POWER CORP. R.O.W.
NEW TEMPORARY FENCING
20' W
CITY OF NIAGARA FALLS
I.R. REF. POINT
N 1127021.2100
E 398162.0300
ZITO PROPERTY
TEAD AVENUE
N 1127000
DWG T323-840-0-5
RELEASED FOR CONSTRUCT
By: Date: 2

DAILY INSPECTION REPORT

REPORT NO. 025
DATE 5/24/90

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT PIPE & NIAGARA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	8.	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 AM	LARRY BIAS	EMPIRE SOILS INVESTIGATIONS	COMPACTION TESTS, STRUCTURAL FILL AT OLD CREEK CHANNEL
5:30 P.M.	DON WARTINGER		

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVERSON CONTINUED PLACEMENT OF 1' O.C #2 STONE COVERING THE DRAINAGE PIPE LEADING TO MANHOLE A. 10' O.C THE DRAINAGE PIPE LEADING TO MANHOLE A WAS WRAPPED WITH DRAINAGE FABRIC. #2 STONE WAS PLACED BENEATH THE PIPE FOR SUPPORT AND DRAINAGE. THIS AREA WAS BACKFILLED WITH SELECT SOILS. PHOTOGRAPHS TAKEN OF THE INSTALLATION. ALL WORK PERFORMED ON THE DRAINAGE SYSTEM IS IN CONFORMANCE WITH THE SPECIFICATIONS.

CONTINUE PLACEMENT OF #4 AND #5 STONE MIX. MARAFI DRAINAGE FABRIC WAS PLACED AS A FINAL COVER PRIOR TO PLACING BACKFILL. PHOTOGRAPH TAKEN OF FABRIC COVER. WORK IS IN ACCORDANCE WITH THE SPECIFICATIONS.

SEVERSON CONTINUED AIR MONITORING OF THE SITE EVERY TWO HOURS.

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BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 025
DATE 5/24/90
DAY S M T W TH ✓ F S

PROJECT PINE & TUSCARORA NIAGRA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MAZUR BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 AM	LARRY BIAS	EMPIRE SOIL INVESTIGATION	COMPACTION TESTS STRUCTURAL FILL AT OLD CREEK CHANNEL.
5:30 P.M.	DON WARTINGER		

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVERSON EXCAVATED SOIL WITHIN THE 6' LIMIT OF THE SLURRY WALL. STATIONS 3+50 TO 6+00. EXCAVATED SOIL WERE PLACED ON THE NORTH SLOPE OF THE CAP AREA. MEASUREMENTS WERE TAKEN IN ORDER TO VERIFY ALL USABLE STONE WAS REMOVED WITHIN THIS LIMIT.

SEVERSON CONTINUED PLACEMENT OF BACKFILL ALONG THE OLD CREEK CHANNEL. STA 0+50 TO 5+90. EMPIRE SOIL TECHNICIAN ON SITE IN ORDER TO TAKE COMPACTION TESTS. SOIL USED FOR BACKFILL WERE FROM THE NORTH SIDE OF THE OLD CREEK CHANNEL DURING EXCAVATION AND STORED ON SITE. (WEST STOCKPILE OF STAGED SOIL) COMPACTION OF SOILS MET CONTRACT REQUIREMENTS FOR STRUCTURAL FILL.

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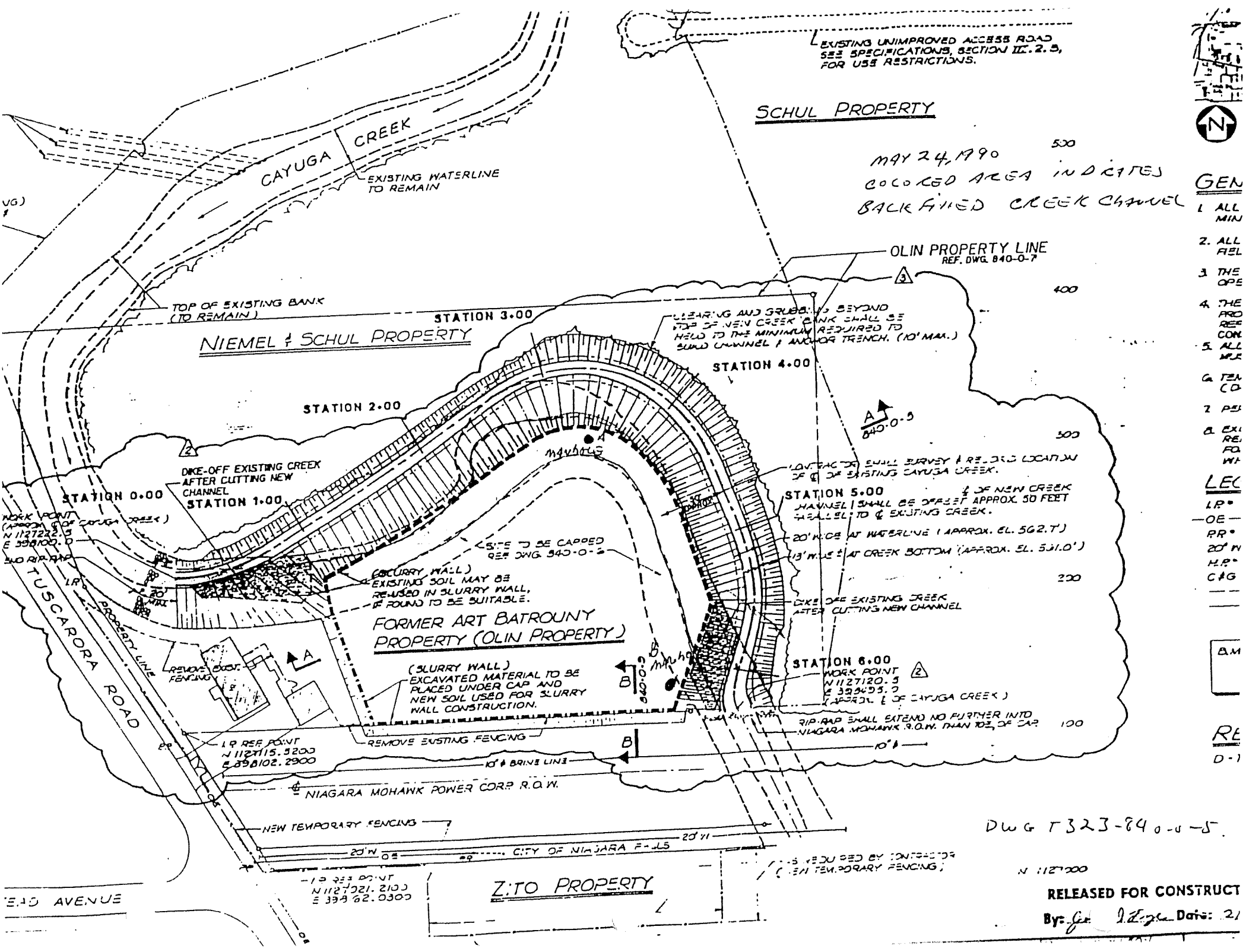
BY LOUIS LIBERATORE TITLE QA



DWG T323-840-0-5

N 1127000

RELEASED FOR CONSTRUCT

By: [illegible] Date: 2/

DAILY INSPECTION REPORT

REPORT NO. 026
DATE 5/25/90
DAY | S | M | T | W | TH | F ✓ | S |

PROJECT Pine & Tuscarora Rd. Niagara Falls, NY
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	7	20 trucks hauling soil.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 4:30	Larry Blas	Empire Soils	Compaction tests at old creek channel and cap area.

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson recieved 156 truckloads of clay from the Indian Hill off site borrow source. Continue backfill operations at old creek channel sta 0+50 Line to 6+00 Line. Empire Soils technician on site in order to measure compaction. All tests taken on compacted soils measured between 91.7 and 100%.

While reviewing the proctor curves for tests taken on 5/23/90, 5/24/90, 5/25/90 (1st Reading), I observed the wrong proctor code was used for testing compaction. Proctor curve PT-1 (On site stockpile - East Pile) was used in lieu of TP-1 (On site stockpile West Pile) or the standard proctor supplied by Woodward Clyde. After analyzing recorded readings and comparing them to the correct proctor code, it was determined compactive efforts on these dates

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BY TITLE

DAILY INSPECTION REPORT

REPORT NO. 026
DATE 5/25/90

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT PINE & TUSCARORA RD. NIAGARA FALLS, NY.
JOB NO. 5402202
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN STRONG

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	7	20 TRUCKS HAULING SOIL.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 4:30	LARRY GIAS	EMPIRE SOILS	COMPACTIVE TESTS AT OLD CREEK CHANNEL AND CAP AREA.

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: STILL MET OR EXCEEDED CONTRACT REQUIREMENTS.

ONE LIFT OF CLAY WAS PLACED AT THE CAP AREA AND COMPACTED WITH A SMOOTH DRUM ROLLER. PRIOR TO PLACEMENT, 6" OF UNDESIRABLE CLAY WAS REMOVED FROM THE SURFACE AND MOVED TO MANHOLE "A" AREA WHERE IT WOULD BE USED AS STRUCTURAL FILL. SEVERSON DEPLOYED A WATER TRUCK IN ORDER TO ADD MOISTURE TO SOILS PRIOR TO AND DURING PLACEMENT. ALL COMPACTION TESTS WERE WITHIN CONTRACT REQUIREMENTS. AFTER COMPACTION TESTS WERE TAKEN THE CAP AREA WAS SMOOTH DRUM ROLLED FOR ADEQUATE DRAINAGE OF SOILS.

SEVERSON CONTINUED MONITORING AIR

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BY Louis Liberatore TITLE O/A

ES DAILY INSPECTION REPORT

REPORT NO. 027
DATE 5/26/90

DAY	S	M	T	W	TH	F	S
							✓

PROJECT Pine & Tuscarora Rd., Niagara Falls, NY.
JOB NO. SY028.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environment -AL			

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log

CONSTRUCTION ACTIVITIES: No work performed today due to memorial day weekend - 3 days.

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PAGE 1 OF 1

BY Louis Liberatore TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 028
DATE 5/28/90
DAY S M✓ T W TH F S

PROJECT Pine & Niagara Rd, Niagara Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	Temp.	Wind	Humidity
BRIGHT SUN	TO 32	STILL	DRY
CLEAR✓	32-55	MODER.✓	MODER.✓
OVERCAST	55-70✓	HIGH	HUMID
FOG	70-85		
RAIN	85 UP		
SNOWY			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: NO WORK PERFORMED TODAY - MEMORIAL DAY

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BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 029
DATE 5/29/90

DAY

S	M	T	W	TH	F	S
		✓				

PROJECT PINE & NIAGARA Rd., NIAGARA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: NO WORK TODAY - RAINED OUT.

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PAGE ____ OF ____

BY ____ TITLE ____

DAILY INSPECTION REPORT

REPORT NO. 030
DATE 5/30/90
DAY S M T W✓ TH F S

PROJECT PIVERTUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY078 02
CLIENT OLIN CHEMICALS
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70✓	70-85	85 UP	
STILL	MODER.✓	HIGH			
DRY	MODER.✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	7	6 TRUCK DRIVERS

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 4:00	DON WARTINGER	EMPIRE SOILS INVESTIGATION	COMPACTION TESTS AT OLD CREEK CHANNEL. STRUCTURAL FILL

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CLEAR AND GRUB THE SOUTH EMBANKMENT OF THE OLD CREEK CHANNEL. SPRAY HERBICIDE HYVAR X ON THE EMBANKMENT. LABORER DRESSED IN LEVEL "C" WITH HALF FACE RESPIRATOR.

GRADE CAP AREA FOR SLURRY WALL. MATERIAL BLADED FROM THE CAP AREA INTO OLD CREEK CHANNEL FOR STRUCTURAL FILL.

OWNER IDENTIFIES SEVEN DAMAGED TREES ON THE NORTH SIDE OF THE CREEK. THAT HAD TO BE REMOVED.

SURVEYERS ON SITE ESTABLISHING LINE AND GRADE FOR SLURRY WALL.

AIR MONITORING PERFORMED ON AN HOURLY BASIS.

EMPIRE SOILS TECHNICIAN ON SITE IN ORDER TO

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BY Don Tibbetts TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 030
DATE 5/30/90
DAY S M T W✓ TH F S

PROJECT PINE & TUSCARORA Rd, NIAGARA FALLS, N.Y.
JOB NO. 590702
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BRUNN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ▲	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5 +	7 +	6 TRUCK DRIVERS

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:00 4:00	DON WARTINGER	EMPIRE SOILS INVESTIGATIONS	COMPACTION TESTS AT OLD CREEK CHANNEL - STRUCTURAL FILL

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: PERFORM COMPACTION TESTS ON THE CONSTRUCTED BENCH AT THE OLD CREEK CHANNEL. SOILS SOURCE: INDIAN HILL CLAY BORROW #5. COMPACTION TESTS RECORDED TODAY MEASURED 99.5% MINIMUM

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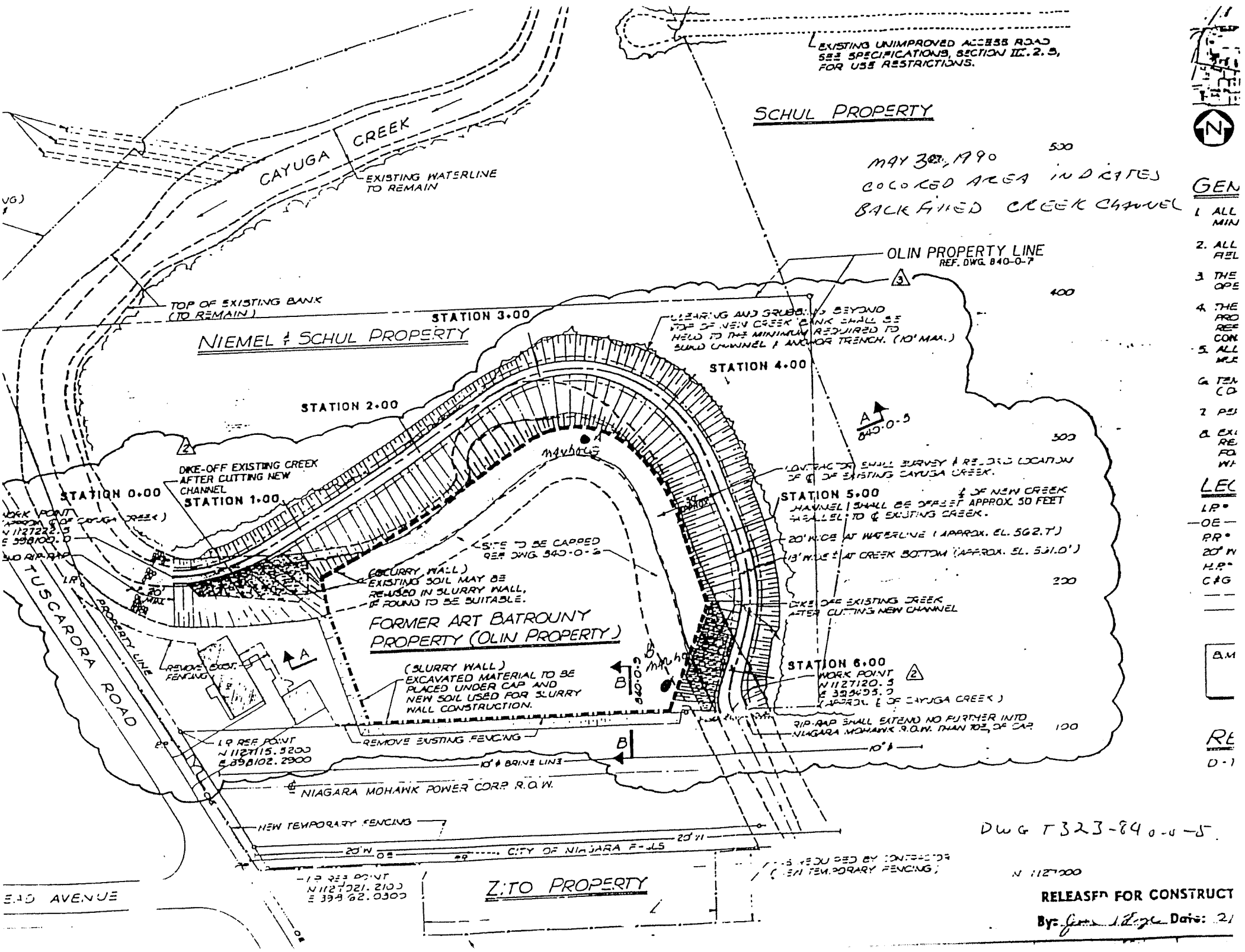
BY [signature] TITLE QA



EXISTING UNIMPROVED ACCESS ROAD SEE SPECIFICATIONS, SECTION III.2.5, FOR USE RESTRICTIONS.
SCHUL PROPERTY
MAY 30, 1990
COLORED AREA INDICATES
BACK FILLED CREEK CHANNEL
CAYUGA CREEK
EXISTING WATERLINE TO REMAIN
OLIN PROPERTY LINE
REF. DWG. 840-0-7
TOP OF EXISTING BANK (TO REMAIN)
STATION 3.00
NIEMEL & SCHUL PROPERTY
CLEARING AND GRUBBING BEYOND TOP OF NEW CREEK BANK SHALL BE HELD TO THE MINIMUM REQUIRED TO BUILD CHANNEL & ANCHOR TRENCH. (10' MAX.)
STATION 4.00
STATION 2.00
840-0-5
DIKE-OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
STATION 0.00
STATION 1.00
CONTRACTOR SHALL SURVEY & RECORD LOCATION OF ℄ OF EXISTING CAYUGA CREEK.
STATION 5.00
℄ OF NEW CREEK CHANNEL SHALL BE OFFSET APPROX. 50 FEET PARALLEL TO ℄ EXISTING CREEK.
20' WIDE AT WATERLINE (APPROX. EL. 562.7')
13' WIDE ± AT CREEK BOTTOM (APPROX. EL. 531.0')
SITE TO BE CAPPED REF DWG. 840-0-6
(SLURRY WALL) EXISTING SOIL MAY BE REUSED IN SLURRY WALL, IF FOUND TO BE SUITABLE.
DIKE OFF EXISTING CREEK AFTER CUTTING NEW CHANNEL
FORMER ART BATROUNY PROPERTY (OLIN PROPERTY)
TUSCARORA ROAD
PROPERTY LINE
REMOVE EXIST. FENCING
(SLURRY WALL) EXCAVATED MATERIAL TO BE PLACED UNDER CAP AND NEW SOIL USED FOR SLURRY WALL CONSTRUCTION.
STATION 6.00
WORK POINT N 1127120.5 E 398495.0 (APPROX. ℄ OF CAYUGA CREEK)
RIP-RAP SHALL EXTEND NO FURTHER INTO NIAGARA MOHAWK R.O.W. THAN 70% OF CAP
REMOVE EXISTING FENCING
I.R. REF POINT N 1127115.5200 E 398102.2900
10' ϕ BRINE LINE
NIAGARA MOHAWK POWER CORP. R.O.W.
NEW TEMPORARY FENCING
CITY OF NIAGARA FALLS
I.R. REF POINT N 1127021.2100 E 398162.0300
ZITO PROPERTY
EAD AVENUE
DWG T323-840-0-5
N 1127000
RELEASED FOR CONSTRUCT
By: Date: 21

DAILY INSPECTION REPORT

REPORT NO. 031
DATE 5/31/90

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT PIVE & TUSCARORA Rd., NIAGA FALLS, N.Y.
JOB NO. SY078-02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY ✓	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	7 6 TRUCK DRIVERS	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: ○ SEVENSON CONTINUED CONSTRUCTION OF THE BERM ALONG THE OLD CREEK CHANNEL. STATION 0+50 TO STA 6+10. ESI ON SITE IN ORDER TO MEASURE COMPACTION WITH A NUCLEAR DENSITY METER. 23 READINGS TAKEN. $\bar{x}$ = 99.787, SD = .751, CONTRACT REQUIREMENTS: 90% COMPACTION.

○ REMOVED UNDESIRABLE FILL AT OLD CREEK CHANNEL AT STATION 5+50 LINE.

○ CUT DAMAGED TREES AND CHIP WOOD ON NORTH SIDE OF CREEK CHANNEL

○ SET UP FOR SLURRY WALL MIXING ON SITE. CONNECTED BACKFLOW PREVENTER AT FIRE HYDRANT FOR BENTONITE SLURRY AND BACKFILL WATER SUPPLY.

○ MONITORED AIR EVERY HOUR - HEALTH AND SAFETY
○ STAGED CLAY ON SITE FOR BENTONITE BACKFILL.

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PAGE 1 OF 1

BY LOUIS LIBERATORE TITLE Q/A

ES DAILY INSPECTION REPORT

REPORT NO. 032
DATE 6/1/90

DAY | S | M | T | W | TH | F ✓ | S |

PROJECT Pine & Tuscarora Rd., Niagara Falls, N.Y.
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Mark Brown

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	14 2 SUPERS INCLUDED 6 TRUCK DRIVERS EXCLUDED.	REFERENCE PERSONNEL LOG.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE: REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: SEVERSON IS PREPARING BACKFILL MIX ON SITE AT THE CLAY CAP AREA. STARTED TO STAGE 600 CY OF CLAY FROM INDIAN HILL BORROW AREA. COMMENCED MIXING 14 TONS OF BENTONITE WITH CLAY. BAGS OF BENTONITE WERE EMPTIED INTO A FRONT END LOADER AND SPREAD ONTO THE STAGED CLAY. MIXING WAS PERFORMED WITH A TRACTOR BULLDOZER BLADING AND MIXING THE CLAY/BENTONITE BACKFILL MATERIAL.

I REVIEWED TEST PROCEDURES WITH SEVERSON'S FOREMAN TOM SCHELL AND PERFORMED THE FOLLOWING TESTS ON A BATCH OF BENTONITE SLURRY THAT WAS MIXED

1.) MARSH VISCOSITY - 40 SECONDS. SOLUTION: 4½ BAGS BENTONITE TO ONE MIXING CHAMBER OF WATER. - PASSED
2.) MARSH DENSITY TEST ON SLURRY. 65.5 LB/FT^3 - PASSED.
3.) FILTRATE LOSS ON BENTONITE SLURRY: 21.5 ML PER 30 MINUTES - PASSED.
4.) P.H. OF BENTONITE SLURRY = 7. - PASSED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis LiBeratore TITLE G/A

DAILY INSPECTION REPORT

REPORT NO. 032
DATE 6/1/90

DAY | S | M | T | W | TH | F ✓ | S |

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY ✓	MODER.	HUMID			

PROJECT PIVE & TUSCARORA Rd. NIAGRA FALLS, NY.
JOB NO. SY 078-02 — Weather
CLIENT OLIN CHEMICAL — Temp.
CONTRACTOR SEVENSON ENVIRONMENTAL — Wind
PROJECT MANAGER MARVIN BROWN — Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	14 1 TRUCK DRIVERS 2 SURVEYERS	REFERENCE PERSONNEL LOG 2 HRS EA.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: MARVIN BROWN AND MYSELF FOREMAN'D SEVENSON THAT NO CLAY LUMPS EXCEEDING 2" DIA. WOULD BE ALLOWED IN THE BACKFILL MIX PRIOR TO PLACEMENT.

- SEVENSON CONTINUED CUTING AND CLIPPING TREES ON THE NORTH SIDE OF THE NEW CREEK CHANNEL.
- SEVENSON RECONSTRUCTED THE ~~CLAY~~ FILTRATE FENCE ON THE SOUTH SIDE OF THE CHANNEL ADJACENT TO THE SLURRY WALL.
- PERFORMED AIR MONITORING ON SITE ON THE HOURLY BASIS
- SURVEYERS ON SITE IN ORDER TO START LAYING OUT THE SLURRY WALL.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 033
DATE JUNE 2, 1990

DAY | S | M | T | W | TH | F | S ✓ |

PROJECT PIKE & TUSCARORA Rd., NIAGRA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	1	6	2 SURVEYERS ON SITE LEFT AT NOON.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SURVEYERS ON SITE IN ORDER TO LAYOUT THE SLURRY WALL. REVIEWED LAYOUT WITH REX GLIFFER OF LAWSON ENGINEERS AND MARVIN BROWN. THE SLURRY WALL LOCATION APPEARS TO LONGER THAN SHOWN ON THE DRAWINGS, CORNERS OF THE EAST SIDE OF THE SLURRY WALL MEASURED FROM THE BRICK GARAGE INDICATE THE SLURRY WALL IS SLIGHTLY LONGER THAN SHOWN AND WILL BE FURTHER OUTSIDE THE LIMITS OF THE CONTAMINATED AREA. THE SOUTH WEST CORNER OF THE SLURRY WALL APPEARED TO BE WHERE IT WAS LOCATED ON THE DWGS. THE SURVEYED LOCATIONS WERE APPROVED BY MARVIN BROWN, REX GLIFFER AND MYSELF.

SEVENSON STARTED MIXING THE BACKFILL MIX AT THE CLAY CAP AREA. MIXING TIME STARTED AT 12:30 P.M. AND ENDED AT 5:30 P.M. MIXED APPROXIMATELY 300 CY OF BENTONITE/ CLAY BACKFILL. THE FOLLOWING TESTS WERE RECORDED:

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 033
DATE JUNE 2, 1990

DAY | S | M | T | W | TH | F | S ✓

PROJECT PINE & TUSCARORA Rd. NIAGARA FALLS, NY.
JOB NO. SYC78.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY ✓	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	1	5	2 SURVEYORS ON SITE LEFT AT NOON.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: MARSH VISCOSITY TESTS ON SLURRY - FIVE HOUR PERIOD.

1.) 39.5 SECONDS (ADDED ½ BAG BENTONITE)
2.) 40 SECONDS PASSED
3.) 42 SECONDS PASSED
4.) 42 SECONDS PASSED.
5.) 40 SECONDS PASSED

SLUMP TESTS ON BACK FILL MIX

1.) 5" SLUMP PASSED
2.) 4" SLUMP PASSED
3.) 6" SLUMP PASSED.

BACKFILL WAS STAGED ON SITE FOR MONDAY

O SEVENSON CONTINUED RECONSTRUCTING WEAK AREAS OF THE FILTER FABRIC FENCE AT THE SOUTH SIDE OF THE CHANNEL.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 034
DATE JUNE 4, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT PINE AVE & TUSCARORA RD., NIAGRA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	6	12	SLURRY WALL CREW ON SITE

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: SEVERSON BEGAN CONSTRUCTION OF THE SLURRY WALL. YESTERDAY HIGH WINDS (60 MPH) DEHYDRATED THE BACKFILL THAT WAS PREPARED ON JUNE 2, 1990. AS A RESULT THE PREPARED BACKFILL MIX HAD TO HAVE SLURRY ADDED TO IT AND BE REMIXED PRIOR TO PLACEMENT. EARLY SLUMP TESTS INDICATED MATERIAL WAS TO STIFF FOR PLACEMENT (1" SLUMP). AFTER MIXING, AN ADDITIONAL SLUMP TEST WAS TAKEN AT 9:25 A.M. THIS TEST MEASURED A 5 1/2" SLUMP AND BACKFILL WAS THEN ADEQUATE FOR PLACEMENT. EXCAVATION AND BACKFILL OPERATIONS BEGAN AT THE STARTER TRENCH LOCATED AT QUADRANT LOCATIONS N 7128.57, E 8221.76. THEY PROCEEDED TO THE SOUTH WEST CORNER AND THEN THE SOUTH EAST CORNER OF THE CAP AREA. 3' OVERLAPPING CORNERS WERE CONSTRUCTED AS SHOWN ON THE DRAWINGS AT BOTH LOCATIONS. STATION 0+00 WAS ASSIGNED TO THE STARTING POINT OF THE TRENCH WHICH WAS ADEQUATELY SLOPED TO

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LISERATORE TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 034
DATE JUNE 4, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT PINE AVE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	6	12	SLURRY WALL CREW ON SITE.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: 9' DEEP EXCAVATION WAS TERMINATED AT STATION 3+40. SOIL EXCAVATED FROM THE TRENCH ALONG THE WESTERN AND SOUTHERN ALIGNMENTS WAS DISPOSED OF AT THE OLD CREEK CHANNEL EXCAVATION.

THE DEPTH OF THE TRENCH EXCAVATION WAS CONTINUOUSLY MONITORED DURING EXCAVATION UNTIL THE KEYING MATERIAL WAS REACHED. THEN AN ADDITIONAL 2' OF CLAY WAS REMOVED. MEASUREMENTS OF THE BOTTOM OF THE KEYING STRATUM WERE MADE IN ORDER TO INSURE A CLEAN BOTTOM. SAMPLES OF THE TOP OF THE KEYING STRATA WERE COLLECTED EVERY 25' WITH A BACKHOE. BACKFILL PLACEMENT WAS PERFORMED WITH A DOZER PUSHING THE MIX DESIGN INTO THE TRENCH.

AVERAGE DEPTH FOR THE WESTERN ALIGNMENT OF THE SLURRY WALL WAS 9.16' DEEP. AVERAGE DEPTH OF THE SOUTHERN ALIGNMENT WAS 9.15' DEEP. EXCAVATION OF THE SOUTHERN ALIGNMENT STARTED

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BY LOUIS LIBERATORE TITLE G/A

DAILY INSPECTION REPORT

REPORT NO. 034
DATE JUNE 4, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	6	12	SLURRY WALL CREW ON SITE.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT Coq.

CONSTRUCTION ACTIVITIES: AT THE SOUTH WEST CORNER WITH A DEPTH OF 8' AND PROCEEDED TO THE SOUTH EAST CORNER WITH A DEPTH OF 12'. CAREFUL MONITORING OF EXCAVATION IN THE AREA OF D-3 (REFERENCE WOODWARD & CLYDE DESIGN REPORT) WAS PERFORMED IN ORDER TO LEAVE UNDERLYING SAND BENEATH THE KEYING CLAY UNDISTURBED.

WHILE PERFORMING TRENCHING OPERATIONS, SLURRY WAS INDUCED INTO THE TRENCH IN ORDER TO SUPPORT OPEN EXCAVATION AND FACILITATE PLACEMENT OF BACKFILL. CONTINUOUS AIR MONITORING WAS PERFORMED DURING EXCAVATION AND BACKFILL OPERATIONS. THE FOLLOWING TESTS WERE OBSERVED AND MONITORED DURING THE DAY

7:45 A.M SLURRY MARSH DENSITY 40 SECONDS - PASSED
PH 8 - PASSED
FILTRATE LOSS 14 ML - PASSED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LISETADRE. TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 034
DATE JUNE 4, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT PINE AVE & TUSCARORA Rd., NIAGRA FALLS NY
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR A. SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	6	12	SLURRY WALL CREW ON SITE.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT Cog.

CONSTRUCTION ACTIVITIES:

8:40 A.M. SLUMP TEST 1" - FAILED - BACKFILL ADJUSTED AND REMIXED
9:45 A.M. SLUMP TEST 5½" PASSED
10:10 A.M. FILTRATE LOSS ON SLURRY 17.5 ML - PASSED
10:55 A.M. BOTTOM TRENCH SLURRY DENSITY 65 LB/FT³ - PASSED
12:15 A.M. PERMEABILITY SAMPLE TAKEN FROM STA 0+80
12:15 A.M SLUMP TEST ON BACKFILL 4½" - PASSED
10:55 A.M. BOTTOM TRENCH SLURRY VISCOSITY 45 MARSH SECONDS - PASSED
1:30 P.M SLURRY MARSH DENSITY 64.5 LB/FT³ - PASSED
1:40 P.M SLURRY MARSH VISCOSITY 41.09 - PASSED
2:00 P.M. MID DEPTH TRENCH SLURRY MARSH VISCOSITY 44.64 SECONDS - PASSED.
2:00 P.M MID DEPTH TRENCH SLURRY DENSITY 67 LB/FT³ - PASSED.
1:37 P.M FILTRATE LOSS SLURRY 18.5 ML - PASSED AT 2:07 P.M.
SLURRY DENSITY AT 2:07 P.M. 64.5 LB/FT³ - PASSED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 035
DATE June 5, 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, NY
JOB NO. SY 079-02
CLIENT Olin Chemical
CONTRACTOR Severson Environmental
PROJECT MANAGER Marvin Brown

Weather: Bright Sun | Clear ✓ | Overcast | Fog | Rain | Snowy
Temp.: To 32 | 32-55 | 55-70 ✓ | 70-85 | 85 up
Wind: Still | Moder. ✓ | High
Humidity: Dry | Moder. ✓ | Humid

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Severson Environmental	5	12	Slurry wall crew on site.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log

CONSTRUCTION ACTIVITIES:

9:30 AM Slurry Density 64.5 LB/FT^3 - Passed
Slurry PH 8 Passed
Slurry Marsh Viscosity 41.5 Marsh Seconds - Passed
Filtrate Loss on Slurry 18 ml - Passed
11:00 A.M. Bottom Slurry Viscosity 42.37 - Passed
Bottom Slurry Density 66.5 LB/FT^3 Passed
mid depth Slurry Marsh Density 41.85 Sec. - Passed
mid depth Slurry Marsh Density 64.5 LB/FT^3 Passed
11:20 A.M Permiability Sample From Top of Slurry Trench at Plan Location 4+75
2:10 PM Slump Test 5½"
2:15 P.M. Marsh Viscosity - Slurry 42 Seconds - Passed
Slurry Density 64.5 LB/FT^3 Passed.
2:23 P.M mid depth Slurry Marsh Density 67.5 LB/FT^3 - Passed Station 3+40 - Plan Location 4+35.
mid depth Slurry Marsh Viscosity 50 Sec - Passed
Same Station Location.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 035
DATE JUNE 5, 1990
DAY S M T W TH F S (T)

PROJECT PIKE AVE & TUSCARORA RD. NIAGARA FALLS, NY
JOB NO. SY078-02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MAZUIN BROWN

Weather: BRIGHT SUN | CLEAR (✓) | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 (✓) | 70-85 | 85 UP
Wind: STILL | MODER. (✓) | HIGH
Humidity: DRY | MODER. (✓) | HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	12	SLURRY WALL CREW ON SITE

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES:
EXCAVATION AT PLAN LOCATION 4+05 HAD TO PROCEED TO 16½' DEEP. WHILE DIGGING, A POCKET OF DEBRIS, CONCRETE SLABS, AND ORGANIC MATTER WAS EXPOSED. EXCAVATION PROCEEDED UNTIL 2' OF RED CLAY FREE OF ANY FOREIGN MATTER WAS EXPOSED.

BACKFILL WAS MIXED ON THE CAP AREA. CLAY FROM INDIAN HILL WAS MIXED WITH DRY BENTONITE POWDER (1.70 TO 1½% MIXTURE). A TRACTOR PROCEEDED TO MIX THE FILL AS IT WAS SPRAYED WITH BENTONITE SLURRY SOLUTION. AFTER MIXING WAS COMPLETED A TRACTOR BULLDOZER WOULD PUSH THE DESIGN MIX INTO THE SLURRY TRENCH. SOUNDINGS FOR SLOPE AND CLEAN BOTTOM WERE CONSTANTLY MONITORED. TODAYS EXCAVATION ENDED AT PLAN LOCATION 2+15.

DURING TODAYS ACTIVITIES I MONITORED THE FOLLOWING TESTS:
7:45 SLUMP TEST 5¼" - PASSED
9:30 BACKFILL DENSITY 103.4 LB/FT³ - PASSED

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 035
DATE JUNE 5, 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT PINE AVE & TUSCARORA RD., NIAGRA FALLS, NY
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	12	SLURRY WALL CREW ON SITE.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: SEVENSON CONTINUED CONSTRUCTION OF THE SLURRY WALL. WORK STARTED AT STATION 5+80 OR PLAN LOCATION 3+48.80. BACKFILL WAS MIXED UNTIL A SLUMP OF 5½" WAS OBTAINED AT 7:45 A.M. A CAVE IN OCCURED AT TODAYS STARTING POINT. THE CAVE IN WAS ON PREVIOUSLY BACKFILLED SOILS AND WAS APPROXIMATELY 40' LONG. THE TOP OF THE DITCH TOWARD THE CAP AREA SLOUGHED INTO THE DITCH. THE BACKHOE EXCAVATING FOR THE SLURRY WALL CAME BACK TO THIS DAMAGED LOCATION AND EXCAVATED SOILS THAT HAD FALLEN INTO THE DITCH. THE OPERATOR CLEANED THE TRENCH BOTTOM FROM THE AREA OF THE CAVE IN ALL THE WAY TO THE WORK POINT WHERE HE WAS EXCAVATING WHEN THE TRENCH CAVED IN (APPROX 60'). MEASUREMENTS OF THE TRENCH BOTTOM WERE RETAKEN AS REEXCAVATION OCCURRED IN ORDER TO INSURE A CLEAN KEYING STRATA.

DISTRIBUTION 1. Proj Mgr
2. Const Dept
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE. DATE 6/1

DAILY INSPECTION REPORT

REPORT NO. 035
DATE June 5, 1990

DAY	S	M	T	W	TH	F	S
			✓				

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls NY
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Mario Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	12	Slurry wall crew on site

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES:
2:23 P.M. Backfill density 105 LB/FT^3 - Passed

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 038
DATE June 6, 1990
DAY S M T W✓ TH F S

PROJECT Pine Ave & Niagara Rd Niagara Falls, NY
JOB NO. SY 078-02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather: BRIGHT SUN TO 32 | CLEAR✓ 32-55 | OVERCAST 55-70✓ | FOG 70-85 | RAIN 85 UP | SNOWY
Temp.
Wind: STILL | MODER.✓ | HIGH
Humidity: DRY | MODER.✓ | HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	10	Slurry wall crew on site.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
10:30 AM	Gordon Nelle	Engineering Science	Observe construction procedure

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES: Last day of construction on the slurry wall. Operations started at plan location 1+80 and proceeded to completion at plan location 7+55. On June 4, 1990 the starting trench for slurry placement was at station 0+00. Todays excavation removed the starting trench which was between locations 0+00 and 7+55.

Backfill mixing proceeded on a continous basis until the excavated trench was filled. During the three day operation, backfill consistency was uniform and without lump sizes that exceeded 2". A lead trench was dug from the slurry trench to a mixing area where bentonite slurry was mixed with cement.

During todays operations, Gordon Nelle observed stress cracks on soils at station location 2+00. The cracks were approx 1" to 1½" wide and were on top of the constructed

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 036
DATE JUNE 6, 1990

DAY | S | M | T | W ✓ | TH | F | S |

PROJECT PINE AVE & TUSCARORA Rd. NIAGARA FALLS, NY.
JOB NO. 5Y078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN.

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	10	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: BENCH FACING CAYUGA CREEK (SOUTH SIDE OF CREEK CHANNEL). HE RECOMENDED MONITORING OF THESE CRACKS ON A DAILY BASIN. DURING TODAYS OPERATIONS I MONITORED THE FOLLOWING TESTS.

8:30 A.M. SLUMP TEST ON BACKFILL 5" - PASSED
9:15 A.M. SLURRY MARSH VISCOSITY 45.34 SEC - PASSED.
9:17 A.M. SLURRY DENSITY 64.5 LB/FT^3 PASSED.
9:28 A.M. BOTTOM TRENCH SLURRY MARSH VISCOSITY 55.43 SEC - PASSED.
BOTTOM TRENCH SLURRY DENSITY 68 LB/FT^3 PASSED
9:50 A.M. MID DEPTH SLURRY MARSH VISCOSITY 53.48 SECONDS - PASSED.
MID DEPTH SLURRY DENSITY 68 LB/FT^3
12:10 SLURRY MARSH VISCOSITY 38:54 SEC - FAILED
SLURRY ADJUSTED - ADDED 2 BAGS BENTONITE
12:25 SLURRY MARSH VISCOSITY 40.20 SEC - PASSED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 036
DATE JUNE 6, 1990

DAY: S | M | T | W ✓ | TH | F | S

PROJECT PINE AVE & TUSCARORA Rd., NIAGARA FALLS NY.
JOB NO. 5Y079.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MATTHEW BROWN

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 ✓ | 70-85 | 85 UP |
Wind: STILL | MODER. | HIGH |
Humidity: DRY | MODER. ✓ | HUMID |

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	10	SLURRY WALL CREW ON SITE.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

12:25 P.m SLURRY MARSH DENSITY 64.5 LB/FT^3 PASSED
1:30 P.m BACKFILL SLUMP 4 ½" PASSED.
SAMPLE FROM STATION 0+20 IN TRENCH
1:06 PM TO 1:36 PM FILTRATE LOSS 15 ML - PASSED.
PH 8 PASSED.
1:34 P.m MARSH VISCOSITY SLURRY IN TRENCH - MID DEPTH 68.9 SEC. PASSED.
1:37 P.m SLURRY DENSITY MID DEPTH TRENCH 74 LB/FT^3 - PASSED.

DISTRIBUTION 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LISECAMME TITLE QA.

ES DAILY INSPECTION REPORT

REPORT NO. 037
DATE June 7, 1990

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT Pine Ave & Tuscarora Rd, Niagra Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES: Sevenson on site performing clean up operations from slurry wall construction. Removing excess bentonite and cement from site. Sevenson purchased 72 TN of bentonite for this project. 286 bags or 14.3 TN of bentonite are left over. (100 LB per bag). Also perform site grading and removing left over backfill mix from cap area.

Sevenson started grading the backfill mix for the anchor trench, on the western and southern alignments of the slurry wall.

I assisted Sevenson's surveyor in surveying an as built location of the slurry wall.

Sevenson continued grading, placing ground stabilization fabric, and stone at the downstream location of the creek that has not been completed. Station

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BY Louis Liberatore. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 037
DATE JUNE 7, 1990

DAY | S | M | T | W | TH ✓ | F | S |

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY078.02 — Weather
CLIENT OLIN CHEMICAL — Temp.
CONTRACTOR SEVERSON ENVIRONMENTAL. — Wind
PROJECT MANAGER MARVIN BROWN — Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: 6+25 TO 5+75.

I INSPECTED THE CRACKS ON THE BANK BETWEEN THE NEW CREEK CHANNEL AND THE SLURRY WALL AT STATION 2+00. NO APPARENT INCREASE IN SIZE OR SHAPE OF CRACKS ON BANK IS EVIDENT.

O SEVERSON PERFORMED AIR MONITORING ON SITE TODAY.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 038
DATE JUNE 8, 1990

DAY | S | M | T | W | TH | F ✓ | S |

PROJECT DUE AVE & TUSCARORA Rd. NIAGRA FALLS, N.Y.
JOB NO. SY678.02
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERSON ENVIRONMENTAL.
PROJECT MANAGER MARVIN BLOUNT

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	13	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE
REFERENCE EQUIPMENT Log.

CONSTRUCTION ACTIVITIES: SEVERSON TERMINATED OPERATIONS TODAY AT 12:00 P.M. DUE TO RAIN.

- CONTINUED CLEANUP AND GRADING OF CAP AREA. CLAY IMPORTED FROM INDIAN HILL.
- CONTINUED GRADING OF BACKFILL MIX FOR THE ANCHOR TRENCH ON THE SOUTHERN ALIGNMENTS OF THE SLURRY WALL.
- CONTINUED PLACING RIP RAP AT DOWNSTREAM LOCATION OF NEW CHANNEL. STATION 5+75 TO 6+25

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 039
DATE June 11, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT Pine Street Canal Rd, Niagara Falls, N.Y
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Seuenson Environmental
PROJECT MANAGER Marvin Blaine

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Seuenson Environmental	5	13	
Environmental Soils Testing Inc		2	Install Piezometers P-1 & P-2.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Seuenson continued importing clay from Indian Hill for the cap area.

- Continued placement of Rip Rap at the downstream location of the new channel. Placement is consistent with plans and specifications, 12" Rip Rap on north side of channel and 18" on the south side of the new channel.

- Environmental Soils Testing on site in order to install Piezometers P-1 and P-2.

Inspection of materials:

PVC 2" x 5' Riser Pipe Sch 80 / Slot Size .01
supplied by Frederick Drill Inc.
1719 State Street.
LaPorte, Indiana 41350

DISTRIBUTION 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 039
DATE JUNE 11, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT PIPE & TUSCARORA RD, NIAGARA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVEUSON ENVIRONMENTAL
PROJECT MANAGER MARK GLOVER.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVEUSON ENVIRONMENTAL	5	13	
ENVIRONMENTAL SOILS TESTING		2	INSTALL PIEZOMETERS P-1, P-2.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CEMENT: TYPE I PORTLAND MFG BY ICC

3/8" BENTONITE PELLETS AND BENTONITE POWDER - NO NAME.

SCH 10 GALVANIZED SQUARE PROTECTIVE CASINGS WITH COVERS - MATERIAL REJECTED - PLANS IDENTIFY SCH 80 CARBON STEEL PIPE, INSPECTION OF MATERIALS.

POOL FILTER SAND FOR ABOVE AND BELOW GROUND POOLS BY B.S.S., BUFFALO, NEW YORK.

TIP ELEVATION OF PIEZOMETERS WERE SET AT EL. 560.0. EXCAVATION FOR PIEZOMETERS WAS 6" BELOW TIP ELEVATION. SAND WAS PLACED INTO THE BORINGS ONE FOOT ABOVE THE PVC PIPE SLOTED SCREENS. PVC PIPE WAS THEN SEALED WITH 2' OF BENTONITE PLUG. BORINGS WERE THEN FILLED WITH BENTONITE/CEMENT GROUT.

DISTRIBUTION 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE. TITLE O/A

ES DAILY INSPECTION REPORT

REPORT NO. 039
DATE June 11, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT Pine & Tuscarora Rd. Niagra Falls, NY.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown.

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	13	
Environmental Soils Testing Inc		2	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Environmental soils testing on site today in order to test compaction of placed backfill between the constructed bench for the slurry wall and the ~~north~~ South side of the old creek channel. Testing proceeded by excavating a 2' cut at six different locations along this backfilled area. All measurements were obtained with a nuclear densitometer. Compaction tests in this area passed the criteria for structural fill. Test no 1. 90.7 %, 17.7 moisture,
Test no 2. 86.1 % 23.7 moisture
Test no 3. 87.0 % 21.7 "
Test no 4. 92.7 % 19.8 "
Test no 5. 84.7 % 18.0 % moisture
Test no 6. 90.7 % 27.4 % moisture

Tests # 2, # 3, # 5 were difficult readings to obtain due to the disturbed soils when the tractor bulldozer bladed a 2' cut into the compacted clays.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 3 OF 3

BY Louis Liberatore. TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 040
DATE June 12, 1990

DAY | S | M | T ✓ | W | TH | F | S |

PROJECT Pine and Tuscarora Rd. Niagara Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Severson Environmental
PROJECT MANAGER Marvin Stower

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.						
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Severson Environmental	5	9	
Environmental Soils Testing Inc		2	Install Piezometers # 5 & # 6.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Environmental Soils Testing Inc. on site for installation of Piezometers #5 & #6. While Boring for Piezometer #6 it was noted that Red Clay was found beneath the dark clay the slurry wall was keyed into at this location. No traces of sand were found at time of drilling. Field Judgement at time of construction of the slurry wall dictated caution be exercised in depth of excavation along this area of the south alignment. Woodward and Clydes studies indicated traces of sand in this area at this depth.

Environmental Soils Testing Inc on site in order to measure compaction of the final lift of capping clay. Three tests were taken on the clay cap at random locations. Results indicate adequate compaction but low moisture. Severson to remove the final lift of clay and add moisture.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 040
DATE June 12, 1990
DAY S M T ✓ W TH F S

PROJECT Pine Ave & Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Seuenson Environmental
PROJECT MANAGER Marvin Brown.

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 ✓ | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY | MODER. ✓ | HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Seuenson Environmental	5	9	
Environmental Soils Testing Inc.		2	Install Piezometers #5 + #6.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Marvin Brown, Bek Giffet and the land scaper marked 25 trees to be planted on the north side of the new creek channel.

Land Scaper: Beane Enterprises
Landscaping and Lawn Maintenence
Mr. Ken Lilly, Tel: 716-754-2339

Seuenson continued reworking the south slope of the new channel at the up stream work point area.

Seuenson started installing the Geo grid over the anchor trench of the slurry wall (South Alignment).
Material: Product Code:
Tensar BX 1200 40
Description: SS2
Dimension: 3m x 50m
Obtained sample from Lot Roll No. 227799 14

DISTRIBUTION 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore TITLE G/A

DAILY INSPECTION REPORT

REPORT NO. 041
DATE June 13, 1990
DAY S M T W TH F S (W ✓)

PROJECT Pine Ave & Tuscarora Rd., Niagara Falls, NY.
JOB NO. SY079.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	5	9	
Environmental Soils Testing Inc.		2	Install Piezometers #3 & #4.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES: Environmental soils testing on site today in order to install Piezometers #3 & #4. All work on drilling, slotted PVC pipe and Bentonite plugs and seals has been performed according to contract specifications. ESI to return after liner is complete and structural fill is in place over cap area in order to erect protective casings.

Environmental soils testing on site in order to measure compaction on the final lift of clay at the clay cap area. After obtaining two readings, it was determined that the final lift of clay was to dry and that moisture and recompaction would have to be performed in order to meet contract requirements. Test #1, 12.1% moisture, 100% compaction. Test #2, 13.3% moisture, 100% compaction. The optimum moisture content on the standard Proctor for this clay is 19.2%.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Louis Liberatore TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 041
DATE June 13, 1990

DAY | S | M | T | W ✓ | TH | F | S |

PROJECT Pine & Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. 5Y078.02
CLIENT Olin Chemical
CONTRACTOR Seuvenson Environmental
PROJECT MANAGER ~~Marvin~~ Brown.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Seuvenson Environmental	5	9	
Environmental Soils Testing		2	Install Piezometers #3 & #4.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
Reference Equipment Log.

CONSTRUCTION ACTIVITIES: Air monitoring for work at this site has been discontinued today.

Seuvenson continued grading slopes and placing R/P R40 north west of the work point located at the old creek channel.

Seuvenson surveyor and operators work at final grading of the clay cap. No vibrating equipment allowed at slurry wall.

Seuvenson operator rework wet clay at the staging area in order to prepare it for structural fill at the clay cap.

Continue placing geogrid at east side of cap area along creek channel. Placement is within guidelines of the specifications.

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BY Louis Liberatore. TITLE O/I

DAILY INSPECTION REPORT

REPORT NO. 042
DATE JUNE 14, 1990
DAY S M T W TH F S (TH ✓)

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

PROJECT PINE AVE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078.02 — Weather
CLIENT OLIN CHEMICAL — Temp.
CONTRACTOR SEVENSON ENVIRONMENTAL — Wind
PROJECT MANAGER MARVIN BROWN — Humidity

AVERAGE FIELD FORCE

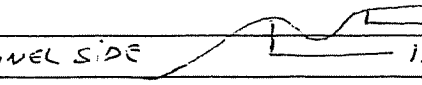
NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT Log

CONSTRUCTION ACTIVITIES: I MEASURED SETLEMENT OF THE SLURRY WALL AT STATION 0+30. MEASUREMENTS AT THE DEEPEST POINT OF SETLEMENT MEASURED .55 OF ONE FOOT ON THE SOUTH SIDE OF THE SLURRY WALL AND 1.20 OF ONE FOOT ON THE NORTH SIDE OF THE SLURRY WALL.



I ALSO NOTICED THE APPEARENCE OF MAKE CRACKS ON THE CHANNEL SLOPES FROM STATION 0+00 TO 2+00. I ASKED MARVIN BROWN & SEVENSON CONSTRUCTION TO ESTABLISH THREE SURVEY POINTS ON THE CHANNEL SLOPE IN ORDER TO MONITOR ANY POSSIBLE MOVEMENT OF THE CONSTRUCTED BANK POINTS SHOULD BE MONITORED ON A DAILY BASIS SURVEYORS ESTABLISHED THREE POINTS WITH QUADRANT LOCATIONS:

NORTH	EAST	NORTH	EAST	NORTH	EAST
7245	8226.06	7282.39	8284.31	7323.77	8344.43

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BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 042
DATE JUNE 14, 1990
DAY S M T W TH ✓ F S

PROJECT PIVE + TUSCARORA Rd. NIAGARA FALLS, N.Y.
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	5	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: 25 CRAB APPLE TREES AND A LOAD OF TOPSOIL WERE DELIVERED TO THE NORTH SIDE OF THE NEW CREEK CHANNEL FOR PLANTING IN THAT AREA.

SEVENSON'S LABORERS WERE CLEARING BRUSH AND DAMAGED TREES ON THE NORTH SIDE OF THE CREEK CHANNEL.

SEVENSON'S OPERATORS CONTINUE GRADING SLOPES AND PLACING RIP RAP AT THE OLD CREEK CHANNEL NORTH WEST OF THE ESTABLISHED WORK POINT

SEVENSON CONTINUED DISCING AND ADDING MOISTURE TO CLAY AT CAP AREA. SOILS WERE REWORKED AND RECOMPACTED. ALL CLAY DELIVERED TO CAP AREA TO DATE HAS BEEN FROM INDIAN HILL. ESI IS SCHEDULED FOR COMPACTION AND MOISTURE MEASUREMENTS TOMORROW.

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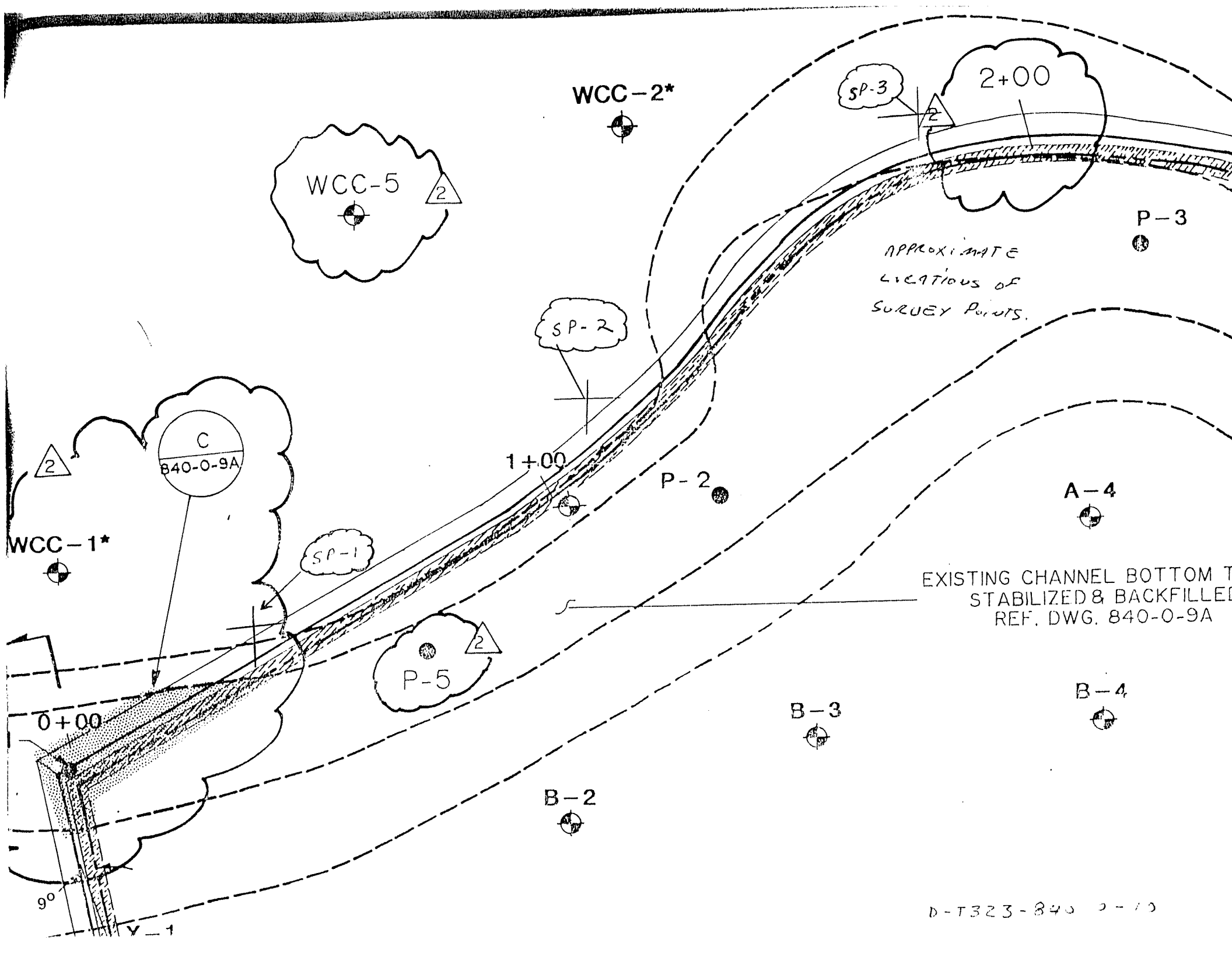
BY LOUIS L. BERNSTORE TITLE QA


WCC-2*
WCC-5
2
SP-3
2+00
P-3
APPROXIMATE
LOCATIONS OF
SURVEY POINTS.
SP-2
C
840-0-9A
2
1+00
P-2
A-4
WCC-1*
SP-1
EXISTING CHANNEL BOTTOM T
STABILIZED & BACKFILLED
REF. DWG. 840-0-9A
P-5
2
B-4
B-3
0+00
B-2
9°
Y-1

DAILY INSPECTION REPORT

REPORT NO. 043.
DATE JUNE 15, 1990

DAY | S | M | T | W | TH | F ✓ | S |

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

PROJECT PINE AVE & NIAGARA RD. NIAGRA FALLS, NY.
JOB NO. SY077.02 Weather
CLIENT OLIN CHEMICAL Temp.
CONTRACTOR SEVERSON ENVIRONMENTAL Wind
PROJECT MANAGER MARVIN BROWN Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFELENCE EQUIPMENT LOG

CONSTRUCTION ACTIVITIES: READINGS INDICATE MOVEMENT OF THE CHANNEL SLOPE .1 OF ONE FOOT NORTH.

I WALKED THE NEW CREEK CHANNEL FROM STATION 0+00 TO 2+50 TODAY AND MADE THE FOLLOWING OBSERVATIONS:

1.) A WRINKLE ALONG THE CHANNEL BOTTOM EXTENDS FROM N 1+50 TO 2+50. CHANNEL FLOOR GRADE IN THIS AREA HAS BEEN LOST.

2.) UNDERLYING CLAY FROM THE NEW CONSTRUCTED SLOPE THAT MAKES UP THE SOUTH SIDE OF THE NEW CREEK CHANNEL APPEARS TO BE HEAVING INTO THE CENTER OF THE CREEK. THIS INFORMATION WAS RELAYED TO MARVIN BROWN.

NORTH CHANNEL SLOPE

SOUTH CHANNEL SLOPE

HEAVED AREA; 3' IN CENTER WEST LOCATION 2+00.

EST ON SITE TODAY IN ORDER TO MEASURE COMPACTION OF THE FINAL LIFT OF CLAY AT THE CLAY CAP AREA. SEVERSON HAD TO RE DISC AND ADD MOISTURE TO AND RE-COMPACT THE FOLLOWING AREAS: N7130 TO N7250, E8300 TO E8400.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 043
DATE JUNE 15, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT PINE AVE AND NIAGARA RD NIAGARA FALLS NY.
JOB NO. SY678.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

Temp.
Wind
Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: AFTER REDISCING AND ADDING MOISTURE TO REWORKED AREAS, COMPACTION MEASUREMENTS FOR THE FINAL LIFT OF CLAY AT THE CLAY CAP AREA MET CONTRACT REQUIREMENTS. HEAVY LOADING OF THE SMOOTH DRUM ROLLER AND BULLDOZER WAS HELD TO A MINIMUM NEAR THE CHANNEL SLOPES FROM STA 0+00 TO 2+50 DUE TO THE SOILS PROBLEM THAT PRESENTLY EXISTS IN THIS AREA.

SEVERSON'S OPERATORS CONTINUED REWORKING CHANNEL SLOPES AND PLACING RIP RAP AT STATION 6+00.

HDPE LINER MATERIAL WAS UNLOADED FROM A FLATBED TRUCK AT THE JOBSITE TODAY. (7 ROLLS) ALL MATERIAL APPEARED TO BE IN GOOD CONDITION AND WITHOUT NEED OF REPAIR. ROLLS OF LINER WERE UNLOADED WITH NYLON STRAPS AND PLACED ON WOODEN PALLETS TAG. IDENTIFICATION: GUNDLE LINING SYSTEMS PRODUCT CODE HDE040 6000, THICKNESS 40 MIL. WIDTH OF ROLL 22.5', LENGTH OF ROLL 650 FEET, ROLL NO. B0300418C.

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2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 043
DATE JUNE 15, 1990
DAY S M T W TH F ✓ S

PROJECT PORTAGE & TUSCARORA RD, NIAGARA FALLS, N.Y.
JOB NO. SY 678.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRON. MENTAL	5	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	PAUL MAZIESK	WOODWARD & CLYDE	REVIEW SETTLEMENT OF SLURRY WALL.

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: PAUL MAZIESK OF WOODWARD AND CLYDE IS ON SITE TODAY IN ORDER TO OBSERVE THE SETTLEMENT AND SHIFTING PROBLEM OF THE NEW CONSTRUCTED BANK FROM STA 0700 TO 2700. HE INFORMED MR. FRANK WALLER OF HIS OBSERVATIONS. MR. WALLER APPROVED LINER INSTALLATION WHICH IS SCHEDULED FOR MONDAY JUNE 18, 1990. LINER INSTALLATION IS TO TERMINATE APPROXIMATELY 25' FROM THE TOP OF THE CHANNEL SLOPE FROM STATION 0700 TO 2750.

I ASSISTED SEVERSON'S SURVEYORS IN MEASURING ANY POSSIBLE MOVEMENT ON THE THREE SURVEY POINTS THAT WERE ESTABLISHED YESTERDAY.

MEASUREMENTS OBSERVED TO DATE ARE:

	SPF1	SPF2	SPF3
6/14/90	N 7245.04 E 9226.06	N 7282.39 E 8284.31	N 7323.77
6/15/90	N 7245.17 E 9226.00	N 7282.48 E 8284.23	N 7323.84
6/14/90			E 8344.43
6/15/90			E 8344.38

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BY LOUIS LIBERATORE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 244
DATE June 16, 1990

DAY

S	M	T	W	TH	F	S
						✓

PROJECT Pine Ave & Tuscarora Rd, Niagra Falls, N.Y.
JOB NO. SY 079.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental		2	Surveyors - 2 hrs 8:00-10:00 A.M.
Landscaper: Bean Enterprises		4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I assisted Sevenson's surveyors while measuring the three survey points on the south side of the creek channel. Todays measurements are

SP#1 SP#2
N 7245.13, E 8226.02 / N 7282.56, E 8284.20

SP#3
N 7223.90, E 8344.37

Measurements indicate movement of the channel slope has stopped

Sevenson is watering the clay cap area in order to prevent desication of soils. Watering is supposed to take place today and tommorrow.

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PAGE 1 OF 2

BY Louis Liberatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 044
DATE June 16, 1990

DAY

S	M	T	W	TH	F	S
						✓

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, N.Y.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Landscapers are on site today planting 25 crab apple trees at the area north of the new channel.

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4. Client
5. File

PAGE 2 OF 2

BY Louis Liberatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 045
DATE JUNE 17, 1990

DAY	S	M	T	W	TH	F	S
	✓						

PROJECT PINE AVE & TUSCARORA Rd. NIAGRA FALLS NY
JOB NO. SY078 02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70	70-85	85 UP	
Temp.	STILL	MODER.	HIGH			
Wind	DRY	MODER.	HUMID			
Humidity						

.38" RAIN

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL		2	SURVEYORS 2 hrs 8:00 A.M.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I ASSISTED SEVENSONS SURVEYORS WHILE MEASURING THE THREE SURVEY POINTS ON THE SOUTH SIDE OF THE CREEK CHANNEL. TODAYS MEASUREMENTS ARE:

SP#1 N 7245.13, E 8226.02

SP#2 N 7282.56, E 8284.20

SP#3 N 7223.90, E 8344.37

OBSERVATIONS INDICATE THAT MOVEMENT OF THE CHANNEL SLOPE HAS DECREASED OR STOPPED.

SEVENSON IS SCHEDULED TO WET CAP AREA TODAY. I MET WITH ALLAN ELIA THIS MORNING IN REGARDS TO THIS.

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5. File

PAGE 1 OF 1

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 046
DATE JUNE 18, 1990

DAY	S	M	T	W	TH	F	S
		✓					

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

.15"

PROJECT PINE AVE & TUSCARORA RD. NIAGARA FALLS, NY.
JOB NO. SY079.07
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARK GLYNN
Weather
Temp.
Wind
Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	4	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	MARK W. GLYNN P.E.	GLYNN GEOTECHNICAL ENGINEERING	

EQUIPMENT AT THE SITE:
REFERENCE EQUIPMENT LOG.

CONSTRUCTION ACTIVITIES: HEAVY RAIN AND A THUNDERSTORM AT 7:00 A.M. TERMINATED MAJOR ACTIVETY ON SITE TODAY. ONCE RAIN STOPPED ~ 10:00 A.M., SEVENSON'S LABORERS WORKED NORTH OF THE NEW CREEK CHANNEL SPREADING HAY AND FERTILIZER ON THE NEWLY SEEDED AREAS. WORK ON THIS ITEM PROGRESSED AS SPECIFIED IN THE SPECIFICATIONS. OPERATORS WERE SENT HOME FOR THE DAY.

I MET WITH SEVENSON'S SURVEYORS AT 6:30 A.M. IN ORDER TO ASSIST IN MEASURING THE THREE SURVEY POINTS AT THE CREEK CHANNEL. INFORMATION COLLECTED IS TABULATED AND ILLUSTRATES MEASUREMENTS OF THREE ESTABLISHED POINTS ON THE SOUTH CHANNEL SLOPE FROM ONE POINT SOUTH OF THE GAP AREA. TODAYS READINGS INDICATE NO ADDITIONAL MOVEMENT SINCE YESTERDAY.

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BY Louis Costantare TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 241
DATE June 18, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, N.Y.
JOB NO. S-0772.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather | Temp. | Wind | Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	4	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

DATE	SP # 1		SP # 2		SP # 3		
	NORTH	EAST	NORTH	EAST	NORTH	EAST	
6/14/90	7245.04	8226.06	7282.39	8284.31	7323.77	8344.43	3:00 P.M.
6/15/90	7245.14	8226.00	7282.48	8284.23	7323.84	8344.38	11:00 A.M.
6/15/90	7245.17	8225.99	7282.53	8284.21	7323.88	8344.41	3:00 P.M.
6/16/90	7245.21	8225.91	7282.55	8284.19	7323.90	8344.36	8:00 A.M.
6/17/90	7245.13	8226.02	7282.56	8284.20	7323.90	8344.37	8:00 A.M.
6/19/90	7245.18	8225.99	7282.57	8284.20	7323.90	8344.37	7:00 A.M.

Sevenson requested an independent opinion from Mr. Mark W. Glynn, P.E. of Glynn Geotechnical Engineering Services regarding the channel slope that has been monitored since 6/14/90. Mr Glynn stated that the slope has failed and will continue to fail. He recommended one possible solution to correct the movement of soils in this area would be to excavate the problem area down to bedrock and remove soft underlying

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BY Louis Ciccatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. #46
DATE June 19, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, NY.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER.	HUMID ✓			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	4	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CLAY. THEN BACKFILL AND COMPACT NEW SOILS FOR A NEW CONSTRUCTED BANK WITH CLAY MEETING THE PERMIABILITY REQUIREMENTS OF THE CLAY CAP.

SURVEYORS MEASURED ELEVATIONS OF THE THREE POINTS USED FOR SURVEYING THE CHANNEL SLOPE.

EL. SP #1 = 570.1, EL. SP #2 = 570.00 EL SP #3 = 569.26

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3. Inspector
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BY Louis Liberature TITLE Q/A.

DAILY INSPECTION REPORT

REPORT NO. 047
DATE JUNE 19, 1995

DAY | S | M | T ✓ | W | TH | F | S |

PROJECT PINE AVE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. 5Y0078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER.	HUMID ✓			
Humidity	LIGHT SHOWERS.					

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	4	7	
		1	SUPERVISOR.
GUNDLE		9	4 TECHNICIANS 4 LABORERS 1 OPERATOR.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON SPREAD AND WORKED SOILS IN THE STAGING AREA. EFFORTS ARE CONCENTRATED AT MAKING STAGED SOIL ON SITE SUITABLE FOR STRUCTURAL FILL ABOVE THE CLAY CAP LINER.

- PROCEEDED TO DIG ANCHOR TRENCHES FOR THE HDPE LINER ON THE WEST AND SOUTH SIDES OF THE CAP AREA. TRENCHES ARE 2' MINIMUM.
- CONTINUE AND COMPLETE PLACEMENT OF RIP RAP ON THE SOUTH CHANNEL SLOPE STATIONS 0+50 TO 1+50.
- FINE GRADE CAP AREA WITH TRACTOR SOILDOZER AND SMOOTH DRUM ROLLER.
- CONTINUE TO SPREAD HAY AND FERTILIZER ON THE NEWLY SEEDED AREA NORTH OF THE CREEK CHANNEL.

GUNDLE ON SITE AT APPROXIMATELY 10:00 A.M. IN ORDER TO START PLACEMENT OF HDPE LINER. MEETING WITH KEVIN KOPF OF GUNDLE, MARVIN BROWN, ALAN ELIA, KIM LITFIELD AND MYSELF IN REGARDS TO METHODS

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BY LOUIS USERATORE. TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 047
DATE June 19, 1990

DAY

S	M	T	W	TH	F	S
		✓				

PROJECT Pine Ave & Tuscarora Rd. Niagara Falls, NY.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Severson
PROJECT MANAGER Marvin Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: of testing trial seams. It was decided to waive the use of digital tensometers and test the one inch trial test strips to failure of the HDPE liner material. It was agreed if liner material failed before the trial seam failed, the trial test would be considered a passing test. We also reviewed Gundle's request for a change in overlapping material for fusion welds (3") and overlapping material for extrusion welds (4)". I informed Mr. Kopf that test times of 45 seconds for vacuum type testing would be maintained on extrusion type welds.

Gundle's technicians and laborers proceeded installing panels # S-01 through S-09 from Roll Nos. D-B30041 7C and B0300418 9C. Panel widths are 22'. Lengths of each panel are noted in the signed Gundle progress report. 40 mil HDPE liner was inspected for any flaws or blemishes prior

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4. Client
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BY Louis Liberatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 047
DATE June 19, 1990

DAY	S	M	T	W	TH	F	S
			✓				

PROJECT Pine & Tuscarora Rd. Niagra Falls, NY.
JOB NO. SY 077.02
CLIENT Olin Chemical
CONTRACTOR Sevenson
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather			✓		✓	
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: TO WELDING SEAMS. NONE WERE NOTED. ALL PANEL LENGTHS WERE LAID IN A NORTH/SOUTH DIRECTION. TECHNICIANS PROCEEDED WITH WELDING 866 FEET OF FUSION WELDING AND 17 FEET OF EXTRUSION WELDING AROUND PATCHED AREAS. 504 FEET OF FUSION WELDING WAS TESTED AT 25 TO 30 PSI FOR A PERIOD OF 8 MINUTES PER TEST AND PASSED INSPECTION. VACUUM TESTING OF 17 FEET OF EXTRUSION TYPE WELDING PASSED WITH EACH SEAM TESTED AT 25 LB VACUUM FOR FORTY FIVE SECONDS. TESTS OF TRIAL SEAMS WERE OBSERVED AT 11:00 P.M. PRIOR TO PERFORMING ANY WELDING ON PANELS THAT WERE LAID OUT. WORK ON THIS ITEM PROCEEDED AS SPECIFIED IN THE SPECIFICATIONS. GUNDLE HAS ONE VACUUM BOX ON SITE AND TWO TESTERS FOR PERFORMING AIR TESTS ON DOUBLE SEAMS. MEASUREMENTS OF THE VACUUM BOX ARE ONE FOOT BY SIX INCHES.

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3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 048
DATE JUNE 20/1990
DAY S M T W TH F S (W ✓)

PROJECT DUEANE & TUSCARORA RD NIAGRA FALLS, N.Y.
JOB NO. 5X077.07
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERNSON ENVIRONMENTAL
PROJECT MANAGER MACKIN BROWN

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERNSON ENVIRONMENTAL	4	6	1 SUPERVISOR, 4 TECHNICIANS
GUNDLE.		10	4 LABORERS, 1 OPERATOR

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVERNSON SURVEYORS ON SITE IN ORDER TO SURVEY THE CREEK CHANNEL BOTTOM STA 1+00 TO 2+50.
- CONTINUE REWORKING SOILS AT THE STAGING AREA.
- COMPLETE FERTILIZING AND SPREADING HAY OF THE NEW CREEK CHANNEL.
- CONTINUE FINE GRADING AND COMPACTING SOILS AROUND MANHOLES A AND B AND PIEZOMETERS WITHIN THE CAP AREA
- SPRAY WATER AND MOISTEN SOILS AT THE EAST SIDE OF THE CAP AREA

GUNDLE CONTINUED TO PLACE HDPE LINER AT THE CLAY CAP AREA. INSTALLED PANELS S-10 THROUGH S-20 FROM ROLL NOS. B0300422A4, B0300419C, B0300422Z4, B0300422Z1A, D0300417C. WHILE OBSERVING A TECHNICIAN PERFORM A VACUUM TEST ON A FUSION TYPE WELD, I NOTICED A BROKEN SEAL AND AN INOPERATIVE VACUUM GAGE ON THE VACUUM BOX. I INFORMED MR. GARY HUETE OF GUNDLE THAT

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BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 041
DATE June 20, 1990
DAY S M T W ✓ TH F S

PROJECT Pine & Tuscarora Rd Niagara Falls, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN SEVERSON

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	4	6	
GUNDLE		10	1 SUPERVISOR 4 TECHNICIANS 4 LABORERS 1 OPERATOR

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: THE VACUUM BOX HAD TO BE REPAIRED PRIOR TO ANY TESTING OF WELDS. AND THAT ALL WELDS TESTED YESTERDAY WITH THAT VACUUM BOX HAD TO BE RETESTED.

DESTRUCTIVE SAMPLES FOR YESTERDAYS PLACEMENT OF LINER WERE TAKEN FROM: DOS#1, N7166, E8244 DOS#2 N7213, E8279.

WHILE ONE OF THE WELDERS WAS PULLING THE WELDING MACHINE OVER PANEL S-09, HE SCRATCHED THE PANEL ALMOST THE ENTIRE LENGTH. ALL SCRATCHES WERE MARKED FOR REPAIR WITH THE FUSION WELDING PROCESS.

GUNDLE SEAMED 959 FEET OF FUSION TYPE WELD AND 44 FEET OF EXTRUSION TYPE WELD. 1,296 FEET OF EXTRUSION WELDS WERE AIR PRESSURE TESTED AND PASSED INSPECTION. TESTING OF FUSION TYPE WELDS WILL PROCEED AS SOON AS THE VACUUM IS REPAIRED

TRIAL TEST STRIPS WERE VIEWED AT 7:55 A.M AND AT 1:00 P.M.

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BY Louis LIBERATORE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 049
DATE JUNE 21, 1990
DAY S M T W TH F S

PROJECT PINE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. 5X07E.07
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

RAIN LAST NIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON	4	5	1 SUPERVISOR 4 TECHNICIANS
GUNDLE	1	9	4 LABORS 1 OPERATOR

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON: PERFORM SITE CLEAN UP AND ASSIST GUNDLE WITH PLACEMENT OF 110 MIL GEOTEXTILE FABRIC OVER FIRST LAYER OF LINER.
MATERIAL IDENTIFICATION: AMOCO FABRICS AND FIBERS COMPANY.
STYLE 4510
LENGTH OF ROLL: 200 YDS
WIDTH 180 INCHES
AREA 1000 SQ YD
MIL THICKNESS: 110 MIL.
ROLLS OF FABRIC WERE ENCASED IN BLACK POLYETHYLENE COVERING. MATERIAL WAS FREE FROM HOLES OR BLEMISHES. GEOTEXTILE FABRIC WAS PLACED WITH 12" OVERLAPING SEAMS.
GUNDLE STARTED PLACEMENT OF THE SECOND LAYER OF HDPE LINER AT THE WEST SIDE OF THE CAP AREA. PANELS P-01 THROUGH P-07 WERE PLACED FROM ROLL NO. B-030042210A. 378 FEET OF FUSION WELDS

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BY LOUIS LIBERATORE TITLE 9/4.

DAILY INSPECTION REPORT

REPORT NO. 049
DATE JUNE 21, 1990

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT PINE AVE & TUSCARORA Rd NIAGARA FALLS
JOB NO. SY 078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON	4	5	
SUNDLE	1	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: WELDS TESTED BETWEEN 25 TO 30 PSI FOR AN 8 minute PERIOD OF TIME, AND PASSED INSPECTION. 66 FEET OF FUSION WELDS WERE PERFORMED OVER PATCHED AREAS. SUNDLE REPAIRED THE VACUUM BOX NOTED IN YESTERDAYS REPORT AND TESTED ALL PRIOR FUSION WELDS along with TODAYS WORK. NO LEAKS WERE DETECTED. DESTRUCTIVE SAMPLE DS-03, DS-04, AND DS-05 WERE SENT TO BUFFALO TESTING LABORATORY. NOTE: DS-05 PEEL TEST FAILED, AT 44 LBS. A PATCH WAS PUT OVER THIS SAMPLE LOCATION AND VACUUM TESTED. AIR PRESSURE TESTS WERE INDUCED AT BOTH SIDES OF THE SEAM REPAIR. BOTH AIR PRESSURE TESTS PASSED. SUNDLE IS TO FOLLOW UP WITH DESTRUCTIVE TESTING ON THIER SAMPLE OF DS-05.

MEETING ON SITE - ATTENDEES: MARK WALLER, VIN FRYE, JOHN McINTOSH, KIM LICKFIELD, ALAN ECIA, WAYNE KUSTAK, MARVIN BROWN AND MYSELF. REVIEWED

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY _____ TITLE _____

ES DAILY INSPECTION REPORT

REPORT NO. 049
DATE June 21, 1990

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT Pine Ave & Tuscarora Rd
JOB NO. SY 072 02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	4	5	
Gundle	1	9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: And discussed Mr. Wallers plan for correcting the soils problem at the new creek channel. Proposal includes a reduction in channel slope from 2:1 to 4:1 and laying geogrid between layers of compacted backfill. I obtained a copy of the planned correction.

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4. Client
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PAGE 3 OF 3

BY Louis Liberatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 050
DATE June 22, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT Pine Ave & Tuscarora Rd., Niagra Falls.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	4	4	
Gundle	1	9	1 Supervisor 4 Technicians 4 Laborers, 1 Operator

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson: Continues to work and spread staged soils on site so they could be used as structrual fill at the clay cap area.

Gundle: Continue to place 40 mil HDPE liner at cap area. Placed panels P-14 through P-22 welded panels P-8 through P-14. Trial test seams observed at 7:30 a.m. and at 1:30 p.m. prior to welding HDPE liner. I requested a change in personnel or work procedure on a fusion welding machine. This mornings seams appeared to have an above average occurrence of leaks on fusion type seams. A change in indicator speed from #5 to #4 slowed the seaming process and provided adequate welds for this type of procedure. A different operator was also used. Gundle performed destructive tests on DS-05. Results of tests passed on the sample that was

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BY Louis Liberatore TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 050
DATE JUNE 22, 1990

DAY: S | M | T | W | TH | F ✓ | S

PROJECT PINE AVE & TUSCARORA RD, NIAGARA FALLS, NY.
JOB NO. SV 078.82
CLIENT OCC CHEMICAL
CONTRACTOR SEVERN TRENT ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: DELIVERED TO THEM. WORK ON LINER PLACEMENT IS SLOW. GUNDLE IS FOLLOWING UP WITH ADEQUATE QUALITY CONTROL FOR ANY SEAMS THAT FAIL PRESSURE TESTS. INSTALL BOOT FOR PIEZOMETER #...

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3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 051
DATE June 23, 1990

DAY: S | M | T | W | TH | F | S ✓

PROJECT Pine Ave Industrial Rd, Niagara Falls, NY.
JOB NO. SY 078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown.

Weather

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

Temp.
Wind
Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	1	1	
Gundle	1	8	1 Supervisor 4 Technicians 4 Associates.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Gundle on site at 8:00 A.M. Continue fusion welding of the first and second layer of HDPE liner at the east side of the cap area. The vacuum box was removed from this site at 9:00 A.M. and returned at 1:30 P.M. - Testing of seams was limited to air pressure tests. Gundle still has two more panel widths at the east side of the cap area to test (first layer). Rain terminated todays work at 3:00 P.M. Work is scheduled for tomorrow

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BY Louis Liberatore. TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 052
DATE JUNE 24, 1990
DAY S ✓ | M | T | W | TH | F | S

PROJECT PINE AVE & TUSCARORA RD, NIAGARA FALLS, N.Y.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON	1		
GUNDLE	1	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: GUNDLE CONTINUES DEPLOYMENT OF LINER. I OBSERVED PRE-WELD DESTRUCTIVE TESTS AT 9:00 A.M AND AT 1:30 P.M. I ALSO OBSERVED AND MONITORED AIR TESTING OF FUSION TYPE SEAMS. GUNDLE TECHNICIANS REPAIRED CUTS PLACED IN LINER MATERIAL FOR AIR PRESSURE TESTS AND ALSO PLACED PATCHES OVER FAILED SEAMS. QUALITY OF WORK HAS DETERIORATED AND HAS REQUIRED ADDITIONAL PATCHING AND VACUUM TESTING IN ORDER TO OBTAIN AN ACCEPTABLE INSTALLATION. AREAS THAT REQUIRE REPAIR ARE THE LAST THREE PANEL WIDTHS AT THE EAST SIDE OF THE CAP AREA. (FIRST LAYER OF HDPE). CONTINUE PLACEMENT OF CAPS ON PIEZOMETERS P-6, P-4, P-2. START TIME 8:00 A.M. FINISH TIME 9:00 P.M.

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3. Inspector
4. Client
5. File

PAGE 1 OF 1

BY LOUIS LIBERATORE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 053
DATE June 25, 1990

DAY	S	M	T	W	TH	F	S
		✓					

PROJECT Pine Ave & Tuscarora Rd., Niagara Falls, NY
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental.
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	4	6	
Gundle		9	1 Supervisor 4 Technicians 4 Laborers.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson: Assisted Gundle by placing 60 mil geotextile fabric over the west half of the cap area. Fabric material was placed with 18" overlapping seams. Inspection of geotextile showed fabric was in good condition free from flaws or blemishes.
TAG information on geotextile fabric:
Amoco Fabrics and Fibre Company
Style: 4506
Length: 300 yds
Width: 180 inches
Area 1500 sq. yd.

Sevenson dug 5 holes in the clay cap area 13 to 17 feet from the top of the channel slope in order to provide sampling of questionable material. Soils in this area of fill were from the excavated clay of the south alignment of the slurry wall. Testing will determine the disposition of this soil as corrective.

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BY Louis Liberatore. TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 053
DATE JUNE 25, 1990

DAY: S | M ✓ | T | W | TH | F | S

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID			

PROJECT PINE AVE & TUSCARORA Rd., NIAGRA FALLS, NY
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN
Weather
Temp.
Wind
Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON	4	6	
GUNDLE		9	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: WORK PROCEEDS ON THE SOUTH WALL OF THE NEW CREEK CHANNEL. SAMPLES WERE MANIFESTED AND WILL BE SENT TO SAL DEANGELO AT THE OLIN CORPORATION (GATE #4). HE WILL SEND THE SOIL SAMPLES FOR ANALYSIS. A SAMPLING PLAN IS ATTACHED.

MARVIN BROWN RECRUITED ENVIRONMENTAL SOILS TESTING TO DRILL SAMPLING HOLES NORTH OF THE SLURRY WALL IN ORDER TO DETERMINE ITS SHAPE AND MOVEMENT. RESULTS INDICATE THE SLURRY WALL MOVED NORTH BUT IS STILL INTACT.

GUNDLE CONTINUED DEPLOYMENT OF 40 MIL HDPE LINER. PRETRIAL TESTS WERE OBSERVED AT 8:00 AM. AND AT 1:00 P.M. ONE TEST STRIP FAILED THE TENSION TEST. ANOTHER STRIP OF HDPE WAS CUT FROM THE SAME SAMPLE AND RETESTED. THE SECOND ATTEMPT PASSED. EFFORTS TODAY WERE FOCUSED ON COMPLETING SEAMING OPERATIONS. TECHNICIANS AND LABORERS PROCEEDED TO

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4. Client
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BY LOUIS LIBERATORE TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 053
DATE JUNE 25, 490

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE AVE AT SEARLES RD., NIAGARA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: MAKE CAPS FOR MANHOLES A AND B. I MONITORED AIR PRESSURE TESTING AND VACUUM TESTING OF SEAMS. MARVIN BROWN ASSISTED WHEN I WAS SOIL SAMPLING. WORK ON THE LINER SYSTEM SHOULD BE COMPLETED TOMMORROW. REPAIRS ON THE THREE PANELS (FIRST LAYER) AT THE EAST SIDE OF THE CAP AREA ARE ALMOST COMPLETE. DEPLOYMENT OF THE SECOND LAYER OF HDPE IS ALSO WITHIN SPECIFICATIONS

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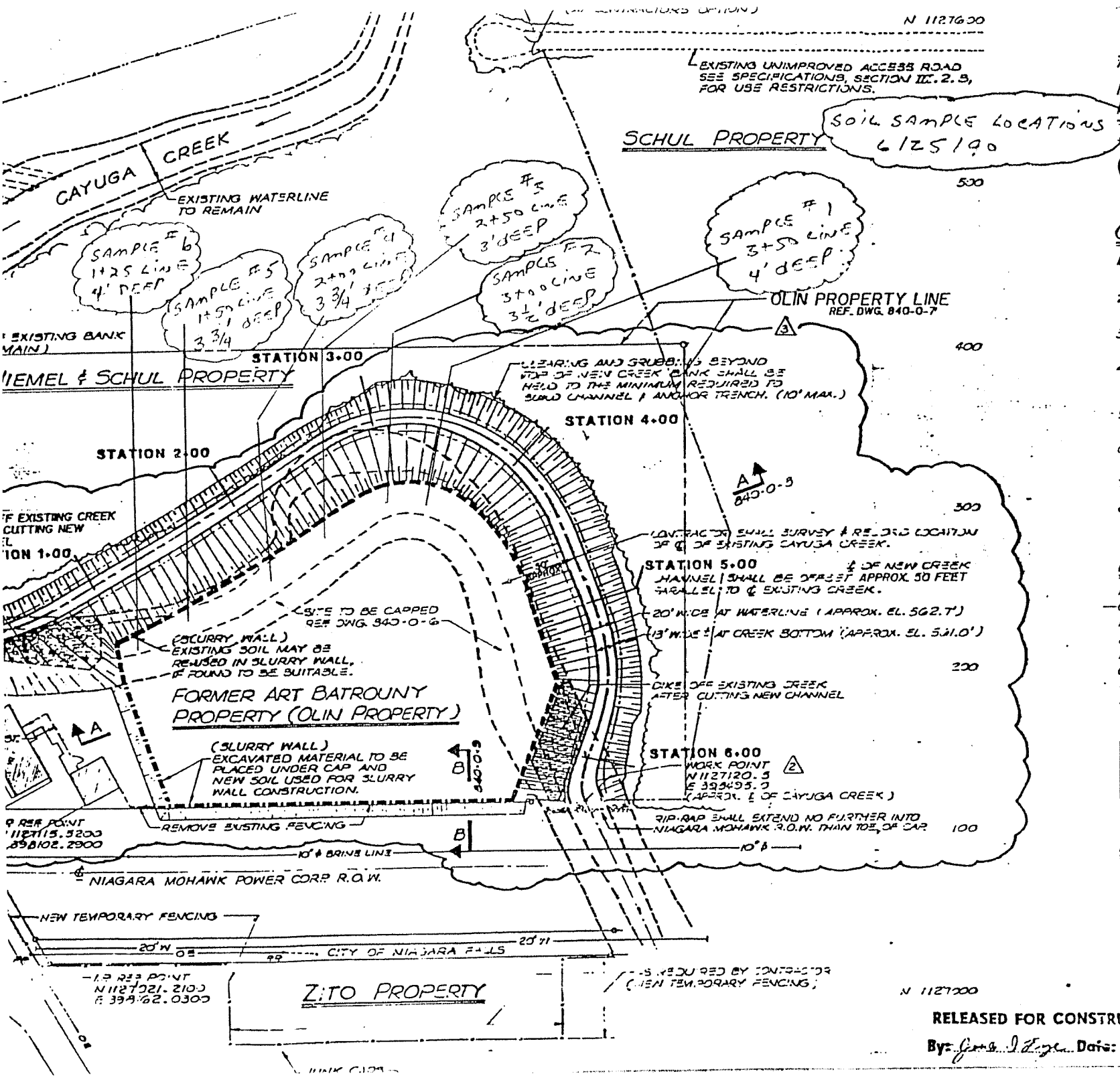
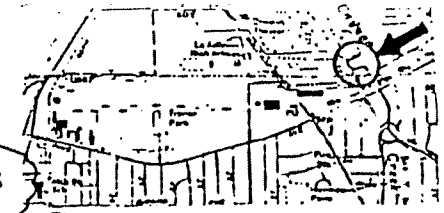
BY LOUIS LIBERATORE TITLE QA





LOCATION MAP

GENERAL NOTES:

1. ALL CLEARING AND GRUBBING SHA MINIMUM.
2. ALL DIMENSIONS MAY BE ADJUSTE FIELD. (WITH OLIN APPROVAL ONLY)
3. THE "FLOOD OF RECORD" DURING MC OPERATING PROCEDURES IS ELEV.
4. THESE DRAWINGS TO BE WORKED WI PROCEDURE AND SPECIFICATIONS" DOCU REFERRED TO AS SPECIFICATIONS OR CONSTRUCTION OA/OC PLAN.
5. ALL GRADES SHOWN ARE "FINAL GRA MUST BE MADE FOR RIPRAP, TOPSOIL, E
6. TEMPORARY FENCING IS SHOWN ON (DRAWING NOT STORED IN VAULT, CO
7. PERMANENT FENCING IS SHOWN ON D
8. EXISTING UTILITIES SHOWN ON THIS DRA REFERENCE ONLY. CONTRACTOR SHAL FOR LOCATING ALL EXISTING UTILITIES WHETHER SHOWN OR NOT.

LEGEND / ABBREVIATION

I.P.°	-IRON PIN	
—OE—	-OVERHEAD ELEC.	
P.P.°	-POWER POLE	
20" W	-20" WATER LINE	
H.P.°	-HIGH POINT	
C&G	-CLEAR & GRUB	
——570	EXIST. CONTOUR	
——570	NEW CONTOUR	

B.M.-NORTHWEST FLANGE BOLT OF HYDRANT AT NORTHEAST CORNER OF TUSCARORA ROAD & NIAGARA FALLS BLVD. = ELEV. 576.69

REFERENCE DRAWING

D-T323-840-0-6	ENLARGED SITE
840-0-7	SITE GRADING PL
840-0-8	CROSS SECTION
840-0-9	SECTIONS & DET
840-0-10	SLURRY WALL PL
840-0-11	SLURRY WALL S
840-0-12	SUBSURFACE
T323-TF-5	TEMPORARY FENC
840-0-9A	SECTIONS & DETAILS
840-0-13	CROSS SECTIONS OF NEW CHANNEL

RELEASED FOR CONSTRUCTION

By: [signature] Date: 2/26/90

DAILY INSPECTION REPORT

REPORT NO. 054
DATE June 26, 1990

DAY	S	M	T	W	TH	F	S
			✓				

PROJECT Pine & Tuscarora Rd Niagara Falls, NY.
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	4	7	
Olin	1	8	1 Supervisor 4 Technicians 4 Laborers.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson continue placement of structural fill at the west side of the cap area. Clay source was from on site stockpiled soil. Alternating loads from the east and west stockpiles were spread and tracked in place in one foot lifts with a Komatzu D 31 tractor Bulldozer. After placement of soils an Ingersol Rand smooth drum roller compacted the structural fill. Work proceeded in sequence with completion of testing panels on the second layer of HDPE liner. All tests except one located at N7204 and E8353 passed. This area will be reworked and tested at a later date. Proctor Code ~~ID~~ PT-1 was used for compactive measurements. (Easterly side of staged soils.)

Sevenson is continuing to rework clay at the staging area in order to prepare it for structural fill.

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BY [signature] TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 054
DATE JUNE 26 1990
DAY S M T W TH F S (T)

PROJECT FIVE AND TUSCARORA Rd NIAGARA FALLS, NY.
JOB NO. 5Y078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENON ENVIRONMENTAL
PROJECT MANAGER MARK BROWN

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I DELIVERED FIVE SOIL SAMPLES OBTAINED YESTERDAY TO MR. SAL DEANGELO. REQUESTED PRIORITY IN PROCESSING SAMPLES.

O JEFF MIKACHI OF NYDEC ARRIVED ON SITE IN ORDER TO OBSERVE CONSTRUCTION PROCEDURE

GUNDLE COMPLETED PHASE I OF THE LINER INSTALLATION. THIS WORK INCLUDED PLACEMENT OF TWO LAYERS OF 40 MIL HDPE LINER AND GEOTEXTILE FABRIC WITHIN TWENTY FIVE FEET SOUTH OF THE SLURRY WALL STATION 0+75 TO 4+00. TRIAL SEAM TESTS WERE OBSERVED AT 7:30 A.M. AND 1:00 P.M. FINAL AIR PRESSURE TESTS AND VACUUM TESTS WERE MONITORED FOR ACCEPTANCE AND COMPLETION OF THIS PHASE OF WORK. GUNDLE WILL RETURN WHEN CORRECTIONS AT THE SOUTH CREEK CHANNEL HAVE BEEN COMPLETED. STAINLESS STEEL RODS STILL HAVE TO BE PLACED AT MANHOLES A AND B.

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BY Jan Hunter TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 055
DATE JUNE 27, 1990

DAY: S | M | T | W ✓ | TH | F | S

PROJECT PINE AVE & TUSCALORA Rd NIAGRA FALLS, NY.
JOB NO. 5Y078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON	3	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: PLACED OVER THE EXCAVATED AREA IN ORDER TO KEEP MOISTURE OFF THE AREA.

JEFF MIRACHI OF NY DEC IS ON SITE IN ORDER TO OBSERVE CONSTRUCTION PROCEDURE.

FRANK WALLER, RICHARD ROWE AND VIM FRYE ARRIVED ON SITE IN ORDER TO OBSERVE THE EXCAVATION AND PREPARE FOR TOMMORROWS MEETING.

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BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 055
DATE JUNE 27, 1990
DAY S M T W ✓ TH F S

PROJECT PIVE & TUSCARORA Rd., NIAGARA FALLS, NY
JOB NO. SY 079.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON	3	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON CONSTRUCTED AN ACCESS ROAD OVER THE CLAY LINER IN ORDER TO REMOVE EXCAVATED SOILS FROM THE SOUTH SIDE OF THE CREEK CHANNEL. EXCAVATE AND REMOVE THE SOUTH CHANNEL SLOPE FROM STATION 1+50 TO 3+00 (REF SITE DWG FOR STATIONING). SLOPE WAS CUT TO ELEVATION 565 AND PROCEEDED SOUTH 30 FEET FROM RIP RAP AT THE CHANNEL. QUESTIONABLE MATERIAL REMOVED DURING EXCAVATION WAS STAGED ON SITE FOR DISPOSITION. WORK PERFORMED TODAY WAS WITHIN THE LIMITS OF STEP ONE OF WOODWARD & CLYDE'S CORRECTIVE PLAN. THE SLURRY WALL WAS PROBED 7 TO 8 FEET. DURING EXCAVATION, IT WAS NOTED THAT THE SLURRY WALL WAS INTACT WITH NO POCKETS OF UNMIXED CLAY OR BENTONITE BACKFILL. IT APPEARS TO HAVE MOVED 2 TO 3 FEET NORTH, AND IS LOCATED NORTH OF THE GEOGRID PANELS THAT WERE PLACED OVER IT DURING CONSTRUCTION. AFTER EXCAVATION, POLYETHYLENE WAS

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BY LOUIS LISZATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 056
DATE JUNE 28, 1990
DAY S M T W TH ✓ F S

PROJECT PINE AVE & TUSCARORA RD NIAGARA FALLS NY
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BROWN

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON	3	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: FOR TRUCKS DRIVERS AND REMOVED STONES, ASOTS AND DEBRIS FROM FILL.

- CONTINUE EXCAVATION OF THE SOUTH SLURRY WALL. STATION 0+75 TO 1+50. POLYETHYLENE WAS PLACED OVER THE EXCAVATED AREA.

- MARVIN BROWN WALKED THE NEW CHANNEL BOTTOM FROM STATION 0+25 TO 2+50 AND INSPECTED LOSS OF GRADE AT THE CHANNEL FLOOR.

- SURVEYORS ON SITE SETTING STAKES AT EL 565 EXCAVATION OF NEW CHANNEL. STAKES WILL BE USED TO MONITOR ANY ADDITIONAL MOVEMENT OF THE FAILED BANK.

DISTRIBUTION 1 Proj. Mgr.
2. Const. Dept.
3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE. TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 056
DATE June 28, 1990

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, NY
JOB NO. SY 078 07
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	3	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Subject of meeting was to discuss bank failure at the creek channel and propose a corrective action plan that would modify existing conditions. Proposed plans illustrate a change in slope to 4:1 and include the placement of geogrid at different lifts of compacted fill to stabilize soils. The possible use of extending an HDPE liner to the slurry wall from the top of the excavated area to the slurry wall was also mentioned. A proposed method of sealing the top of the slurry wall will be developed by Woodward and Clyde. Frank Waller is to finalize a set of construction plans and submit them to the Olin Corporation. Representatives from NYDEC should recieve plans by July 9, 1990 in order to review and comment.

Sevenson continued placing structural fill at the clay cap area (east half). One laborer spotted

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BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 056
DATE June 28, 1990
DAY S M T W TH ✓ F S

PROJECT Pine + Tuscarora Rd, Niagara Falls, NY
JOB NO. SY079.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson	3	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Meeting on site today.

Attendees:

Jim Collins	Collins and Associates
Jim Van Hoesen	NY DEC
Jeff Mikachi	NY DEC
Jim Drumner	NY DEC
Rex Griffeth	Larson Engineering
Louis Liberatore	Engineering Science
Jim Frye	Olin Chemical
Marvin Brown	Olin Chemical
Blaine Butand	Olin Chemical
Frank Walker	Woodward and Clyde
Richard Roe	Woodward and Clyde
Alan Elia	Sevenson Environmental
Wayne Kostuk	Sevenson Environmental
Kim Lickfield	Sevenson Environmental

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3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 057.
DATE June 29, 1990
DAY S M T W TH F ✓ S

PROJECT Pine Ave & Tuscarora Rd, Niagara Falls, N.Y.
JOB NO. SY 028.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Mark Brown

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.						
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	3	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I obtained water samples from manholes A and B. Samples were manifested with chain of custody forms and sent to SAL Deangelo at the Olin Chemical plant. He will forward them to a testing laboratory and have them analyzed for BHC. I requested priority in processing. 3.71 feet of water was measured in manhole A. 4.4 feet of water was measured in manhole B.

o Sevenson continued to place 10 mil geotextile fabric over the liner and backfill with structural fill (east side of cap area). Soils were placed in a one foot lift with a Komatsu D31 tractor bulldozer. Stones, tree roots and debris were removed during placement. Soils used were obtained from the staging area on site. Compaction tests are scheduled for 7/2/90.

DISTRIBUTION 1 Proj. Mgr.
2. Const. Dept.
3. Inspector
4 Client
5 File

BY Louis Liberatore. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 057
DATE JUNE 29, 1990
DAY S M T W TH F ✓ S

PROJECT PINE & TUSCARORA, NIAGARA FALLS, NY
JOB NO. SY 07E.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER MARVIN BLANN

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	3	7.	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: MR. A. E. STODDARD FROM THE BUFFALO EVENING NEWS TOOK PICTURES OF THE SITE FOR A NEWS PAPER ARTICLE.

JOHN MCINTOSH OF OLIN ON SITE TODAY IN ORDER TO MEET WITH THE CITIZEN COMMITTEE AND TOUR THE SITE.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE. TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 058
DATE JULY 2, 1990
DAY S M ✓ T W TH F S

PROJECT PINE AVE & TUSCARORA Rd. NIAGRA FALLS, NY.
JOB NO. SY077.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER MAZUIN BROWN.

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 ✓ | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY | MODER. ✓ | HUMID

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON	3	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON: CONTINUE PLACEMENT OF STRUCTURAL FILL AT CAP AREA. ENVIRONMENTAL SOILS INVESTIGATIONS ON SITE IN ORDER TO MEASURE COMPACTION OF THE FIRST LIFT OF CLAY ON THE EAST SIDE OF THE CAP AREA. ALL TESTS OBTAINED TODAY EXCEED COMPACTION. RETEST OF COMPACTION MEASUREMENT #8 OBTAINED ON 6/29/90 WAS WAIVED. THIS AREA WAS RECOMPACTED W/ A SMOOTH DRUM ROLLER. TODAYS READINGS INDICATE COMPACTION OF THE EAST SIDE OF THE CAP AREA (1ST LIFT) IS WELL ABOVE CONTRACT REQUIREMENTS.

O SEVENSON IS REGRADING THE CHANNEL BOTTOM AND PLACING RIP RAP AT STATION 6+00. ALSO FINE GRADING ANCHOR TRENCHES ON THE WEST, SOUTH, AND EAST SIDES OF THE CAP AREA. WORK ON THESE ITEMS ARE WITHIN THE SCOPE OF THE SPECIFICATIONS.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 058
DATE JULY 2, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE AVE & TUSCARORA Rd, NIAGARA FALLS, NY.
JOB NO. SY078.02
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL.
PROJECT MANAGER MARVIN BROWN.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON	3	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: FIELD MEASUREMENTS OF ESTABLISHED HUBS AT THE SOUTH CHANNEL SLOPE (STATION 0+00 TO 2+50) WERE MEASURED TODAY. SLIGHT VARIATIONS IN READINGS OF .01 TO .02 0.5 ONE FOOT WERE OBSERVED. IT WAS FELT THAT THESE DIFFERENCES MAY HAVE BEEN DUE TO DIFFERENT PEOPLE TAKING MEASUREMENTS. NO PROVISION WAS MADE FOR TAP SAG.

DISTRIBUTION
1 Proj. Mgr
2. Const. Dept.
3 Inspector
4 Client
5 File

BY LOUIS LISENATOLE. TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 059
DATE July 3, 1990

DAY	S	M	T	W	TH	F	S
			✓				

PROJECT Pine Ave & Tuscarora Rd., Niagra Falls, NY
JOB NO. SY078.02
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Marvin Brown

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	3	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: Sevenson: Continue grading and placement of R.P. rap at channel slopes and channel bottom at station 1+00. Continue fine grading anchor trenches on the west, south and east alignments of the slurry wall. Prepare site for a close in operations while plans for the creek channel revision are being finalized. Placed a protective 4.5 polyethylene cover on all exposed HDPE liner and geotextile fabric at the cap area.

I made arrangements for a leachate compatibility test with Environmental Soil Investigation. ESI delivered a 1½" bailer for obtaining leachate from piezometer #5, but could not wait for the sample to be drawn. A leachate sample, bentonite sample, and clay sample will be picked up by ESI on 7/5/90.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 060
DATE SEPT 4, 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT DIKE # TUSCARORA Rd NIAGARA FALLS
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

Weather

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

Temp.
Wind
Humidity

.3C" RAIN - NIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	2	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

KOMATSU PC 2000 TRACKED BACKHOE.
KOMATSU PC 90 TRACKED BACKHOE. BAMMAX TAMPER # 7480 WALK ALONG VIBRATING SHEEPSFOOT.

CONSTRUCTION ACTIVITIES:

I ARRIVED ON SITE AT 4:30 P.M. AND WALKED AROUND THE PROJECT. THE FOLLOWING OBSERVATIONS WERE NOTED:

(1) WATER WAS PUMPED FROM MANHOLE 8 TO THE SANITARY SEWER LINE INSIDE THE HOUSE THAT OLIN CHEMICAL OWNS AT 150 TUSCARORA RD. I DISCUSSED THIS WITH JIM FRYE AND HE TOLD ME THAT OLIN HAD PERMISSION TO DO THIS AND THAT WATER WOULD EVENTUALLY BE TREATED AT THE LOCAL SEWER PLANT.

(2.) DURING THE WORK DAY SEVENSON HAD GRADED THE SLOPE SOUTH OF THE SLURRY WALL FOR THE 2½ TO 1 PLANNED REVISION. STATIONS 0+75 TO 2+75.

DISTRIBUTION
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2. Const. Dept.
3. Inspector
4. Client
5. File

BY Don Johnston TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 060
DATE SEPT 4, 1990

DAY

S	M	T	W	TH	F	S
		✓				

PROJECT PINE & TUSCARORA Rd. NIAGRA FALLS
JOB NO. SY 078.03
CLIENT OLIN CHEMICALS
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER VIM FRY

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

.36" RAIN - NIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	2	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

(3) INSPECTION OF NEWLY PLANTED CRAB APPLE TREES NORTH OF THE CREEK CHANNEL REVIELED SOME TREES HAD A DIFFICULT TIME GROWING. SPARCE LEAVES AND ORANGE/YELLOW BARK. SOME OF THE PLANTINGS MAY HAVE TO BE REPLACED.

(4) THERE APPEARS TO BE NO APPARENT INCREASE IN THE SIZE OF THE MOUND IN THE CREEK CHANNEL. SLIPPAGE APPEARS TO HAVE STOPPED

(5) SEVENSONS WORK DAY ENDED AT 3:30.

(6) THE BACKHOE, KOMATZU PC 2000, WORKED FROM THE TOP OF THE SLOPE AT APPROX EL. 573 TO GRADE THE AREA IDENTIFIED IN THE REVISED WORK PLAN. NO TRACKS OR LOADING APPEARED TO BE EVIDENT AT EL. 566

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY [signature] TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 061
DATE SEPT 5, 1990
DAY S M T W ✓ TH F S

PROJECT PINE & TUSCARORA RD, NIAGARA FALLS, N.Y.
JOB NO. 5Y07E.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Fay

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

RAIN-MORNING

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2		QA/QC, S.O.T.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
1:00 P.M	RICHARD ROE	WOODWARD-CLYDE	

EQUIPMENT AT THE SITE:
KOMATZU PC2000 BACKHOE, PC90 BACKHOE, KOMATZU D-51A-17 BULLDOZER, RANMAX WALK ALONG SHEEPSFOOT

CONSTRUCTION ACTIVITIES:

- NO WORK PERFORMED TODAY DUE TO RAIN.
- I CALLED CHUCK KIEPER OF EMPIRE SOILS INVESTIGATION IN REGARDS TO THE STATUS OF THE LEACHATE COMPATIBICITY TEST SUBMITTED ON JULY 5, 1990. HE WOULD CALL HIS LAB AND INFORM ME OF STATUS.
- RICHARD ROE ON SITE IN ORDER TO OBSERVE CONSTRUCTION METHODS.
- A SMALL KOMATZU D-51A-17 WAS DELIVERED TO THE SITE TODAY AT 4:30 P.M

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 1 OF 1

BY Joe Johnston TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 062
DATE SEPT 6, 1990

DAY: S | M | T | W | TH ✓ | F | S

PROJECT Pine & Tuscarora Rd., Niagara Falls, N.Y.
JOB NO. SY078.0
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Vim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN ✓	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

RAIN - LATE AFTERNOON

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	2	4	2 operators 1 laborer. 1 truck driver.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
7:15 TO 3:00 P.M.	Richard Roe	Woodward Clyde	Observe construction procedure
	Vim Burns	Olin Chemical.	
	Vim Hendzlik	Empire Soils Inv.	Test compaction.

EQUIPMENT AT THE SITE

Komatzu PC 2000, PC 90 Backhoes, Dump Truck
Komatzu D-51A-17 Tracked Bulldozer, Rammax Tamper.
#7430 Walk Along Sheepsfoot

CONSTRUCTION ACTIVITIES

Sevenson: Continue to grade slope at creek modification. STA 0+75 to 2+75. Clay was hauled to the top of slope and placed with a Komatzu D-51A-17 tracked bulldozer. After soils were tracked in place, clay was compacted with a Rammax #7430 vibrating walk along sheepsfoot. Empire soils investigation on site in order to obtain compaction and moisture readings. ESI technician left at 4:30 P.M. due to rain. He stated that he could not operate his nuclear densitometer due to wetness. Readings prior to his departure indicated low moisture of soils. Placement of clay proceeded until 6:30 P.M. During this time it rained. The surface area of the slope was rolled smooth with the bucket of the PC 2000 backhoe.

DISTRIBUTION
1. Proj Mgr.
2. Const Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore. TITLE N/A

DAILY INSPECTION REPORT

REPORT NO. 062
DATE SEPT 6, 1990
DAY S M T W TH F S

PROJECT PINE & TUSCARORA Rd, NIAGARA FALLS, NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON CONSTRUCTION
PROJECT MANAGER Jim FREY

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

LIGHT RAIN - LATE AFTERNOON
- .04" OVERNIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

- CONTINUE PUMPING WATER FROM MANHOLE "B" TO THE SANITARY SEWER SYSTEM IN THE HOUSE LOCATED AT 1505 TUSCARORA BLVD.

- REC'd STATUS OF LEACHATE COMPATIBILITY TEST FROM E.S.I. - 80% COMPLETE

- I ASSISTED IN OBTAINING MEASUREMENTS OF SURVEY POINTS PLACED ALONG THE CREEK CHANNEL. NO APPARENT CHANGE IN DISTANCES WERE OBSERVED

DISTRIBUTION 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 063
DATE SEPT 7, 1990

DAY | S | M | T | W | TH | F ✓ | S |

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

PROJECT PINE & TUSCARORA RD. NIAGRA FALLS N.Y.
JOB NO. SY078.03 — Weather
CLIENT OLIN CHEMICAL — Temp.
CONTRACTOR SEVERSON ENVIRONMENTAL — Wind
PROJECT MANAGER VIM FRY — Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS
3:00	RICHARD ROE	WOODWARD & CLYDE	
1:30	LARRY GLAS	EMPIRE SOILS INVESTIGATIONS	

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVERSON STARTED EXCAVATION FOR THE 8" THICK REINFORCED CONCRETE SLAB AT EL. 565.5. EXCAVATION LIMITS WERE 4' NORTH AND 4' SOUTH OF THE SLURRY WALL. A KOMATSU PC 90 BACKHOE USED WOODEN MATS FOR SPREADING LOAD ON THE MODIFIED SLOPE.

LARRY GLAS OF EMPIRE SOILS ON SITE AT 1:30 P.M. IN ORDER TO TEST YESTERDAYS COMPACTION ON THE 2.5:1 SLOPE. MORNING TEMPERATURE AND MODERATE WINDS DRIED SURFACE SOILS PRIOR TO TAKING READINGS. SOILS CONDITIONS WERE NOT EXACTLY THE SAME AS DURING PLACEMENT. COMPACTION MEASUREMENTS WERE 96.7 TO 100%.

SEVERSON GRADED AREAS EAST AND WEST OF THE SLURRY WALL MODIFICATION IN ORDER TO CONSTRUCT A CONTOURED GRADE AND PROFILE AT EACH END OF THE CREEK MODIFICATION.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Jon Tibbetts TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 063
DATE SEPT 7, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT PINE & TUSCARORA RD. NIAGRA FALLS, NY.
JOB NO. SY 07 & 03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN TRENT ENVIRONMENTAL
PROJECT MANAGER JIM FEY

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
		✓	✓			
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: RICHARD ROE ON SITE IN ORDER TO OBSERVE CONSTRUCTION PROCEDURE. WHILE ON SITE REVIEWED AND DISCUSSED THE TIE IN OF THE 80 mil LINER AT THE SLURY WALL.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Jon Ibbotson TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 064
DATE SEPT 8, 1990

DAY | S | M | T | W | TH | F | S ✓

PROJECT SEQUESON ENVIRONMENTAL
JOB NO. SY078.03
CLIENT OLIN CORP
CONTRACTOR SEQUESON ENVIRONMENTAL
PROJECT MANAGER Jim FEY

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEQUESON ENVIRONMENTAL	1	5 4.	2 OPERATORS, LABORER, FIELD SUPT, 9A/9C

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEQUESON CONTINUED EXCAVATION FOR THE 8" THICK, REINFORCED CONCRETE SLAB AT EL 565. EXCAVATION LIMITS WERE 4' SOUTH AND 4' NORTH OF THE SLURRY WALL. A KOMATZU PC 90 BACKHOE EXCAVATED SOILS FROM THE SLURRY WALL AND PLACED MATERIAL ON THE RESHAPED 2:5:1 SLOPES. A KOMATZU PC 2000 REMOVED THE SOILS FROM THE SLOPES AND PLACED IT INTO DUMP TRUCKS THAT HAULED THE SLURRY WALL BACKFILL / CLAY TO THE STAGING AREA. THE SOUTH CHANNEL SLOPE WAS THEN ROLLED SMOOTH WITH THE BUCKET OF THE PC 2000 BACKHOE. BACKFILL FROM THE SLURRY WALL WAS THEN COVERED WITH POLYETHYLENE IN ORDER TO PREVENT DESICATION. ALL WORK PERFORMED TODAY WAS IN ACCORDANCE WITH THE REVISED MODIFICATION TO THE CREEK CHANNEL DATED AUGUST 9, 1990. NOTE: ALL WORK PERFORMED BY THE KOMATZU PC 90 WAS PERFORMED WHILE IT WAS ON WOODEN MATS.

DISTRIBUTION
1 Proj. Mgr.
2 Const. Dept.
3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 065
DATE SEPT 10, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT OLIN CHEMICAL PINE & TUSCARORA Rd.
JOB NO. 5707E.03
CLIENT
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Frey

Weather

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

Temp.
Wind
Humidity

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	3	
CLYDE	1	2	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
KOMATSU PC 2000 BACKHOE, PC60 BACKHOE, KOMATSU D-51A-17 TRACKED BULLDOZER, SOILS DISC, HOE PAC.

CONSTRUCTION ACTIVITIES: CLYDE ON SITE. COMPLETE SEAMING OF 80 mil LINER PANELS THAT ARE PLACED WITHIN THE SLURRY WALL. CLYDE ARRIVED AT 8:00 A.M AND DEPARTED AT 10:A.M. ALL SEAM WELDED TO DAY WERE VACUUM TESTED AND PASSED INSPECTION.

I CALLED RICHARD BOE of WOODWARD - CLYDE IN REGARDS TO THE USE OF FUSION TYPE WELDING ON THE 80 mil HORIZONTAL SEAM EXTENDING FROM STA 0+75 TO 2+75 AT EL 566.5 TO 567.5. RICHARD STATED HE PREFERRED A FUSION TYPE WELD AT THE DESCRIBED LOCATION.

JIM FRYE AND ALLAN ELIA BOTH SPOKE WITH RICHARD BOE AND REQUESTED THE USE OF AN EXTRUSION TYPE WELD OVER THE ABOVE MENTIONED AREA. THIS EXTRUSION WELD WOULD BE HORIZONTALLY CAPPED. THEY BASED THEIR REQUEST

DISTRIBUTION
1 Proj. Mgr.
2. Const. Dept.
3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 065
DATE SEPT 10, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT PIEGATUSCARORA Rd, NIAGARA FALLS
JOB NO. SY078.03
CLIENT OCC CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER VIC FRY

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: ON THE AVAILABILITY OF LABOR AND EQUIPMENT TO PERFORM THE WORK. PRESENTLY GUNDLE DOES NOT HAVE THE EQUIPMENT TO PERFORM A FUSION TYPE WELD AT THIS LOCATION. THEY STATED THEY could OBTAIN IT BUT ONLY AT A LATER DATE.

SEVERSON CONTINUED WORK AND ANCHORED THE 80 MIL LINER IN 2' OF SLURRY WALL AS NOTED IN THE MODIFICATION TO THE CREEK CHANNEL.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE. TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 066
DATE SEPT 11, 1990

DAY

S	M	T	W	TH	F	S
		✓				

PROJECT PINE AVE & TUSCARORA Rd., NIAGRA FALLS, NY
JOB NO. SX 078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	5	
G+V IRONWORKERS.		2	MINORITY CONTRACTOR

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

HOMATZU PC2000, PC90 BACKHOES, HOMATZU D-51A-17 TRACTOR BULLDOZER, (1) DUMP TRUCK, (1) SOILS DISC

CONSTRUCTION ACTIVITIES:

- IRONWORKERS PLACED METAL DECKING OVER SLURRY WALL MATERIAL DESCRIPTION:
  MANCUSO STEEL PRODUCTS
  ROOF DECK B, 1½" deep ribs
  36" x 12'-3" x 22 GA COLD ROLL GRAY
  30 PCS
  PIECES WERE PLACED WITH 4' MINIMUM OVERLAP ON THE NORTH AND SOUTH SIDE OF THE SLURRY WALL.

- IRONWORKERS START INSTALLATION OF #4 REBAR - 2 MATS 10" x 8" ON CENTERS.

- SEVENSON OPERATORS AND TRUCK DRIVER HAUL STRUCTURAL FILL TO THE TOP OF THE CLAY LINER. STRUCTURAL FILL IS SOIL WHICH IS STAGED MATERIAL ON SITE.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA.

ES DAILY INSPECTION REPORT

REPORT NO. 066
DATE SEPT 11, 1990

DAY | S | M | T ✓ | W | TH | F | S |

PROJECT PINE & TUSCARORA RD, NIAGARA FALLS, NY
JOB NO. SY072.03
CLIENT ELIN CHEN
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER VIM FRY

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	
G&V IRONWORKERS		2	MINORITY CONTRACTOR

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

- INSPECTION OF THE NORTH ACCESS ROAD AT THE SITE REVEALED MORE TIRE dumping HAS OCCURED SINCE LAST FRIDAY. I REPORTED THIS MATTER TO VIM FRYE.
- WORK PERFORMED TODAY WAS WITHIN THE SCOPE OF THE CONTRACT SPECIFICATIONS.

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE. TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 047
DATE 9/12/90
DAY S M T W✓ TH F S

PROJECT PINE & TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER VIM FOX

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOW
Temp.	TO 32	32-55	55-70 ✓	70-85 ✓	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

mid 70's

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	8	
G+V IRON WORKERS.		2	MINORITY CONTRACTOR.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	KYLE KARAMAZYN	EMPIRE SOILS INV.	

EQUIPMENT AT THE SITE:
KOMATSU PC 2000, PC 90 TRACK EXCAVATORS, KOMATSU D-51A-17 Bulldozer, (1) dump Truck, (1) Soils disc, 1/2 Hoe PACK TAMPER.

CONSTRUCTION ACTIVITIES: SEVERSON: POURED CONCRETE FOR PANELS #1 AND #3. HIGH EARLY 4000 PSI, 6% AIR, STONE SIZE SMALLER THAN 3/4".
EMPIRE SOILS TECHNICIAN ON SITE IN ORDER TO TAKE SLUMP TESTS, CAST CYLINDERS, MEASURE AIR. ONE MEASUREMENT OF AIR WAS OBTAINED FROM FIVE TRUCKS THAT DELIVERED CONCRETE TO THE SITE TODAY. THE TEST CYLINDER FOR MEASURING AIR BROKE.
TRUCK #1 3" SLUMP, LOCATION: PANEL #1
TRUCK #2 4" SLUMP, 4 CYLINDERS TAKEN, LOCATION: PANEL #1
TRUCK #3: 5 1/2% AIR, 4" SLUMP, LOCATION PANELS #1 #3
TRUCK #4: 4" SLUMP, 4 CYLINDERS TAKEN, LOCATION: PANEL #3
TRUCK #5: 4" SLUMP, POUR LOCATION 3RD PANEL.
CONCRETE SUPPLIED BY CLARENCE MATERIALS.

L+M curing Compound APPLIED AFTER BULLFLOATING

DISTRIBUTION 1 Proj Mgr. 2 Const. Dept. 3 Inspector 4 Client 5 File

BY Jan Johnston TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 067
DATE 9/12/90

DAY | S | M | T | W ✓ | TH | F | S |

PROJECT PINE + TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078,03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Fry

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	BREEZY.	HIGH			
Humidity	DRY	BREEZY. ✓	HUMID			

mid 70's

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CONCRETE PLACEMENT WAS IN PANELS THAT MEASURED 13' WIDE BY 50' LONG. FIFTY FOOT OF SPACING WAS BETWEEN PANELS #1 AND #3. NO LOADING OF EQUIPMENT OR MATERIAL WAS IN THIS AREA. PANEL #1: STA 0+75 TO 1+25, PANEL # 3 STATION #1+75 TO 2+25.

SEVERSON CONTINUED SMOOTH DRUMING COMPACTED CLAY AT THE TOP OF SLOPE ALONG THE CREEK MODIFICATION 0+75 TO 2+00. THIS WAS PERFORMED WITH A SMOOTH DRUM WALK BEHIND ROLLER.

I REC'D A DETAIL ILLUSTRATING LINER INSTALLATION AT THE NORTH EAST CORNER OF THE SLURRY WALL FROM JIM FRY

DISTRIBUTION
1. Proj Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 2 OF 2

BY Joe Tibbetts TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 068
DATE 9/13/90

DAY	S	M	T	W	TH	F	S

PROJECT Pine & Tuscarora Rd., Niagara Falls, N.Y.
JOB NO. SY 078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Jim Fay

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOW
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	2	8	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	S. Roman	Empire Soils Investigation.	

EQUIPMENT AT THE SITE:
Komatzu PC2000, PC90 Backhoes, Komatzu D-5A-17 Bulldozer Soils disc., Conveyor, Hoe Pack Tamper.

CONSTRUCTION ACTIVITIES: Sevenson: Pour Concrete for Panels #2 & #4. High Early 4000 PSI Concrete, 6% Air, Stone size smaller than 3/4".

Empire Soils Technician on site in order to take slump tests, cast cylinders, and measure air.

1st Truck 5 1/2% Air, 4" slump, 4 cylinders taken. Pour Location - Panel #4.

2nd Truck 5% Air, 3 1/2" slump, Panel #4 - Pour Location
3rd Truck 5% Air, 3 1/2" slump, 4 cylinders taken, Pour Location: Panels #4 and #2.
4th Truck 4 1/2% Air, 3 1/2" slump, Panel #2 - Pour Location
5th Truck 4 1/2% Air, 3 1/2" slump, Panel #2 - Pour Location
Concrete supplied by Clarence Materials.
L and M curing compound applied after bull floating.

DISTRIBUTION 1 Proj Mgr. 2 Const. Dept. 3 Inspector 4 Client 5 File

BY Jan Jakubczak TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 068.
DATE 9/13/90

DAY	S	M	T	W	TH	F	S
					✓		

PROJECT Pine & Tuscarora Rd., Niagra Falls, NY.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Jim Fry

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

Concrete placement was in two panels that measured 13' wide by 50' long.

Sevenson continued to smooth drum roll clay at the top of slope of the creek modification station 0+75 to 2+00. Site preperation for placement of HDPE liner.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Jan Tiburtius TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 069
DATE 9/14/90

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT Pine & Tuscarora Rd. Niagra Falls, N.Y.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Vim Fry.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	1	5	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	Vim Drum	NY DEC	Approved change in Geofabric

EQUIPMENT AT THE SITE:
Komatzu D-51A Bulldozer, Backhoes Komatzu PC2000, PC90. (1) Dumptruck, soils disc, conveyor belt, Hoe Pack tamper.

CONSTRUCTION ACTIVITIES: Sevenson: Fine grade soils at creek channel modification. Grade from rip rap at creek to concrete slab.

Excavate anchor trench at east side of creek modification STA 2+75 to STA 3+50

Gundle supervisor on site at 2:00 P.M. - Review work and set up for liner installation tommorrow.

Vim Drum on site. Review work and variance for change of Geofabric. Material change approved

4:00 P.M. I spoke with Richard Roe of Woodward/Clyde. He said he would fax a copy of ASTM D 4437-84 for field testing extrusion welds. Method used is a mechanical stress test. He wants me to

DISTRIBUTION
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2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 049
DATE 9/14/90

DAY: S | M | T | W | TH | F ✓ | S

PROJECT PINE & TUSCARORA RD., NIAGARA FALLS, N.Y.
JOB NO. SYC78.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM ERY

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	1	5	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	JIM DRUM	N.Y. D.E.C.	

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: FIELD TEST SEAMS. THIS ASTM IS NOT IN THE SPECIFICATIONS. HE ALSO STATED HE WOULD LIKE A COPY OF THE SPEC. SHEET ON THE NEW GEOTEXTILE FABRIC APPROVED REPLACEMENT GEOFABRIC BASED ON VERBAL DESCRIPTION.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 070
DATE SEPT 15, 490
DAY S M T W TH F S✓

PROJECT PINE & NIAGARA Rd NIAGARA FALLS, N.Y.
JOB NO. SY079.63
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY

Weather: BRIGHT SUN | CLEAR | OVERCAST ✓ | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 ✓ | 56-70 | 70-85 | 85 UP
Wind: STILL | MODER. | HIGH
Humidity: DRY | MODER. | HUMID ✓

.7" RAIN LAST NIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	1	5	
GUNDLE	1	4	1 SUPERVISOR 4 TECHNICIANS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
(1) KOMATSU PC 2000, (1) PC 90, BACKHOES, (1) KOMATSU D-51A-17 BULLDOZER, (1) DUMP TRUCK, (1) FARM DISC, (1) CONVEYOR BELT (1) HOE PAC TAMPER

CONSTRUCTION ACTIVITIES:

SEVENSON: COMPLETE EXCAVATION OF ANCHOR TRENCH AT TOP OF SLOPE MODIFICATION.

EXCAVATE FOR ANCHOR TRENCH AT NORTH EAST CORNER AND SIDE OF SLURRY WALL.

GUNDLE PERSONEL ON SITE AT 7:30 A.M. IN ORDER TO PROCEED WITH 80 MIL LINER INSTALLATION AT THE NORTH EMBANKMENT. NOTE: THE 80 MIL LINER INSTALLED ON 9/10/90 AND TODAY DOES NOT HAVE ANY ROLL NUMBERS OR IDENTIFICATION NUMBERS. THIS MATERIAL IS FROM THE LOVE CANAL PROJECT AND ALL ROLLS DELIVERED TO THIS SITE HAVE BEEN PARTIALLY USED, INSPECTION OF THE 80 MIL DELIVERED HAS SHOWN THAT THE MATERIAL IS IN GOOD CONDITION WITH NO SIGNS OF EXPOSURE TO SUN OR

DISTRIBUTION 1 Proj. Mgr. 2 Const. Dept. 3 Inspector 4 Client 5 File

BY LOUIS LIBERATORE. TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 070
DATE SEPT 15, 1990

DAY

S	M	T	W	TH	F	S
						✓

PROJECT Pine + Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Jim Fry

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

Rain - 70' last night

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

CONSTRUCTION ACTIVITIES: Blemishes that may effect the installation. Certifications of 80 mil liner will be provided by Gundle and Sevenson.

Gundle personnel submitted trial test seams prior to commencing work. All test strips examined were tested to failure of 80 mil liner or welds. All tests passed - there were no indications of test strips failing at weldments.

While performing fusion welding at seams, technicians placed a 1' to 1½' wide strip of 40 mil liner beneath the seams of the 80 mil liner in order to protect the welding machine and liner material. All seams were brushed prior to welding.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 070
DATE SEPT. 15, 1990

DAY	S	M	T	W	TH	F	S
							✓

PROJECT Pine & Tuscarora Rd., Niagra Falls, NY.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Stevenson Environmental
PROJECT MANAGER Jim Fry

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather			✓			
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

Rain .70' last night

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I witnessed vacuum testing of seams one through ten. All tests held at least 25 LB for 8 minutes.

SEAMS	LENGTH	SEAM	LENGTH
1	19'	6	19'
2	17'	7	17'
3	2'	8	16'
4	19'	9	15'
5	19'	10	15'

3" overlap on weldments. Panel width 22'.

All work performed today is within the contract specifications

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis Liberatore TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 071
DATE SEPT 16, 1990
DAY S ✓ | M | T | W | TH | F | S

PROJECT PINE & TUSCARORA Rd, NIAGARA FALLS, NY.
JOB NO. SK078 03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

RAIN .015" LAST NIGHT MIST AM MORNING

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	1	4	
GUNDLE		5	TECHNICIANS ARRIVE 7:30 DEPART 2:30

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
KOMATZU PC 2000, PC 40 BACKHOE, Bulldozer D-51A-17
KOMATZU, (1) dump TRUCK, soils disc, HOE PACK

CONSTRUCTION ACTIVITIES:

SEVERSON: CONTINUE TO dig ANCHOR TRENCHES AT THE WEST SIDE OF THE SLOPE MODIFICATION. PROCEED TO PLACE RIP RAP AT THE CREEK CHANNEL.

GUNDLE: SUBMITTED 40 MIL TRIAL TEST STRIPS PRIOR TO COMMENCING WORK IN A.M AND P.M. ALL TEST STRIPS EXAMINED WERE TESTED TO FAILURE OF LINER MATERIAL OR WELDMENTS. ALL TESTS PASSED.

TECHNICIANS PROCEED TO REPAIR THE FIRST LAYER OF 40 MIL LINER AT THE TOP OF THE SLOPE MODIFICATION. STATION 1+00 TO 1+40, 0 TO 25 FEET SOUTH OF THE ANCHOR TRENCH. INSPECTION REVEALED LINER MATERIAL WAS CLEANED IN AREAS THAT NEEDED REPAIR PRIOR TO PERFORMING WELDS. VACUUM TESTS ESTABLISH TWO LEAKS ON THE 40 MIL. BOTH EXTRUSION WELDS WERE GROUND AND RELOADED.

DISTRIBUTION: 1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS CIBELATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 071
DATE SEPT 16, 1990
DAY S ✓ | M | T | W | TH | F | S

PROJECT PIVE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: ADDITIONAL VACUUM TESTS INDICATED BOTH LEAKS HAD BEEN REPAIRED.

TWO TECHNICIANS CONTINUE TO SEAM THE HORIZONTAL WELD AT THE BOTTOM OF THE SLOPE MODIFICATION. PROGRESS IS SLOW DUE TO A LIGHT MIST WHICH HAS FALLEN ALL MORNING. HORIZONTAL SEAMING WAS STOPPED DUE TO MOISTURE AT 10:00 A.M. VISQUEEN SHELTERS WERE ERECTED AT THE TOP OF THE SLOPE AND PATCHWORK ON THE FORTY MIL LINER PROCEEDED UNDER SHELTER.

I PERFORMED MECHANICAL POINT STRESSING ON ALL SEAMS WELDED TODAY PRIOR TO VACUUM TESTING. NO UNBONDED AREAS WERE REVEALED. TEST PROCEDURE IDENTIFIED IN ASTM D 4437. THIS WAS REQUESTED BY RICHARD ROE OF GUNDLE/WARDCLYDE. WORK TERMINATED AT 2:30 DUE TO RAIN.

DISTRIBUTION:
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 072
DATE SEPT 17, 1990
DAY S M T W TH F S (M)

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SV678.03
CLIENT OCIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	6	
GUIDE		5	TECHNICIANS ONE LEAD MAN: NOON.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVERSON: PLACED 115 mil GEOFABRIC BETWEEN 40 mil HDPE LINERS AT TOP of SLOPE - CREEK MODIFICATION. ALSO PLACED 60 mil GEOFABRIC OVER THE TOP LAYER OF 40 mil LINER AND PROCEEDED TO COVER with STRUCTURAL FILL in AREAS THAT HAD BEEN ACCEPTED AS COMPLETE. SEVERSON'S LABORERS REMOVED VISABLE STONE AND DEBRIS FROM SOILS AS PLACEMENT OCCURRED. AREA OF COVERAGE WAS BETWEEN S1+50 AND S2+50 - 10-15 FEET SOUTH OF THE ANCHOR TRENCH.

GUIDE: CONTINUE PLACEMENT of PANELS 13 THROUGH 16 AT THE EAST SIDE OF THE SLOPE MODIFICATION. PANELS # 13, 14, 15, 16 ARE 40 mil LINER. PANEL # 12 IS 80 mil LINER.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS L. BERARDI TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 072
DATE SEPT 17, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE & NIAGARA RD., NIAGARA FALLS, N.Y.
JOB NO. 5Y07E.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM FOX

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: GUNDLE: CONTINUE EXTRUSION WELDING OF THE HORIZONTAL SEAM AT THE BOTTOM OF SLOPE FOR PANELS 1 THROUGH 10 (80 mil LINER) REFERENCE ATTACHED DWG FOR PANEL LOCATIONS.

CONTINUE TO PERFORM REPAIR TO DAMAGED LINER AT TOP OF SLOPE.

INSPECTION: I PERFORMED MECHANICAL POINT STRESSING ON THE HORIZONTAL SEAM AT THE BOTTOM OF SLOPE. TESTING REVEALED ONE WEAK SPOT AT SEAM #7 AT EL. ± 567'. THE WEAK SPOT WAS GROUND AND REWELDED. VACUUM TESTING REVEALED NO LEAK.

VACUUM TESTING OF 40 mil LINER INDICATED ONE LEAK IN A SEAM AT THE TOP OF SLOPE AT OHAT, 10' SOUTH OF THE ANCHOR TRENCH. THIS LEAK WAS GROUND AND REWELDED. FURTHER VACUUM TESTING INDICATED THE LEAK HAD BEEN REPAIRED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 073
DATE 9/18/90

DAY: S | M | T ✓ | W | TH | F | S

PROJECT PIPE & TUSCARORA RD. NIAGRA FALLS, NY.
JOB NO. SY022.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY.

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST ✓ | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 ✓ | 55-70 | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY | MODER. | HUMID ✓

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	5	
SUNDLE		5	TECHNICIANS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
KOMATSU D-51A-17 BULLDOZER, KOMATSU PC 2000, PC 90 BACKHOES, (1) DUMP TRUCK, (1) SOILS DISC., (1) 446 PAC (1) BO MAC HAND TAMPER (2) EXTRUSION WELDERS (1) GENERATOR, (1) VACUUM SET

CONSTRUCTION ACTIVITIES:

SEVENSON: CONTINUE TO PLACE 110 mil GEOFABRIC BETWEEN FORTY mil LINERS AND 60 mil GEOFABRIC ON TOP OF SECONDARY LINER AT SLOPE MODIFICATION. TESTING OF ALL SEAMS AND WELDMENTS WERE PERFORMED AND ACCEPTED PRIOR TO COVERING WITH STRUCTURAL FILL

BACKFILL ANCHOR TRENCH AT TOP OF SLOPE MODIFICATION TO CREEK CHANNEL. PRIOR TO BACKFILLING THE ANCHOR TRENCH MIRAFI PARA GRID 100/25 S AND GEO FABRIC SUPAC 16 UP WERE PLACED IN THE TRENCH. BACKFILL WAS PLACED IN 9" TO 12" LIFTS, AND COMPACTED WITH A BO MAC TAMPER.

CONTINUE TO PLACE STRUCTURAL FILL AT THE SOUTH EAST CORNER OF THE CAP AREA AROUND MANHOLE "A". APPROXIMATELY 17 → 20 CY OF SOIL SAMPLED ON 6/25/90 DEPOSITED IN THIS AREA. REFERENCE CLAIM

DISTRIBUTION
1 Proj. Mgr
2 Const. Dept.
3 Inspector
4 Client
5 File

BY Jim Robertson TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 073
DATE SEPT 18, 1990

DAY | S | M | T ✓ | W | TH | F | S |

PROJECT Love & Tuscarora Rd., Niagra Falls, NY.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Severson Environmental
PROJECT MANAGER Jim Fry

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOW
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

CONSTRUCTION ACTIVITIES

of custody dated 6/26/90 and the analytical results from testing these samples dated 7/10/90

Gundle performed trial tests on 80 mil liner and 40 mil liner. All tests passed.

Proceed placing a cap over the extruded horizontal weld at the bottom of slope @ el 567.5

Continue to work on panels 11, 12, 13, 14, and 15 at the east side of the creek modification.

I assisted in performing vacuum tests on 40 mil seams at the top of slope. All welds vacuum tested passed inspection.

DISTRIBUTION
1 Proj. Mgr.
2 Const. Dept
3 Inspector
4 Client
5 File

BY Joe Dibuono TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 073
DATE SEPT 18, 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT PINE & TUSCARORA Rd. NIAGRA FALLS NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Weather	TO 32	32-55 ✓	55-70	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER.	HUMID ✓			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

CONSTRUCTION ACTIVITIES I CALLED ENVIRONMENTAL SOILS TESTING FOR INFORMATION ON 5 DAY CYLINDER BREAKS

POUR DATE 9/12/90 POUR DATE 9/13/90
PANEL #1 CYLINDER #1 3670 LB. PANEL #2 3400 LB.
PANEL #3 CYLINDER #2 3580 LB PANEL #4 3110 LB.

GUNDLE OBTAINED DESTRUCTIVE SAMPLES ON 80 MIL LINER. DOS #10 IS AN EXTRUSION WELD OBTAINED FROM A TRIAL SEAM. LESS THAN 500' OF THIS TYPE OF WELD ON 80 MIL LINER HAVE BEEN COMPLETED. DOS #11 IS A FUSION TYPE WELD OBTAINED FROM SEAM #11. OVER 500 FEET OF THIS TYPE OF WELD HAVE BEEN COMPLETED SAMPLES TURNED OVER TO JIM FRY - OLIN CHEM.

ALL WORK PERFORMED TODAY IS WITHIN THE CONTRACT SPECIFICATIONS.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY [signature] TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 074
DATE SEPT 19, 1990

DAY	S	M	T	W	TH	F	S
				✓			

PROJECT PINE + TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER Vim Fry.

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather			✓			
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

LIGHT RAIN .05" LAST NIGHT.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	1	
GUNDLE		5	TECHNICIANS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
110 TON P&H CRANE, KOMATZU PC2000, PC90 BACKHOES
KOMATZU D-51A-17 TRACTOR, SOILS DISC HOE PAC.
(3) DUMP TRUCKS, (1) VACUUM BOX, (1) GENERATOR, (1) COMPRESSOR

CONSTRUCTION ACTIVITIES:
SEVENSON: THREE TRUCKS HAULING RIP RAP FROM NIAGRA STONE TO CREEK MODIFICATION.

110 TON P&H CRANE USED TO PLACE RIP RAP AT CREEK MODIFICATION, STA 0+75 TO 1+75.

GUNDLE: COMPLETE WELDING PRIMARY HORIZONTAL WELD AT BOTTOM OF SLOPE. ONE LEAK WAS DISCOVERED WHILE I PERFORMED MECHANICAL POINT STRESSING ON THE SEAM. THE HOLE AT THE SEAM WAS GROUND AND REWELDED. IT PASSED THE VACUUM TEST AND INSPECTION. LEAK LOCATION: PANEL #7 - MIDDLE.

CONTINUE TO WELD CAP OVER HORIZONTAL WELD AT BOTTOM OF SLOPE. WORK TERMINATED AT 11:00 P.M DUE TO RAIN.

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2. Const. Dept.
3. Inspector
4. Client
5. File

PAGE 1 OF 1

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 075
DATE 9/20/90
DAY S M T W TH F S (TH ✓)

PROJECT PINE & TUSCA ROSA Rd. NIAGRA FALLS N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVESON ENVIRONMENTAL
PROJECT MANAGER Vim Fry

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVESON ENVIRONMENTAL	2	5	
GUNDLE		5	TECHNICIAN ARRIVE AT 7:30 DEPART AT 5:30

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
110 TON P&H CRANE, (1) KOMATZU PC200, PC 90 BACKHOE, SOIL DISC
HOE PAC, KOMATZU D-51A-17 TRACTOR BULDOZER,
BOMAC HAND TAMPER, 2 EXTRUSION WELDERS, (1) FUSION WELDER
CONSTRUCTION ACTIVITIES: (1) EQUIPATOR, (1) COMPRESSOR/VACUUM BOX

SEVESON: PLACE MARAFI / PARAGID 100 / 25 S AT ANCHOR TRENCH AT TOP OF SLOPE MODIFICATION. PROCEED WITH BACKFILLING ANCHOR TRENCH. BACKFILL PLACED IN 9" TO 12" LIFTS AND COMPACTED WITH A BOMAG HAND TAMPER.

CONTINUE TO PLACE RIP RAP AT NORTH EMBANKMENT SLOPE MODIFICATION. RIP RAP WAS PLACED WITH THE 110 TON P&H CRANE.

GUNDLE:
COMPLETE WELDING OF 40 mil LINER TO 80 mil LINER SOUTH OF ANCHOR TRENCH. VACUUM TESTED - FOUND ONE LEAK AND IT WAS REPAIRED ADEQUATELY.

DISTRIBUTION 1 Proj Mgr
2 Const Dept
3 Inspector
4 Client
5 File

BY Jack Hunter TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 075
DATE SEPT 20, 1990
DAY S M T W TH ✓ F S

PROJECT Pine + Tuscarora Rd, Niagara Falls, N.Y.
JOB NO. SY079.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Fry

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55 ✓	55-70	70-85	85 UP	
STILL	MODER.	HIGH			
DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: GUNDLE: COMPLETE WELDING OF HORIZONTAL CAP AT THE BOTTOM OF 2.5:1 SLOPE. ALL SEAMS WERE VACUUM TESTED AND MECHANICAL STRESS TESTED. 5 LEAKS ON THE CAP WERE DISCOVERED AT THE BOTTOM OF SLOPE ON PANELS #4, #5, #6. ALL LEAKS WERE REPAIRED AND VACUUM TESTED PRIOR TO ACCEPTENCE.

INSPECTION OF THE SOUTH EAST CORNER OF THE SLOPE MODIFICATION REQUIRED 60 mil LINER WAS NOT LONG ENOUGH TO CONFORM TO THE SHAPE OF THE ANCHOR TRENCH. I ASKED GUNDLE'S LEAD MAN TO RESHAPE THE 60 mil LINER AND ALLOW ENOUGH SLACK FOR PROPER BACKFILLING OF THE ANCHOR TRENCH WITHOUT CREATING TENSION AT WELDED SEAMS. HE CONFORMED AND REWORKED LINER MATERIAL SO IT WOULD RESHAPE ADEQUATELY.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Jim Schuster TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 075
DATE SEPT 20, 1990

DAY: S | M | T | W | TH ✓ | F | S

PROJECT PIKE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY 07 E. 03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY

Weather

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp. TO 32	32-55	55-70	70-85	85 UP	
Wind STILL	MODER.	HIGH			
Humidity DRY	MODER.	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: I PREPARED VARIANCE #5 AND #6 TODAY. VARIANCE #6 IS SIGNED. WILL OBTAIN SIGNATURES FOR VARIANCE #5 TOMORROW.

ALL WORK PERFORMED TODAY IS WITHIN THE SCOPE OF THE CONTRACT SPECIFICATIONS

DISTRIBUTION
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3. Inspector
4. Client
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BY Jim Johnston TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 076
DATE SEPT 21, 1990
DAY | S | M | T | W | TH | F ✓ | S |

PROJECT PINE & TUSCARORA CO., NIAGARA FALLS, NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
110 TON P+H CRANE, KOMATSU PZ2000, PZ90 BACKHOES, KOMATSU D-51A-17 BULLDOZER, SOILS DISC, HOE PACK, 2 EXTRUSION WELDERS (1) GENERATOR, (1) COMPRESSOR & VACUUM BOX.

CONSTRUCTION ACTIVITIES:

SEVERSON: CONTINUE PLACEMENT OF RIP RAP AT THE NORTH EMBANKMENT MODIFICATION. (1) TRUCK HAULING STONE FROM NIAGARA STONE CO.

CONTINUE TO PLACE MARAFI / PARACID 100/125 AT THE ANCHOR TRENCH AT TOP OF SLOPE. COMPLETE BACK-FILLING OF ANCHOR TRENCH. SOILS WERE COMPACTED ADEQUATELY.

GUNDLE: COMPLETE VACUUM TESTING OF 80 MIL LINER TO FORTY MIL LINER SOUTH OF THE ANCHOR TRENCH AT THE CREEK MODIFICATION. I FOUND ONE LEAK AT 2+20 LINE. IT WAS REPAIRED AND PASS VACUUM TESTING.

COMPLETE WELDING OF SEAMS AT THE NORTH WEST AND NORTH EAST CORNERS OF THE SLURRY WALL. MECHANICAL STRESS TESTING OF SEAMS WAS PERFORMED

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BY Jim Thurston TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 076
DATE SEPT. 21, 1990

DAY	S	M	T	W	TH	F	S
						✓	

PROJECT Pine & Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Jim Fry.

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: in accordance with ASTM D4437-84. No deficiencies in weldments were detected.

Gundle completed welding the top layer of 40 mil liner at the slope modification (top of slope). I performed vacuum testing on all seams — no leaks were detected.

Gundle finished liner placement at the creek channel. All work performed was in accordance with the specifications.

I called Emipire Soils Investigations for seven day cylinder breaks on concrete poured on 9/12, 13/90. I also requested the status of the leachate compatability test submitted on 7/5/90.

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3. Inspector
4. Client
5. File

BY [signature] TITLE Q/A

DAILY INSPECTION REPORT

REPORT NO. 076
DATE SEPT 21, 1990
DAY S M T W TH F S (F ✓)

PROJECT PINE & TUSCARORA Rd, NIAGRA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather			✓			
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

PANEL #1 9/19/90 4,050 PSI 7 DAY BREAK
PANEL #2 9/19/90 4,000 PSI 7 DAY BREAK
PANEL #3 9/20/90 3,950 PSI 7DAY BREAK
PANEL #4. 9/20/90 3,250 PSI 7DAY BREAK

LEACHEATE COMPATABILITY TEST - APPROX. 85% COMPLETE. 2×10^{-8}

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BY Joe Albanese TITLE

DAILY INSPECTION REPORT

REPORT NO. 075
DATE SEPT 22, 1990

DAY	S	M	T	W	TH	F	S
							✓

PROJECT Pine & Tuscarora Rd., Niagra Falls, NY.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Sevenson Environmental
PROJECT MANAGER Vim Fry.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Sevenson Environmental	1	6	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
110 ton P&H crane, Komatzu PC2000, PZ80 Backhoe, (1) soils disc, (1) Hoe Pack, (1) dump truck.

CONSTRUCTION ACTIVITIES: Sevenson: Continue placement of rip rap at creek modification.

Demolish house north of Zitto property on Pine and Tuscarora. During demolition, water was sprayed on building debrie as work proceeded. Wood and flamables from the house were placed in the basement and seperated from brick and concrete. Three loads of flamable debrie were hauled to modern disposal company.

Prepare and place clay bentonite backfill for use at the anchor trench located at the west side of the creek modification.

Performed inspection of underneath the primary 40 mil liner for stone or debrie that may cause damage to HDPE as it is pulled over the

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3. Inspector
4. Client
5. File

BY Jon Fiberiter TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 075
DATE SEPT 22, 1990

DAY | S | M | T | W | TH | F | S ✓ |

PROJECT PINE & TUSCARORA Rd., NIAGRA FALLS, NY.
JOB NO. 52072.03
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERN ENVIRONMENTAL.
PROJECT MANAGER Jim Cox.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: TOP OF SLOPE. SMALL STONE AND DEBRIS WERE REMOVED BETWEEN BOTH LINERS PRIOR TO FINAL ACCEPTANCE AND PLACEMENT. DEFICIENCIES WERE LOCATED AT THE FOLLOWING LOCATIONS:

1) 0+75 TOP OF SLOPE 15' SOUTH OF ANCHOR TRENCH. A SCATTERING 2' WIDE OF SMALL STONE WERE LOCATED AND REMOVED.

2) 1+35 POINTED AND HARDENED CLAY AT THE TOP OF THE ANCHOR TRENCH WAS REMOVED. TWO STONES APPROX 3/4" WERE FOUND AND REMOVED.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Jon Robertson TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 075
DATE SEPT 22, 1990

DAY | S | M | T | W | TH | F | S ✓

PROJECT PINE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: SEVENSON COMPLETED PLACEMENT OF THE FOLLOWING:

1.) 110 mil GEOTEXTILE FABRIC MATERIAL BETWEEN 40 AND 80 mil LINERS AT THE TOP OF SLOPE.

2.) PULL TOP 40 mil LINER OVER TOP OF SLOPE.

3.) PLACE 60 mil GEOFABRIC OVER TOP 40 mil LINER AT TOP OF SLOPE MODIFICATION.

ALL WORK PERFORMED TODAY IS WITHIN THE SCOPE OF THE REVISED CREEK CHANNEL PLANS AND SPECIFICATIONS.

IT RAINED TODAY FROM 7:00 A.M TO 11:00 A.M.

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3. Inspector
4. Client
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BY Jim Albertson TITLE O/A

ES DAILY INSPECTION REPORT

REPORT NO. 076
DATE SEPT 24, 1990

DAY | S | M ✓ | T | W | TH | F | S |

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, NY.
JOB NO. SY028.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER.	HIGH			
Wind	DRY	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL.	2	5	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
4:00 P.M.	RICK SHAFFER.	GUNDLE	DELIVER DAILY PROGRESS

EQUIPMENT AT THE SITE:
KOMATSU PZ 2000 BACKHOE, PZ 90 BACKHOE, KOMATSU D-51A-17 BULLDOZER, P&H 110 TON CRANE, B. MAC HAND TAMPER.

CONSTRUCTION ACTIVITIES: SEVERSON: CONTINUE MIXING AND PLACEMENT OF CLAY / BENTONITE MIX FOR ANCHOR TRENCH AT THE NORTH WEST CORNER OF THE CREEK MODIFICATION. LIFT SIZES WERE 6" AND COMPACTED WITH A BO MAC HAND TAMPER

CONTINUE PLACEMENT OF RIP RAP AT NORTH CREEK CHANNEL MODIFICATION

CONTINUE TO EXCAVATE MATERIAL FROM HOUSE DEMOLITION. FLAMABLES WERE SEPERATED FROM BRICK AND CONCRETE. 3 LOADS OF FLAMABLE DEBRIE WERE DELIVERED TO MODERN DISPOSAL CO. CONCRETE AND BRICK WERE PLACED IN THE BASEMENT.

RICK SHAFFER ON SITE IN ORDER TO DELIVER GUNDLE DAILY PROGRESS REPORTS.

DISTRIBUTION
1 Proj Mgr.
2 Const Dept.
3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 078
DATE 9/25/90

DAY | S | M | T ✓ | W | TH | F | S |

PROJECT PINE & TUSCARORA RD., NIAGRA FALLS N.Y.
JOB NO. SX-78.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER Jim Fry.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	7	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
1:00 P.M	John McIntosh	OLIN CHEMICAL	

EQUIPMENT AT THE SITE:
KOMATSU PC 200, PC 90 BACKHOES KOMATSU D-51A-17 BULLDOZER
1 DUMP TRUCK

CONSTRUCTION ACTIVITIES:
Field Approval from Jim Drum on Variances # 6 & # 7.

SEVENSON: PLACE STRUCTURAL FILL AT NORTH EAST CORNER OF CAP AREA. CLAY SOURCE - ON SITE MATERIAL. SOILS WERE PLACED IN 9"-12" LIFTS AND COMPACTED WITH A KOMATSU D-51A-17 BULLDOZER LABORERS AT PLACEMENT AREA REMOVING STONES AND DEBRIS. THE ON SITE MATERIAL USED FOR STRUCTURAL FILL CONTAINED CLAY THAT WAS EXCAVATED FROM FIVE SAMPLING POINTS AT TOP OF SLOPE AT CREEK MODIFICATION ON 6/25/90.

FILL BASEMENT OF DEMOLISHED HOUSE WITH CLAY FROM THE SIDING AREA.

PRIOR TO PLACEMENT OF STRUCTURAL FILL TODAY, 60 MIL GEOFABRIC WAS PLACED OVER THE NORTH EAST CORNER

DISTRIBUTION
1 Proj Mgr.
2 Const. Dept.
3 Inspector
4 Client
5 File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 078.
DATE 9/25/90

DAY: S | M | T ✓ | W | TH | F | S

PROJECT PINE & TUSCARORA Rd. NIAGARA FALLS, NY.
JOB NO. 5Y029.03
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY.

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: OF THE CAP AREA FROM MANHOLE A TO THE ANCHOR TRENCH.

DURING TODAYS SITE OBSERVATIONS, I INSPECTED A CRACK IN SOIL AT THE TOP OF SLOPE AT THE EAST SIDE OF THE CAP AREA. THE CRACK EXTENDS FROM PIEZOMETER #3 TO APPROXIMATELY 30' NORTH, 6'-8' FROM EDGE OF SLOPE. PHOTOGRAPHS WERE TAKEN AND THE OBSERVATION WAS REPORTED TO Jim FRY. I SUSPECT THIS MAY BE FROM A SETTLEMENT AND SHRINKAGE AT THE TOP OF SLURRY WALL.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 079
DATE SEPT 26, 1990

DAY: S | M | T | W ✓ | TH | F | S

PROJECT PINE & TUSCARORA RD, NIAGRA FALLS, NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim FRY

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

MORNING SHOWERS.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	FRANK RAGASSI	SEVERSON GEN'L SUPT.	REVIEW WORK ON SITE & PROGRESS.

EQUIPMENT AT THE SITE:
(1) KOMATSU PC 2000 (1) KOMATSU PC90 BACKHOES
(1) KOMATSU D-51A-17 TRACTOR BULLDOZER
(1) DUMP TRUCK, Bo MAC TAMPER.

CONSTRUCTION ACTIVITIES:
SEVERSON: (1) TRUCK HAULING RIP RAP FROM NIAGRA STONE

LABORERS PLACE 18" OF RIP-RAP AT TOP OF SLOPE MODIFICATION. GEOFABRIC EXTENDED TO TOP OF RIP-RAP AS ILLUSTRATED IN MODIFICATION TO CREEK CHANNEL DWGS. STRUCTURAL FILL PLACED AGAINST GEOFABRIC AND RIP RAP

LABORERS PLACE GEOFABRIC ALONG AND IN ANCHOR TRENCHES AT EAST SIDE OF CREEK MODIFICATION ABOVE EL 571. BACKFILL PLACED IN 12" LIFTS AND HAND COMPACTED WITH A Bo MAC HAND TAMPER

10 BAGS 100LB EA. BARA KADE BENTONITE DELIVERED TO SITE FOR CLAY/BENTONITE BACKFILL MIX AT ANCHOR TRENCHES.

DISTRIBUTION
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2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 079
DATE SEPT. 26, 1990

DAY | S | M | T | W ✓ | TH | F | S |

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER VINS FRY.

Weather
Temp.
Wind
Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	56-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

MORNING SHOWER.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: OPERATORS ON SITE GRADE AND TRACK IN PLACE STRUCTURAL FILL AT CLAY CAP AREA.

DECISION ON SITE TO EXTEND RIP RAP TO TOP OF SLOPE AND PLACE 170 MIL GEO-FABRIC BETWEEN STRUCTURAL FILL AND STONE. THIS MODIFICATION WOULD EXTEND ITSELF TO ALL OTHER AREAS OF THE SOUTHERN SLOPE OF THE CREEK CHANNEL. THIS CHANGE WOULD PREVENT ~~BD~~ STRUCTURAL FILL FROM WASHING INTO THE STONE AT TOP OF SLOPE. NO VARIANCE WILL BE WRITTEN FOR THIS AS OLIN CHEMICAL HAS THIS OPTION IN THE ORIGINAL DESIGN.

DISTRIBUTION
1 Proj Mgr.
2. Const. Dept.
3 Inspector
4 Client
5 File

BY Louis LIBERATORE TITLE QA.

ES DAILY INSPECTION REPORT

REPORT NO. 080
DATE SEPT 27, 1990

DAY | S | M | T | W | TH ✓ | F | S |

PROJECT PINE AND TUSCARORA Rd., NIAGARA FALLS N.Y.
JOB NO. SY07E.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM FEY

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER. ✓	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	
		2	SURVEYORS ARE ON AFTERNOON.

VISITORS

TIME	NAME	REPRESENTING	REMARKS
	KEN CINY	BEAU ENTERPRIZES	REVIEW LANDSCAPING
	ERIC WILSON	ENVIRONMENTAL SOILS TESTING	PERFORM COMPACTION TESTS ON FINAL LIFT STRUCTURAL FILL

EQUIPMENT AT THE SITE:

(1) KOMATSU PC 2000 BACKHOE, (1) KOMATSU PC 90 BACKHOE
(1) KOMATSU D-51A-17 TRACTOR BULLDOZER, (1) DUMP TRUCK

CONSTRUCTION ACTIVITIES:

CONTINUE HAULING RIP RAP FROM NIAGARA STONE.

CONTINUE PLACING STRUCTURAL FILL AT TOP OF NORTH EMBANKMENT NEXT TO RIP RAP AT SLOPE MODIFICATION. LIFT SIZES ARE 9" TO 12" AND TRACKED IN PLACE WITH THE KOMATSU BULLDOZER.

LABORERS AND OPERATORS MIXED TWO LOADS OF CLAY/BENTONITE MIX FOR USE IN ANCHOR TRENCHES AT THE EAST SIDE OF THE SLOPE MODIFICATION. ONE LOAD CONTAINED 12 CY OF CLAY AND 10 BAGS BENTONITE. THE OTHER LOAD CONTAINED 10 CY OF CLAY AND 6 BAGS OF BENTONITE. CLAY SOURCE WAS FROM THE STAGING AREA. BENTONITE WAS BARA KADE #90, 100 LB BAGS. CLAY/BENTONITE MIX WAS PLACED IN 9" TO 12" LIFTS UP TO EL. 571 AND COMPACTED IN PLACE WITH A 80 MAC HAND TAMPER. I OBTAINED A SAMPLE OF CLAY/

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BY LOUIS LISERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 080
DATE SEPT 27, 1990

DAY: S | M | T | W | TH ✓ | F | S

PROJECT PIVE & TUSCARORA Rd., NIAGRA FALLS, N.Y.
JOB NO. SY 678-03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER JIM FRY.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: BENTONITE MIX FOR FIES. WORK PERFORMED IS WITHIN THE GUIDELINES OF THE SLOPE MODIFICATION REPAIR.

ERIC WILSON OF ENVIRONMENTAL SOILS TESTING ON SITE PERFORMING COMPACTION TESTS ON THE FINAL LIFT OF STRUCTURAL FILL AT THE CAP AREA. WHILE TESTING, AREA 71+30 N & 82+95 E WAS FOUND TO HAVE LOW COMPACTION READINGS. A FIFTY FOOT RADIUS SURROUNDING THIS LOW READING WAS BLADED AND RE COMPACTED. ADDITIONAL TESTING INDICATED ADEQUATE COMPACTION OF THIS LOCATION WAS OBTAINED ALL OTHER TESTS OF THE CAP AREA SHOWED READINGS THAT MET OR EXCEEDED CONTRACT REQUIREMENTS.

ERIC WILY ON SITE IN AFTERNOON IN ORDER TO REVIEW LAND SCAPING. - BEAU ENTERPRIZES.

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3. Inspector
4. Client
5. File

BY LOUIS GERARDE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 080
DATE SEPT 27, 1990

DAY: S | M | T | W | TH ✓ | F | S

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, N.Y.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER JIM ERY.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70 ✓	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: CONTINUE PLACEMENT OF RIP RAP AT NORTH EAST CORNER OF CREEK MODIFICATION. I INSPECTED THE CREEK CHANNEL AND FOUND SEVERAL SPOTS THAT DID NOT HAVE 12" OF STONE PLACEMENT. REPORTED THIS TO PROJECT SUPT. - WILL SCHEDULE CORRECTION TOMMORROW.

ONE TRAILER REMOVED FROM SITE

SURVEYORS ON SITE ESTABLISHING FINAL GRADES FOR TOPSOIL AND GRADING AT THE CAP AREA.

REVIEWED PUNCHLIST ITEMS WITH REX GRIFFETH OF LARSON ENGINEERS.

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3. Inspector
4. Client
5. File

BY Louis LIBERATORE TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 081
DATE SEPT 29, 1990

DAY: S | M | T | W | TH | F ✓ | S

PROJECT PINE & TUSCARORA Rd NIAGRA FALLS NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Frey.

Weather / Temp. / Wind / Humidity

BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
TO 32	32-55	55-70 ✓	70-85	85 UP	
STILL	MODER. ✓	HIGH			
DRY	MODER. ✓	HUMID			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	QA/QC ½ day FIELD SUPT ½ day.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

KOMATSU PC 2000 BACKHOE, PC 90 BACKHOE, KOMATSU D-51A-17 TRACTOR BULLDOZER, (1) dump TRUCK

CONSTRUCTION ACTIVITIES

CONTINUE HAULING RIP RAP FROM NIAGRA STONE.

COMPLETE PLACEMENT OF RIP RAP AT NORTH CREEK CHANNEL. DEFICIENCIES IDENTIFIED YESTERDAY AND TODAY WERE CORRECTED. STONE PLACEMENT AT THE CREEK CHANNEL IS WITHIN CONTRACT REQUIREMENTS.

FINE GRADE STRUCTURAL FILL AT CAP AREA AND RECEIVE IT FOR TOP SOIL

PERFORM SITE CLEANUP.

GRADE FOR ACCESS ROAD AT NORTH WEST SIDE OF CAP AREA.

DISTRIBUTION
1 Proj Mgr
2 Const Dept
3 Inspector
4 Client
5 File

BY LOUIS LIBERATORE. TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 082
DATE OCT 1, 1990

DAY: S | M ✓ | T | W | TH | F | S

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, NY.
JOB NO. SY028.03 — Weather
CLIENT OLIN CHEMICAL — Temp.
CONTRACTOR SEVERSON ENVIRONMENTAL — Wind
PROJECT MANAGER JIM FRY. — Humidity

BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
TO 32	32-55	55-70	70-85	85 UP	40 - 50
STILL	MODER. ✓	HIGH			
DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	5	FIELD SUPT ½ DAY.
FOX FENCING CO		4	1 FIELD SUPT - MIKE FOX.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
KOMATSU PC200, PC90 BACKHOE, KOMATSU D-51A-17 TRACTOR
1 FARM TRACTOR, YORK RAKE, BOB CAT WITH AUGER.

CONSTRUCTION ACTIVITIES:
SEVERSON: COMMENCE PLACING TOPSOIL FROM STAGING AREA AT THE CLAY CAP. WEST SIDE OF CAP AREA COVERED WITH 6". TOPSOIL WAS OBTAINED FROM THE NORTH SIDE OF THE CREEK AREA PRIOR TO RELOCATION OF THE CHANNEL. ONE LABORER SPOTTING TRUCKS AND REMOVING STONE

FOX FENCE CO.: ON SITE IN ORDER TO START INSTALLATION OF PERIMETER FENCING. FENCE LINE ON THE SOUTH SIDE OF THE CAP AREA WAS MOVED SOUTH ONE FOOT IN ORDER TO AVOID PENETRATING THE HDPE LINER AS FENCE POSTS ARE DUG. CONCAVE PICKET BOARDS 1"x3" CHANGED TO 1"x4" STRAIGHT PICKET. - Jim FRY'S APPROVAL.

I SKETCHED AN AS BUILT LOCATION OF THE SLURRY WALL.

DISTRIBUTION
1. Proj. Mgr.
2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE O/A

DAILY INSPECTION REPORT

REPORT NO. 083
DATE OCT 2, 1990
DAY S M T ✓ W TH F S

PROJECT PIKE & TUSCARORA Rd
JOB NO. SY 072.03
CLIENT OCIN CHEMICAL
CONTRACTOR SEVENSON ENVIRONMENTAL
PROJECT MANAGER Vim Fly

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

TEMP 47° - 61°

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVENSON ENVIRONMENTAL	2	4	
Fox Fences		4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
10:30-5:00	GORDON MELLE	ENGINEERING SERVICE	PROJECT REVIEW & INSPECTION.
11:30-12:00	JEFF MIRACHI	NYDEC	
12:30-12:45	JAMES TL	NYDEC	

EQUIPMENT AT THE SITE:
KOMATSU PZ2000 BACKHOE, KOMATSU D-51A-17 TRACTOR, (1) FARM TRACTOR, (1) SOILS DISC, (1) YORK RAKE, (1) DUMP TRUCK. FOX FENCES: BOBCAT WITH AUGER, (1) TRUCK AND DRILL RIG

CONSTRUCTION ACTIVITIES:

SEVENSON: CONTINUE PLACING TOPSOIL AT CAP AREA. ONE LABORER REMOVING VISABLE STONE AND SPOTTING TRUCKS. LIFT SIZE IS 6" MINIMUM. SOILS PLACED TODAY ARE FROM THE STAGING AREA. THE ORIGINAL SOURCE OF THIS TOPSOIL IS FROM THE NORTH SIDE OF THE CREEK CHANNEL.

CONTINUE GRADING FOR ACCESS ROAD THAT LEADS TO THE WEST SIDE OF THE CAP AREA FROM TUSCARORA Rd. ALSO CONSTRUCT A 5' CLAY BERM AT THE LOCATION OF THE DEMOLISHED HOUSE. SLOPE SIZE OF BERM APPROX 4:1 - NO COMPACTION READINGS OBTAINED ON THIS WORK

DISTRIBUTION 1 Proj Mgr. 2 Const. Dept. 3 Inspector 4 Client 5 File

BY LOUIS LIBERATORE. TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 083
DATE OCT 2 1990

DAY: S | M | T ✓ | W | TH | F | S

PROJECT PINE & TUSCARORA RD.
JOB NO. SY 076.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN-TRENT ENVIRONMENTAL
PROJECT MANAGER VIM FRY.

Weather	BRIGHT SUN	CLEAR ✓	OVERCAST	FOG	RAIN	SNOW
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER. ✓	HUMID			

TEMP 47° - 61°

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERN-TRENT ENVIRONMENTAL	2	4	
FOX FENCES.		4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

FOX FENCES: POUR CEMENT FOUNDATIONS FOR FENCE POSTS AT WEST AND SOUTH SIDES OF CAP AREA. HOLE SIZES FOR FOUNDATIONS ARE 4' DEEP X 12" DIA.: CONTINUE LAYING FENCE LINE AT NORTH CREEK MODIFICATION AND AROUND CREEK CHANNEL TO THE SOUTH EAST CORNER OF THE CAP AREA. 2000 LB CONCRETE USED FOR BASES. C & B CONCRETE IS THE SUPPLIER

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2. Const. Dept.
3. Inspector
4. Client
5. File

BY LOUIS LIBERATORE TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 084
DATE 10/13/89
DAY S M T W TH F S

PROJECT Pine & Tuscarora Rd Niagara Falls, NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Jim Fox

Weather: BRIGHT SUN | CLEAR ✓ | OVERCAST | FOG | RAIN | SNOWY
Temp.: TO 32 | 32-55 | 55-70 ✓ | 70-85 | 85 UP
Wind: STILL | MODER. ✓ | HIGH
Humidity: DRY | MODER. ✓ | HUMID

58° - 73°

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	4	
FOX FENCES		4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE
(1) KOMATSU PZ 2000 BACKHOE, (1) KOMATSU D-51A-12 TRACTOR, (1) FARM TRACTOR, (1) YORK RAKE, (1) DUMP TRUCK.
FOX FENCE: (1) DRILL RIG, (1) BOBCAT WITH 12" AUGER.

CONSTRUCTION ACTIVITIES: SEVERSON: LAY 60 mil GEOFABRIC ON THE GRADED ACCESS ROAD TO THE WEST SIDE OF THE CAP AREA. PLACE 6" minimum BASE OF #2 CRUSHED STONE AND CINDER ON FABRIC. COMPACT IN PLACE WITH A KOMATSU D-51A-12 TRACKED DOZER.

CONTINUE MOVING STRUCTURAL CLAY FROM THE STAGING AREA FOR BERM CONSTRUCTION AT THE WEST SIDE OF THE CAP AREA. COVER WITH 6" TOPSOIL FROM THE SITE STOCKPILE.

ONE LABORER AND ONE OPERATOR EXCAVATE BASES FOR FENCE POSTS WITH A KOMATSU PZ 2000 BACKHOE. BUCKET WIDTH OF THE BACK HOE IS 4'. THIS WORK WAS CONFINED TO THE TOP OF THE CAP AREA ALONG THE CREEK MODIFICATION. REFERENCE VARIANCE # 5 INSPECTION OF EACH EXCAVATION REVEALED NO APPARENT DAMAGE HAD

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BY Jon Silberstein TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 084
DATE 10/13/90
DAY S M T W TH F S

PROJECT Pine & Tuscarora Rd, Niagara Falls, NY
JOB NO. SY07203
CLIENT OCC Chemical
CONTRACTOR Severson Environmental
PROJECT MANAGER Jim Fox

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

58° - 73°

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Severson Environmental	2	4	
Fox Fence		4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

CONSTRUCTION ACTIVITIES: began performed to the 60 mil geofabric at the 40 mil liner beneath.

Fox Fence: Pour bases for fence posts along the creek modification - top of slope. Work performed is in accordance with the approved variance for this work, 2000 LB concrete supplied by C & B Concrete, cedar 4"x4" fence posts.

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3. Inspector
4. Client
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BY Jon C. Tibbetts TITLE QA

DAILY INSPECTION REPORT

REPORT NO. 085
DATE 10/4/90
DAY S M T W TH F S

PROJECT Pine - Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. SY078.03
CLIENT OCIN CHEMICAL
CONTRACTOR SEVERSON ENVIRONMENTAL
PROJECT MANAGER Vim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	56-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

Rain all morning

AVERAGE FIELD FORCE — 56° AT 12:00 NOON

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
SEVERSON ENVIRONMENTAL	2	3	
FOX FENCES			DID NOT WORK TODAY - RAIN.

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:
(1) Komatzu PZ2000, (1) Komatzu D-51A-12 Bulldozer, (1) Soil disc, (1) Farm tractor.

CONSTRUCTION ACTIVITIES: I REPORTED TO THE SITE AND DISTRIBUTED COPIES OF THE PRELIMINARY PUNCHLIST TO Kim Lickfield, SEVERSON ENVIRONMENTAL, AND Vim FRY, OCIN CHEMICAL. SEVERSON SHOULD COMPLETE THESE ITEMS OF WORK PRIOR TO CONTRACT CLOSE OUT, Vim FRY WILL ADD TO OR REMOVE ITEMS TO THE LIST AS WORK PROGRESSES.

I SPOKE WITH GORDON MELLE AND Vim FRY IN REGARDS TO AS BUILT DWGS. IT WILL BE ENGINEERING SCIENCES RESPONSIBILITY TO PROVIDE A SET OF AS BUILTS AS DESCRIBED IN TODAYS CONVERSATION WITH Vim FRY AND GORDON MELLE.

I CALLED Jordan CHRISTIANSON OF EMPIRE SOILS (716-735-3502). I RECIEVED THE PRELIMINARY RESULTS OF THE LEACHEATE COMPATABILITY TEST SUBMITTED ON 7/5/90. PRELIMINARY RESULTS INDICATE PERMABILITY WAS BETWEEN 2.3×10^{-8} AND 3.0×10^{-8}. CONTACT REQUIRED

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BY Jon Johnston TITLE QA

ES DAILY INSPECTION REPORT

REPORT NO. 085
DATE 10/4/90

DAY | S | M | T | W | TH | F | S |

PROJECT Pine & Tuscarora Rd., Niagra Falls, N.Y.
JOB NO. SY078.03
CLIENT Olin Chemical
CONTRACTOR Stevenson Environmental
PROJECT MANAGER Vim Fry

	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Weather	TO 32	32-55	55-70	70-85	85 UP	
Temp.	STILL	MODER.	HIGH			
Wind	DRY	MODER.	HUMID			
Humidity						

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE

CONSTRUCTION ACTIVITIES: For this test are 5×10^{-8}.

I also called Chuck Kieper of Empire Soils in regards to test reports on cylinder breaks for the concrete slab at the creek modification. He informed me they would mail them soon.

I departed at 1:00 P.M. for Cleveland. A meeting is scheduled on site with NYDEC for final inspection and walk through on 10/12/90.

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BY [signature] TITLE QA.

DAILY INSPECTION REPORT

REPORT NO. 086
DATE 10/12/90
DAY S M T W TH F S (F ✓)

PROJECT Pine & Tuscarora Rd., Niagara Falls, N.Y.
JOB NO. SY 078 03
CLIENT Olin Chemical.
CONTRACTOR Seneuson Environmental.
PROJECT MANAGER Jim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
	TO 32	32-55	55-70 ✓	70-85	85 UP	
Temp.	STILL	MODER. ✓	HIGH			
Wind	DRY	MODER.	HUMID ✓			
Humidity						

Rain at 10:20 A.M

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS
Seneuson Environmental	1	4	

VISITORS

TIME	NAME	REPRESENTING	REMARKS
Approx 10:30	James Van Hoesen	NYDEC.	Site Inspection
	James Drum		

EQUIPMENT AT THE SITE:
(1) dump truck, (1) Bulldozer Komatsu D-51A-17,
(1) Farm tractor, (1) Rake

CONSTRUCTION ACTIVITIES: Seneuson: Continue to spread topsoil at the south side of the cap area.

Work at the site was limited on 10/4, 5, 6/90 due to rain. Site conditions are wet. The Niagra Falls area had an above average rainfall for this month. Progress at the site is slow.

Fine grading of the cap area is 95% complete. The top of the cap needs to be raked and grading around manholes A & B needs to be complete.

Items # 3, 6, 9, 11, 12 have been removed from the preliminary punchlist dated 9/3/90

Seneuson has removed two trailers from the site

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BY Jon Johnston TITLE QC

DAILY INSPECTION REPORT

REPORT NO. 086

DATE

DAY | S | M | T | W | TH | F ✓ | S |

PROJECT PINE & TUSCARORA RD. NIAGARA FALLS, NY

JOB NO. SY 078.03

CLIENT OLIN CHEMICAL

CONTRACTOR SEVERSON ENVIRONMENTAL.

PROJECT MANAGER JIM FRY.

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

ARR AT 10:20 A.M.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: AN ESTIMATED 715 CY OF SOIL IDENTIFIED AS STRUCTRAL FILL AT THE PINE AND TUSCARORA RD. REMEDIATION HAS BEEN TRANSPORTED TO WEST 102nd ST. A SPOIL CELL LOCATED ON OLIN CHEMICAL PROPERTY HAS BEEN COVERED WITH THIS CLAY. 65 LOADS DELIVERED 11 CY PER LOAD.

SITE GRADING SOUTH OF THE CAP AREA TO THE TEMPORARY FENCE NORTH OF THE CAR LOT IS SO TO COMPLETE.

A GRAVEL BASE APPROXIMATLEY 35' WIDE HAS BEEN LAID NORTH OF THE ZITTO USED CAR LOT ADJACENT TO THE TEMPORARY FENCE USED TO SEPERATE THE STAGING AREA. 60 mil GEOFABRIC WAS PLACED BENEATH THE GRAVEL.

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BY [signature] TITLE QC

DAILY INSPECTION REPORT

REPORT NO. 086
DATE 10/12/90
DAY S M T W TH F S (F ✓)

PROJECT Pine + Tuscarora Rd., Niagara Falls, NY
JOB NO. SY02603
CLIENT OLIN CHEMICAL
CONTRACTOR SEVERN TRENT ENVIRONMENTAL
PROJECT MANAGER Jim Fry

Weather	BRIGHT SUN	CLEAR	OVERCAST ✓	FOG	RAIN	SNOWY
Temp.	TO 32	32-55 ✓	55-70	70-85	85 UP	
Wind	STILL	MODER. ✓	HIGH			
Humidity	DRY	MODER.	HUMID ✓			

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES: During today's observations I noticed IRON DIN REFERENCE POINT N1127115.52 / E 998102.29 WAS EITHER REMOVED OR BURIED WHILE SITE GRADING IN THIS AREA WAS BEING PERFORMED.

JAMES VAN HOESEN AND JAMES DRUM OF NYDEC WERE ON SITE IN ORDER TO PERFORM A FINAL INSPECTION OF THE SITE. FINAL OBSERVATIONS NOTED:

1) THERE ARE SOME SPOTS NORTH OF THE CREEK CHANNEL THAT DID NOT HAVE GRASS GROWING. MR. FRYE INFORMED MR. VAN HOESEN THAT THIS IS ONE OF THE REMAINING PUNCHLIST ITEMS ON THIS PROJECT AND IT STILL HAS TO BE COMPLETED.

2) MR. VAN HOESEN AND MR. DRUM WOULD LIKE A COPY OF THE LEACHATE COMPAT ABILITY TEST FOR THE SLURRY WALL DESIGN MIX.

DISTRIBUTION: 1. Proj. Mgr. 2. Const. Dept. 3. Inspector 4. Client 5. File

BY Jan Tibbetts TITLE QC

DAILY INSPECTION REPORT

REPORT NO. 086
DATE 10/12/90
DAY S M T W TH F S (F ✓)

PROJECT PINE & TUSCARORA Rd., NIAGARA FALLS, NY.
JOB NO. SY078.03
CLIENT OLIN CHEMICAL.
CONTRACTOR SEVERSON ENVIRONMENTAL.
PROJECT MANAGER VIN FAY.

Weather	BRIGHT SUN	CLEAR	OVERCAST	FOG	RAIN	SNOWY
Temp.	TO 32	32-55	55-70	70-85	85 UP	
Wind	STILL	MODER.	HIGH			
Humidity	DRY	MODER.	HUMID			

RAIN AT 10:20 A.M.

AVERAGE FIELD FORCE

NAME OF CONTRACTOR	NON-MANUAL	MANUAL	REMARKS

VISITORS

TIME	NAME	REPRESENTING	REMARKS

EQUIPMENT AT THE SITE:

CONSTRUCTION ACTIVITIES:

3) MR. VAN HOESEN AND MR. DAWN WOULD LIKE A COPY OF THE AS-BUILT PLANS, AND A COPY OF THE FEMS MODEL CALCULATED FOR THE CHANNEL.

4) MR. VAN HOESEN AND MR DAWN ARE AWAITING A COPY OF THE SITE CERTIFICATION.

I MET WITH REPRESENTATIVES FROM CLARKE E HARTKE, DEVELOPERS, SURVEYORS, PLANNERS, AND McINTOSH-McKINTOSH, LAND SURVEYING PLANNING, IN ORDER TO REVIEW SITE WORK FOR FINAL AS BUILT dwgs.

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BY Jon G. Johnston TITLE O/C

APPENDIX M

APPENDIX M

Site Photographs

OLIN CHEMICAL

PINE AND TUSCACORA REMEDIATION PROJECT

PHOTOGRAPH INDEX

1. Water elevation at existing storm drains leading to Cayuga Creek.
   View: West from east side of Creek.

2. Silt fence upstream of work point N1127222.5/E398100.0.
   View: West from east side of Creek.

3. Silt fence downstrem of work point N1127120.5/E398495.0.
   View: East from east side of Creek.

4. Tree removal at south side of Creek Channel. Location: 3+00 line, south side of Creek Channel.
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5. Brush removal at south side of Creek Channel.
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6. Small tree removal at south side of Creek.

7. Clearing operation north of Cayuga Creek Channel.
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8. Soils removal and survey stakes north of Creek Channel.
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9. Clearing operation north of Cayuga Creek Channel.
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10. Excavation for soil sample at N7263/E8177. Bottom of Excavation Elevation is 561.0. Infiltration of water into trench is observed.]

11. Temporary fence installation at access road to site on Zito Property.
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12. Temporary fence installation at access road to site on Zito Property.
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13. Temporary fence installation on Tuscarora Road.
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14. Cayuga Creek. Location: 2+00 line.
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15. Cayuga Creek. Location: 5+00 line.
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16. Cayuga Creek. Location: 2+00 line.
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17. Cayuga Creek and cap area. Location: 5+00 line.
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20. Zito Road.
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21. Zito Road west of Williams Court Apartments.
View: East 4/3/90.

22. Access Road north of Williams Court Apartments.
View: East 4/3/90.

23. Parking Area and access drive to garage located west of the Williams Court Apartments. 4/3/90.

24. Access road leading to north side of Creek Channel.
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25. Parking Area behind Williams Court Apartments. 4/3/90.

26. Site access road leading to Tuscarora Road on Zito Property.
View: South 4/3/90.

27. Site access road and Zito Apartments.
View: Southwest 4/3/90.

28. Site access road on Zito Property.
View: South 4/3/90.

29. Site access road on Zito Property.
View: South 4/3/90.

30. Temporary facility at used car lot.
View: East 4/30/90.

31. Site access road on Zito Property.
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32. East access drive from Pine Avenue to used car lot.
View: North 4/3/90.

33. Access drive to used car lot on Zito Property.
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34. East access drive from Pine Avenue to used car lot.
View: West 4/3/90.

35. Site access road from Pine Avenue.
View: South 4/3/90.

36. Access drive from Pine Avenue to used car lot.
View: West 4/3/90.

37. Pine Avenue and sidewalk in front of used car lot.
View: West 4/3/90.

38. Pine Avenue and walk east of used car lot.
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39. Intersection of Pine Avenue and Zito Road.
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40. Intersection of Anthony Road and Pine Avenue.
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41. 9050 Pine Avenue.
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42. Intersection of Pine Avenue and Anthony Road.
View: West 4/3/90.

43. Pine Avenue.
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46. Temporary fencing on Tuscarora Road.
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47. Tuscarora Road.
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67. Inspection of rip-rap at Niagra Stone.

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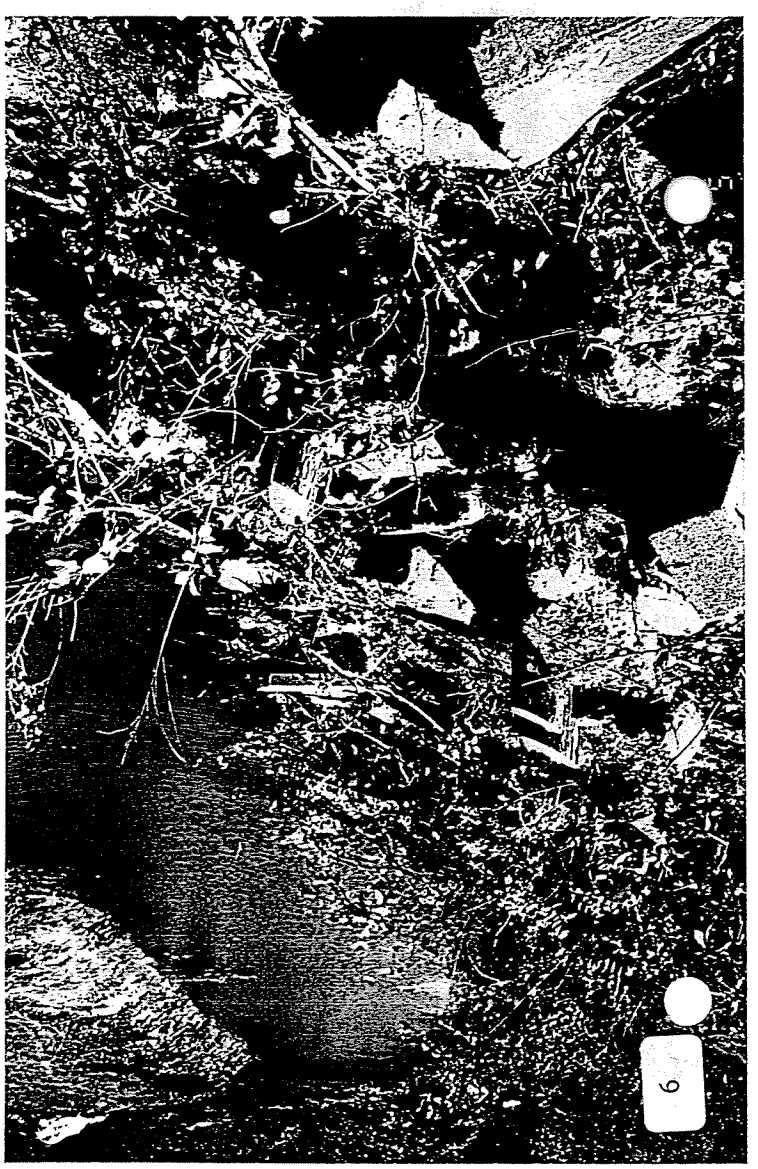
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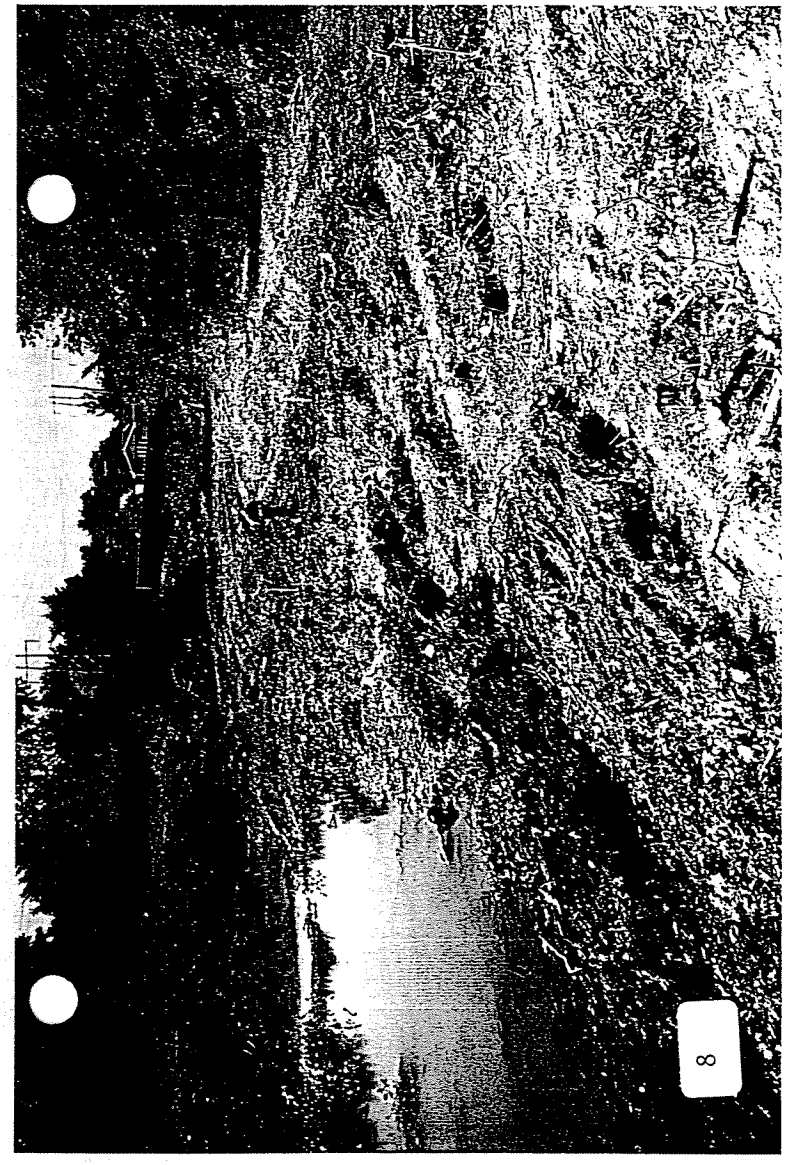
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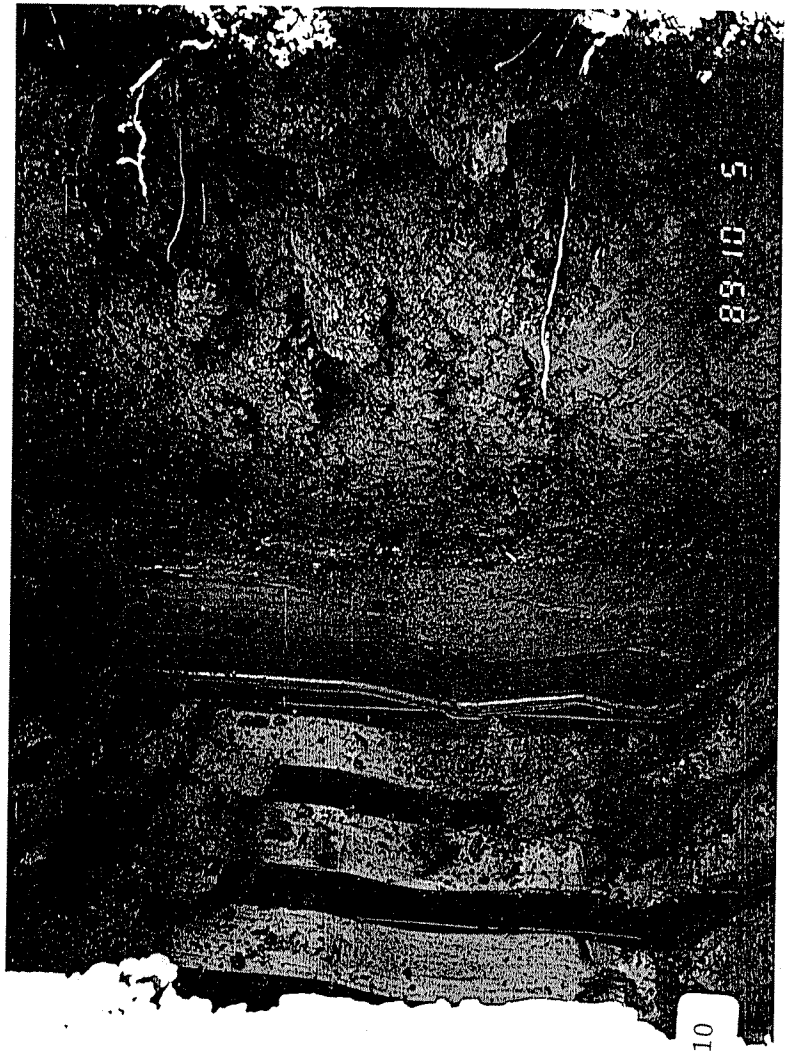
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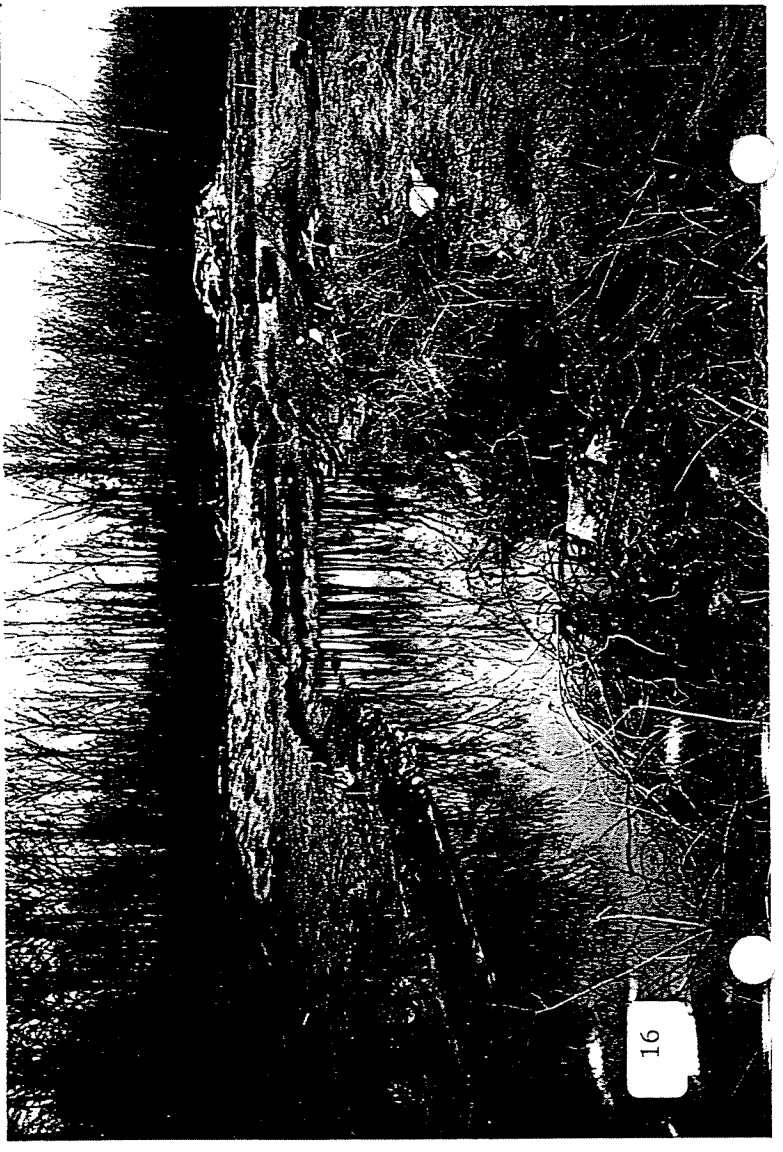
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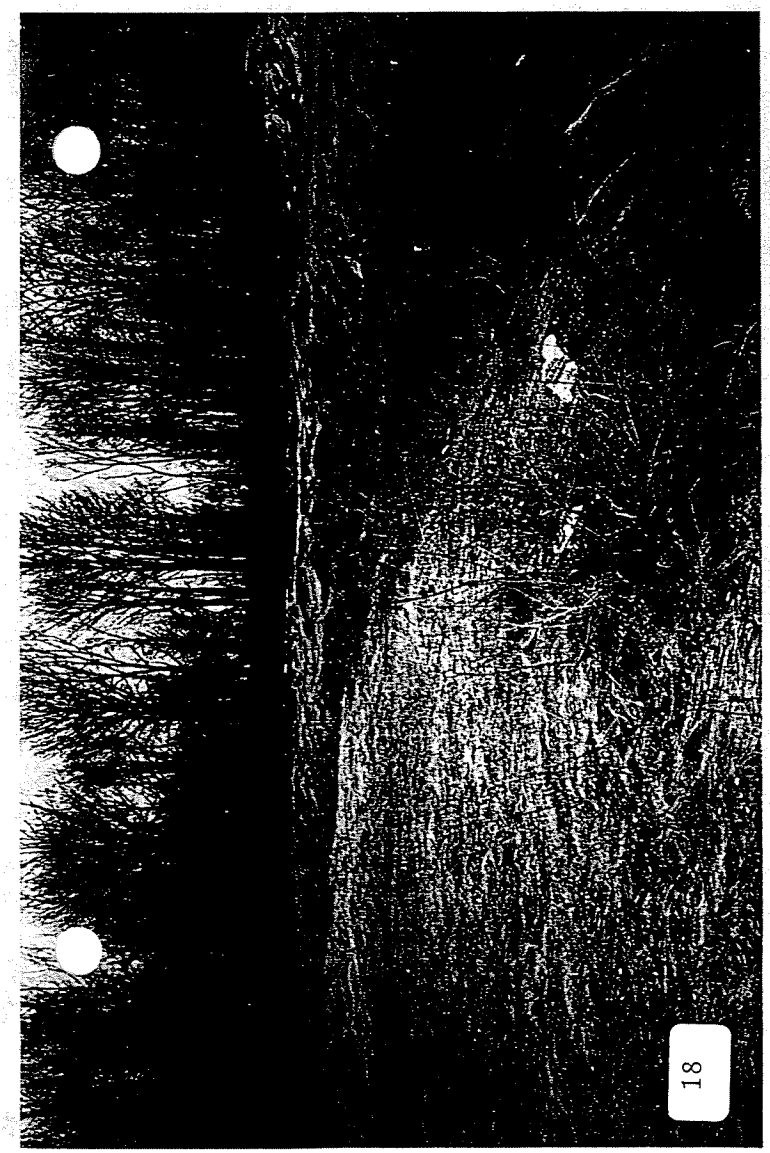
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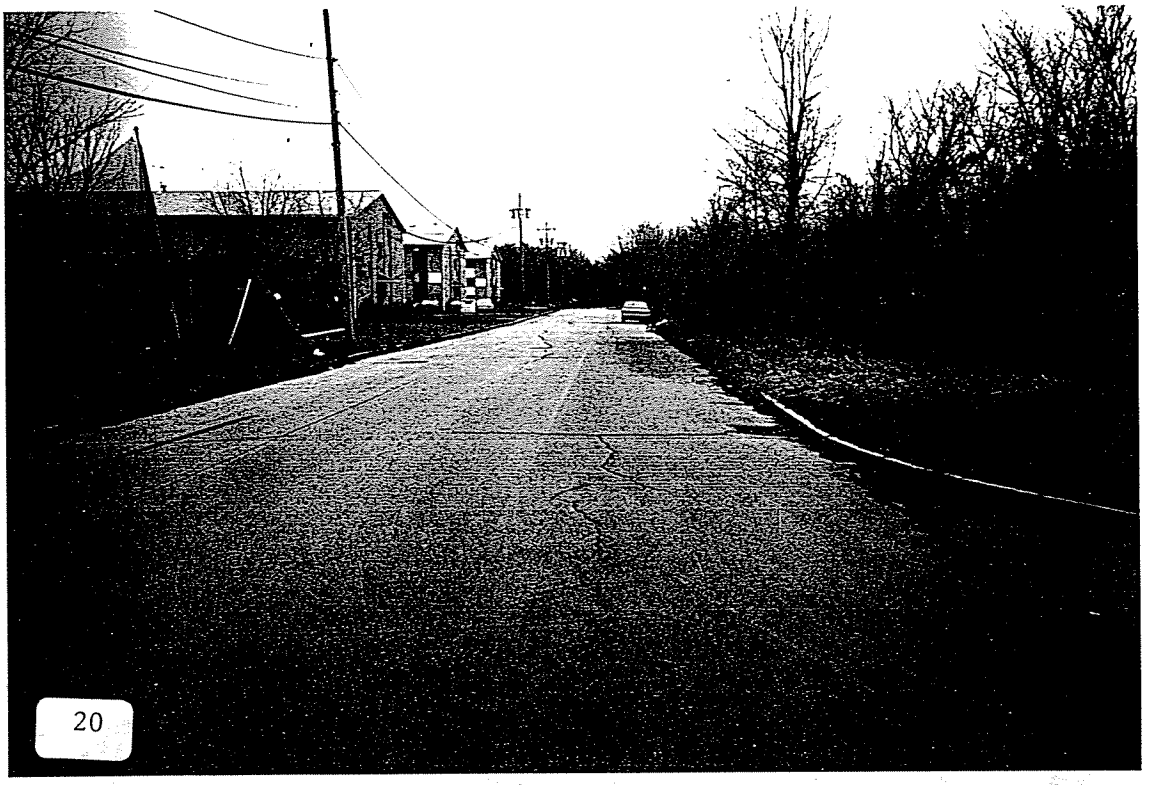
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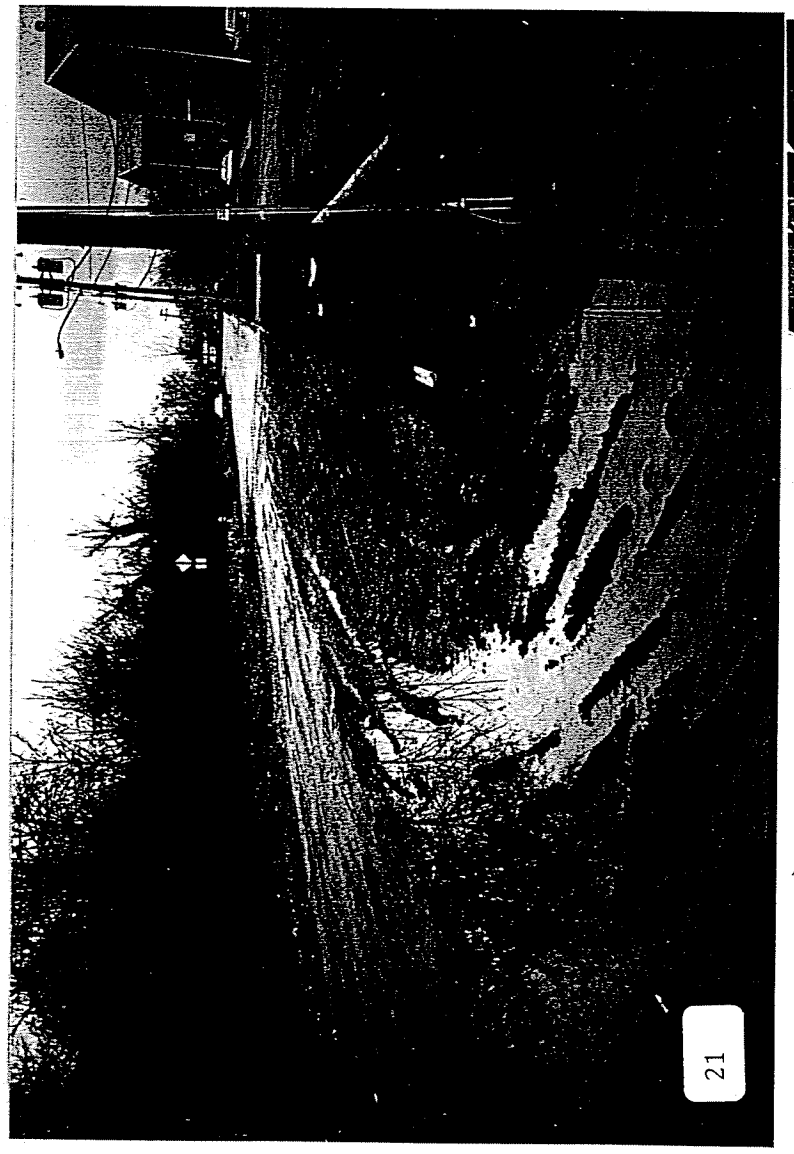
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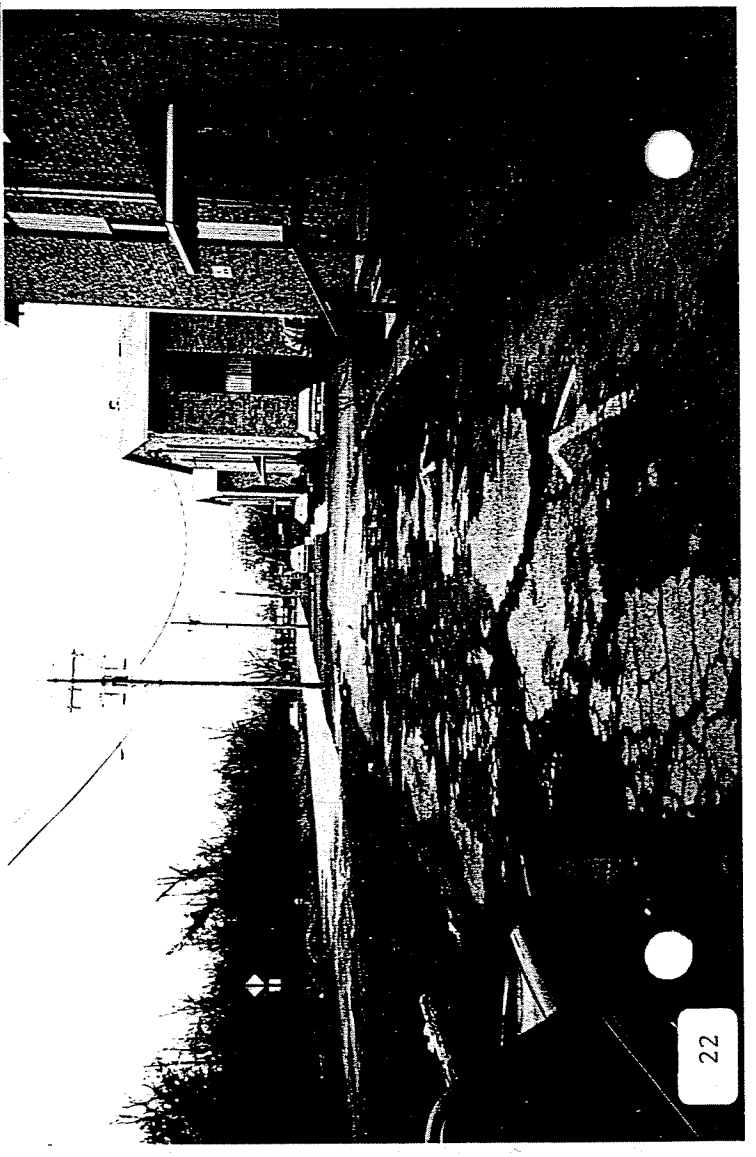
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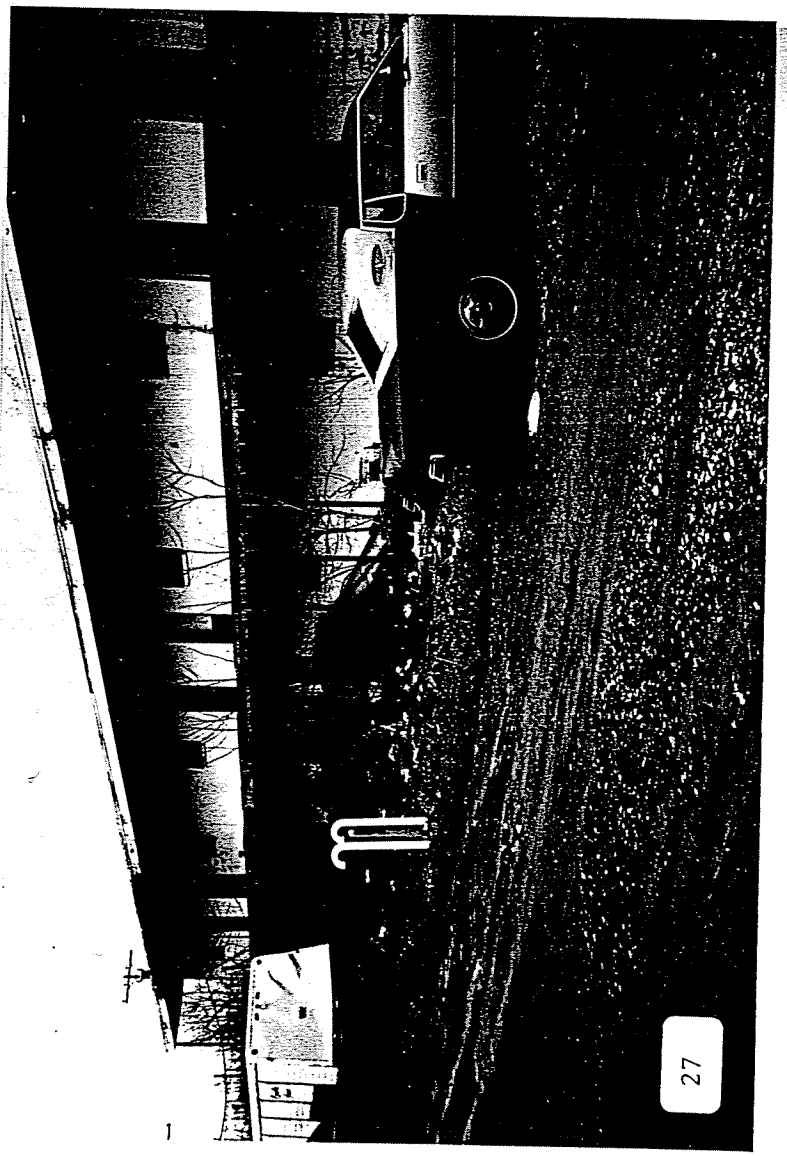
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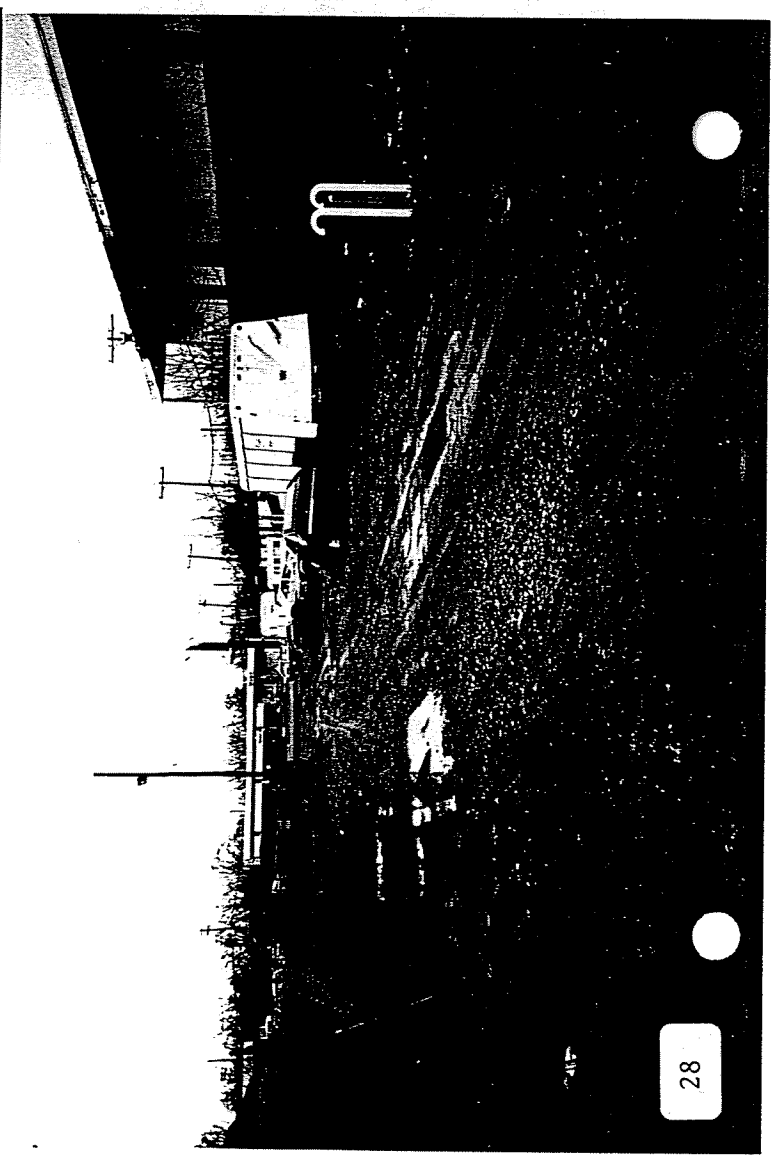
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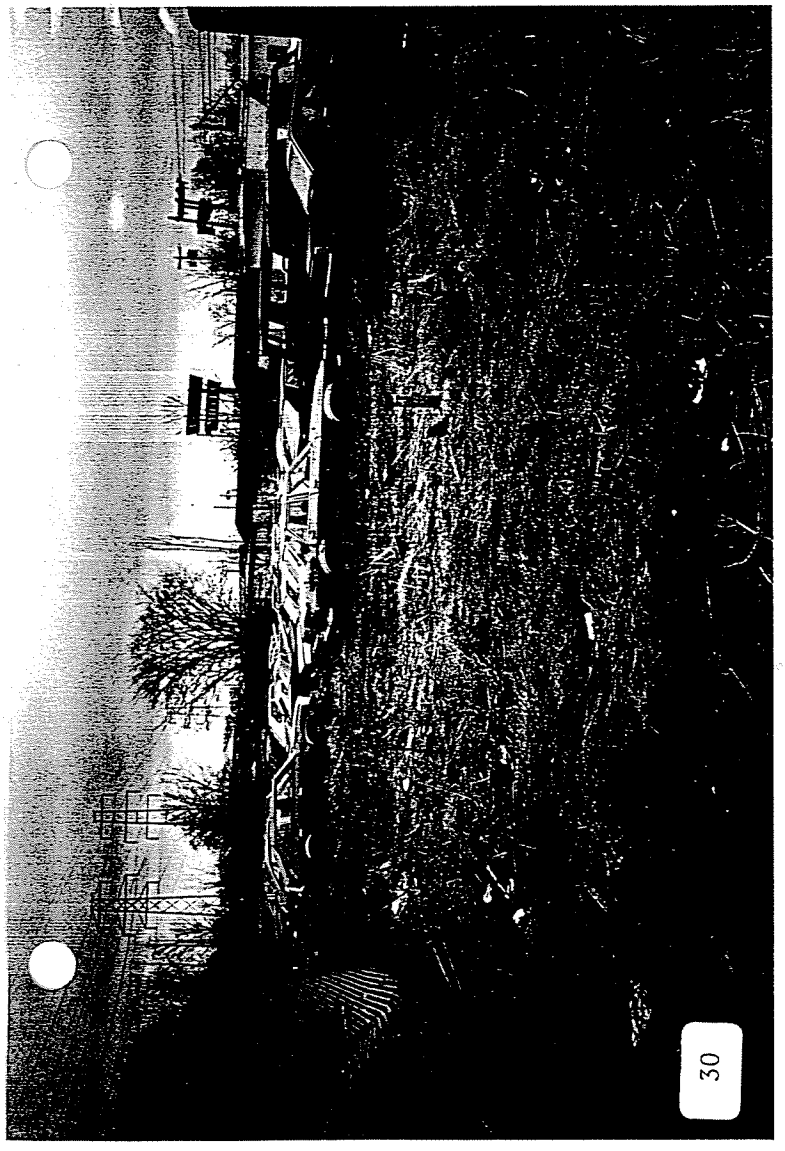
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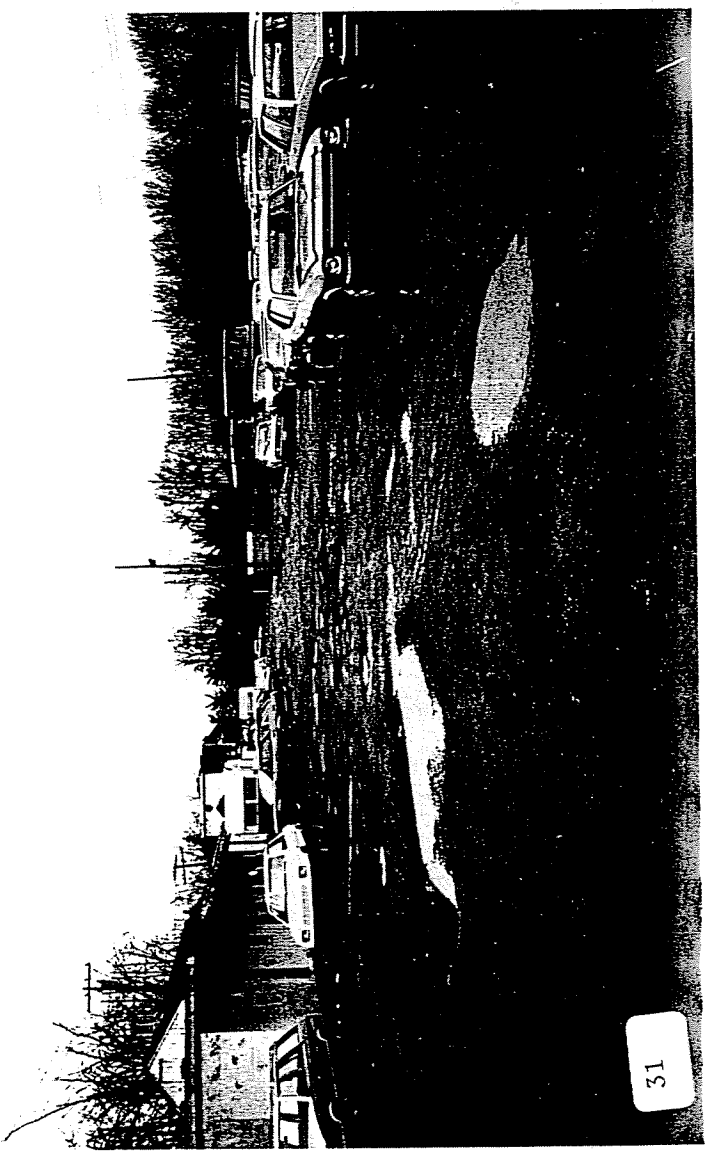
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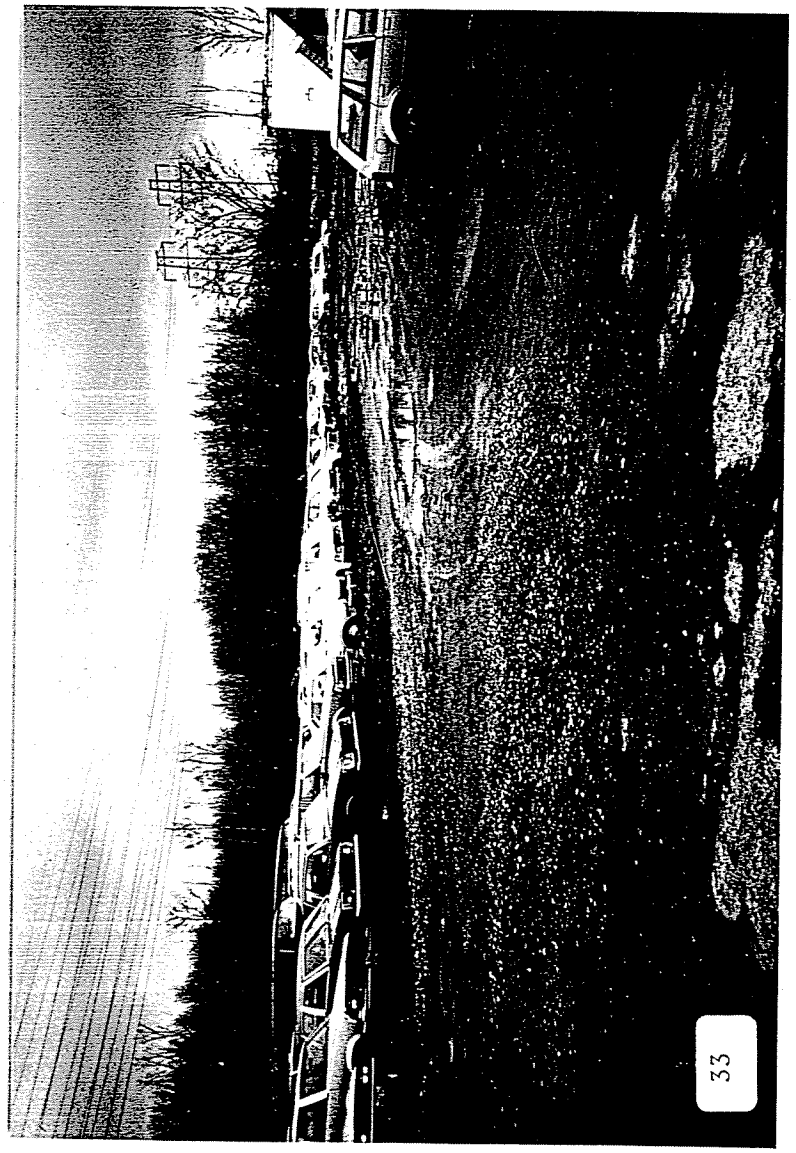
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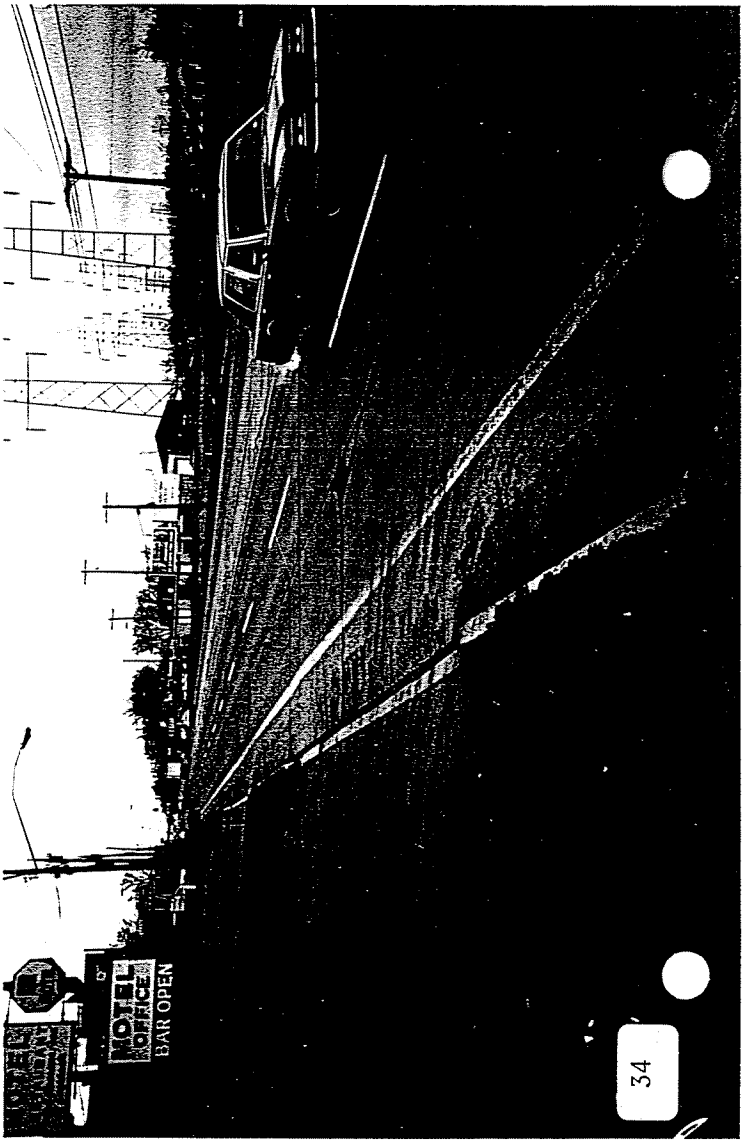
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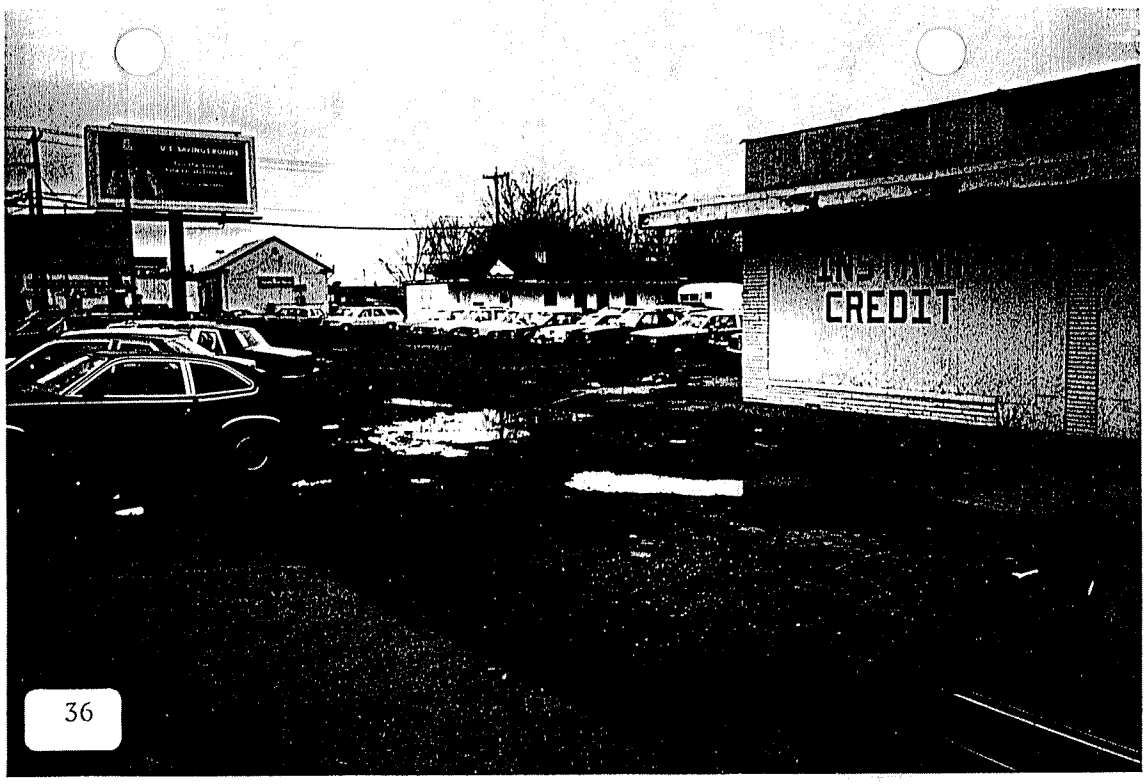

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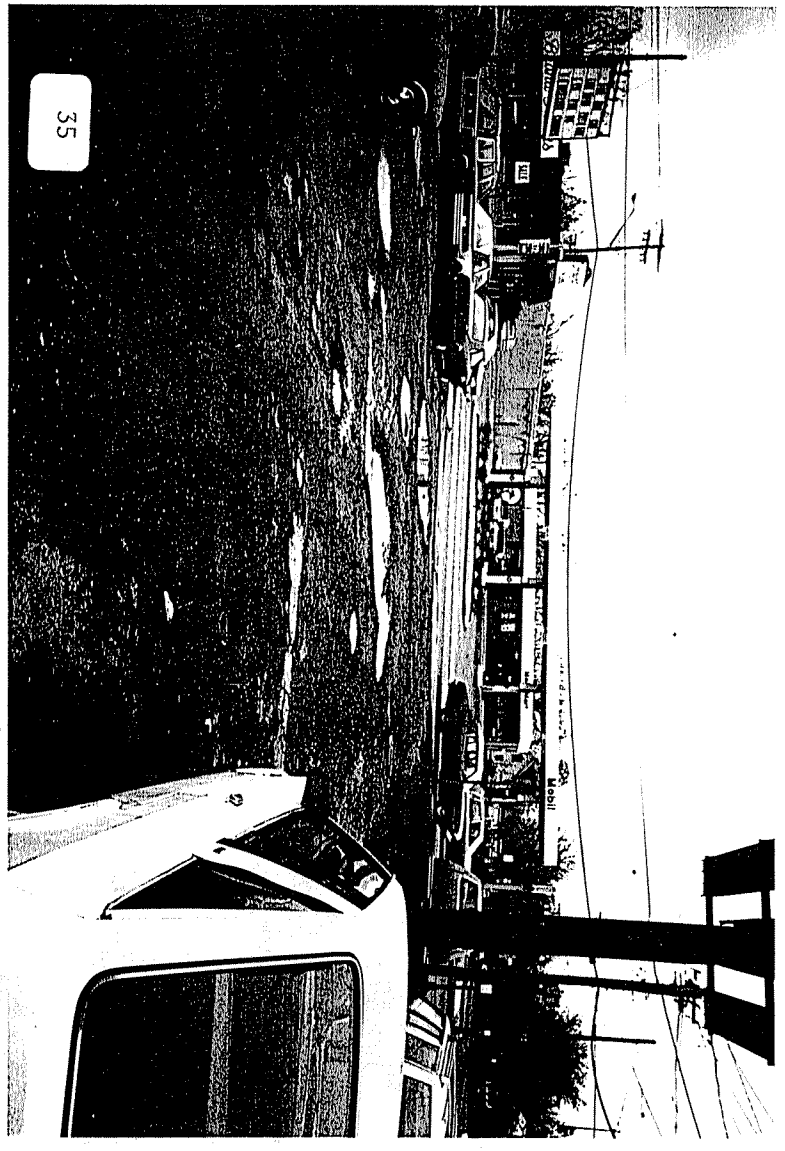

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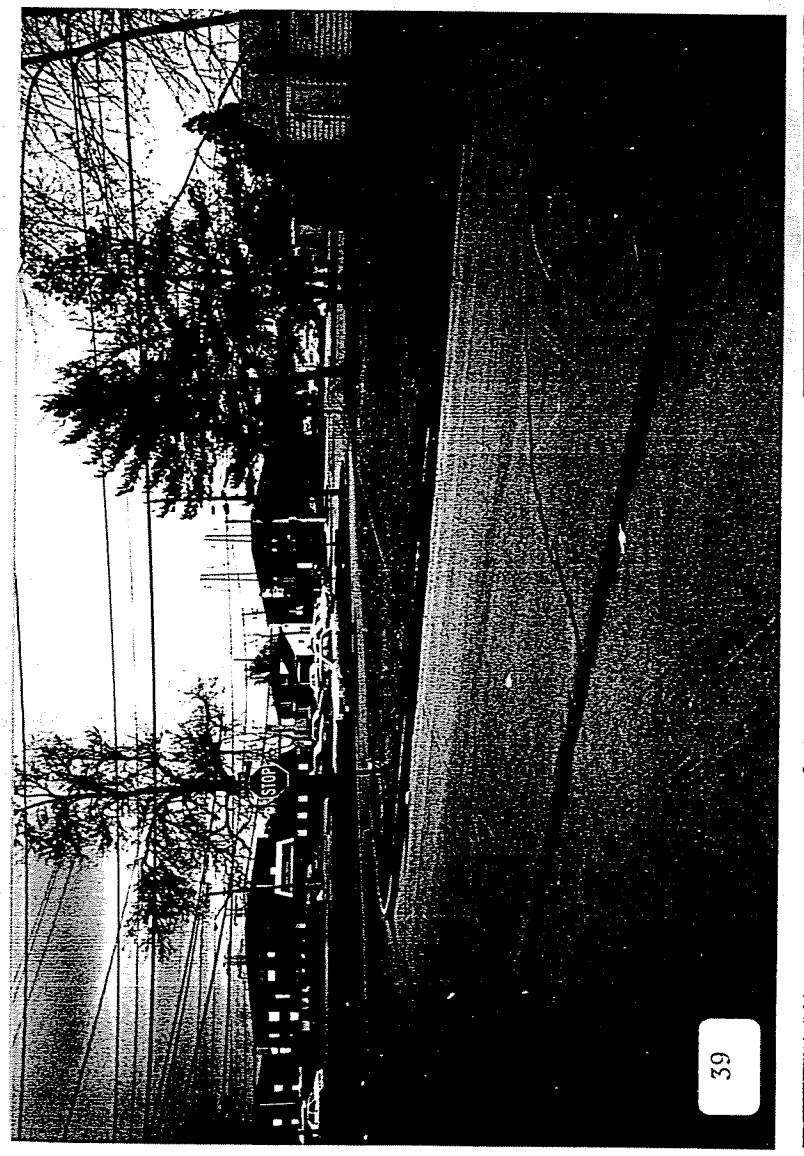
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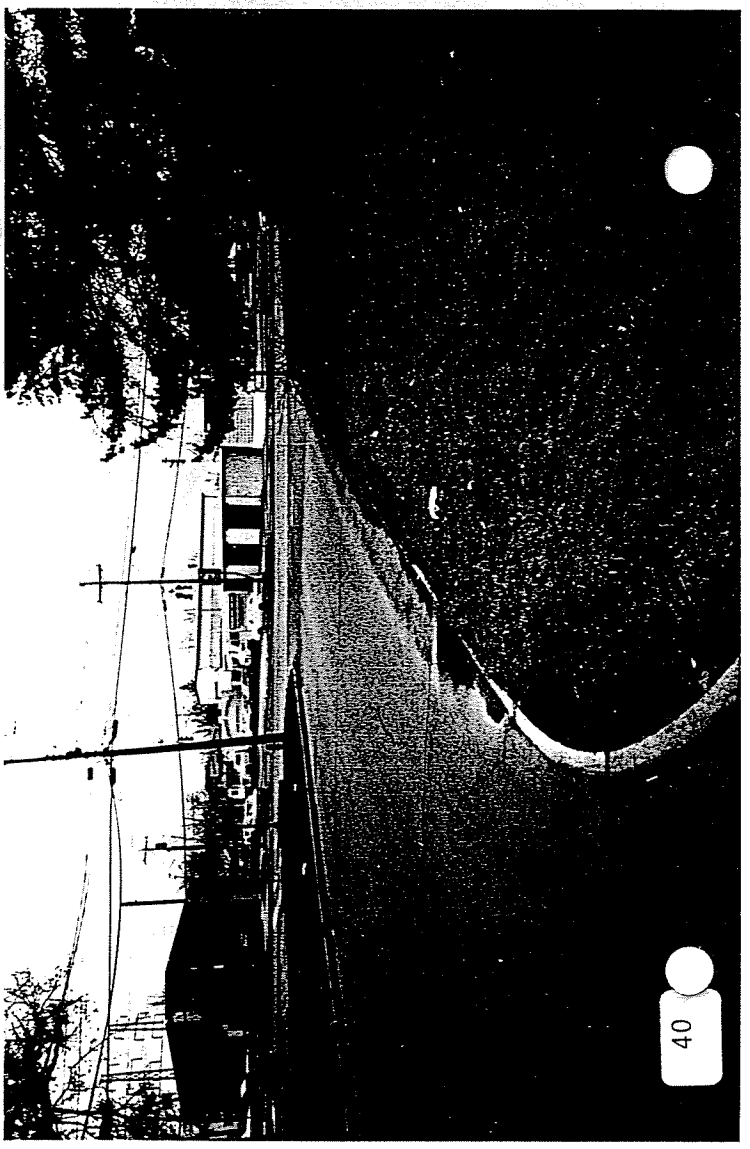
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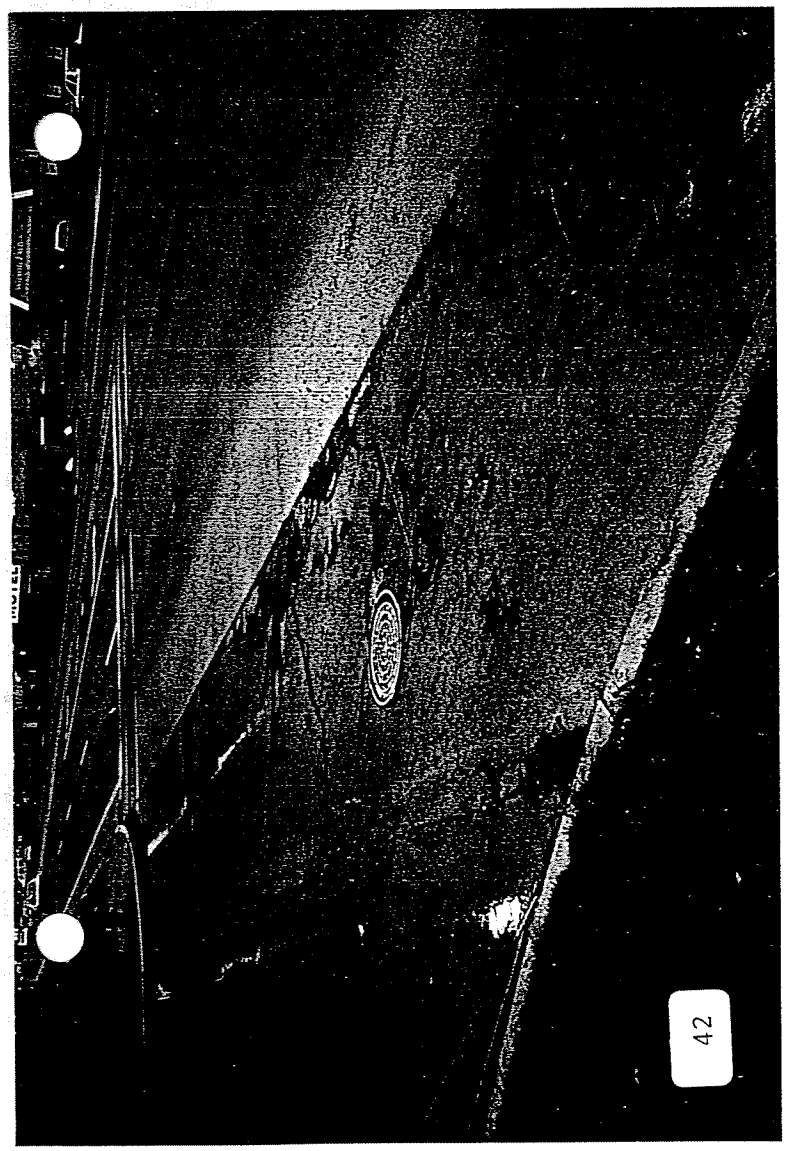
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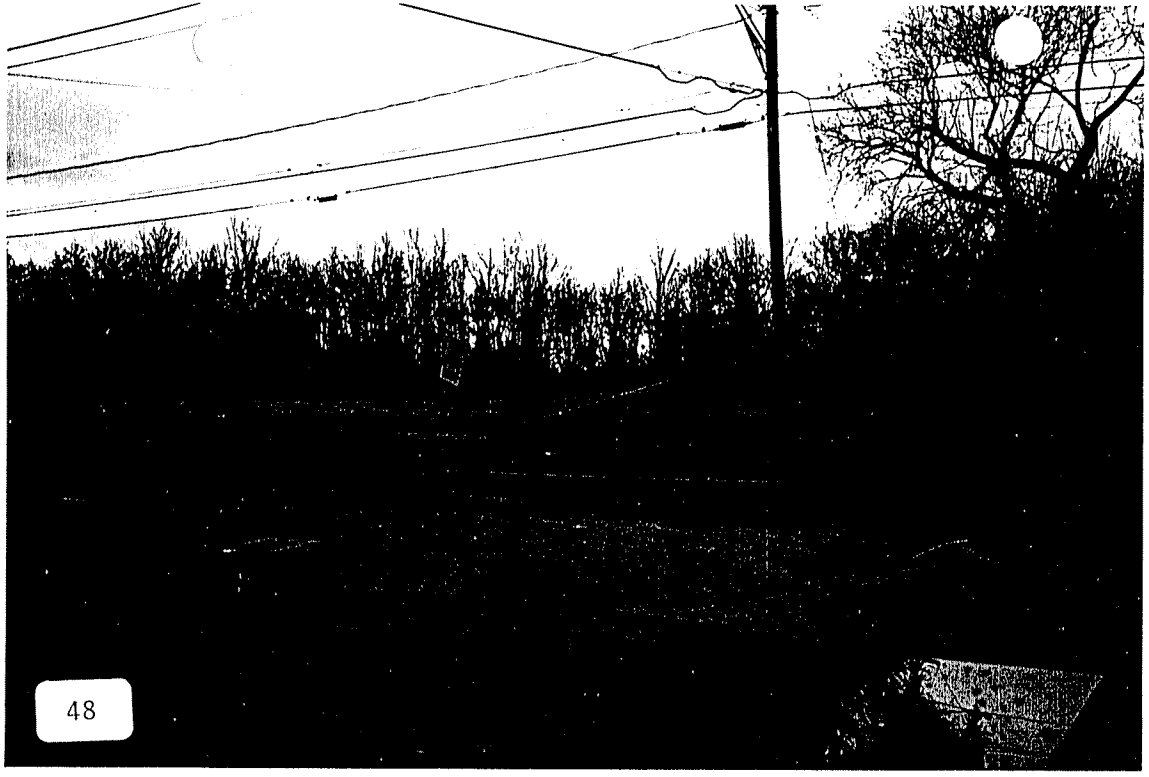
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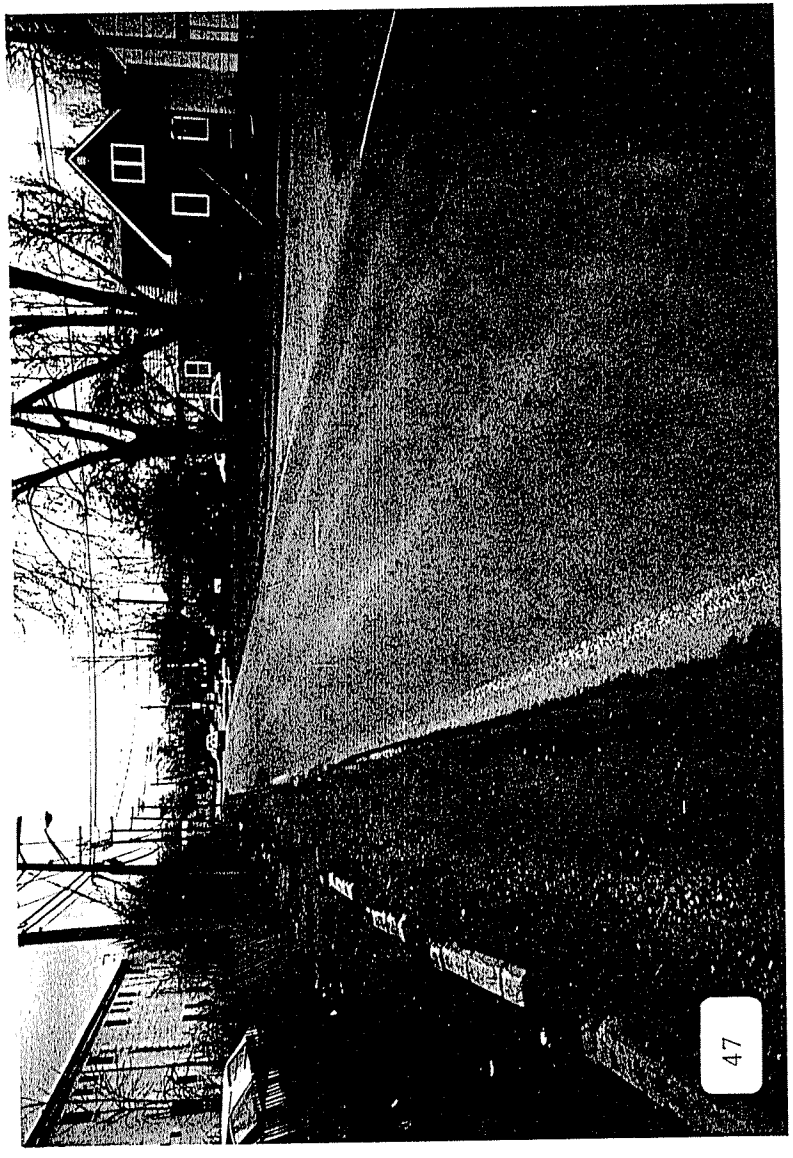
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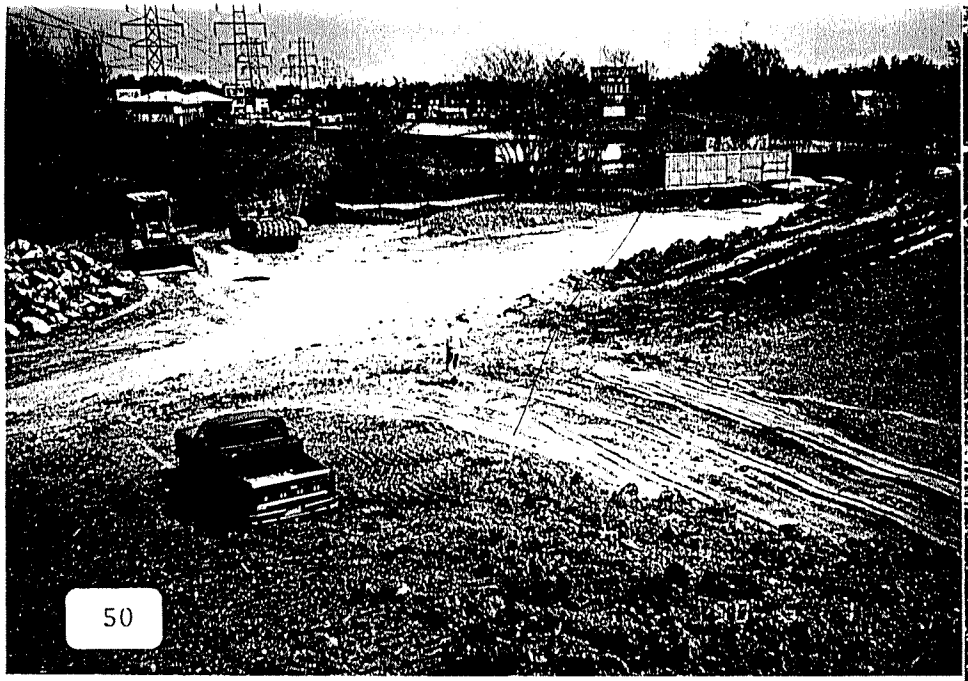
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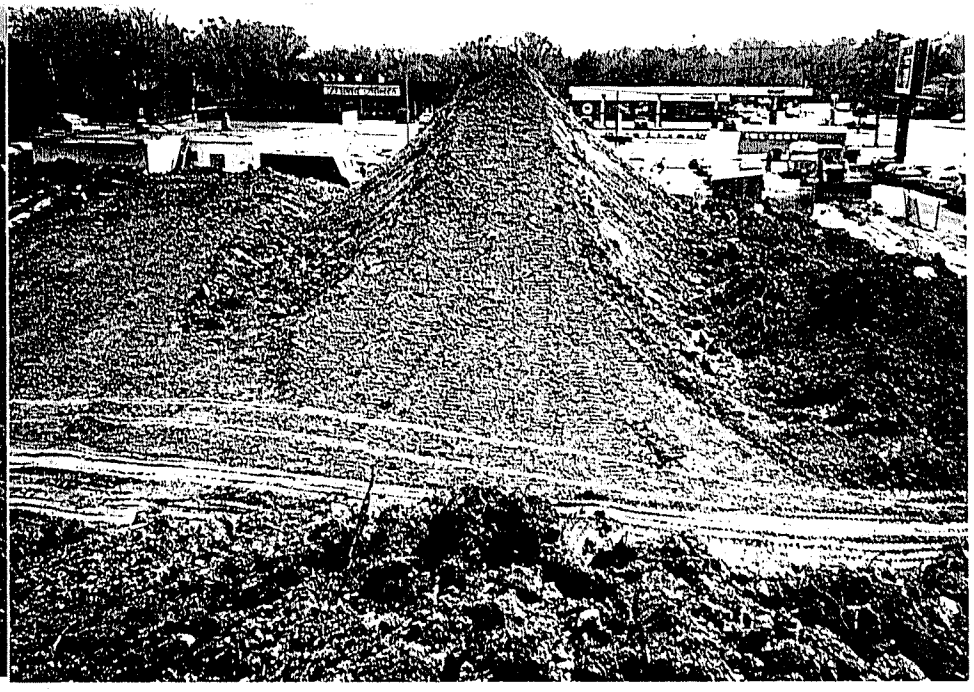


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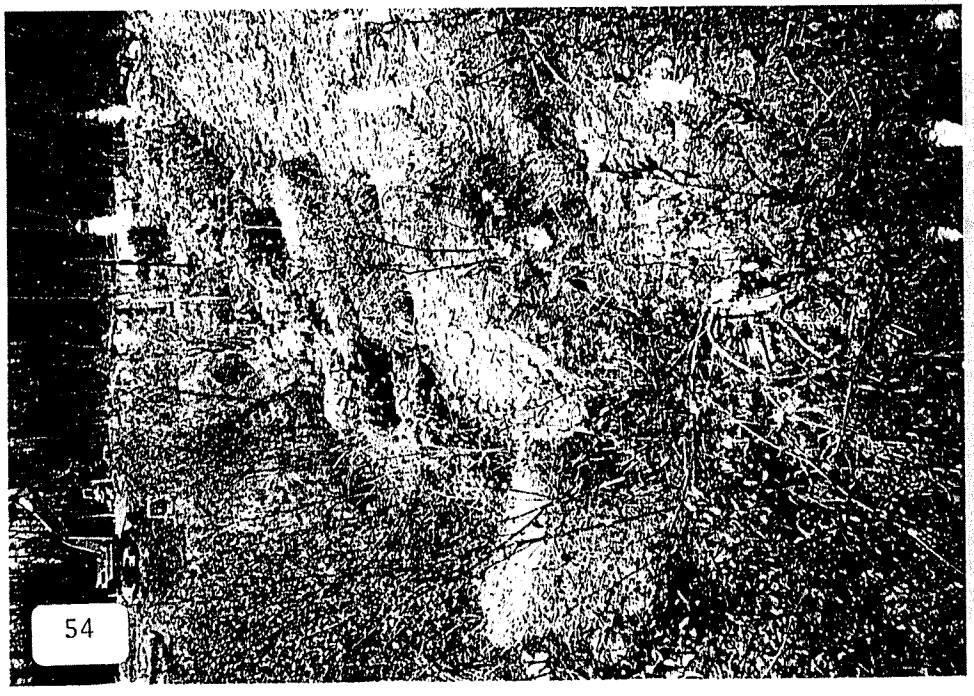
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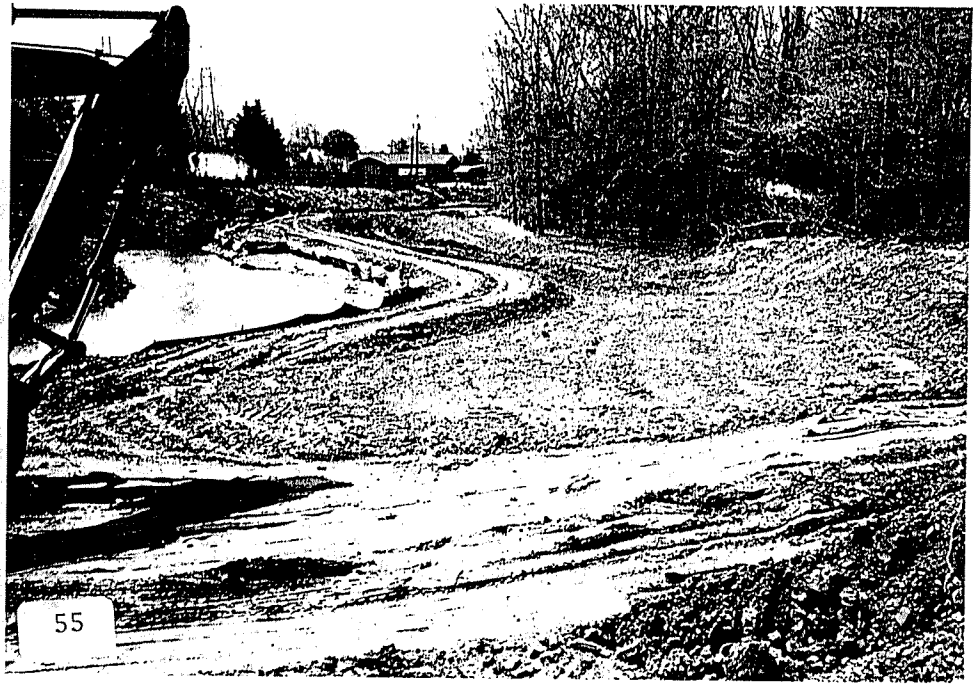
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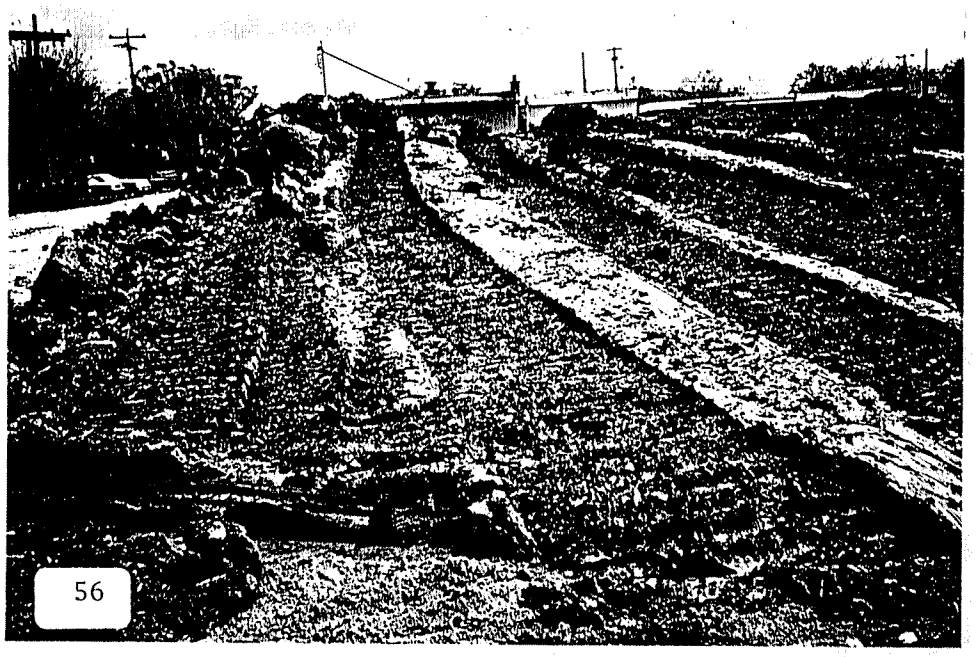
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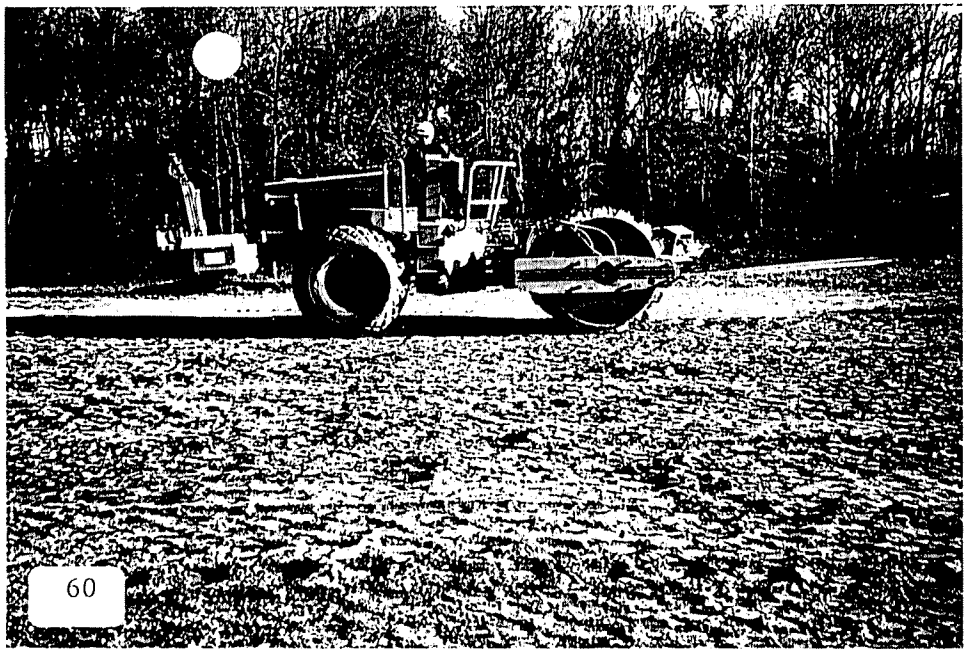
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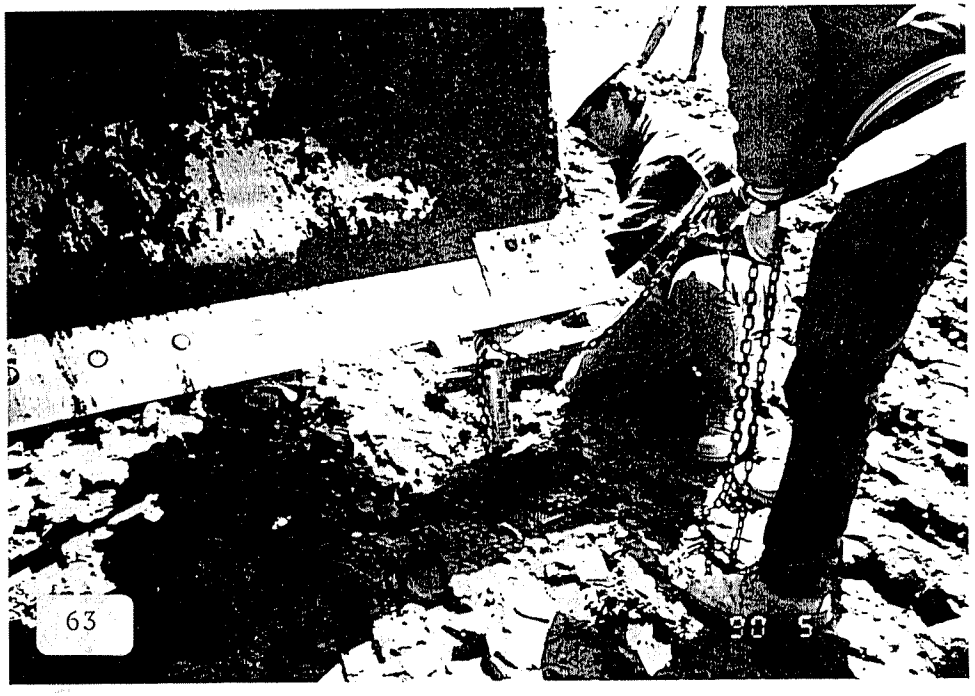
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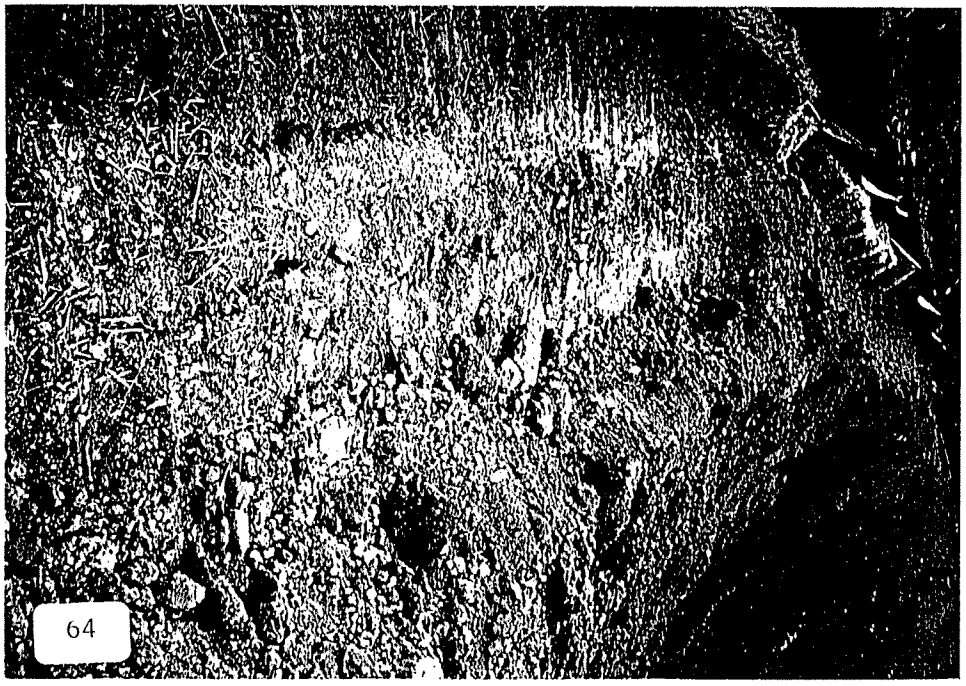

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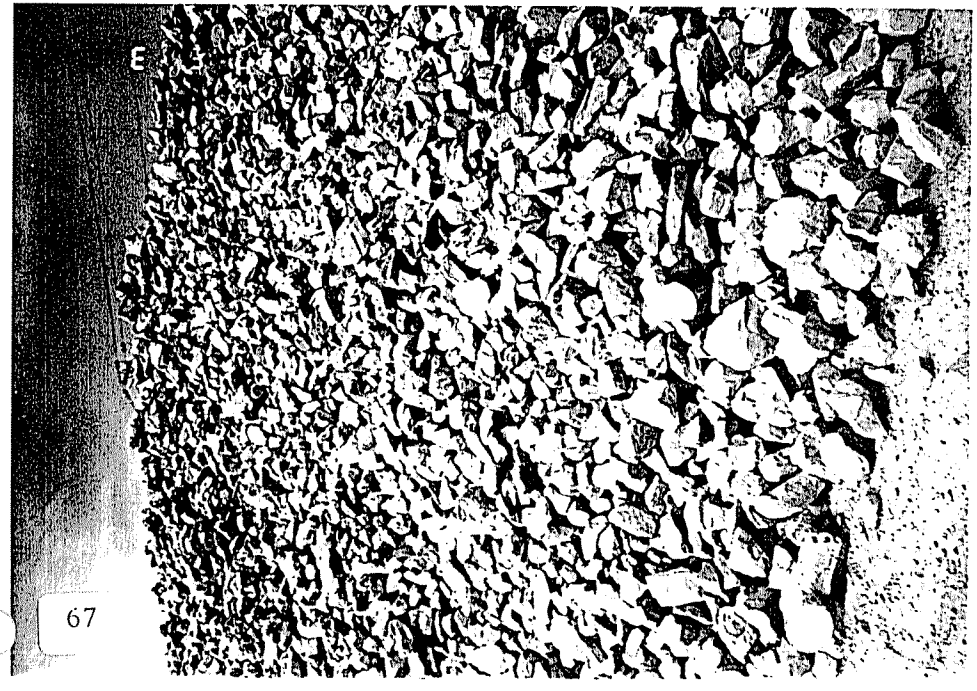

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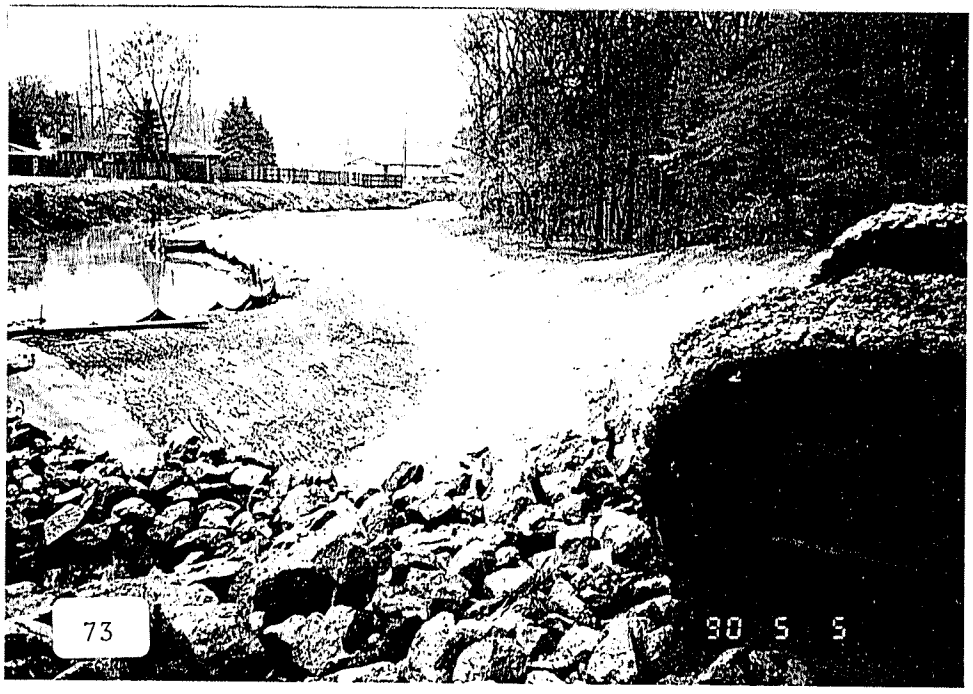
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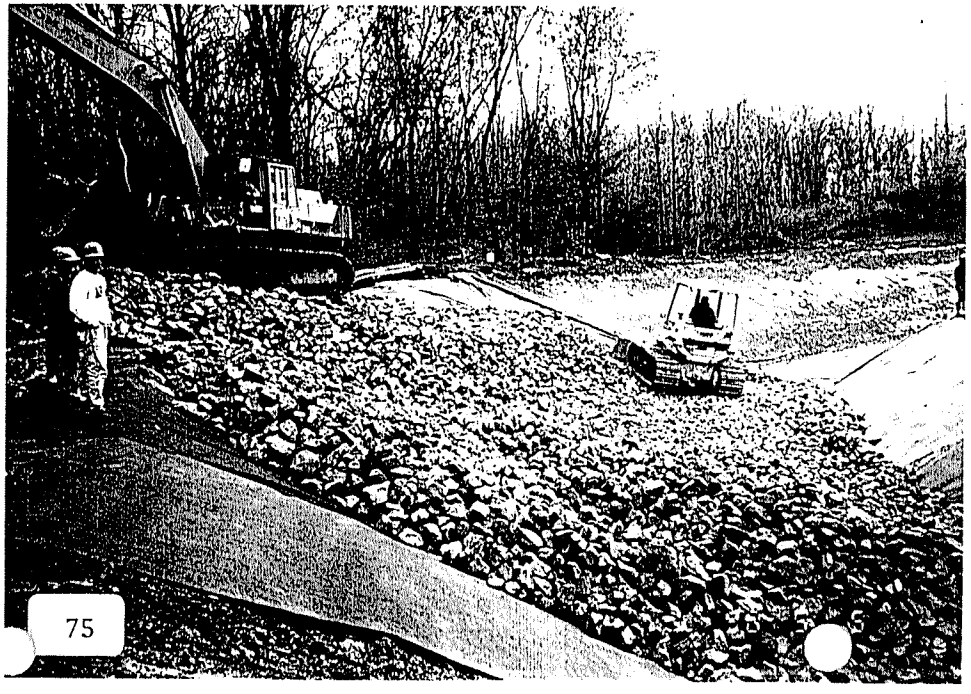
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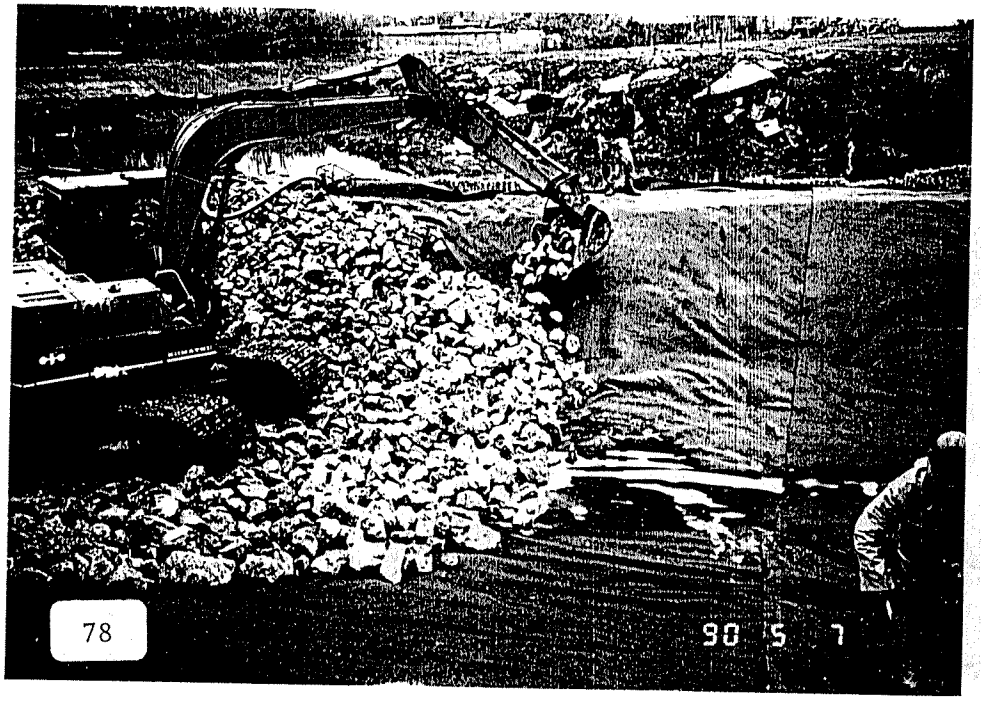
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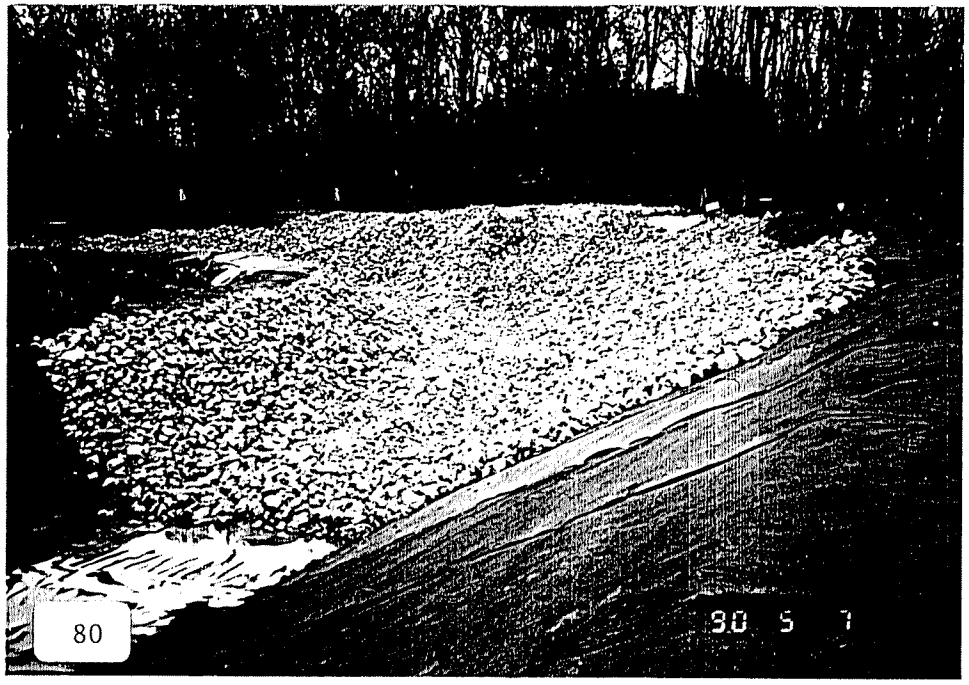
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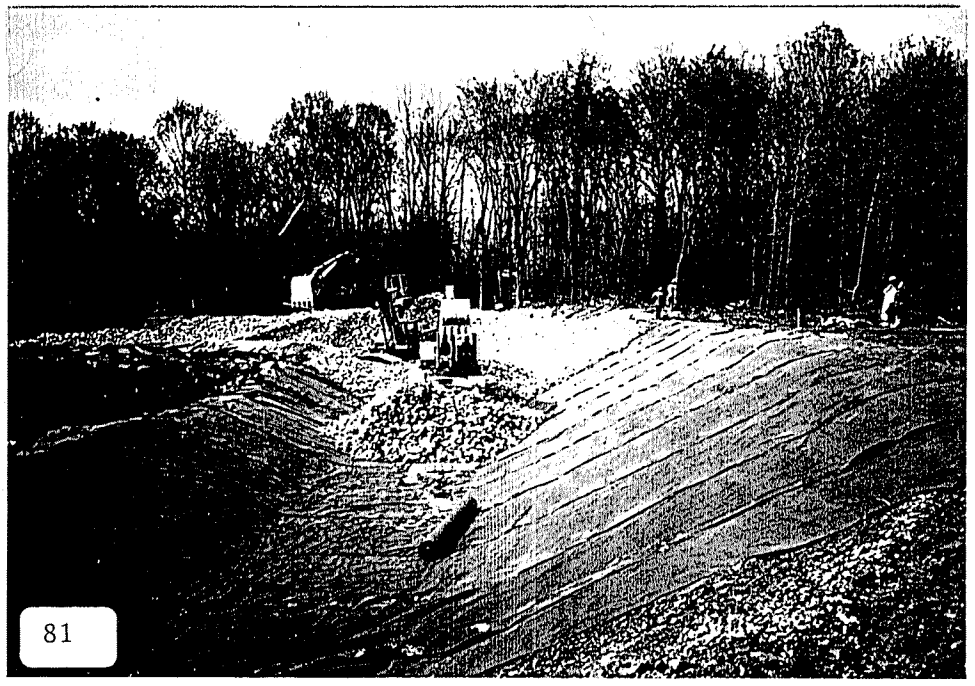
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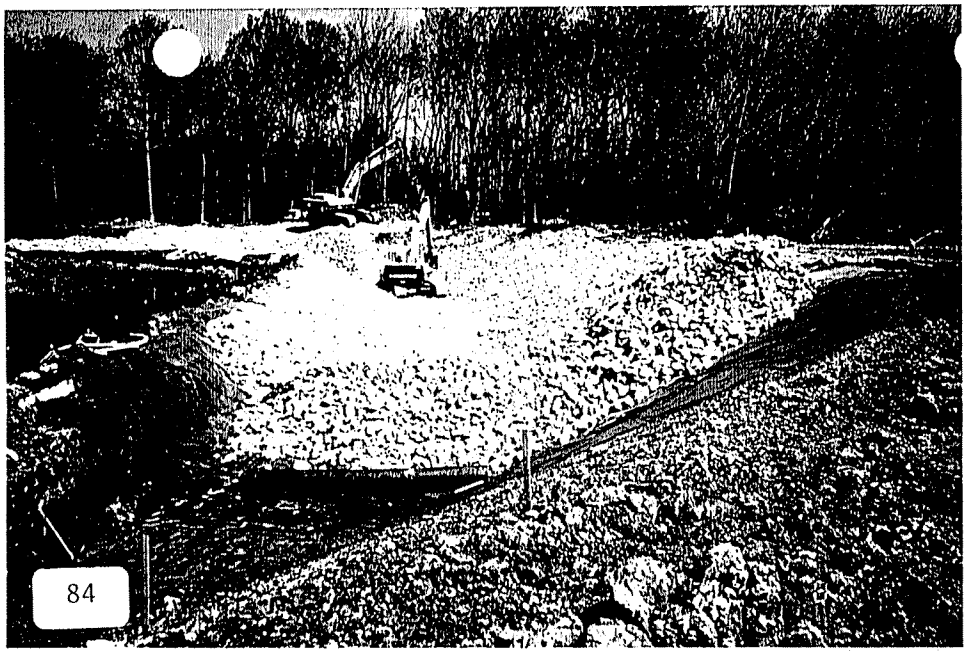
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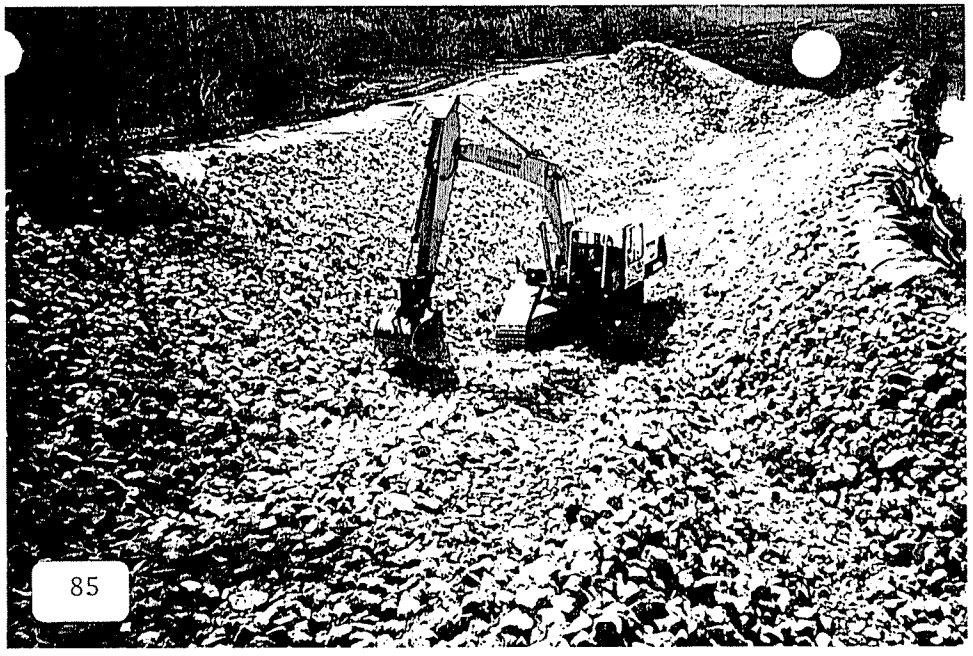
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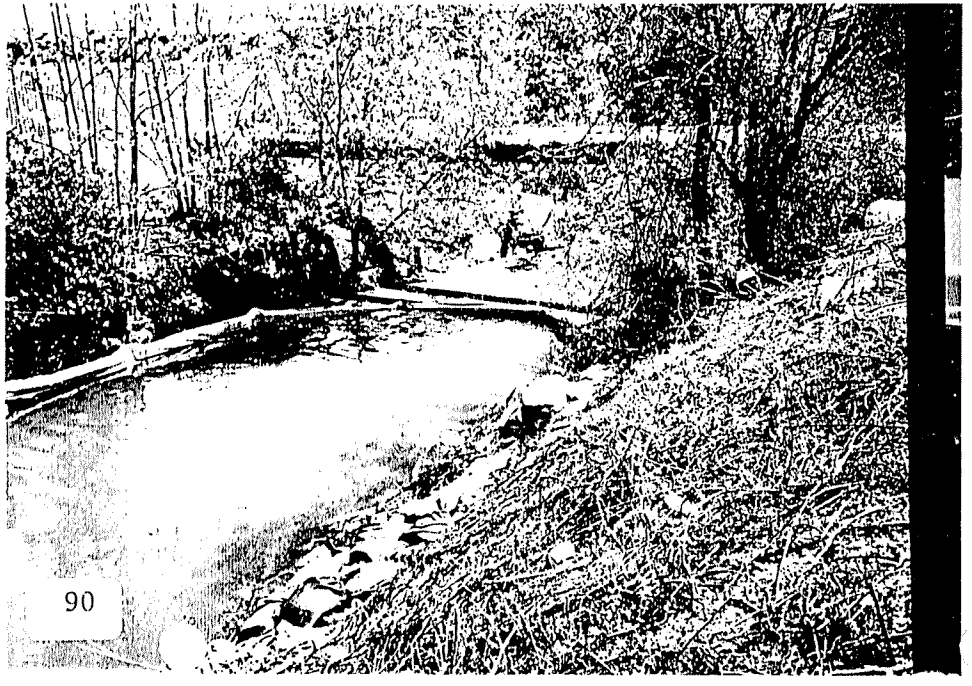
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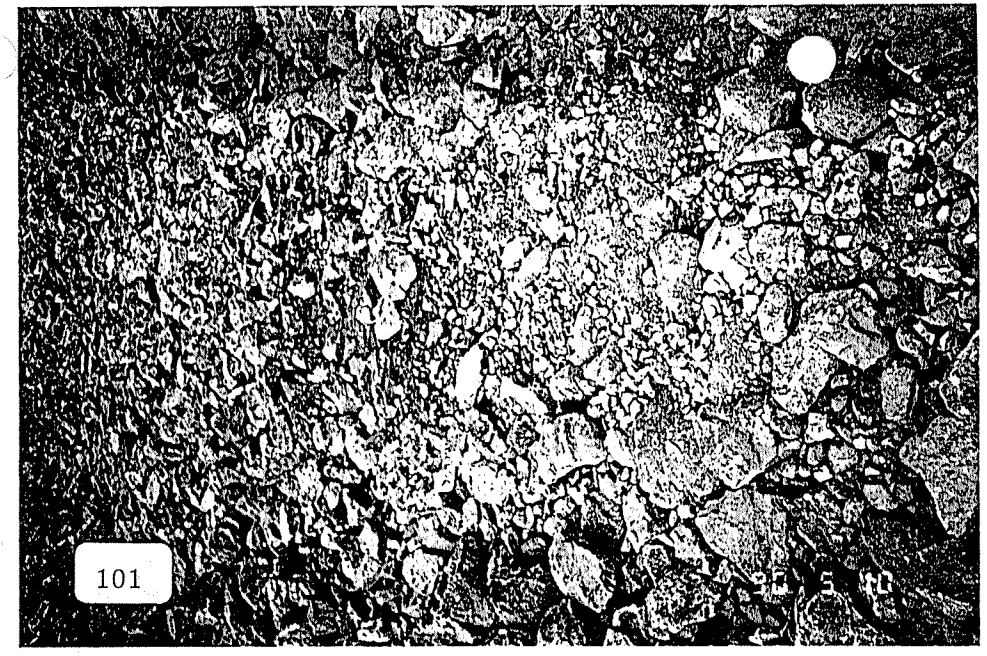
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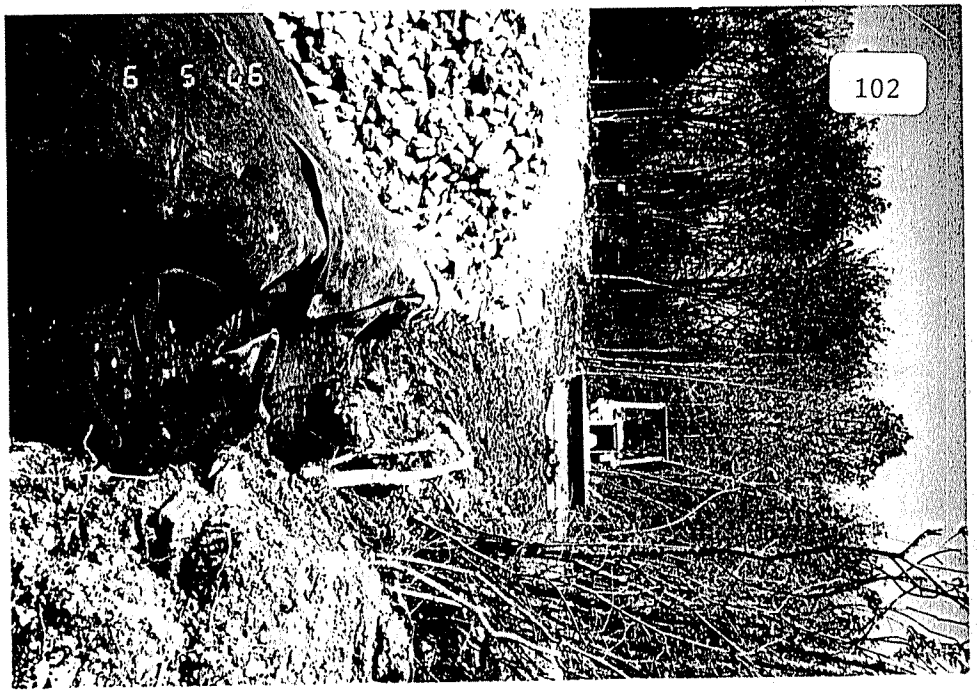
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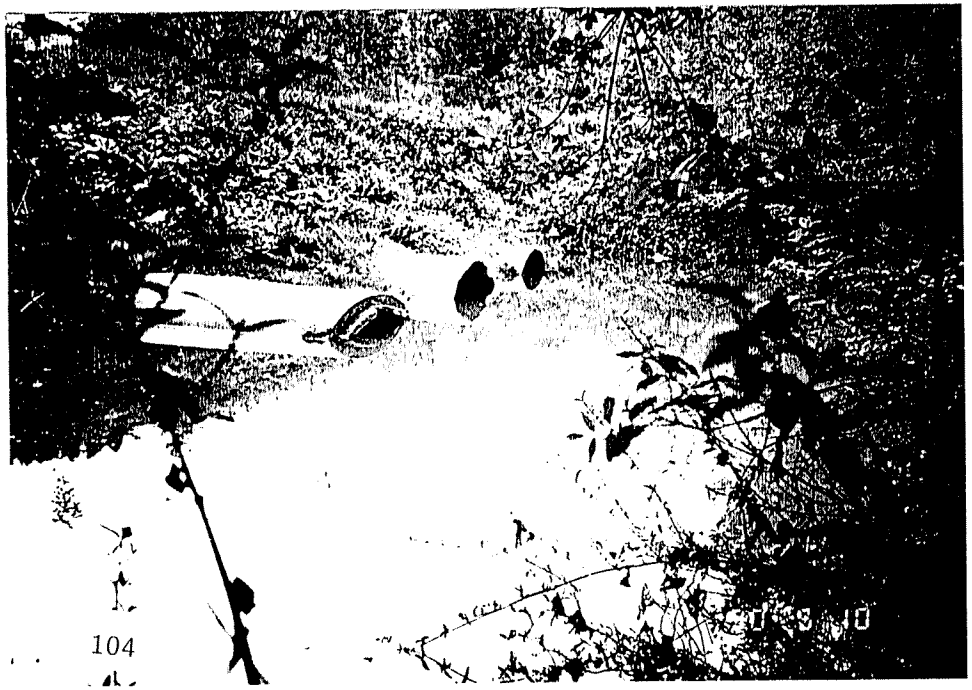

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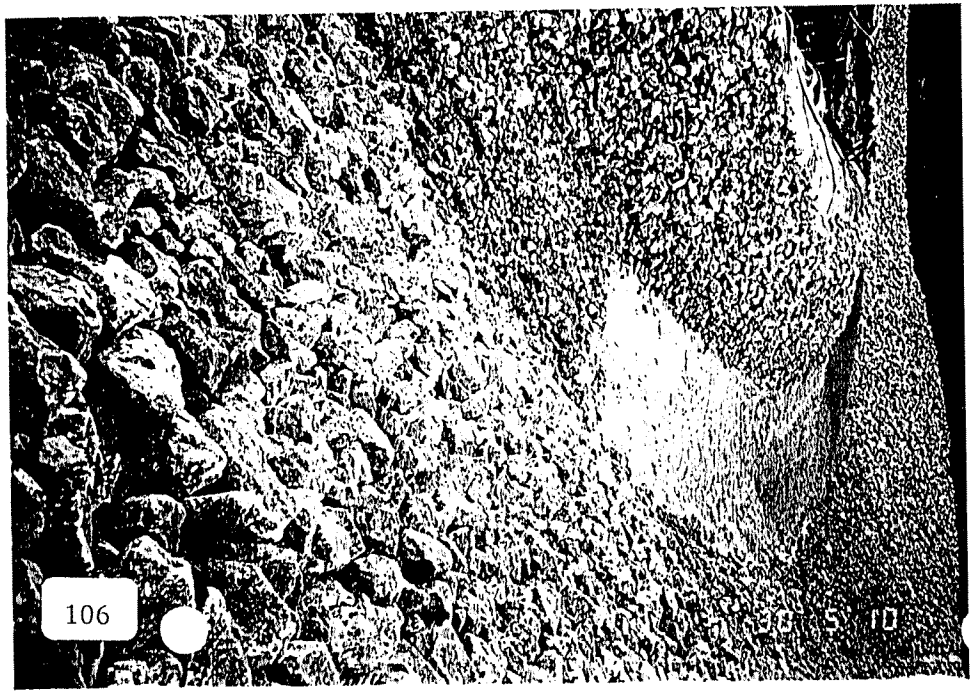

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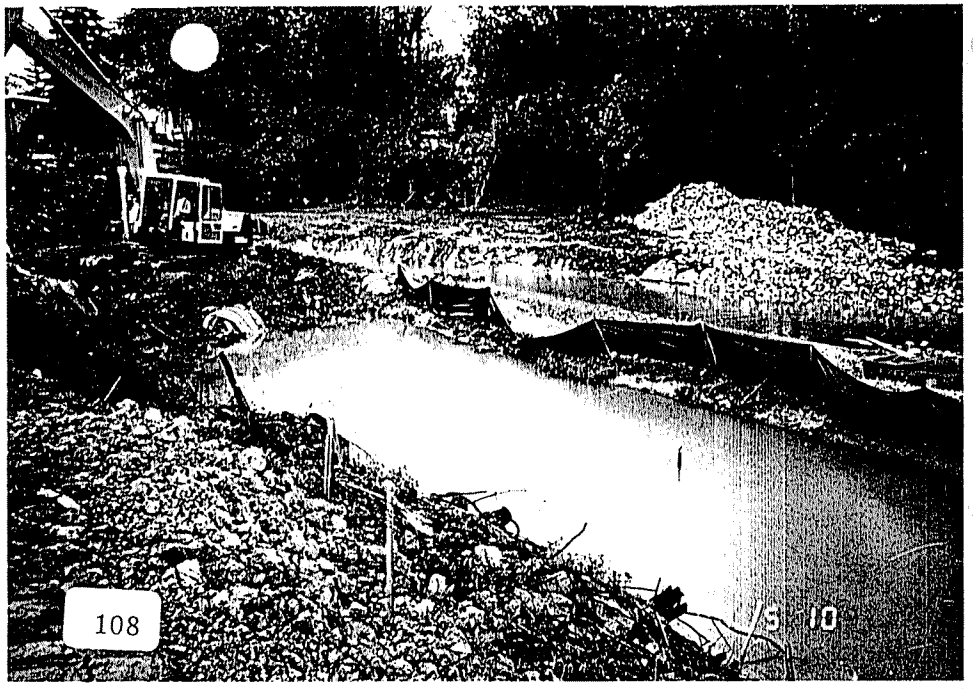
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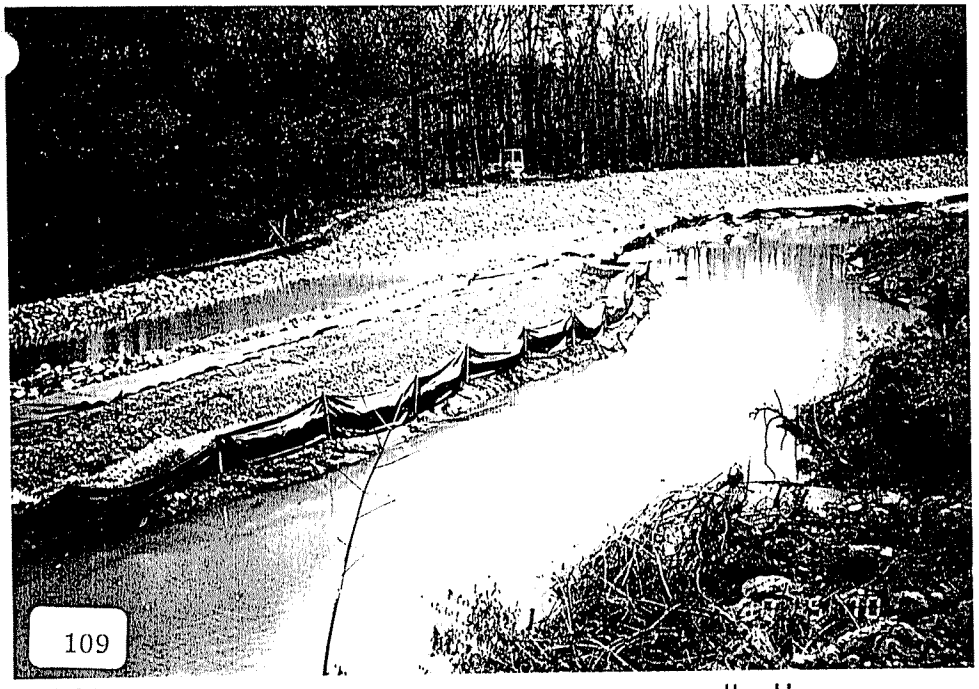
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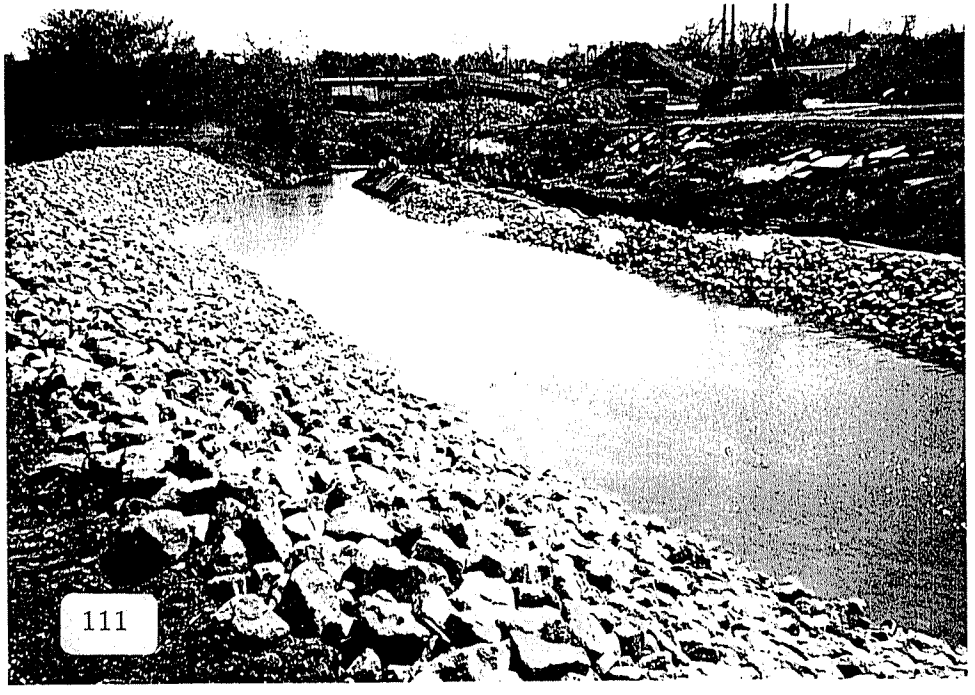
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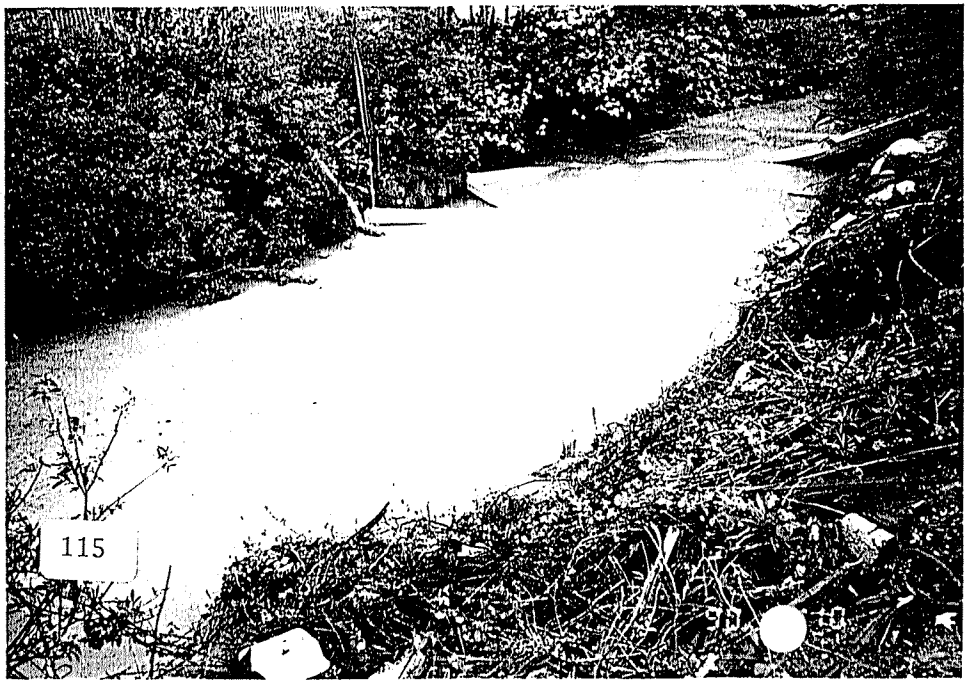
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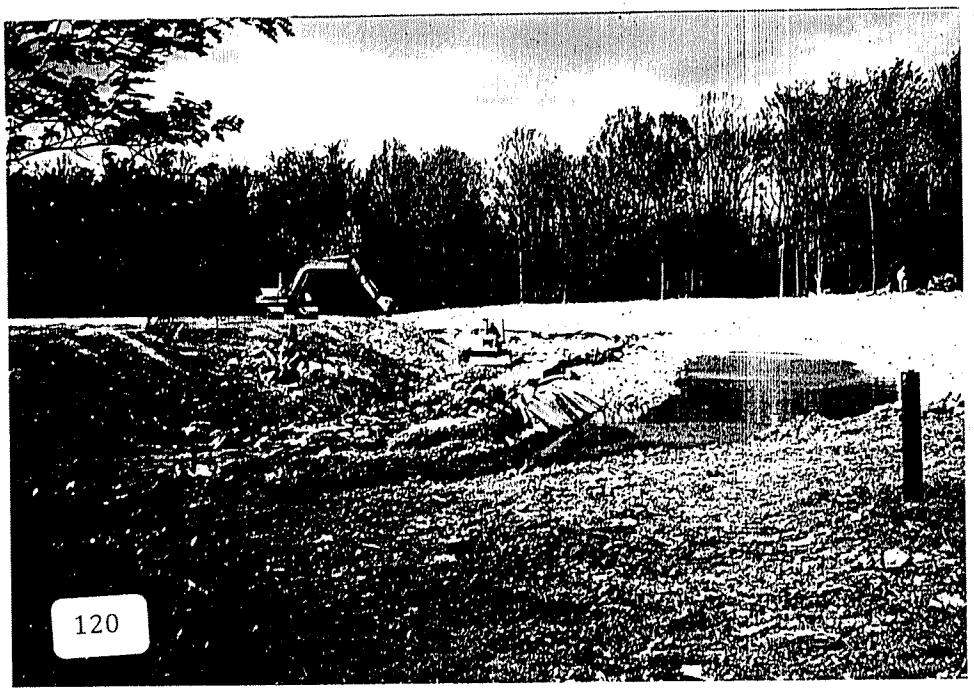
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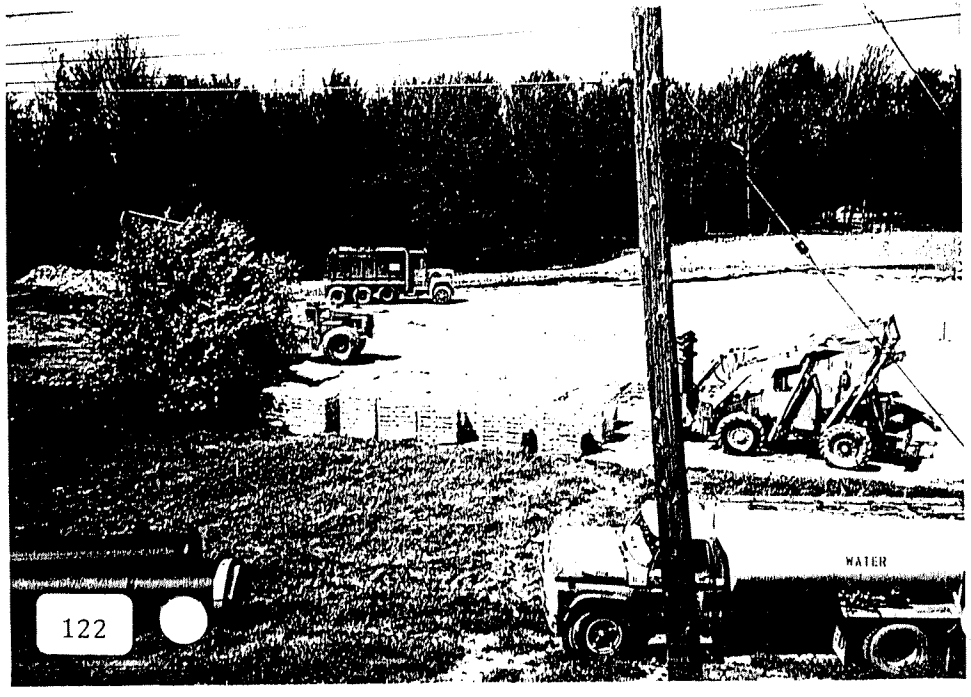

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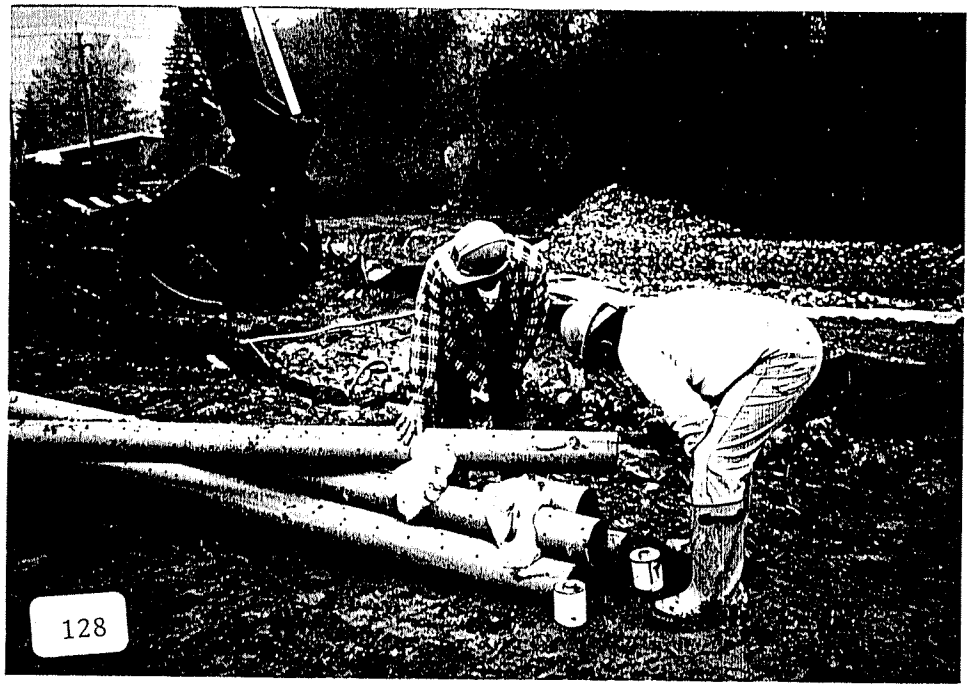
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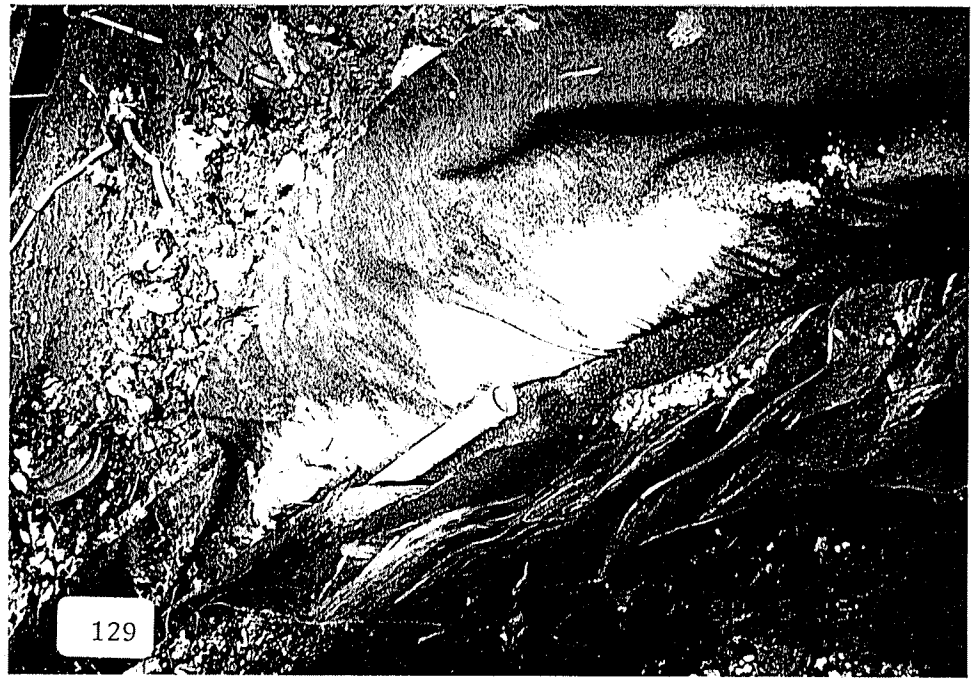
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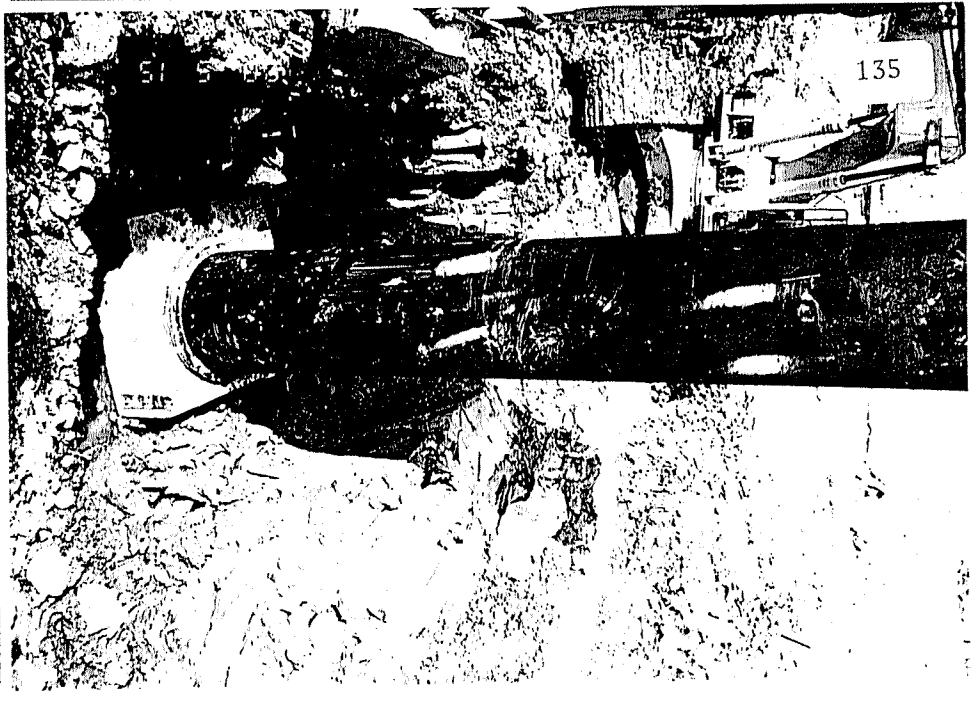
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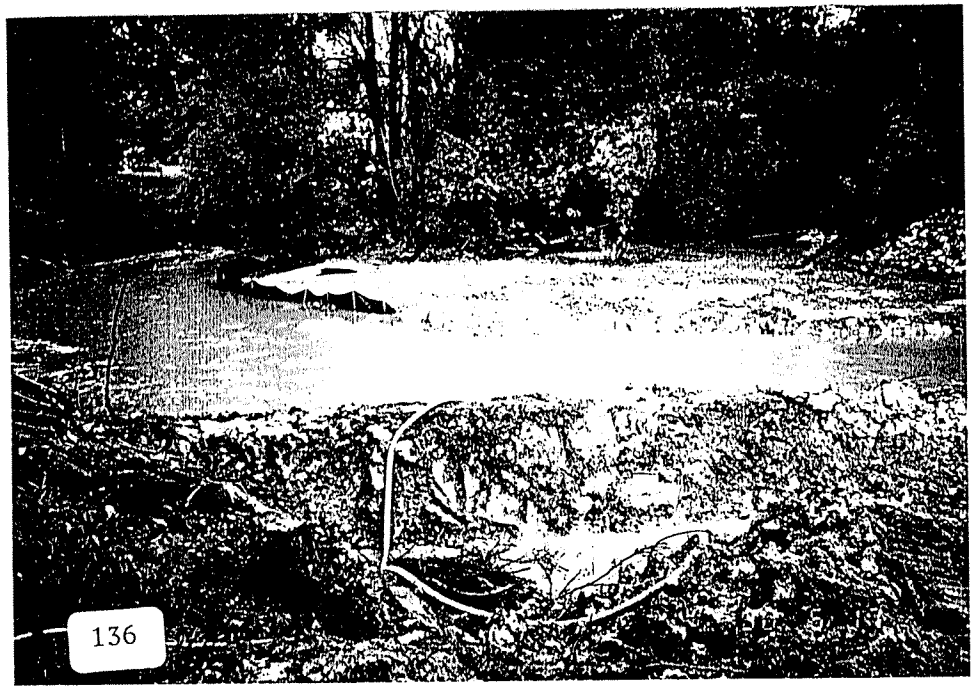
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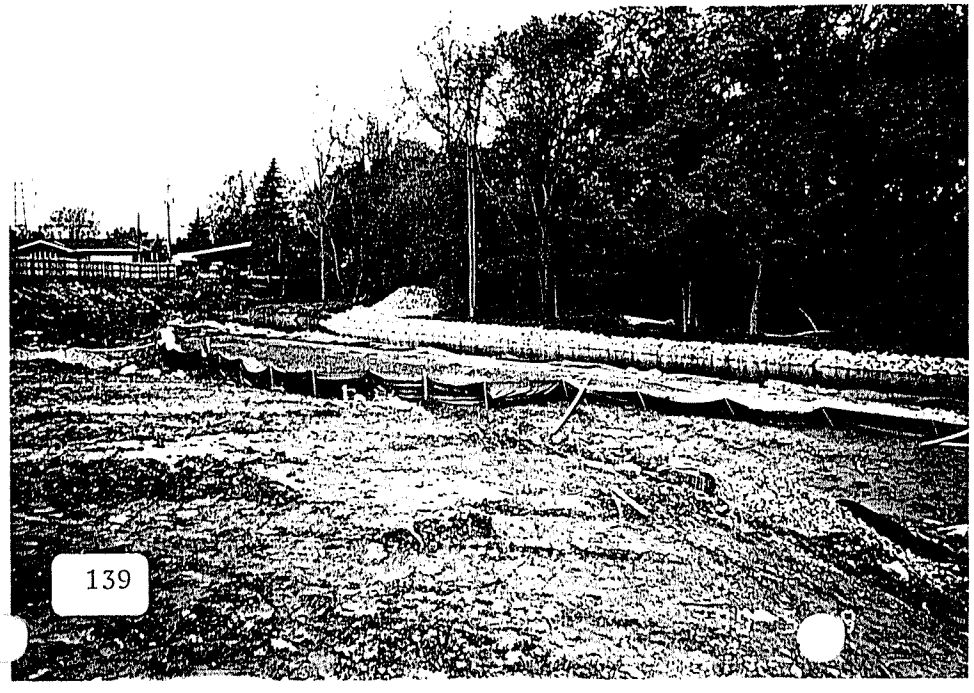
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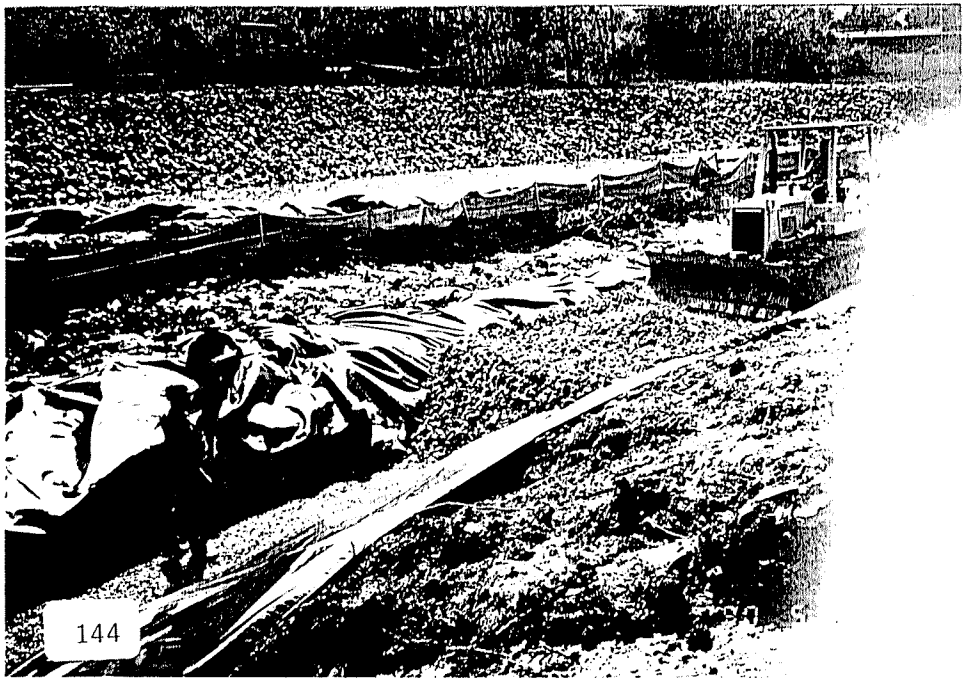
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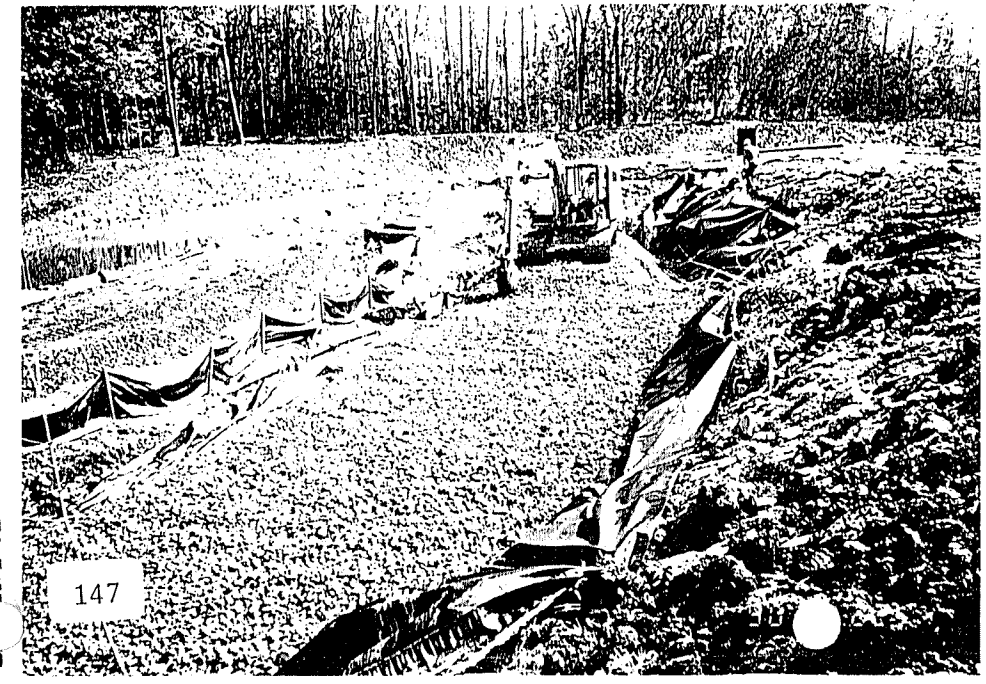
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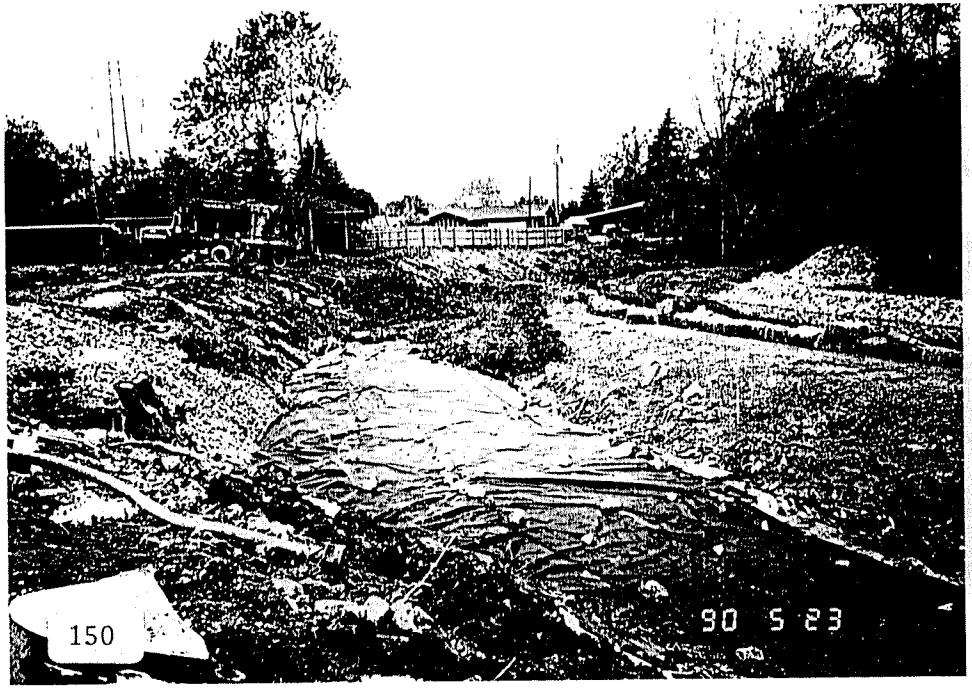
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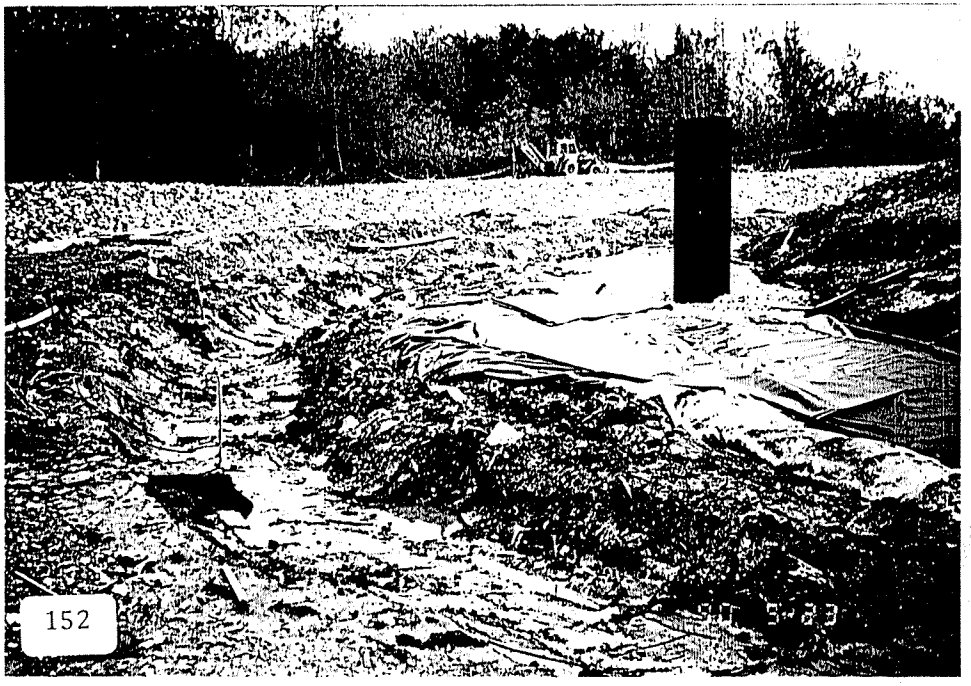
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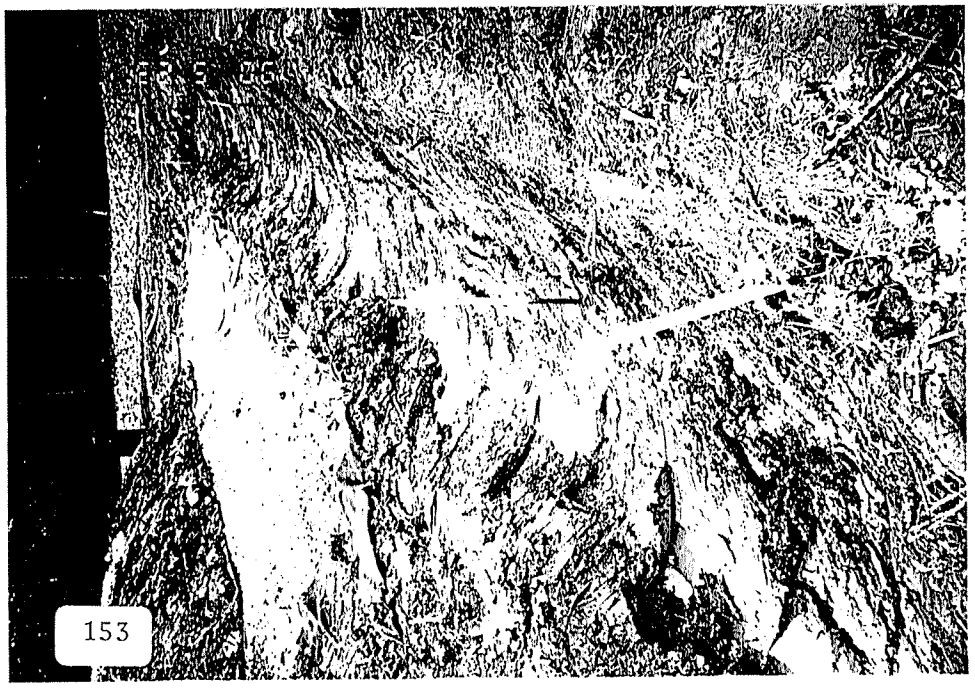
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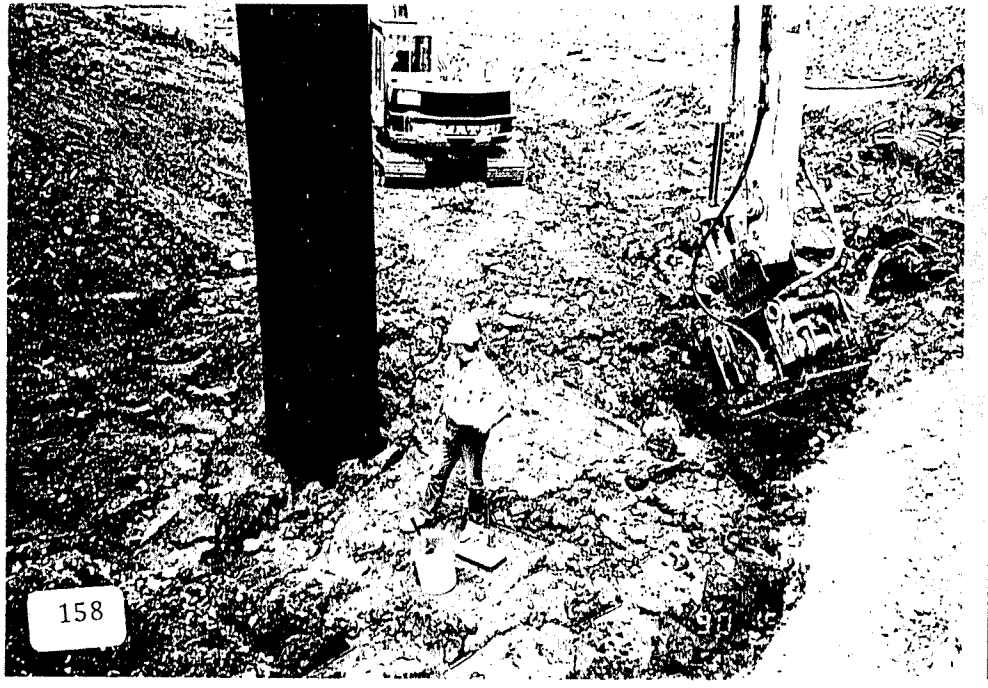
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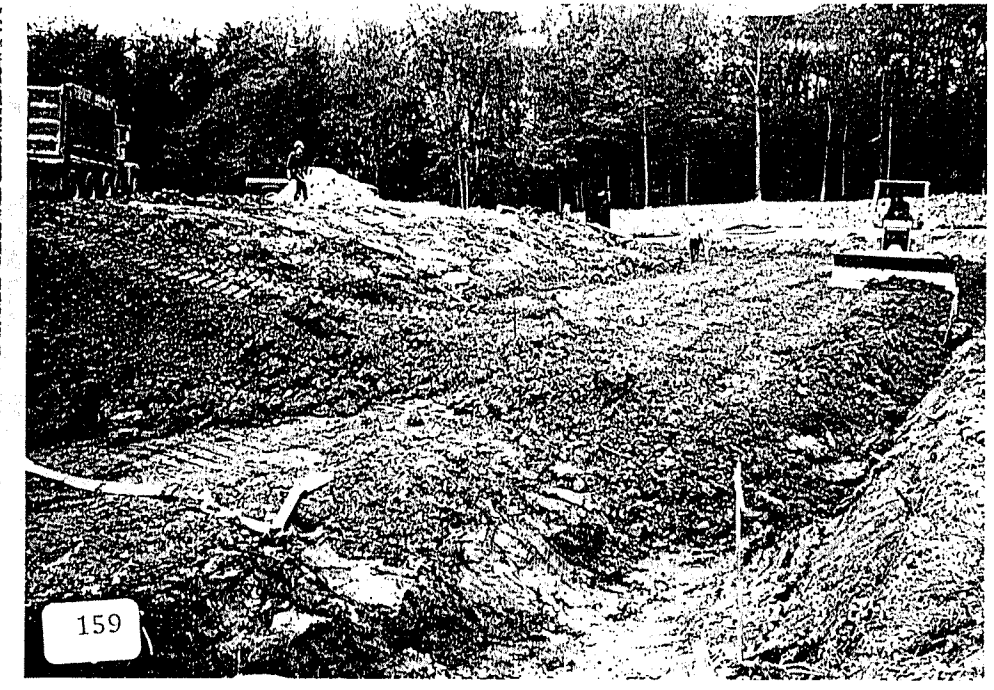
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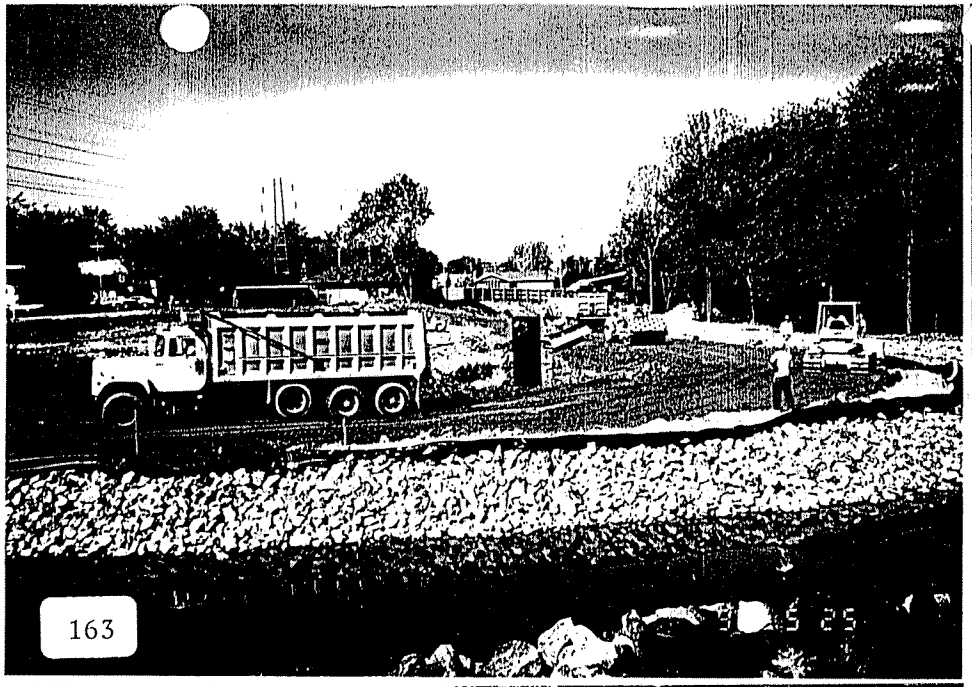
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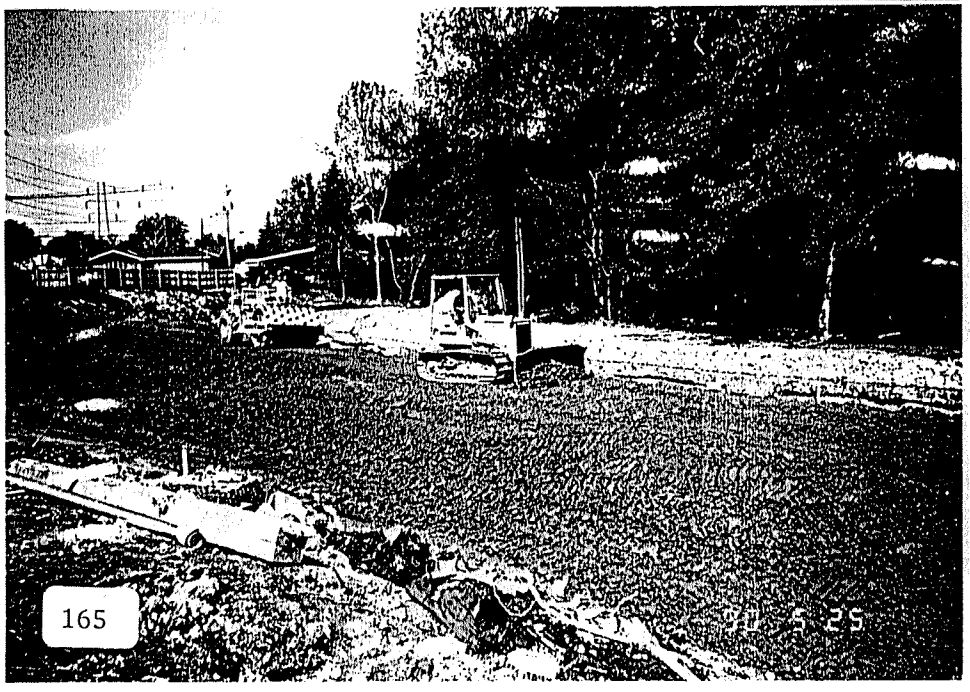
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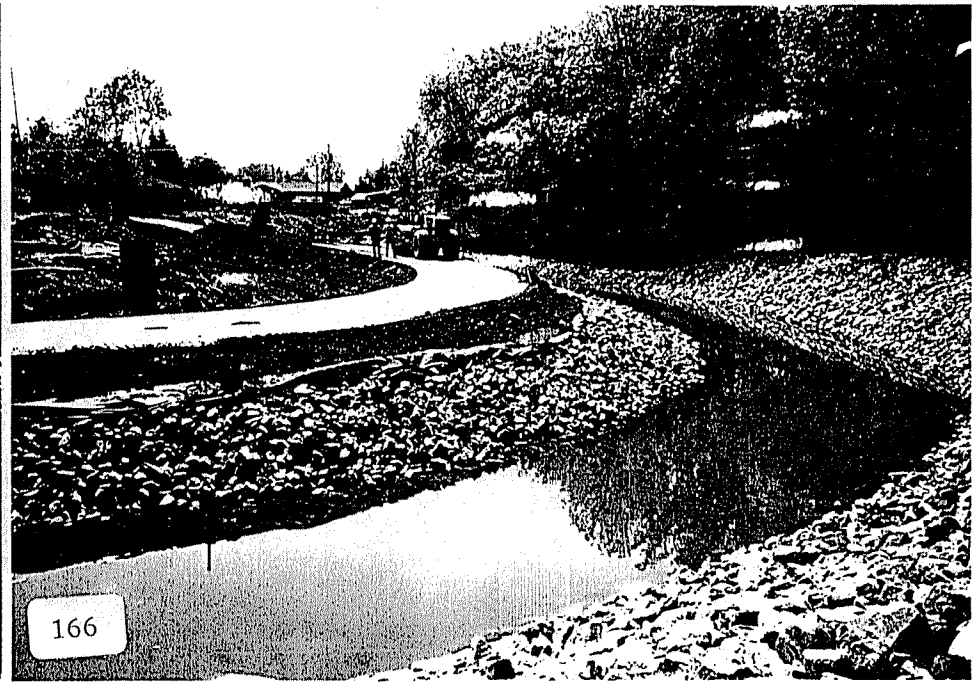
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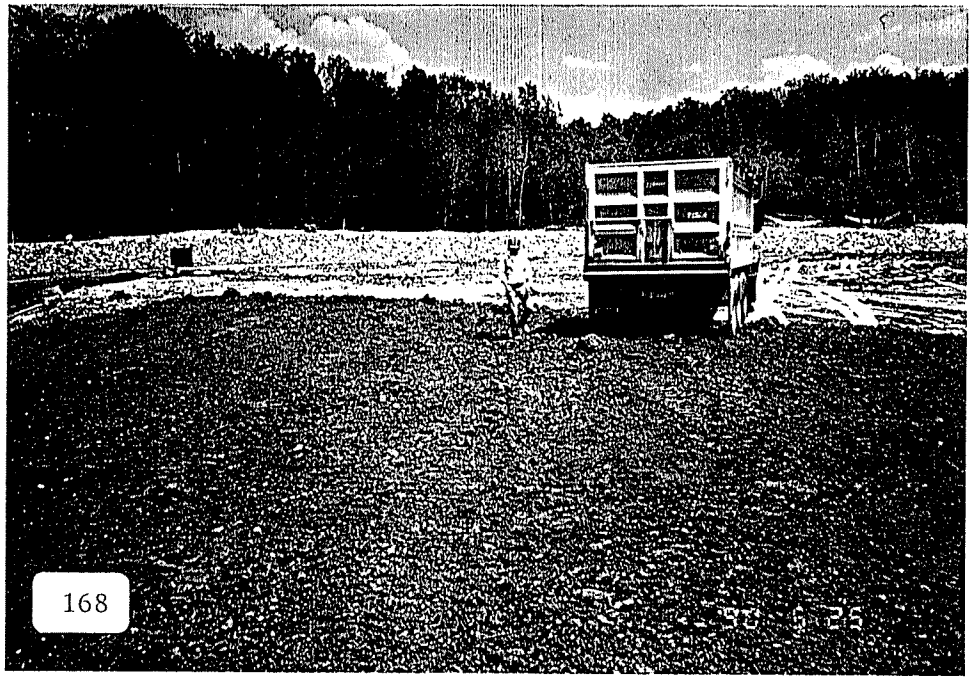
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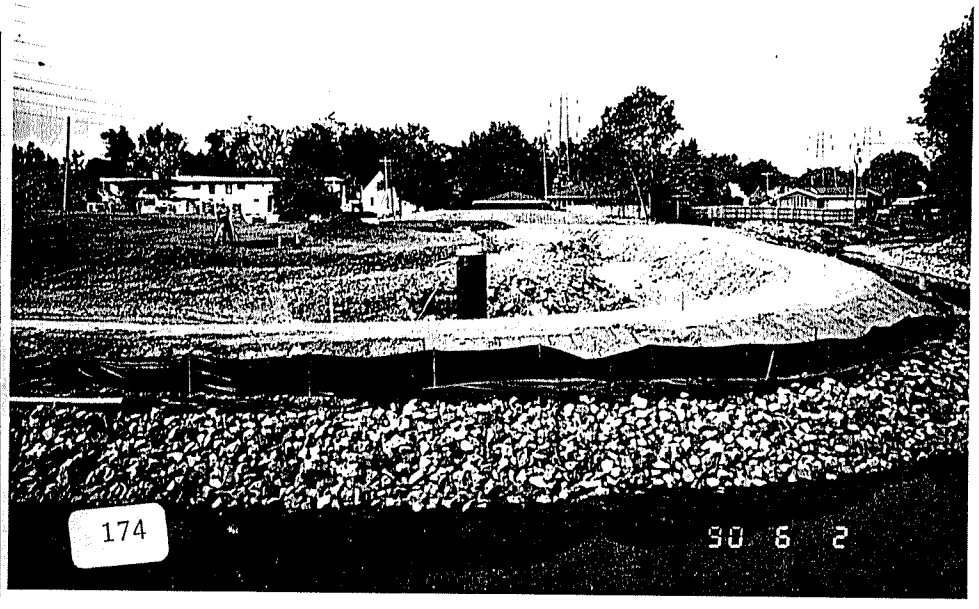
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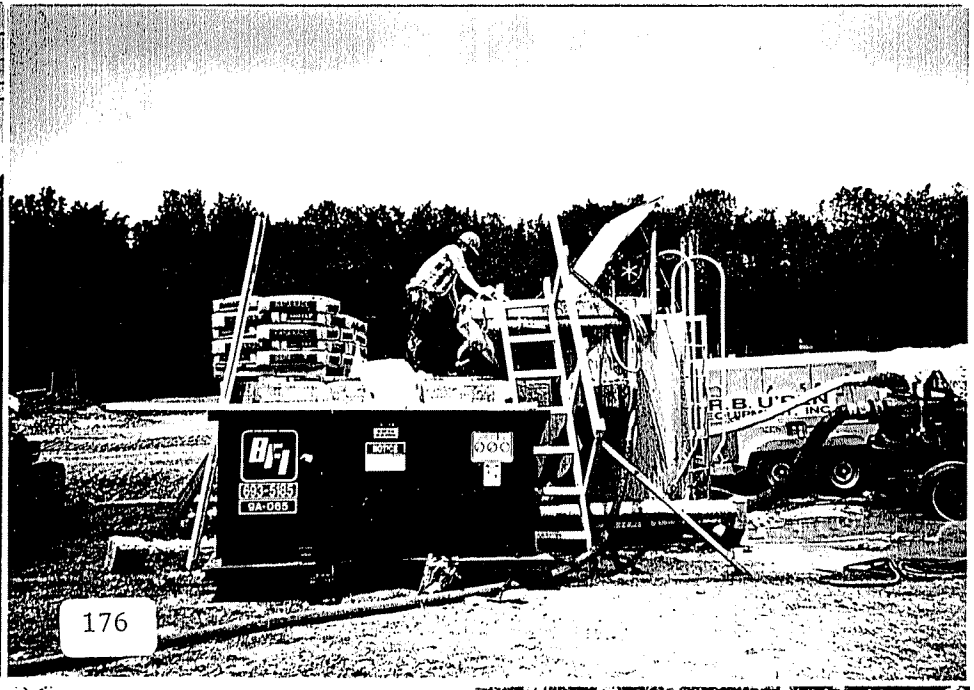
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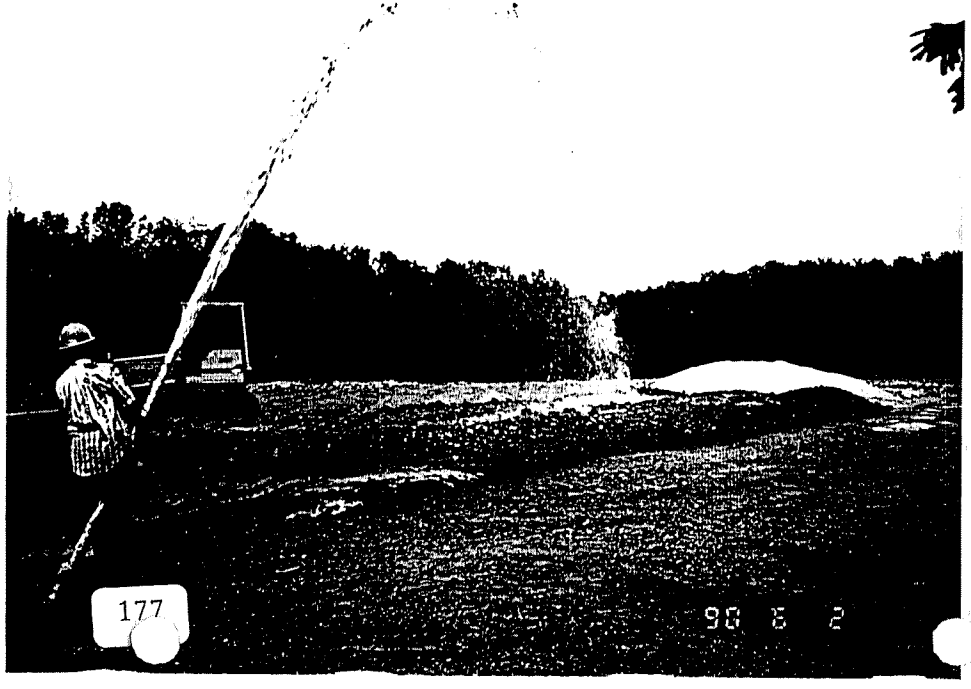
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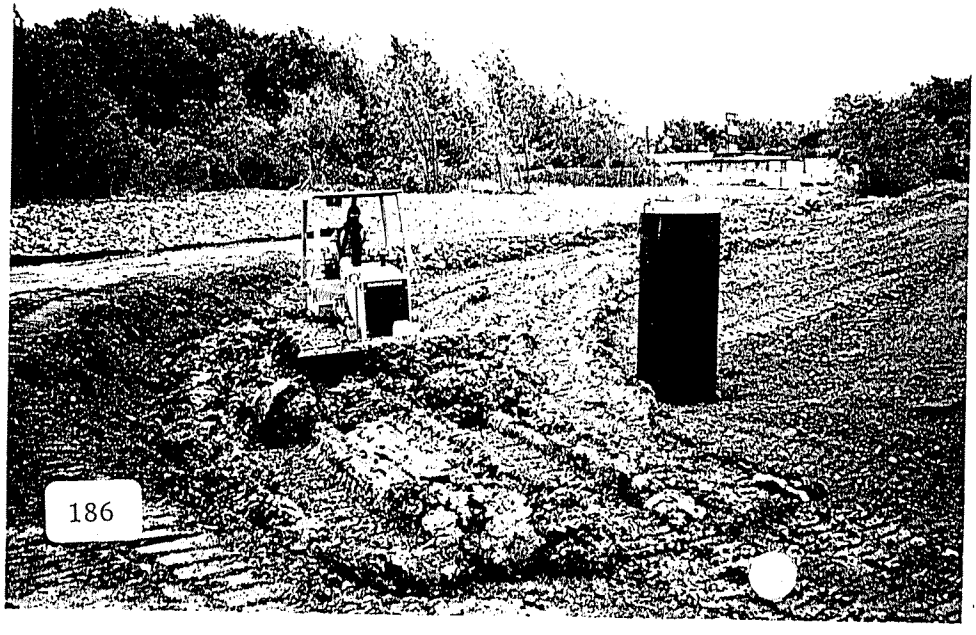
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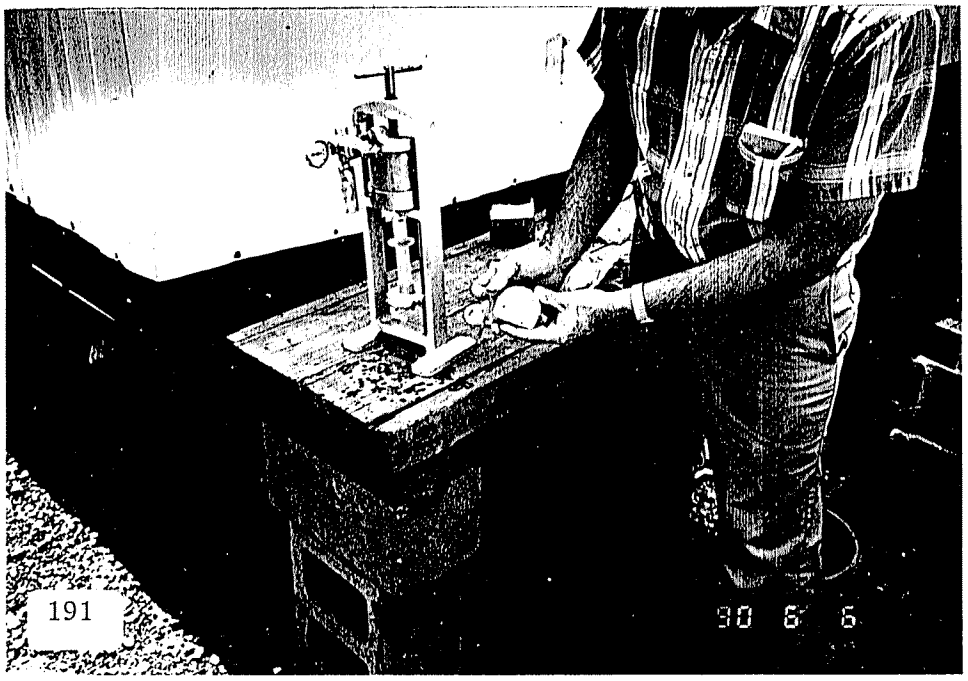
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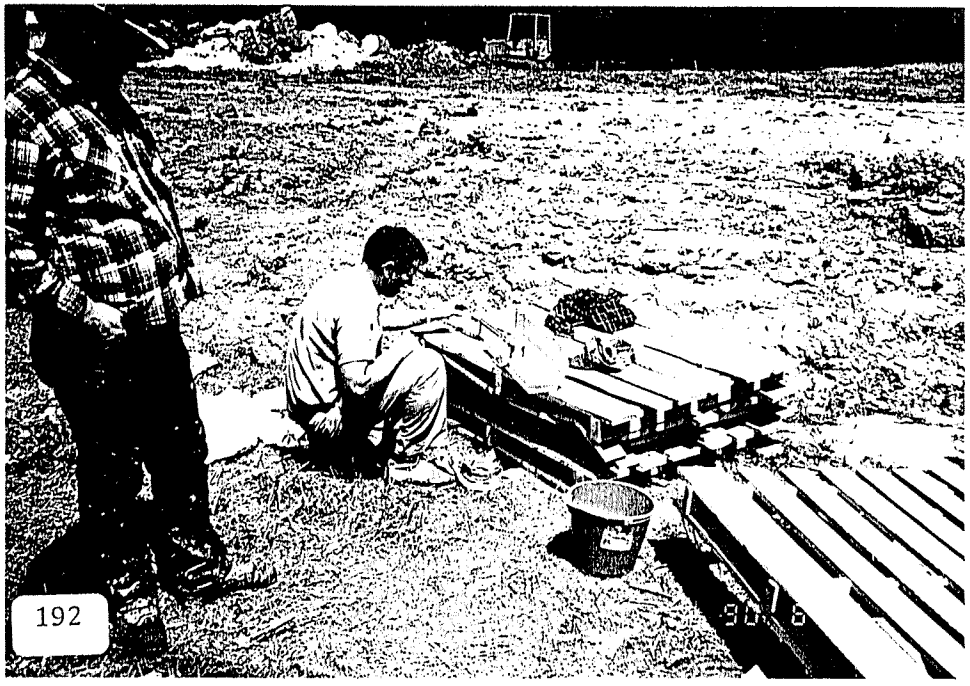
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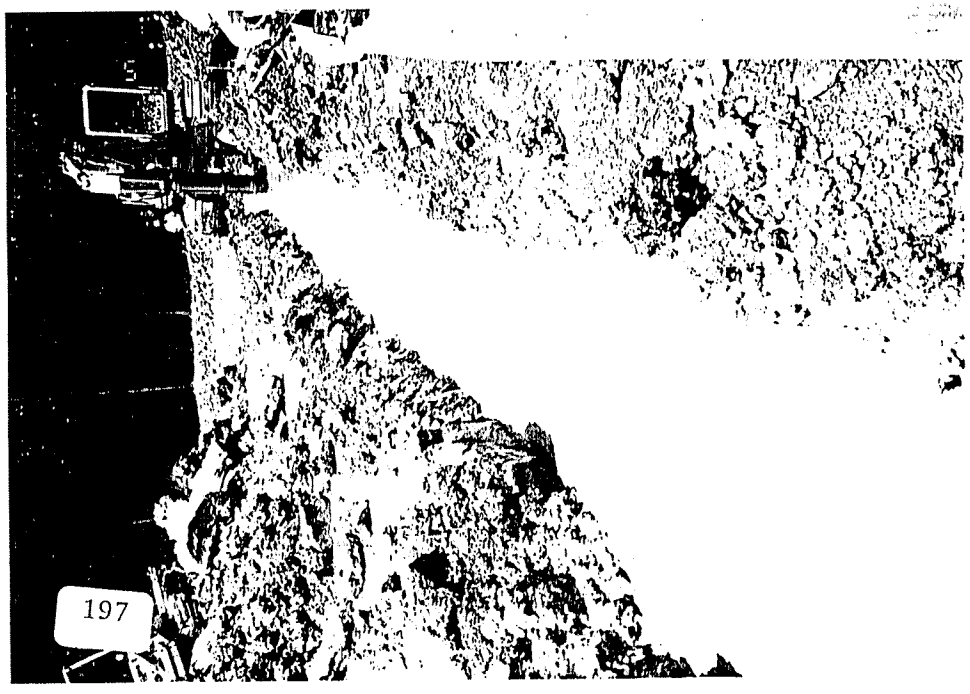
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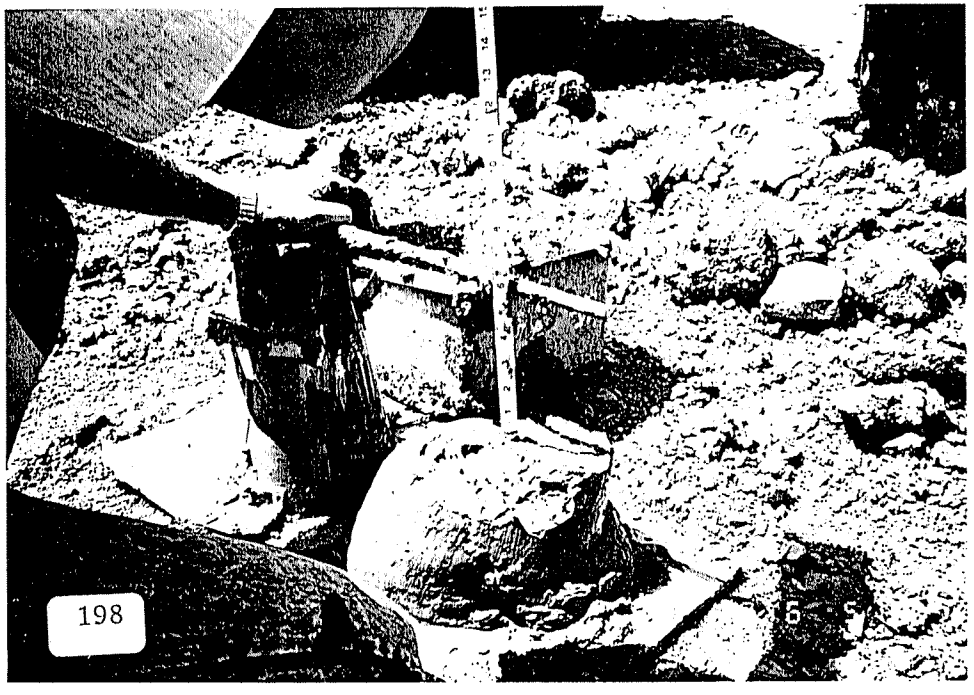
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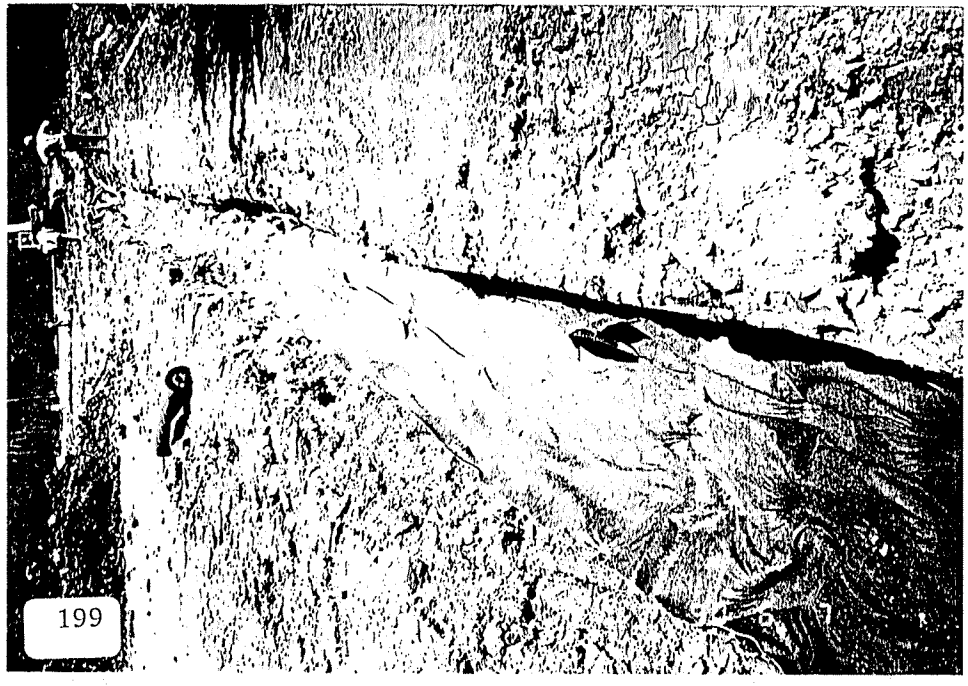
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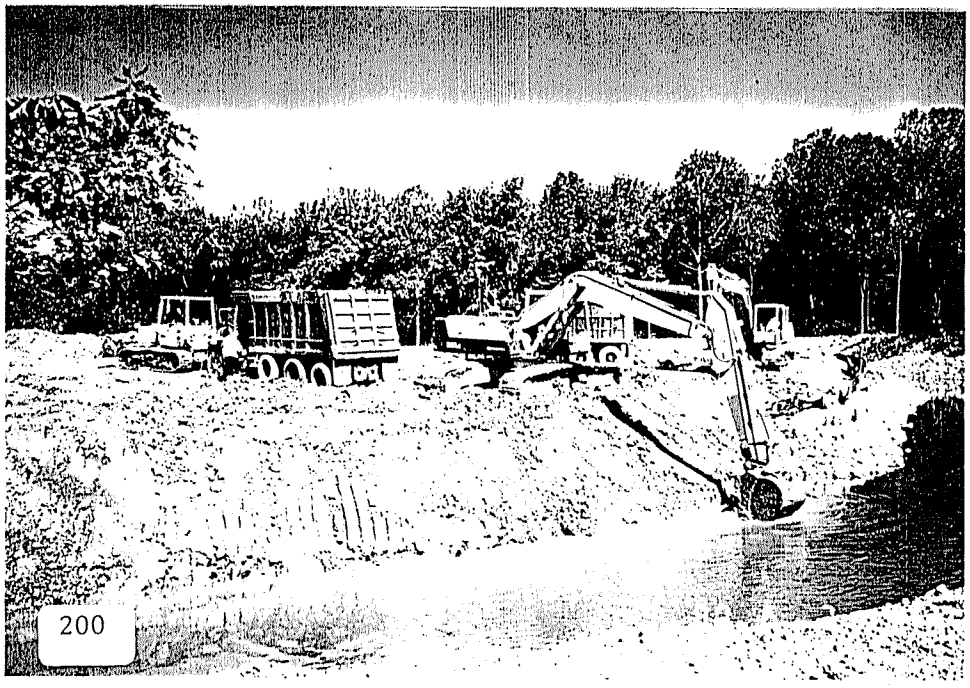
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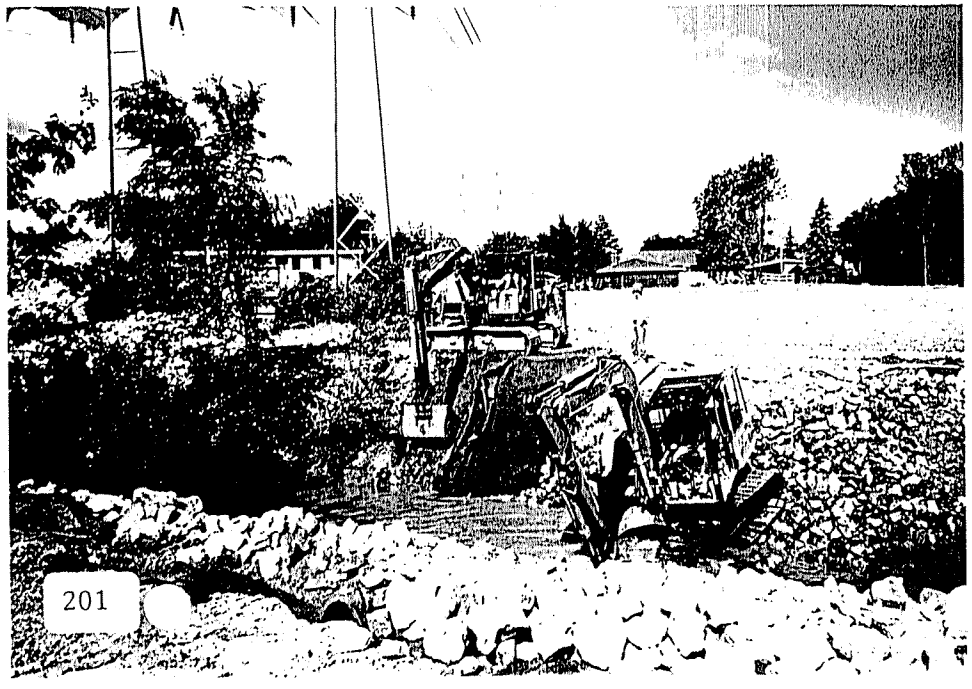
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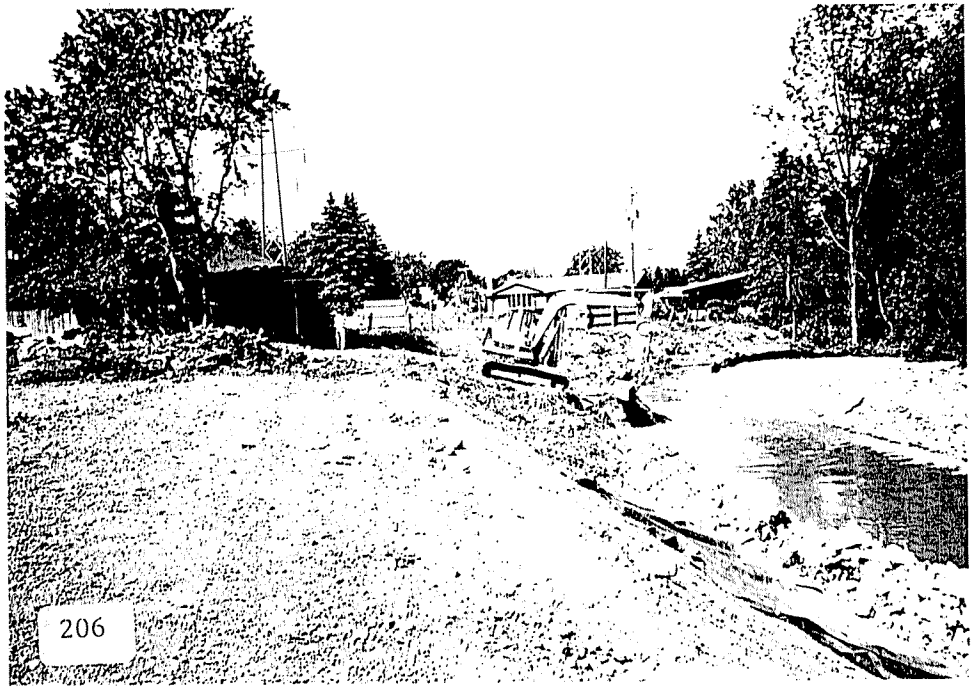
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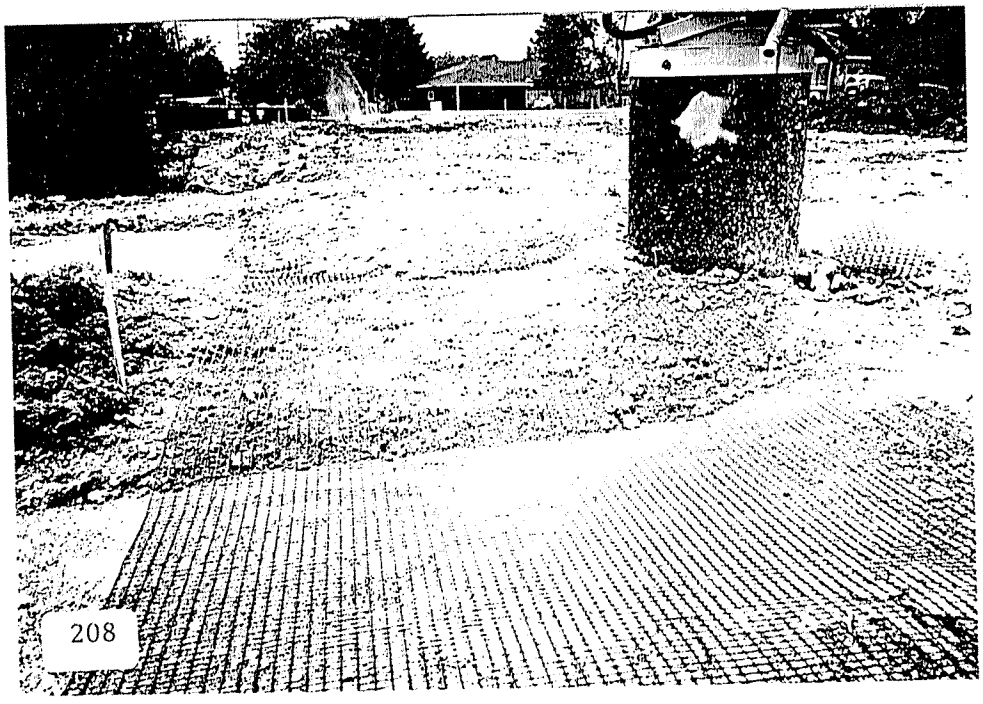

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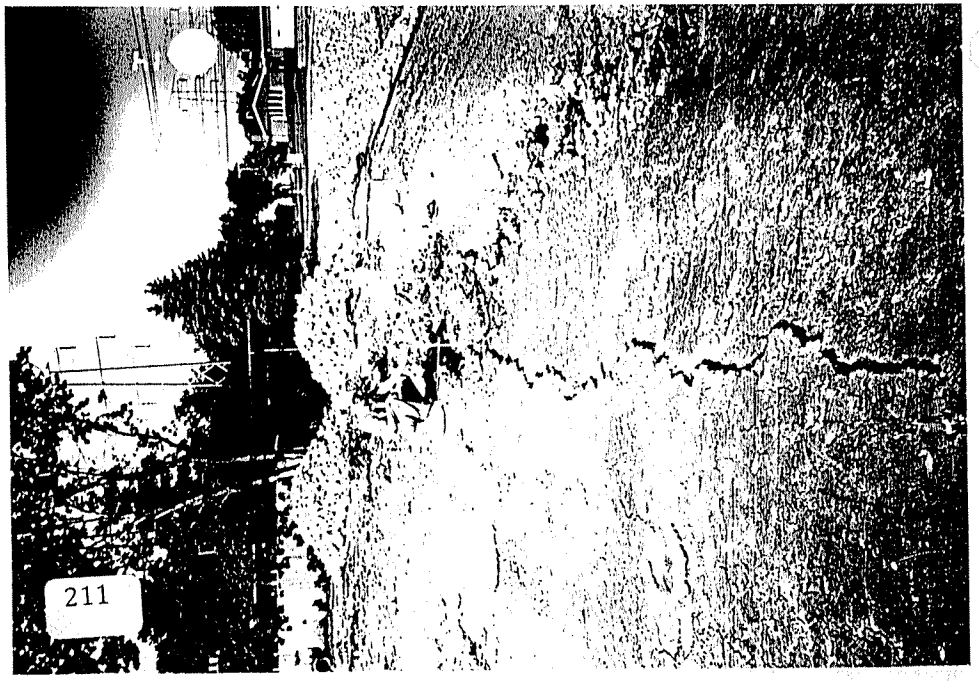
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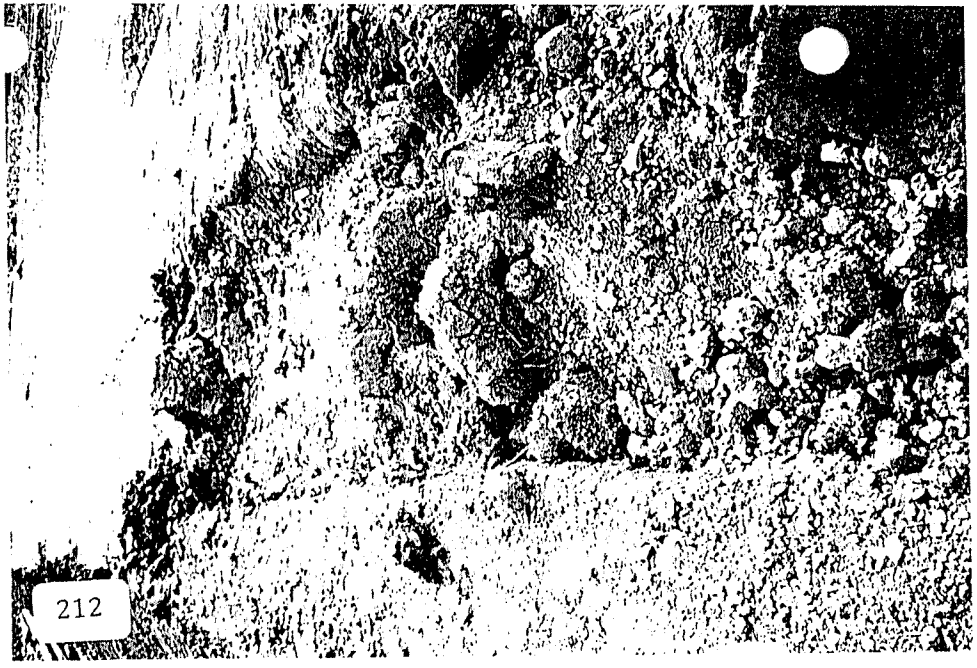
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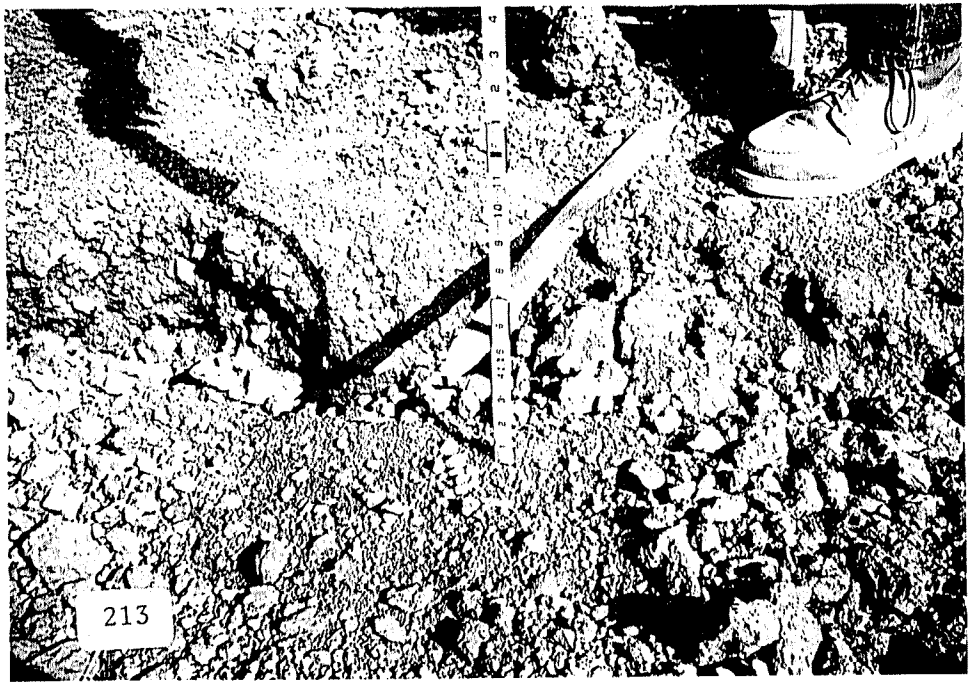
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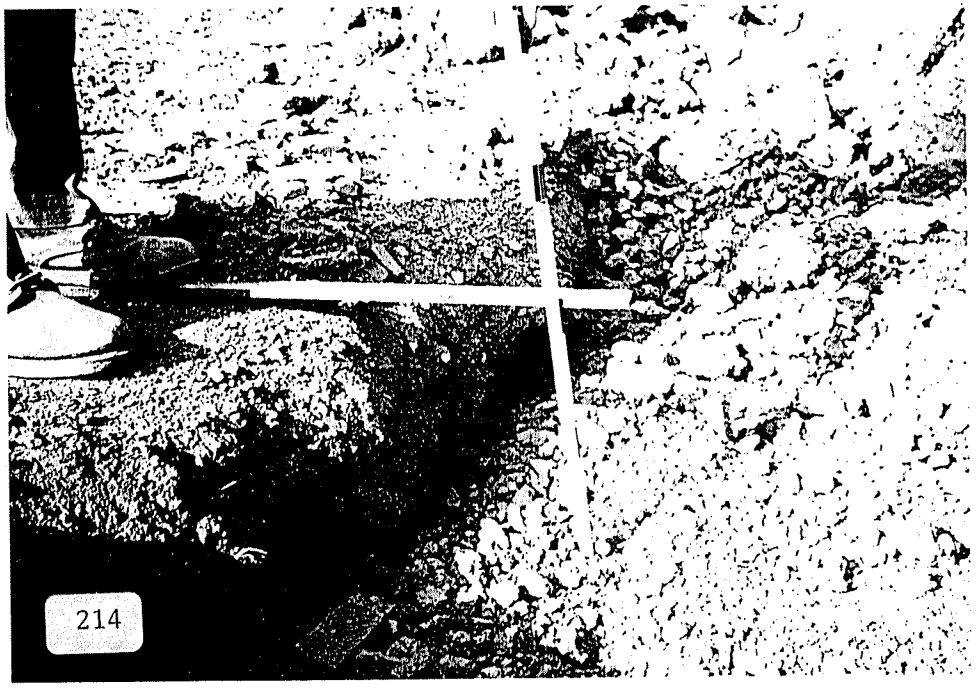
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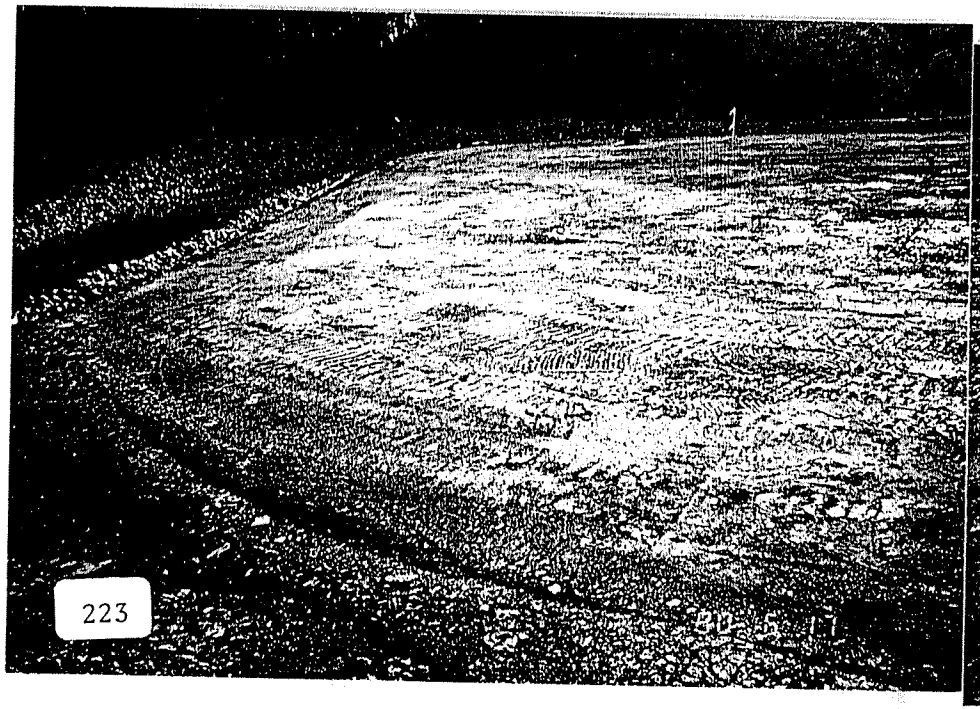
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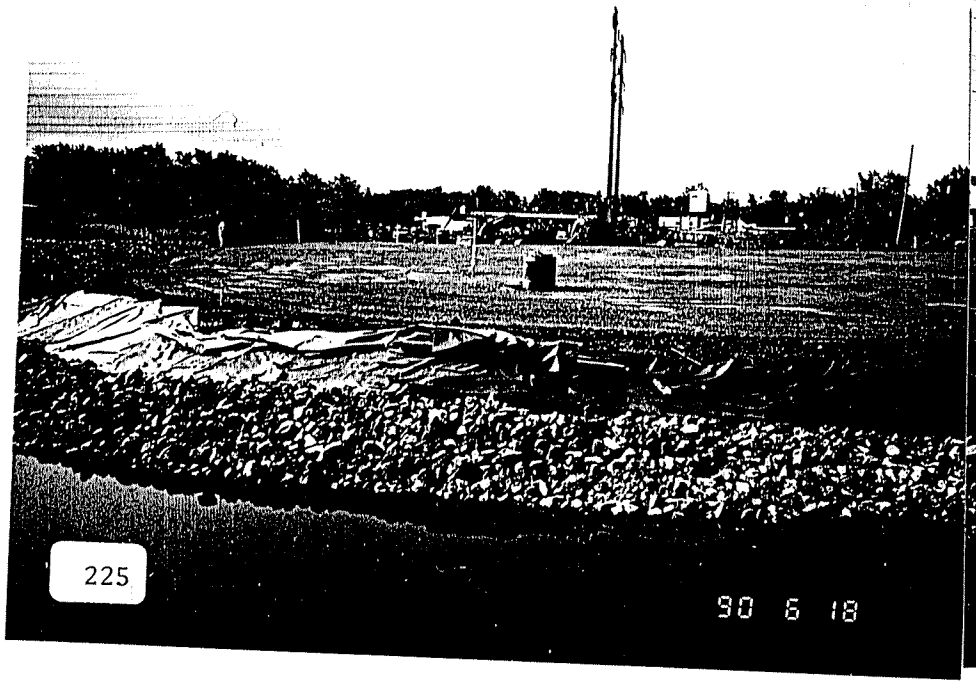
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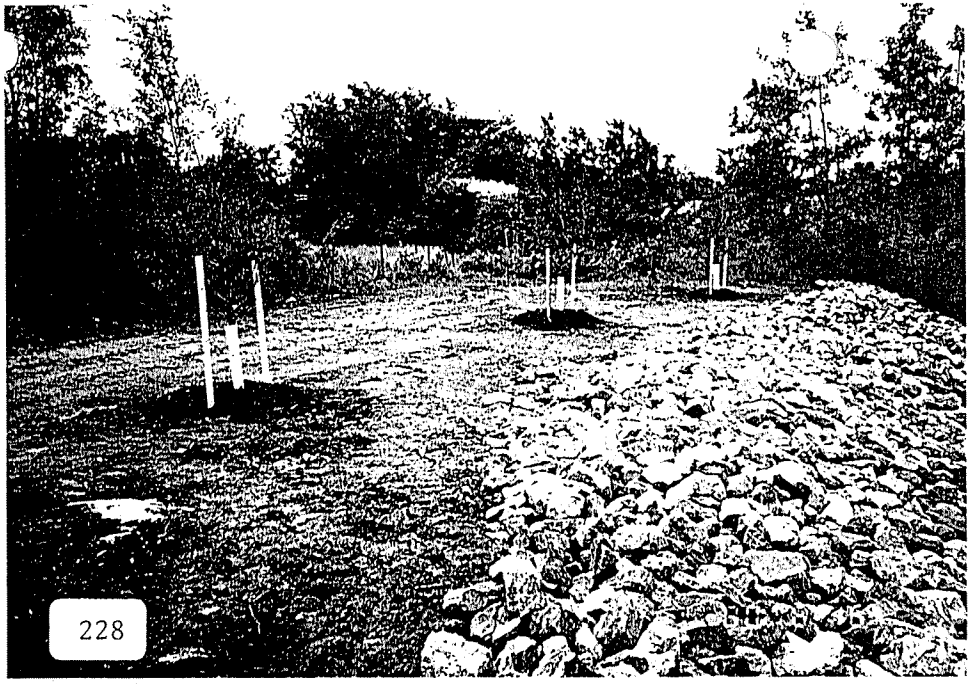
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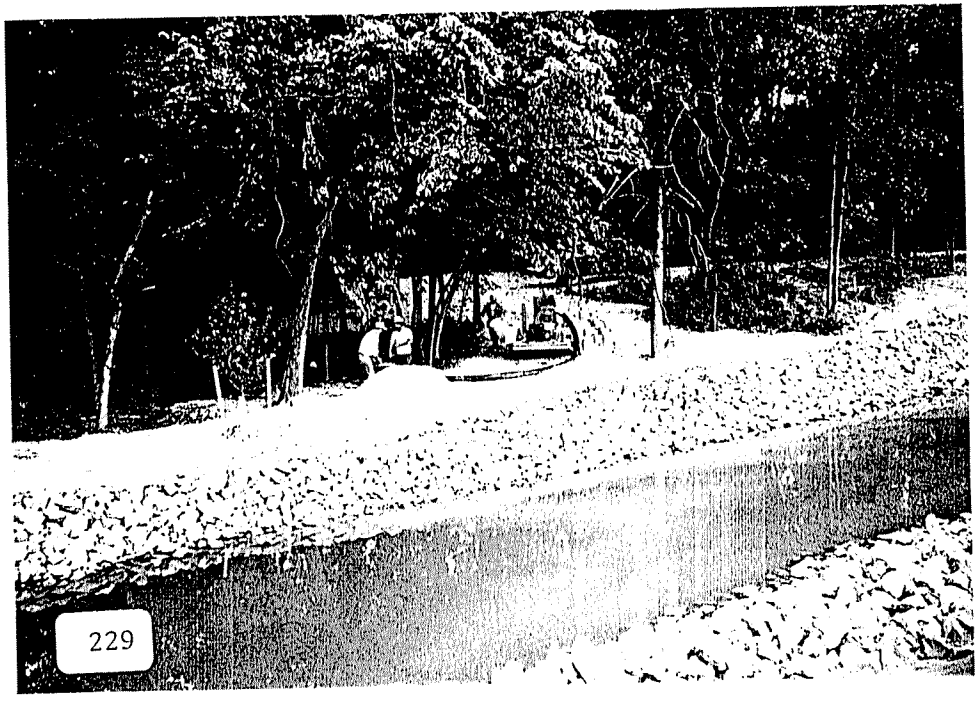
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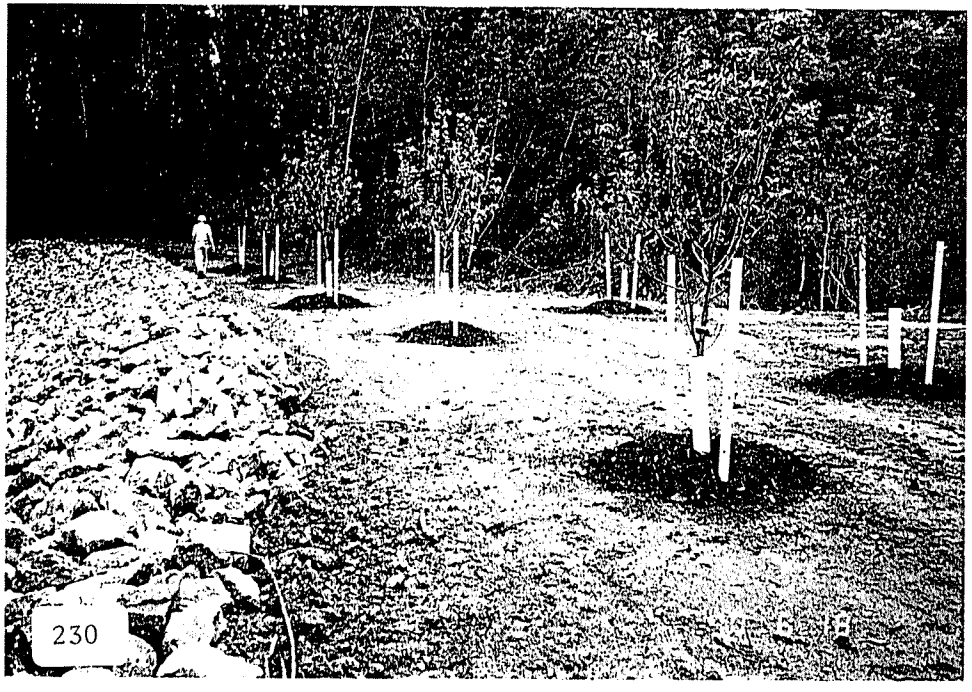
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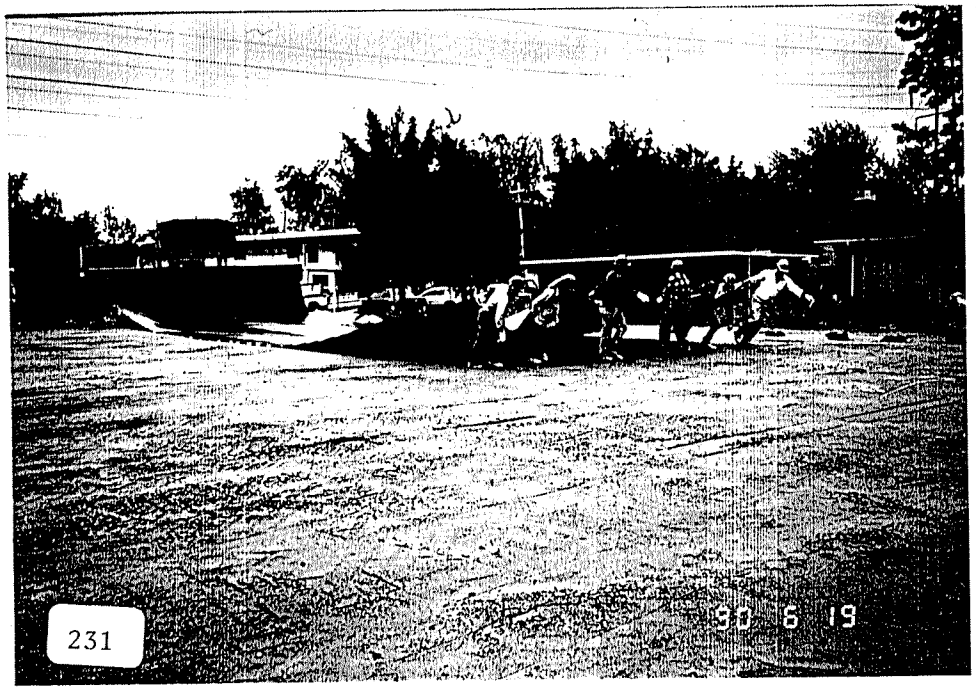
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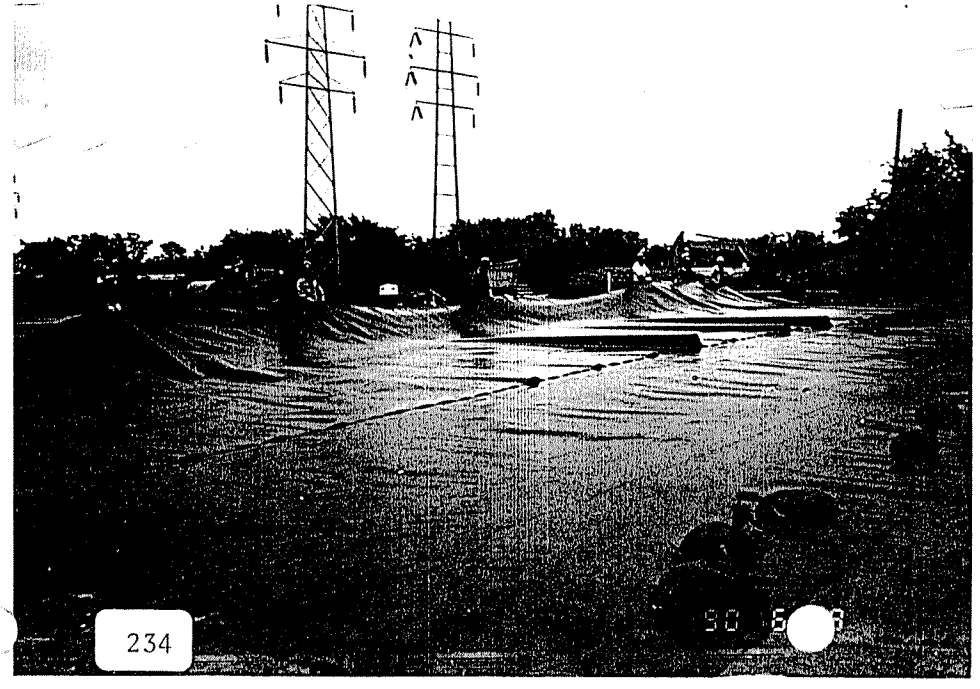
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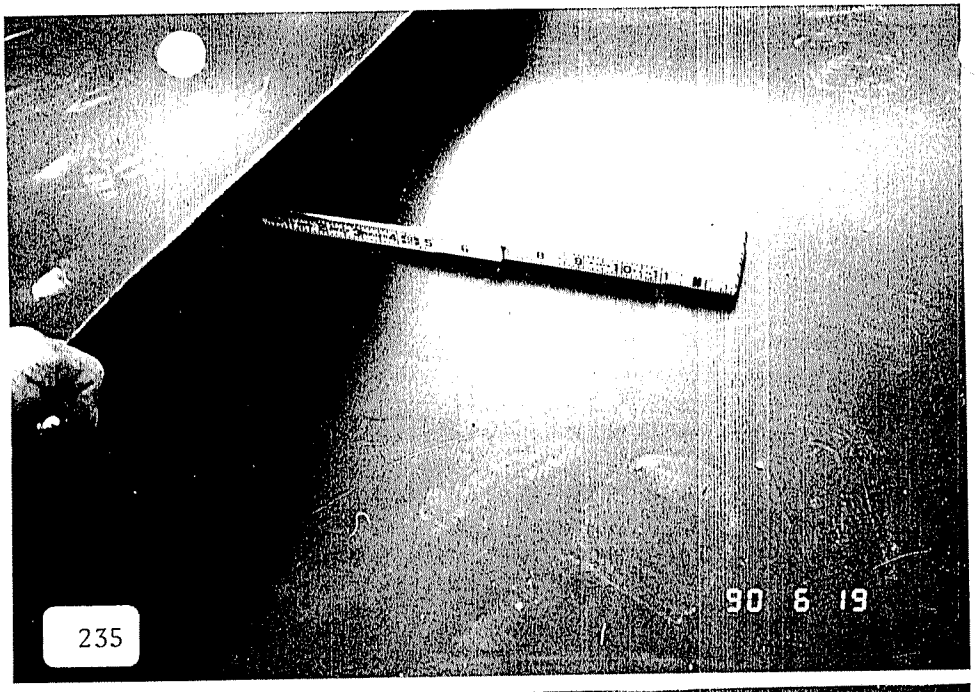
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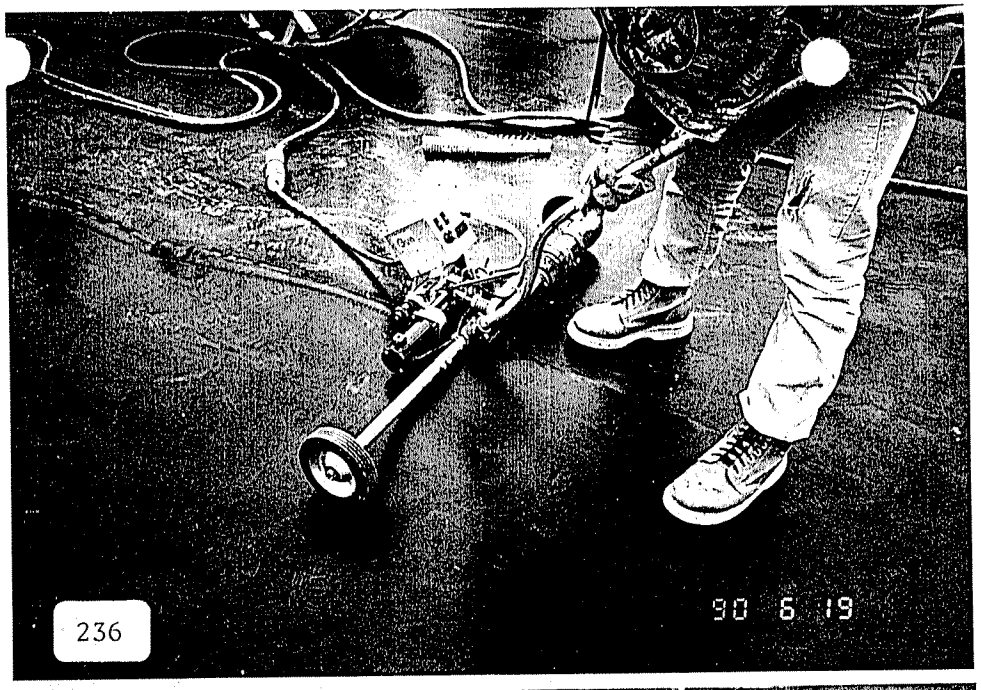
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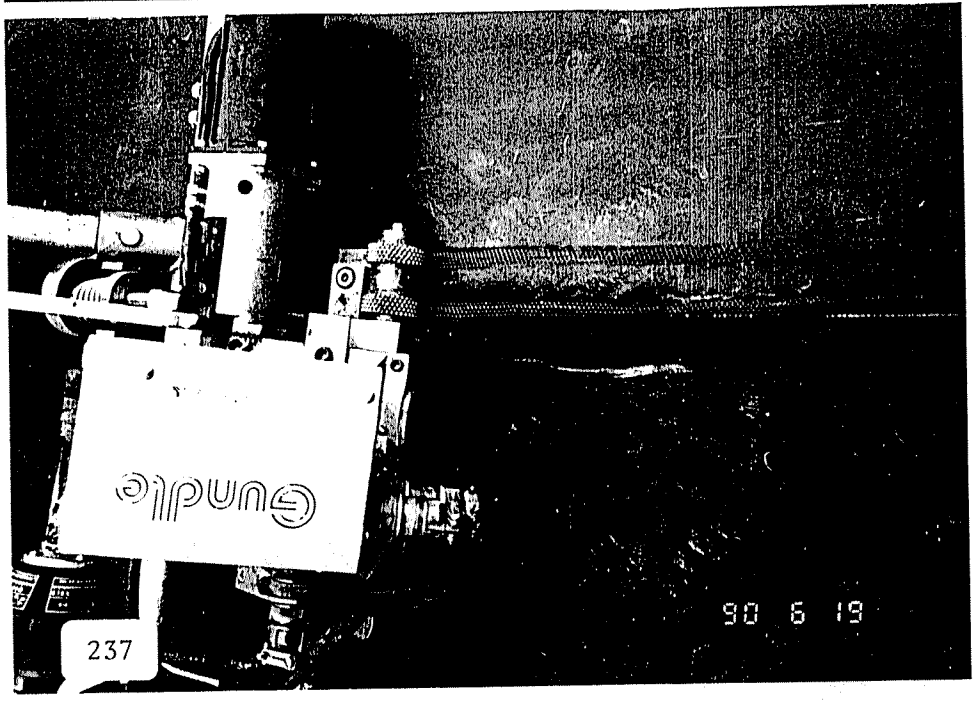
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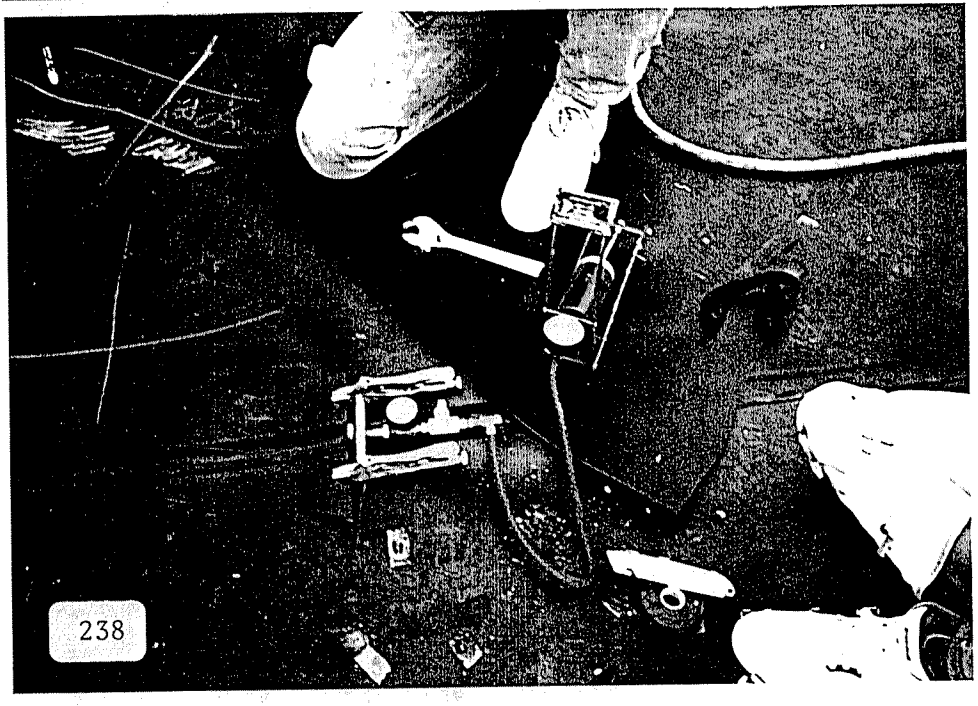
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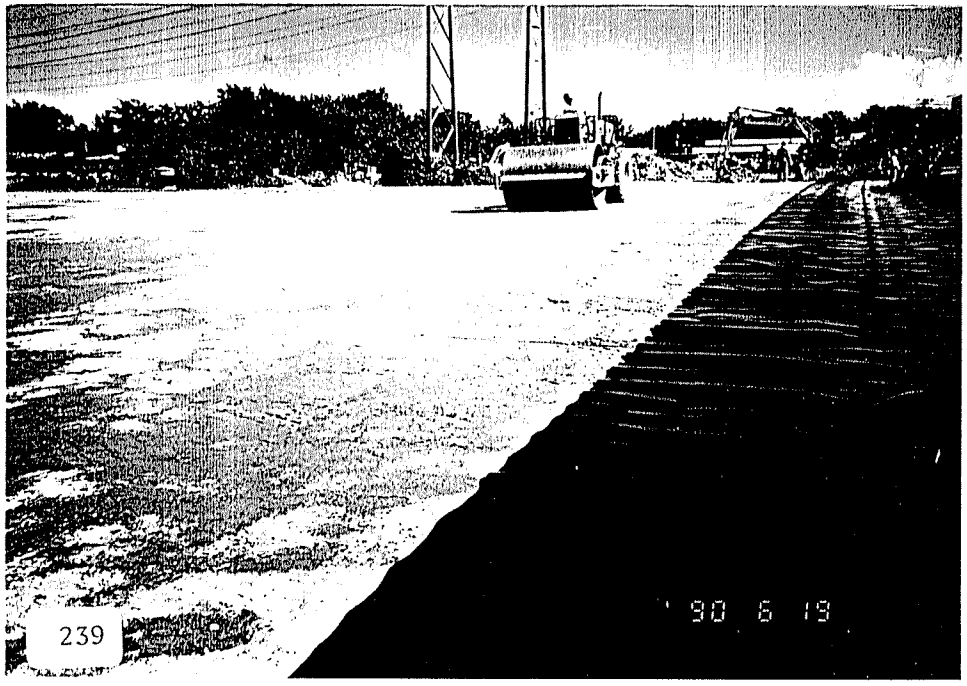
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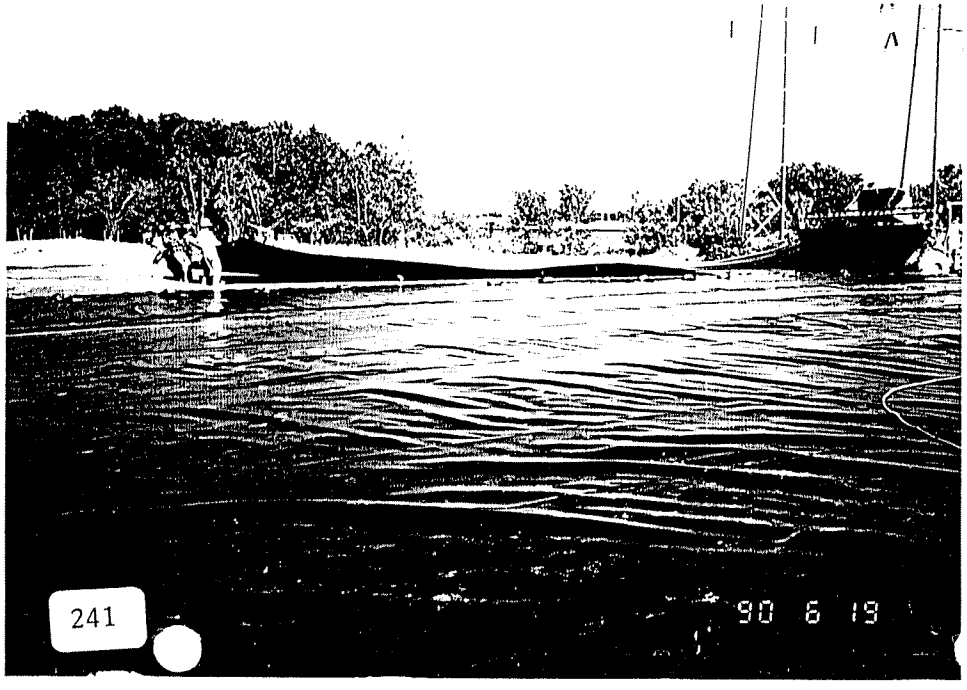
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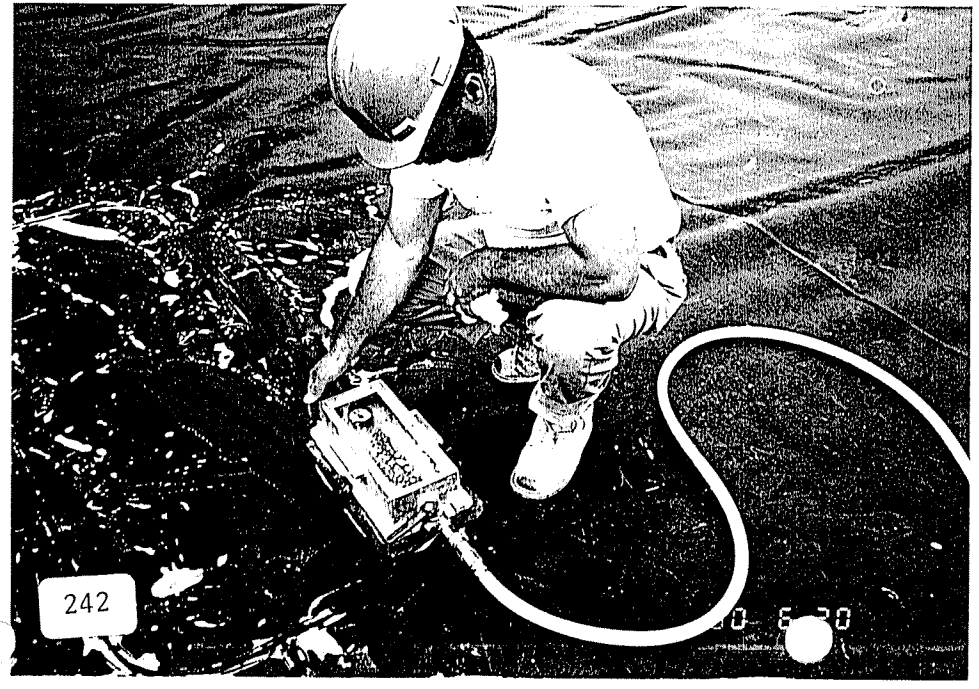
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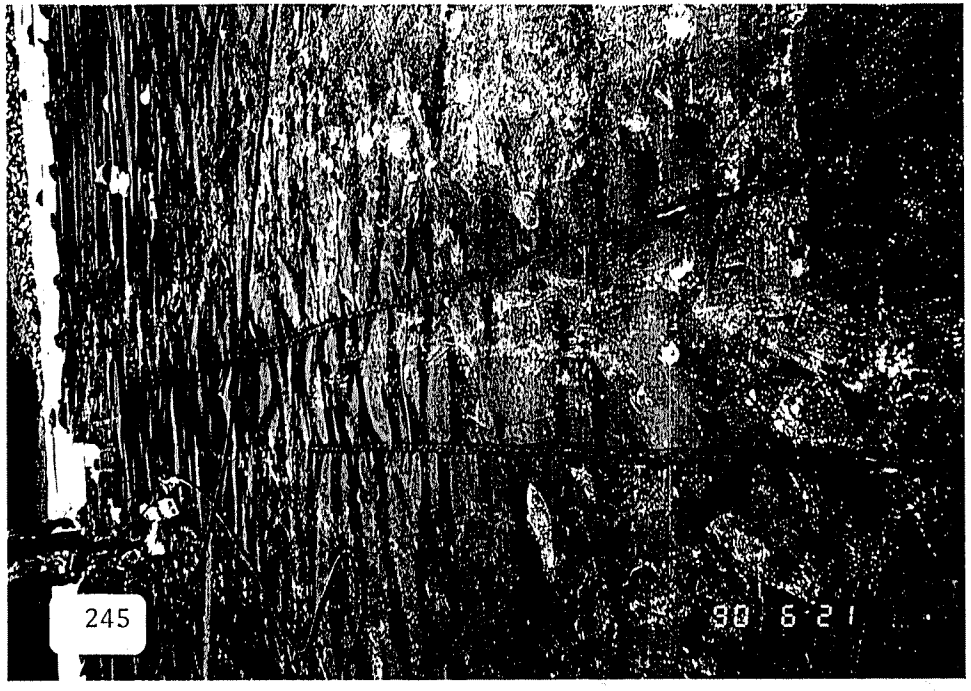
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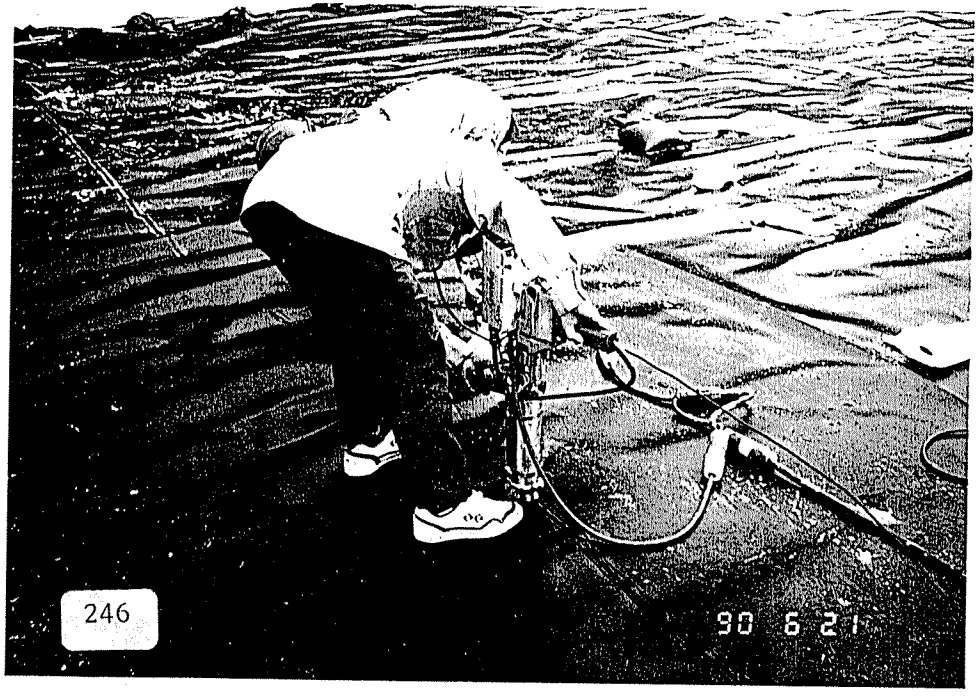
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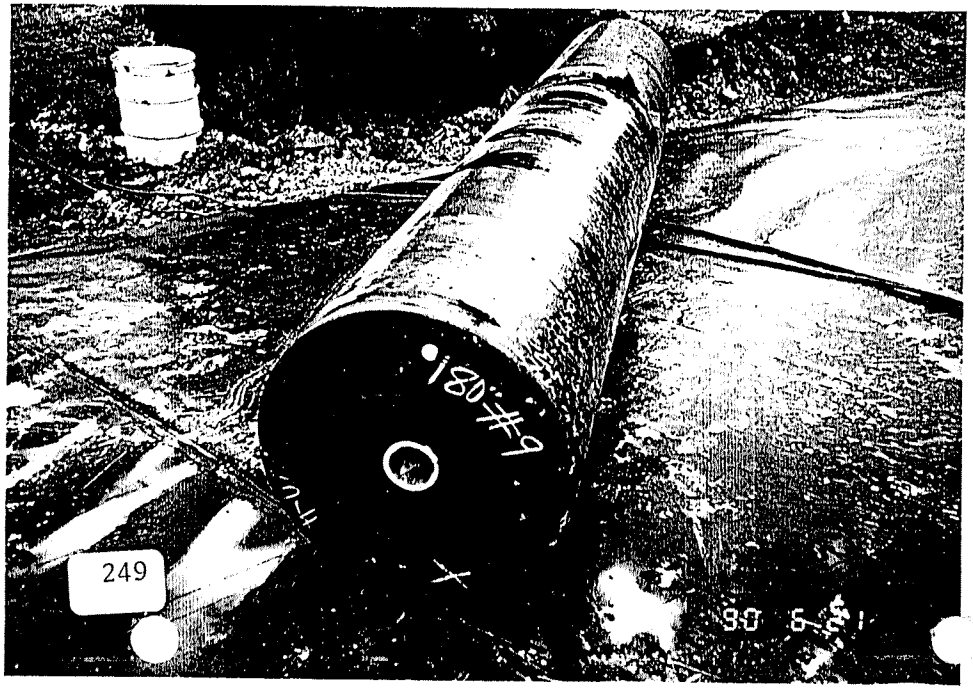
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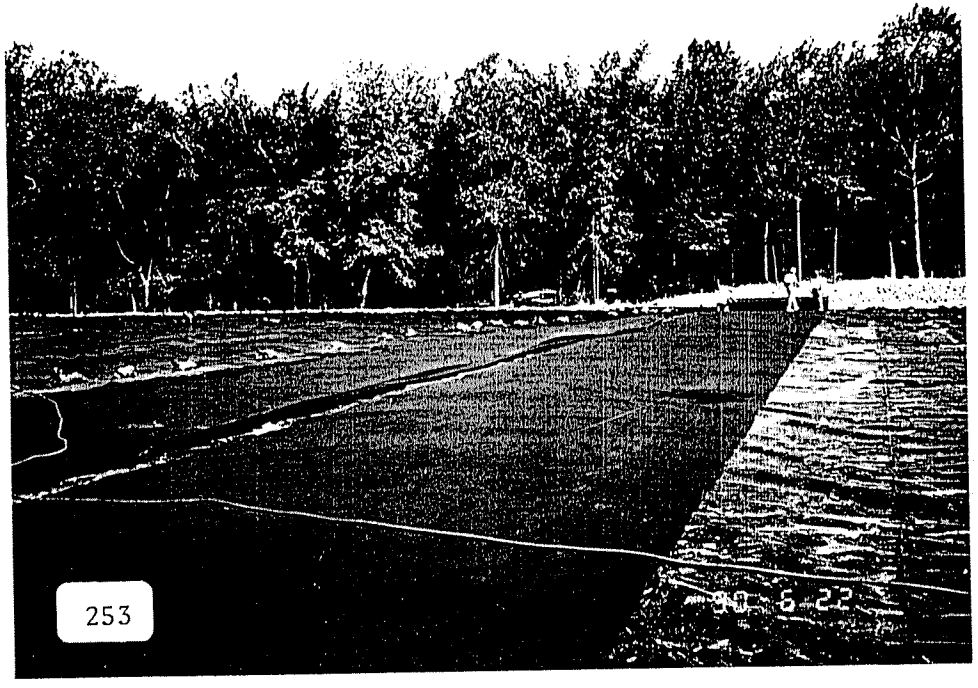
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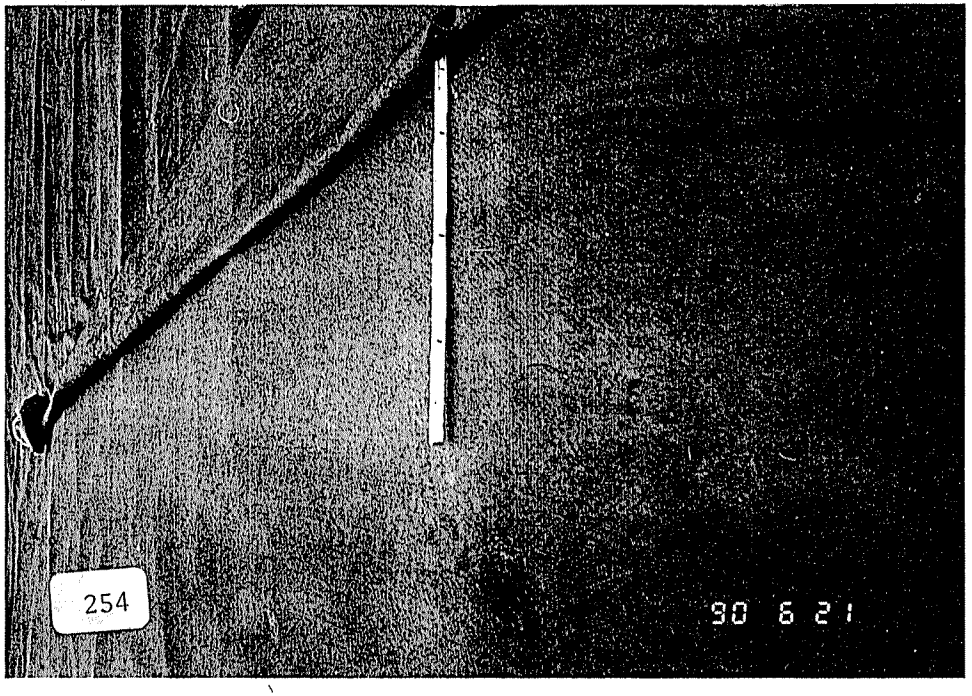
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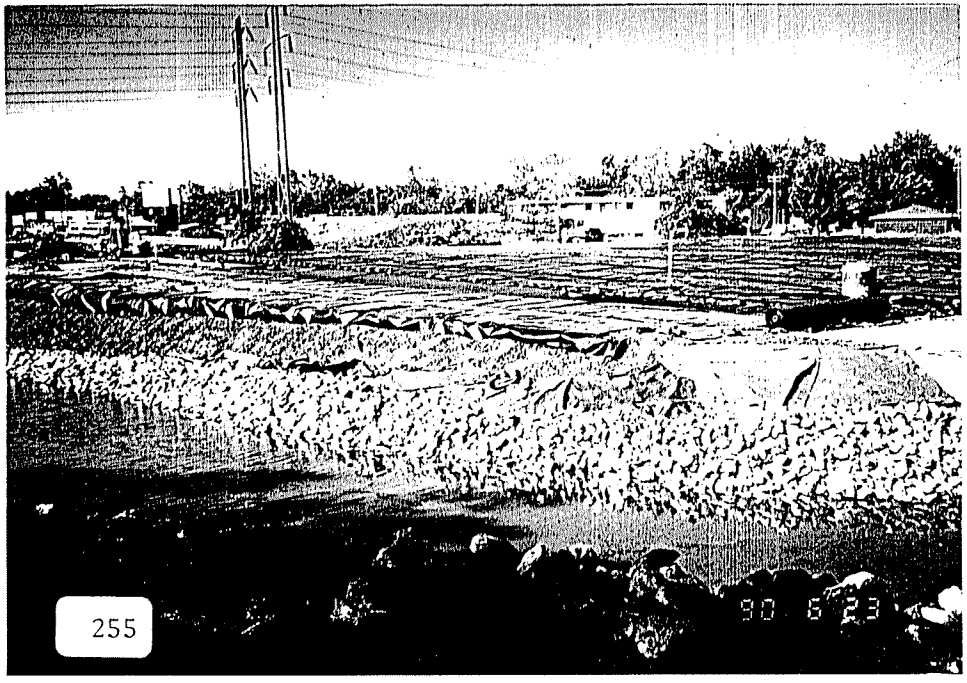
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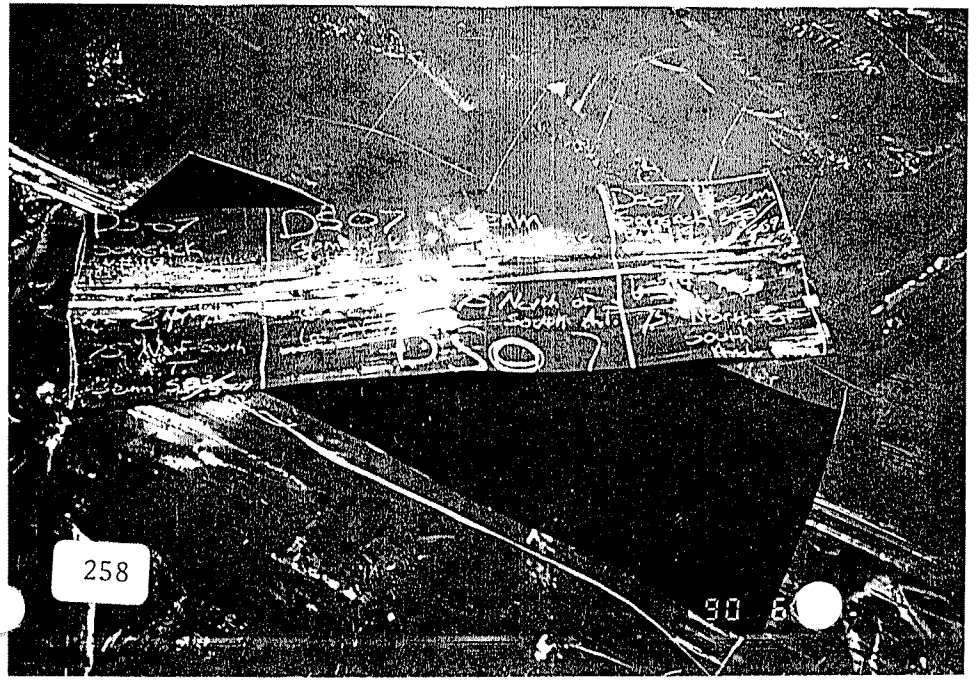
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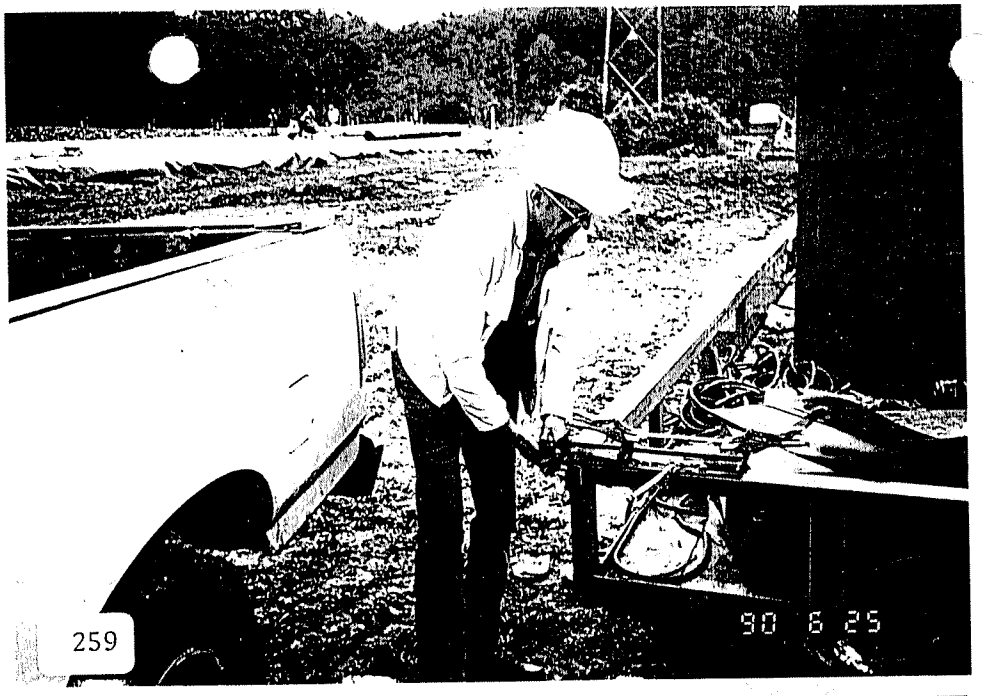

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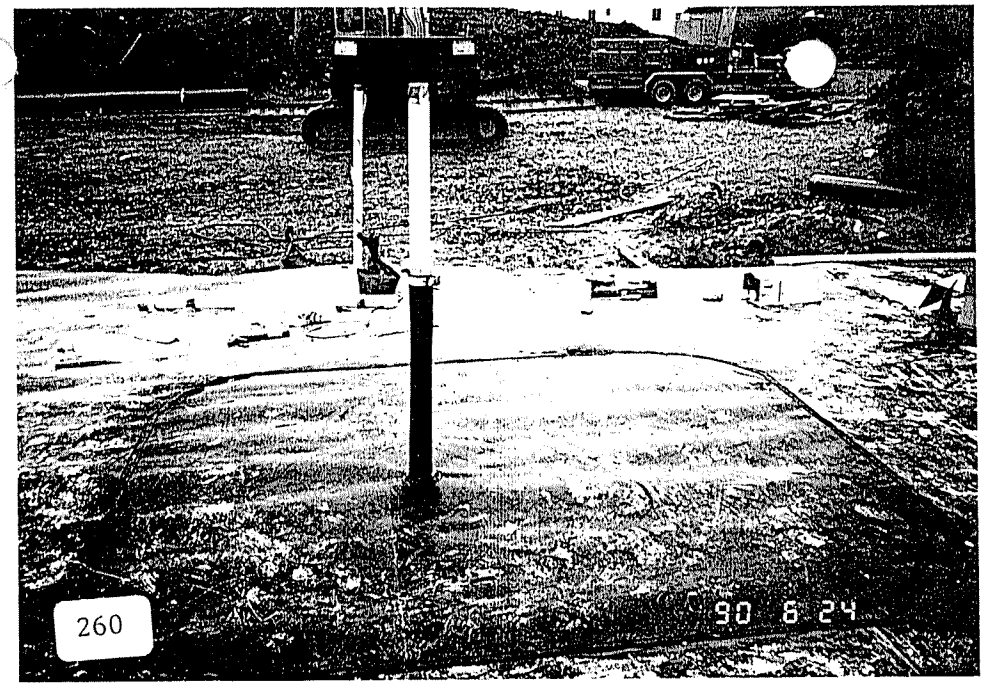

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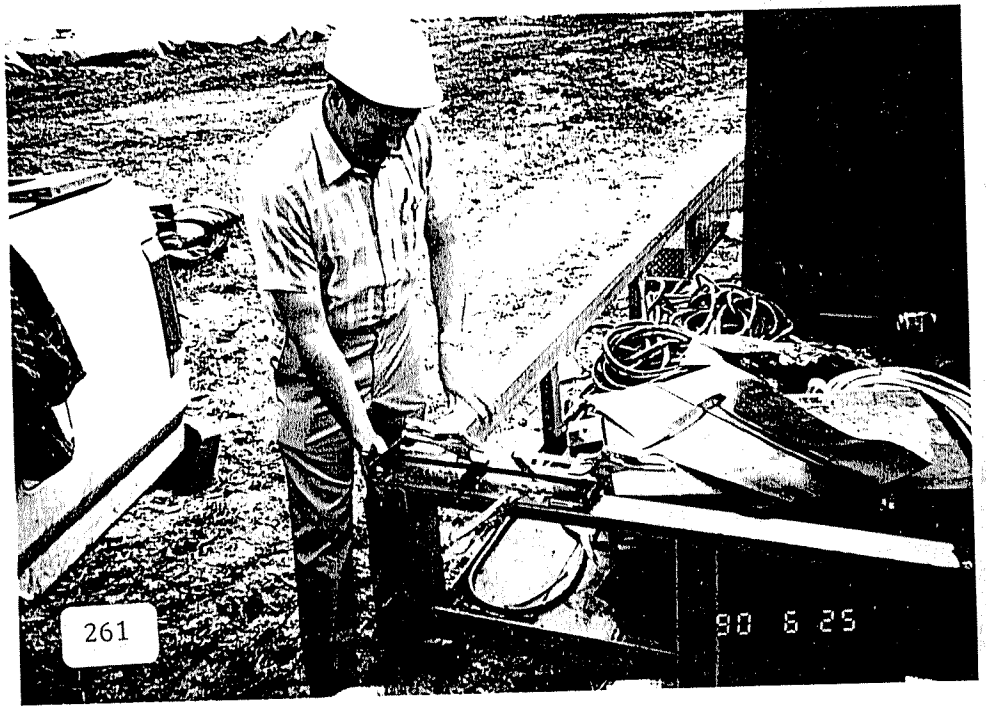

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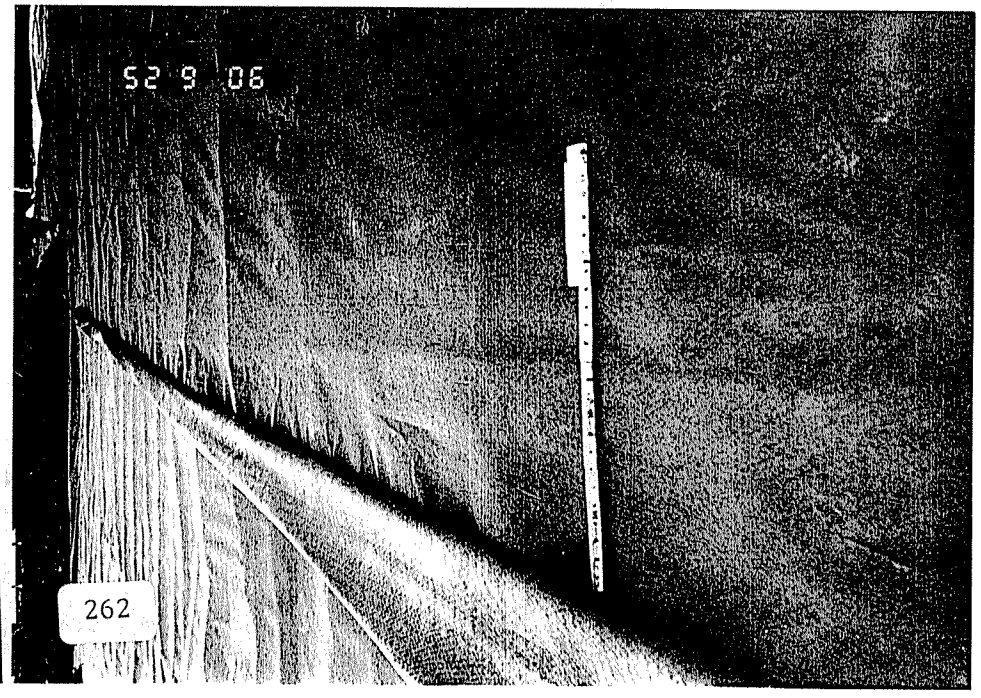

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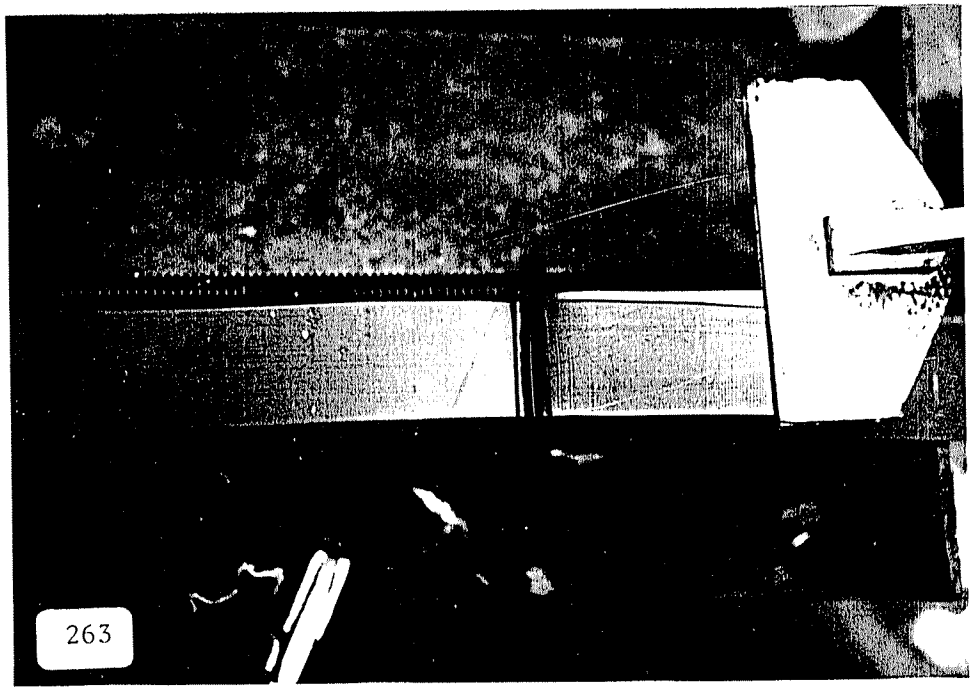
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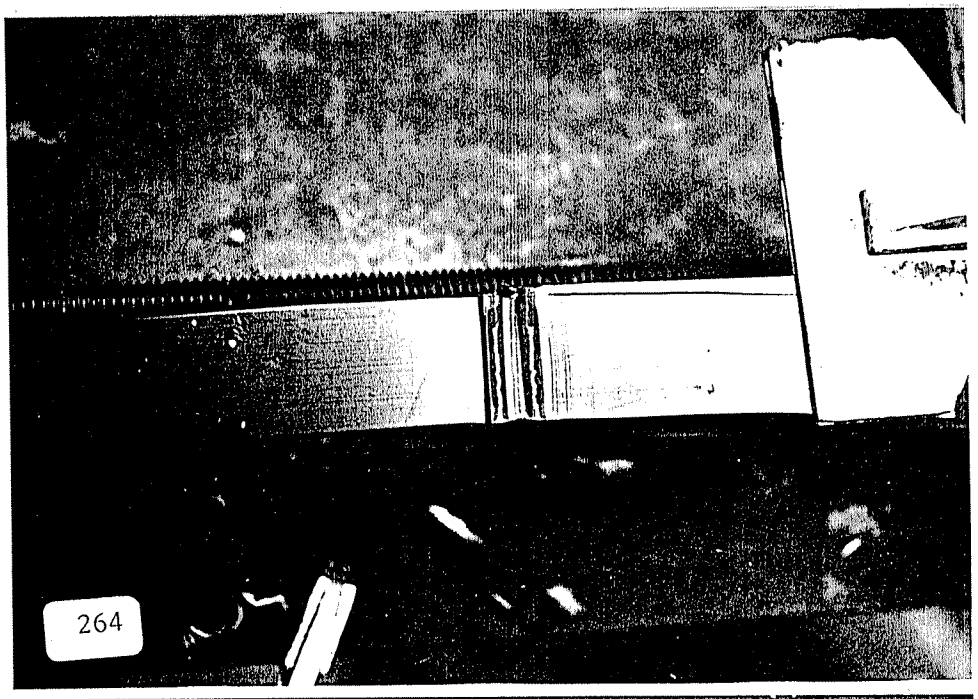
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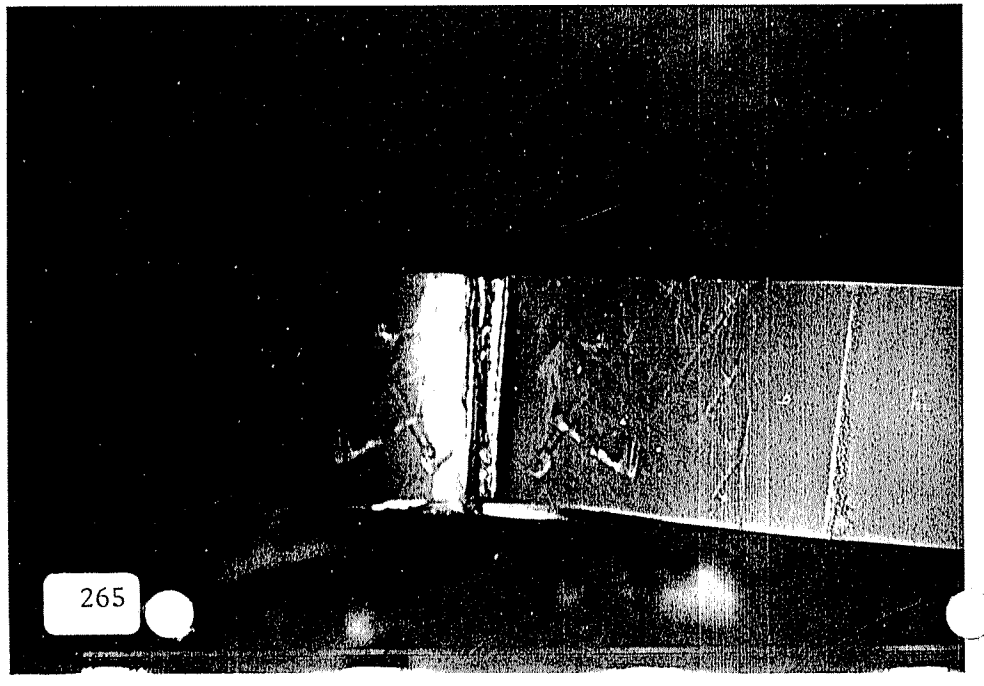
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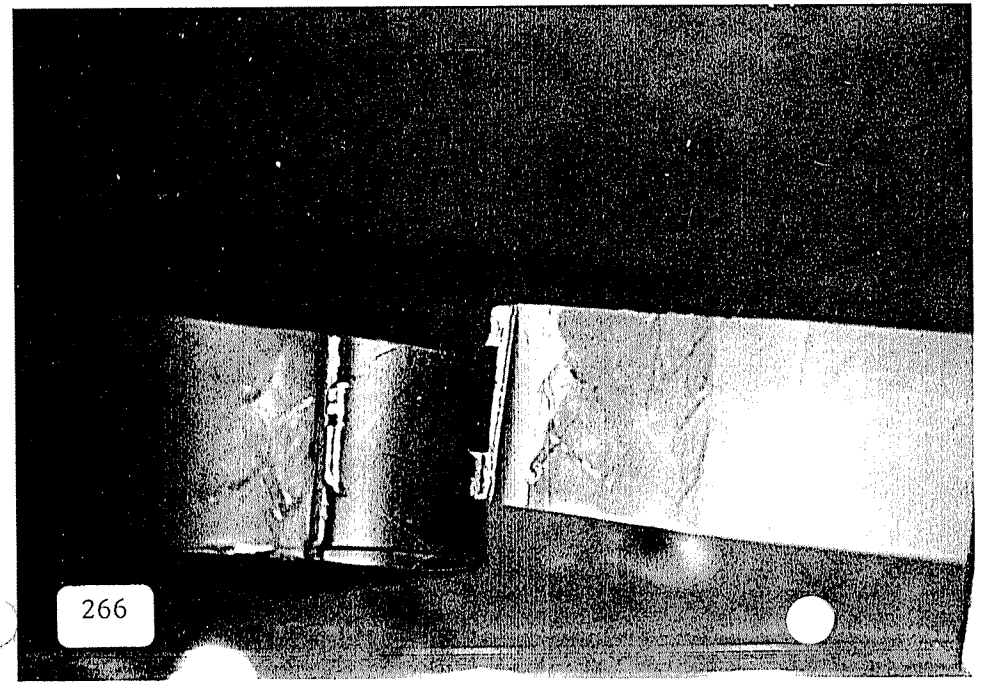
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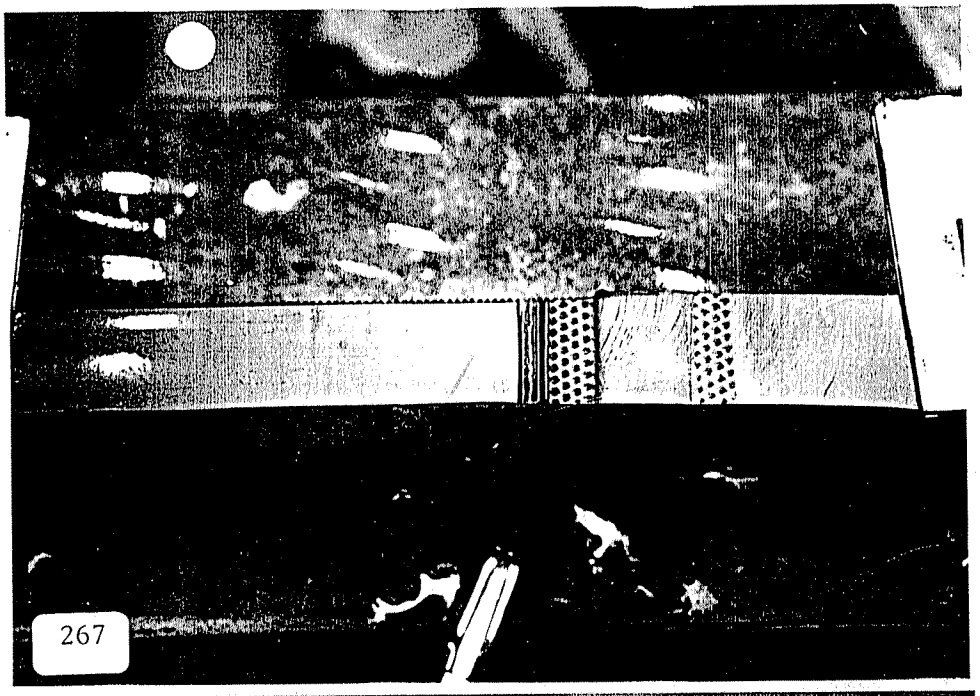
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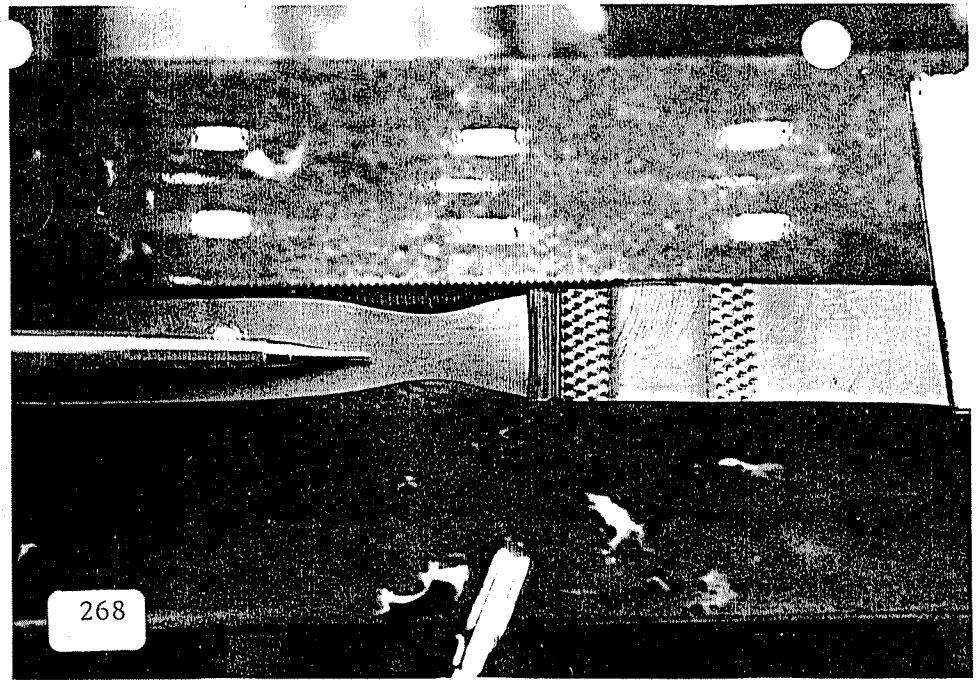
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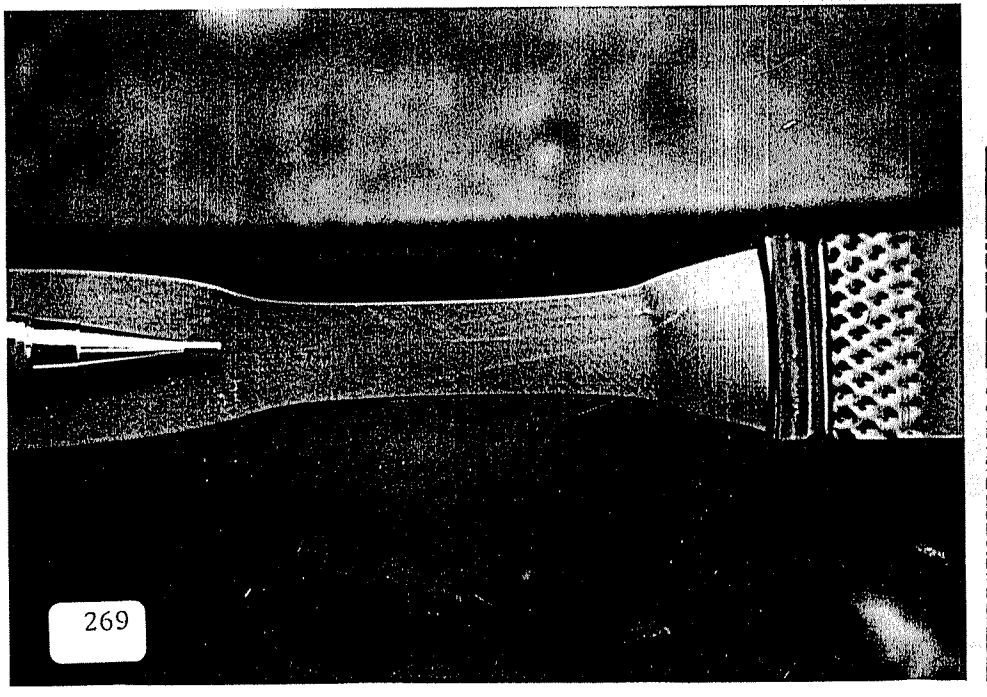
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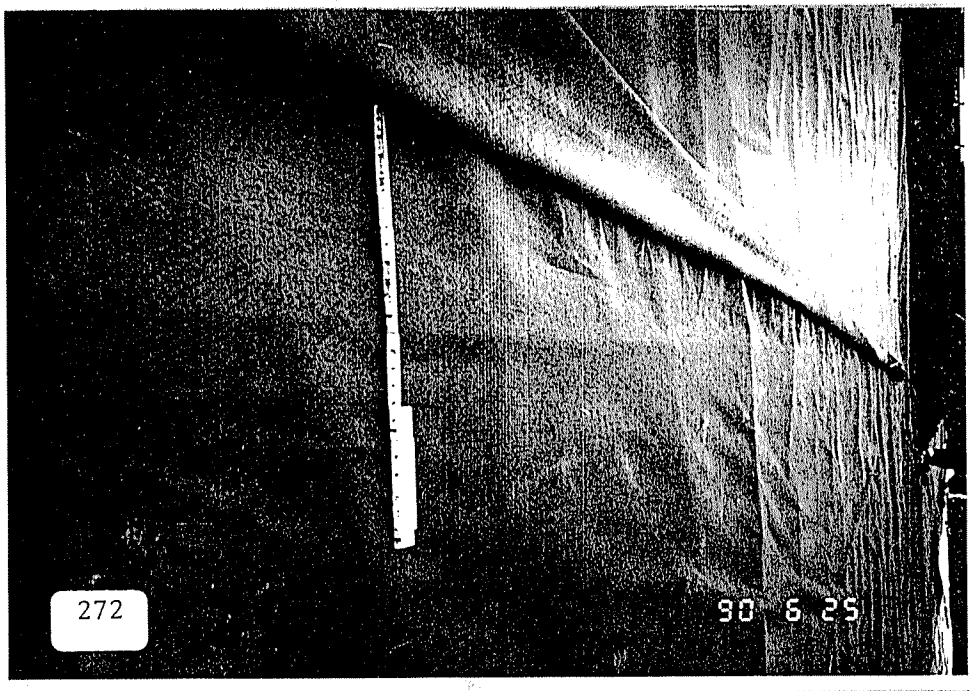
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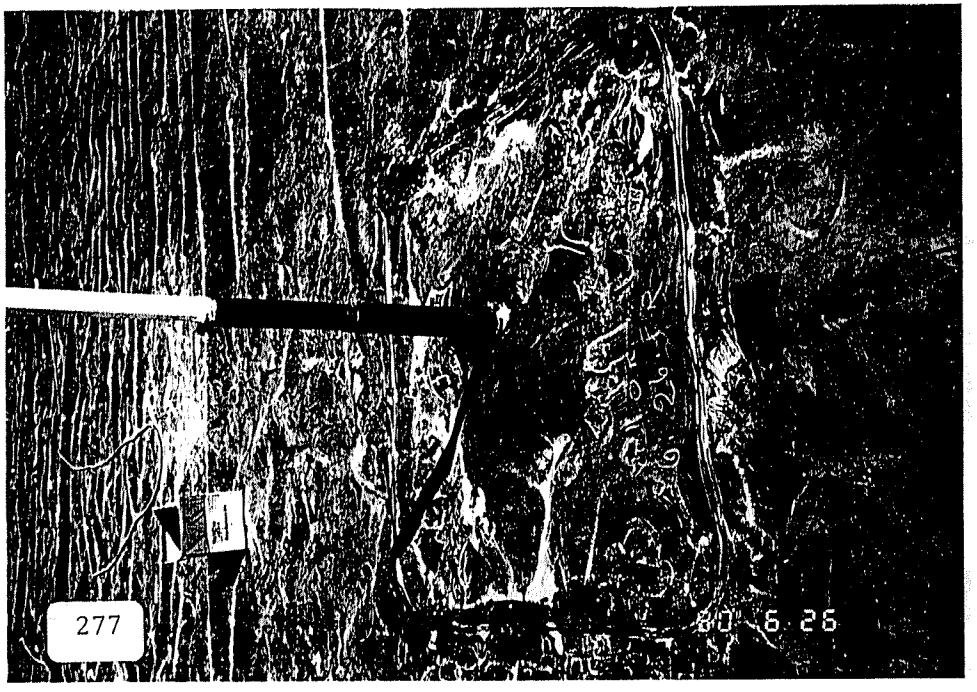
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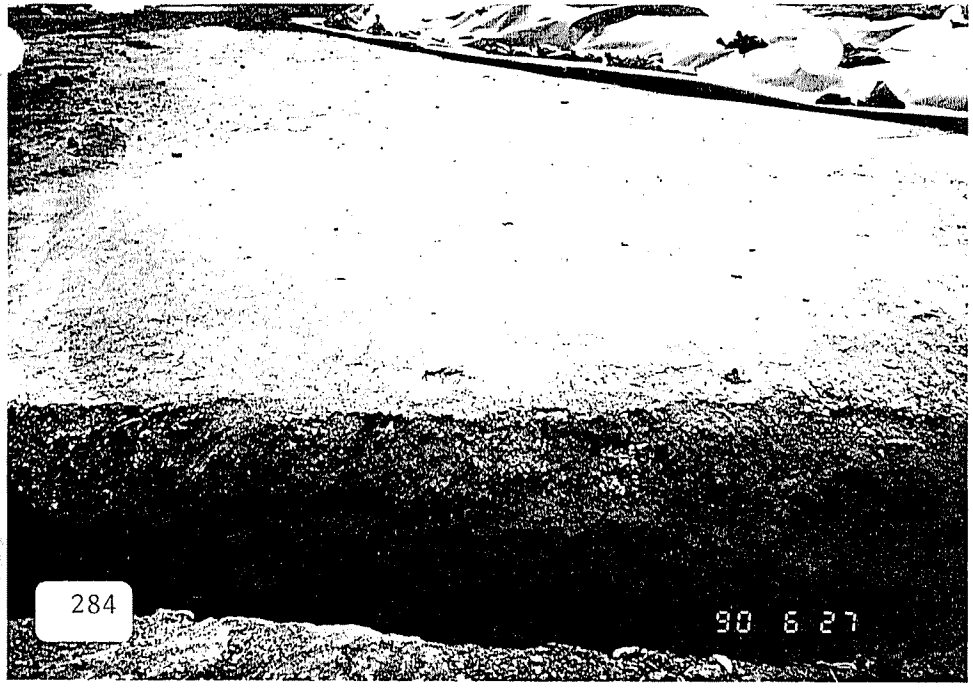
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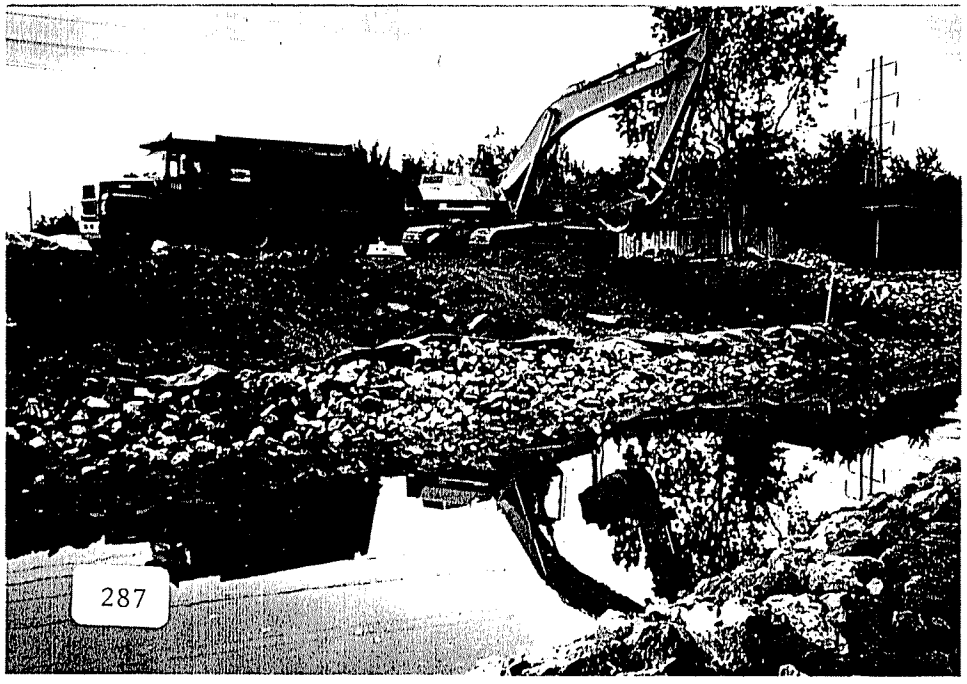
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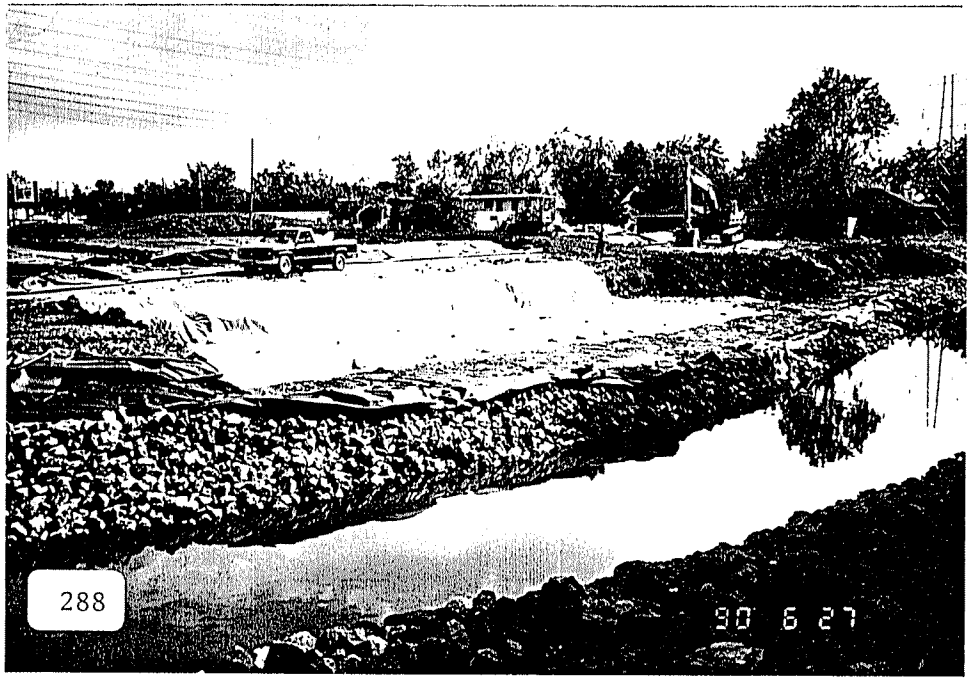
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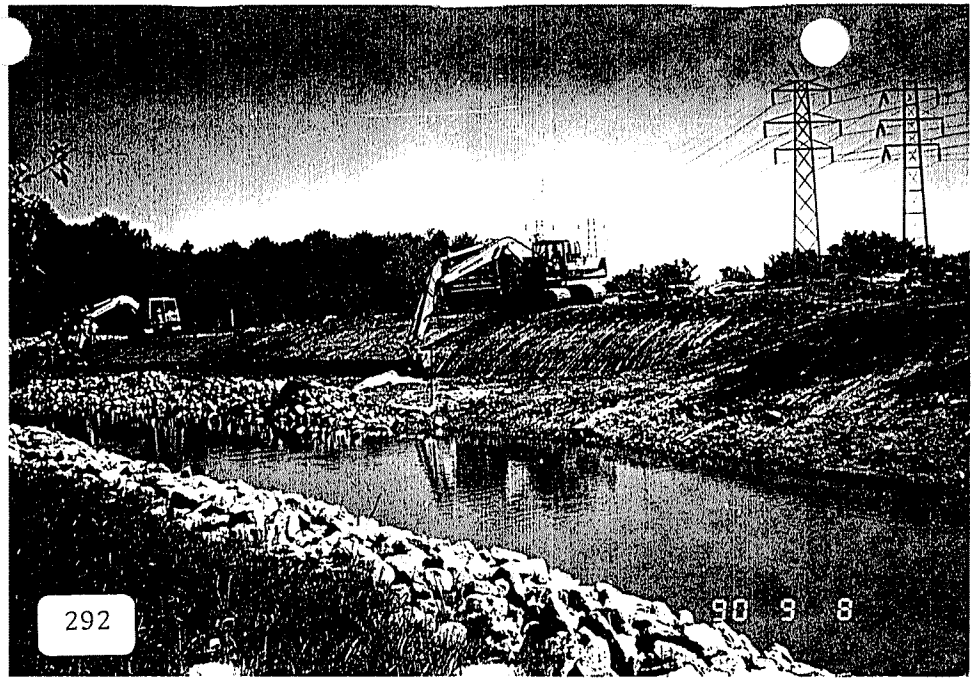
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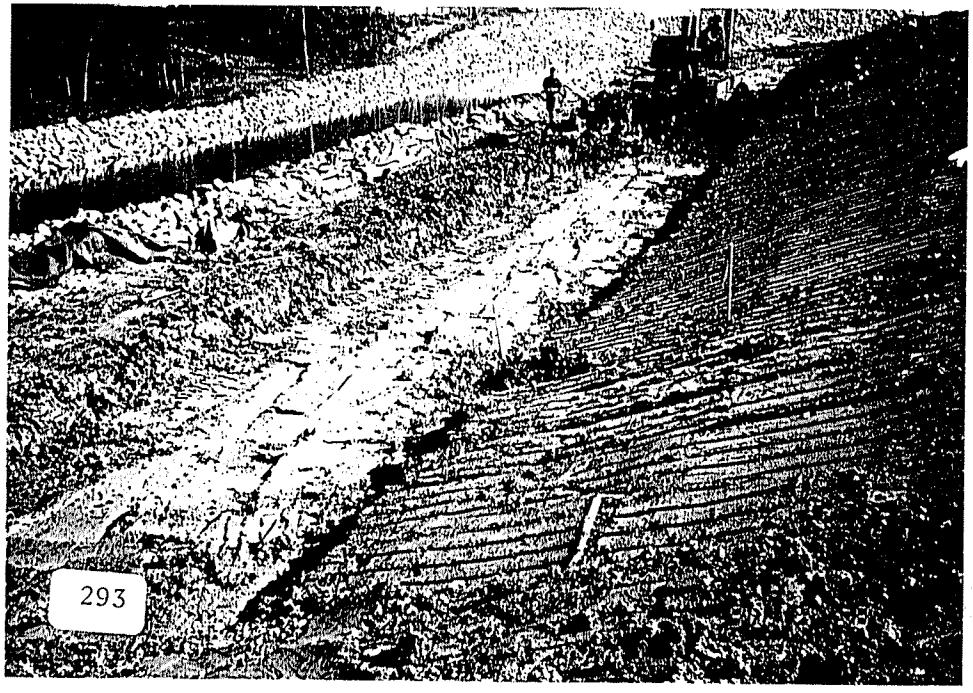
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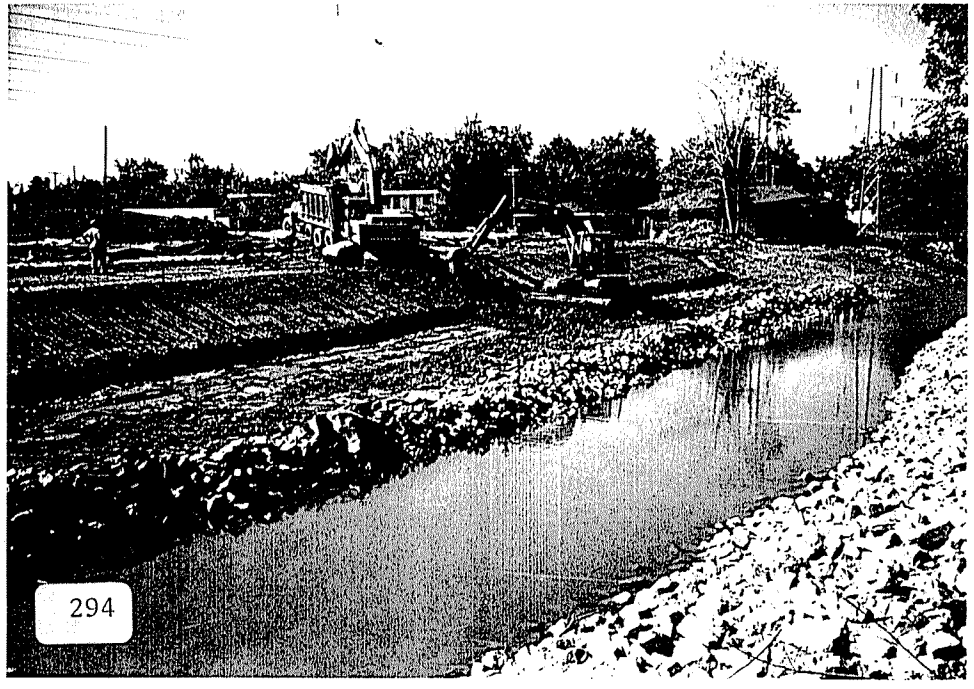
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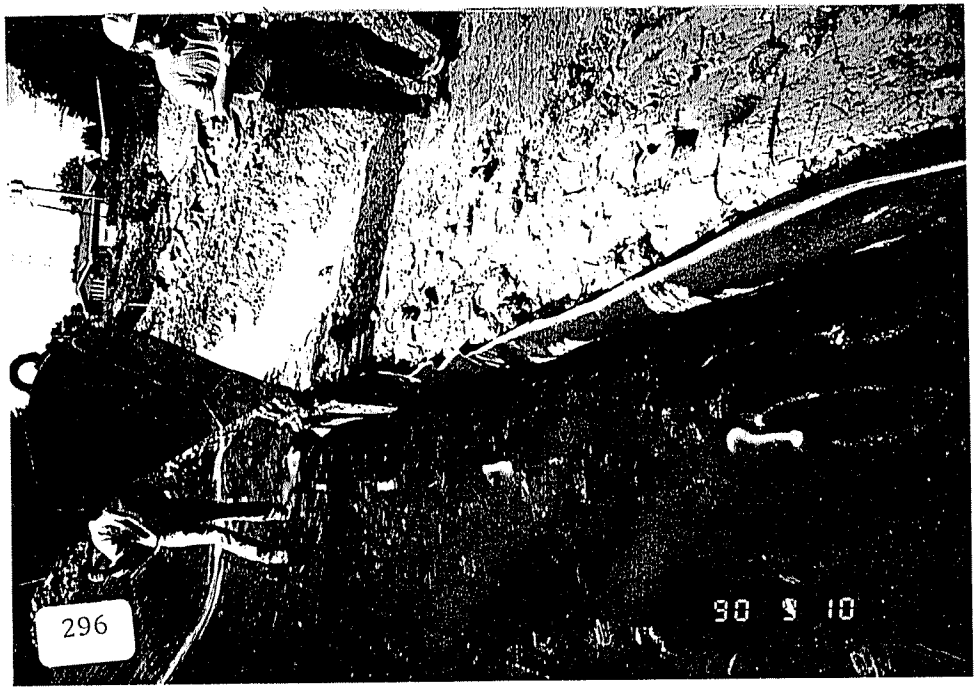
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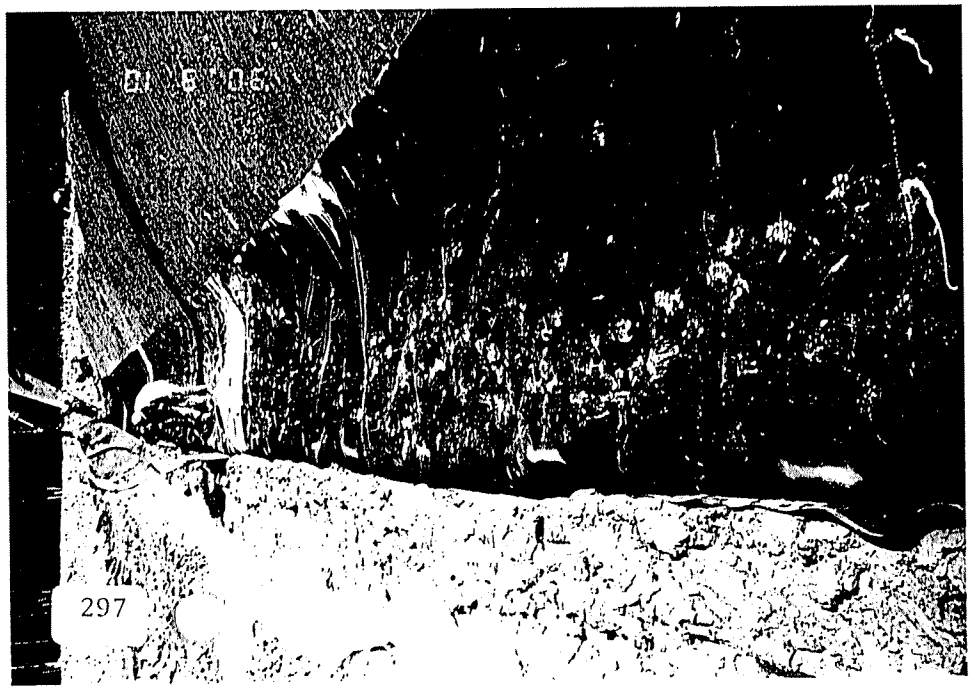
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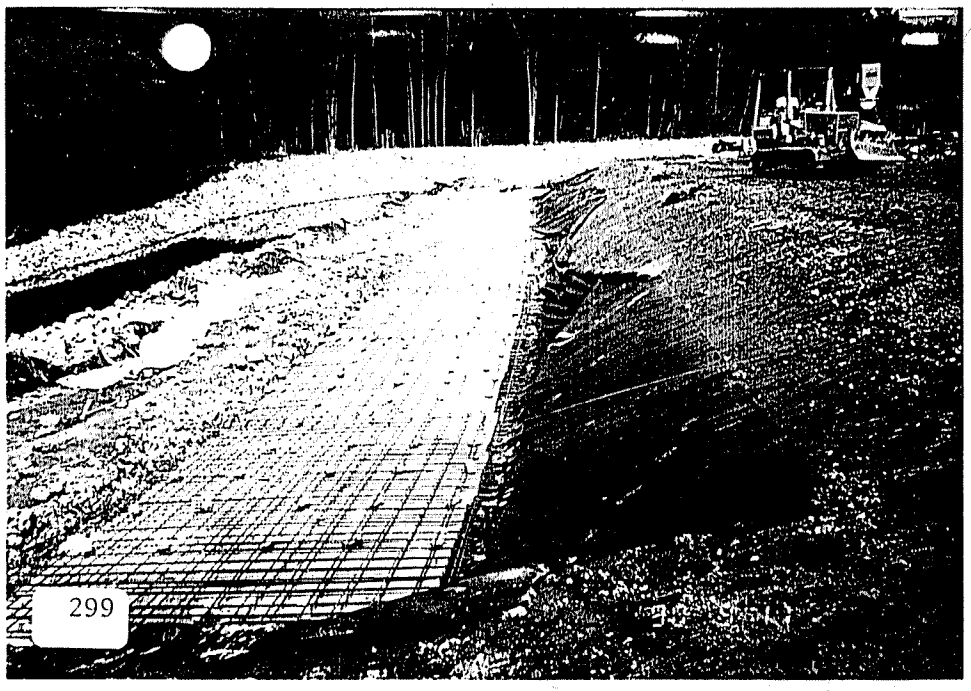
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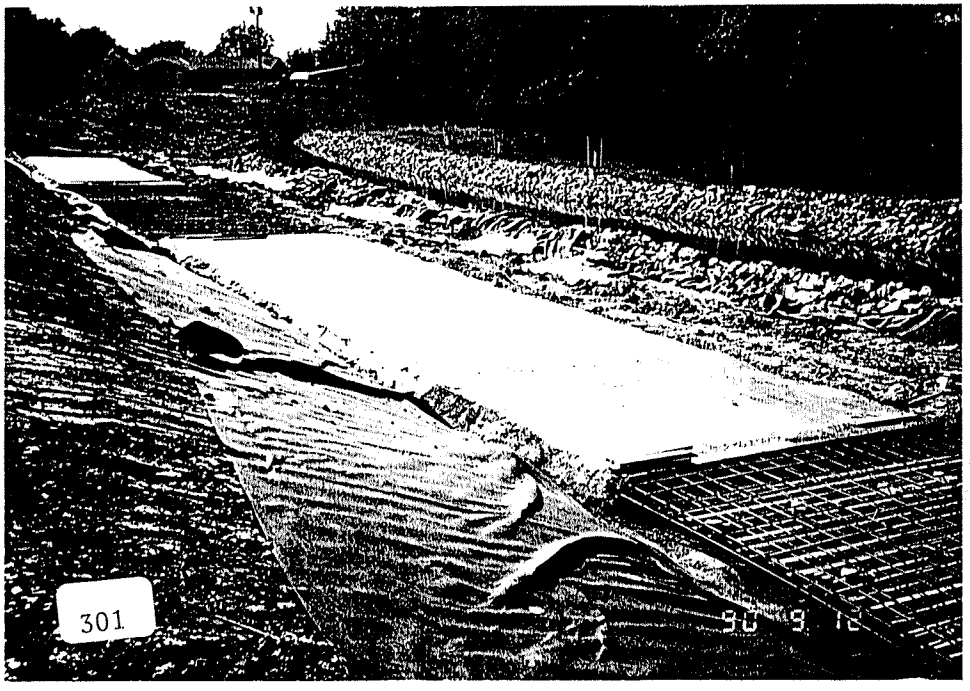
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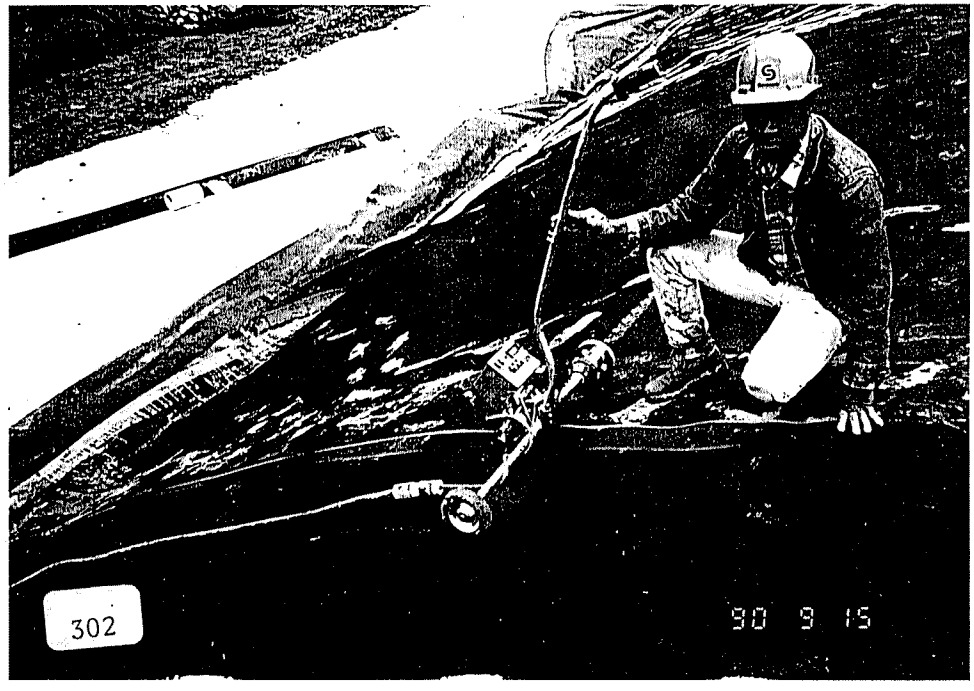
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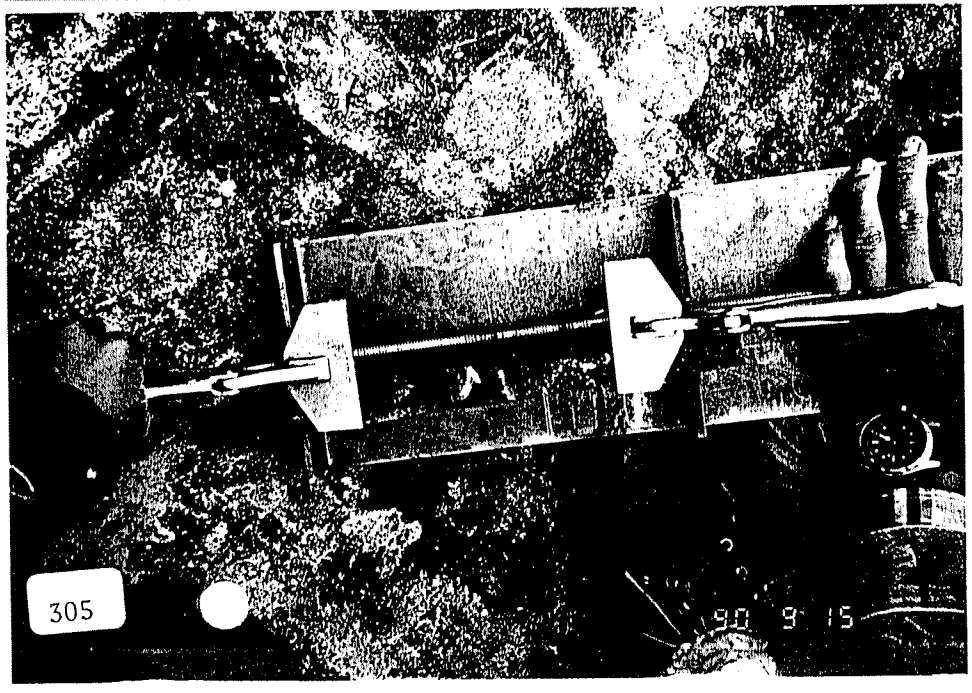
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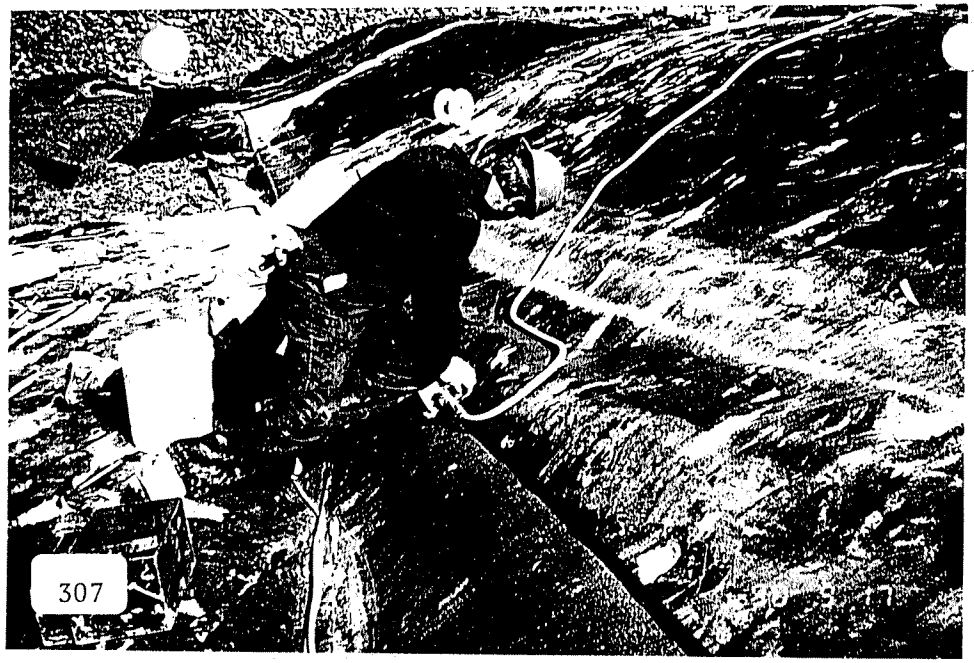
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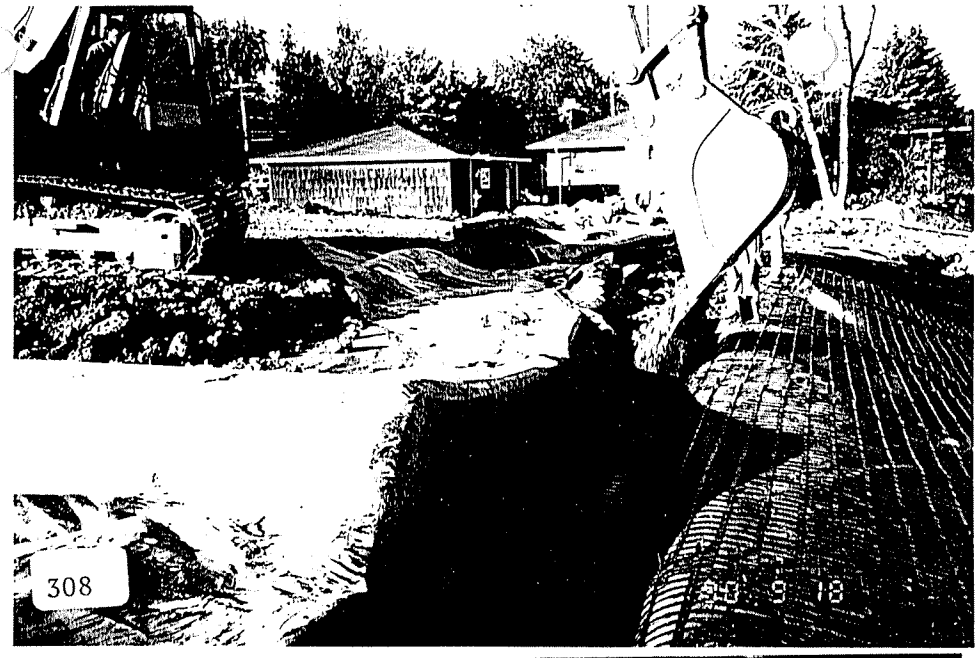
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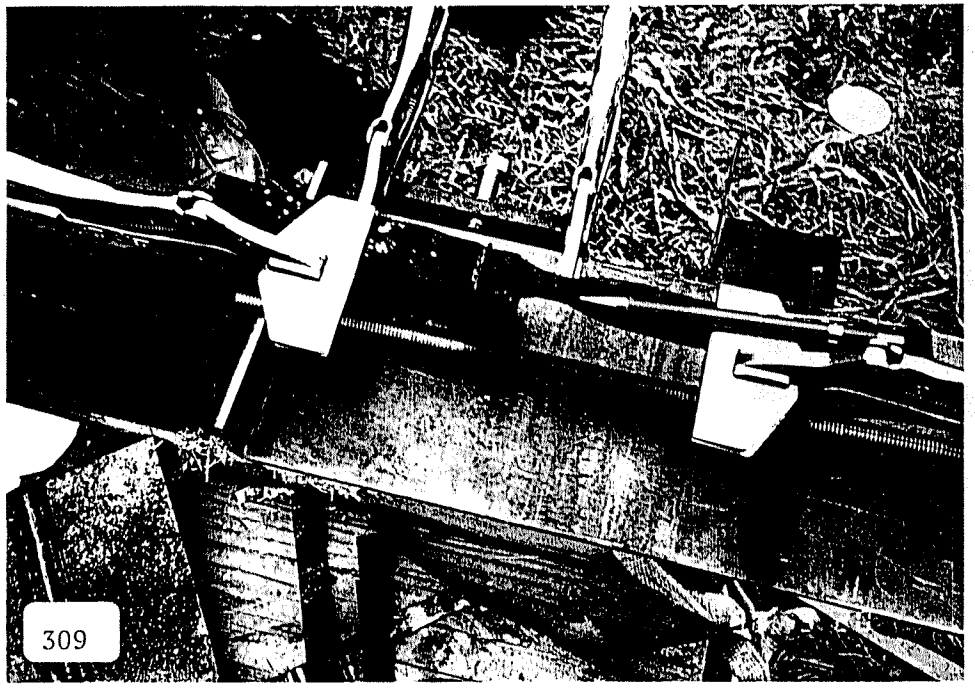
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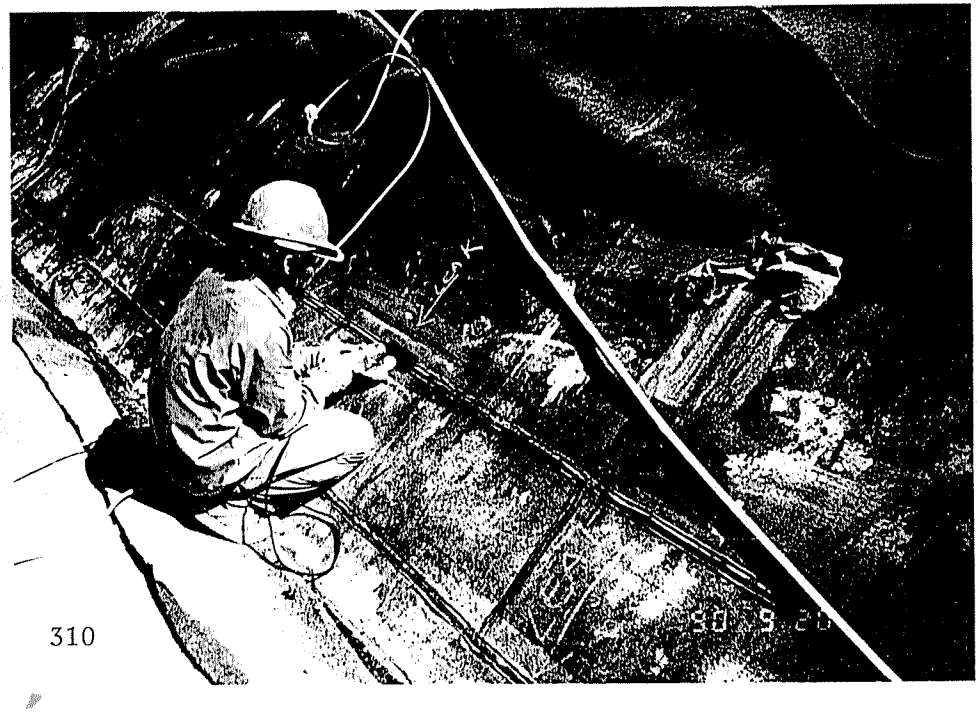
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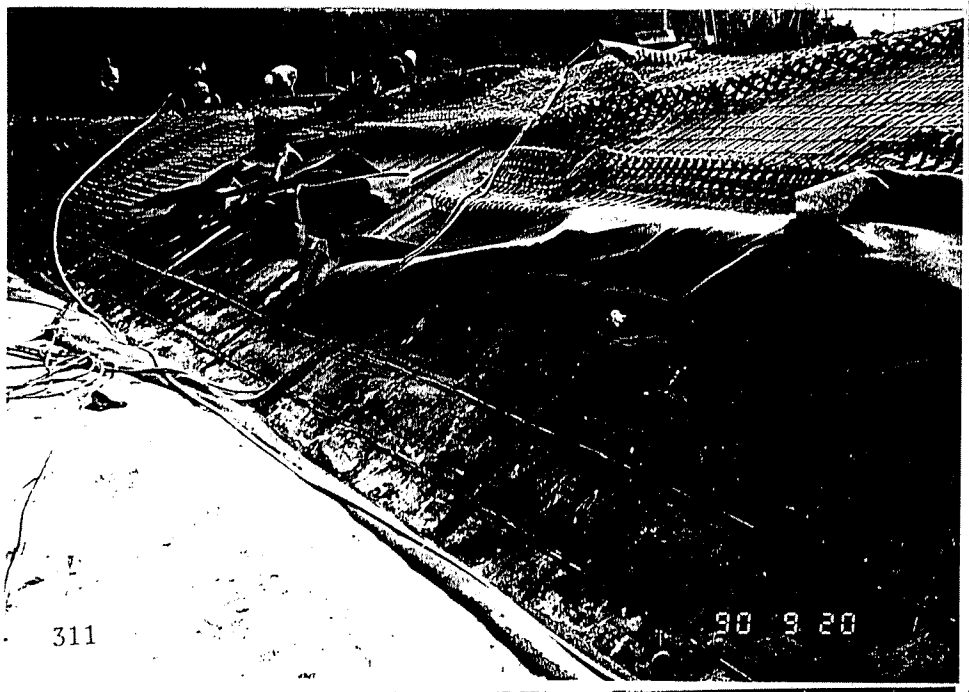
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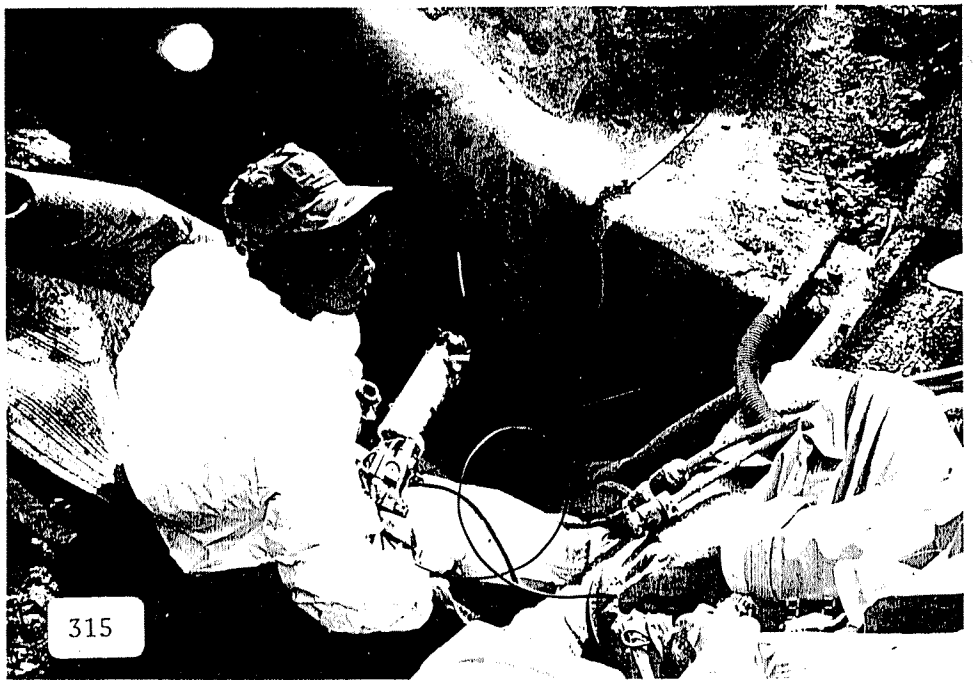
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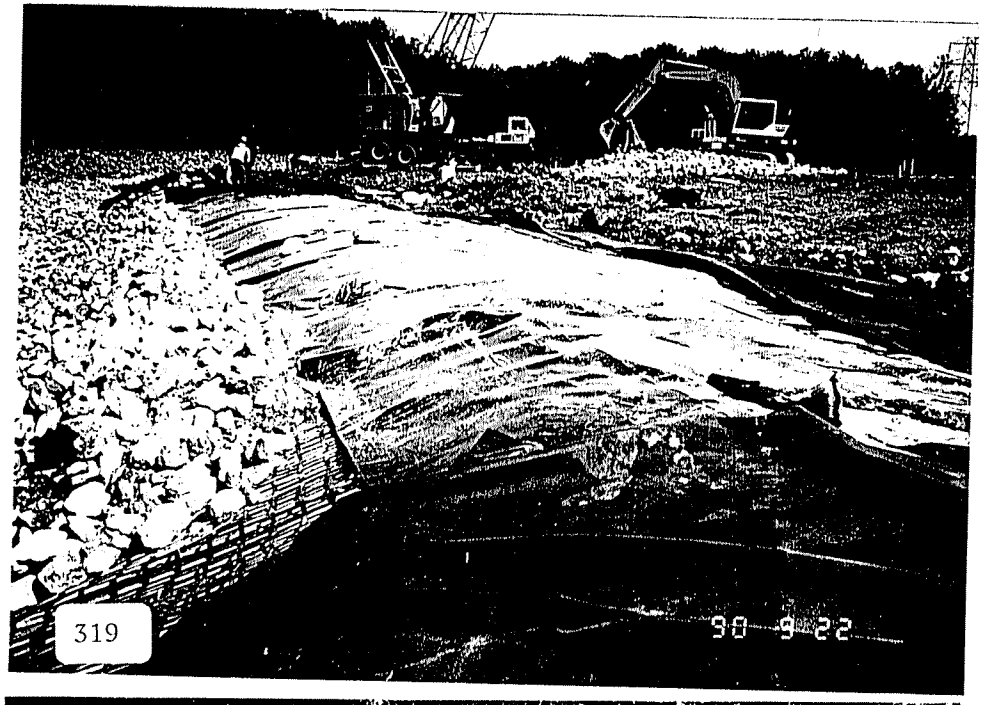
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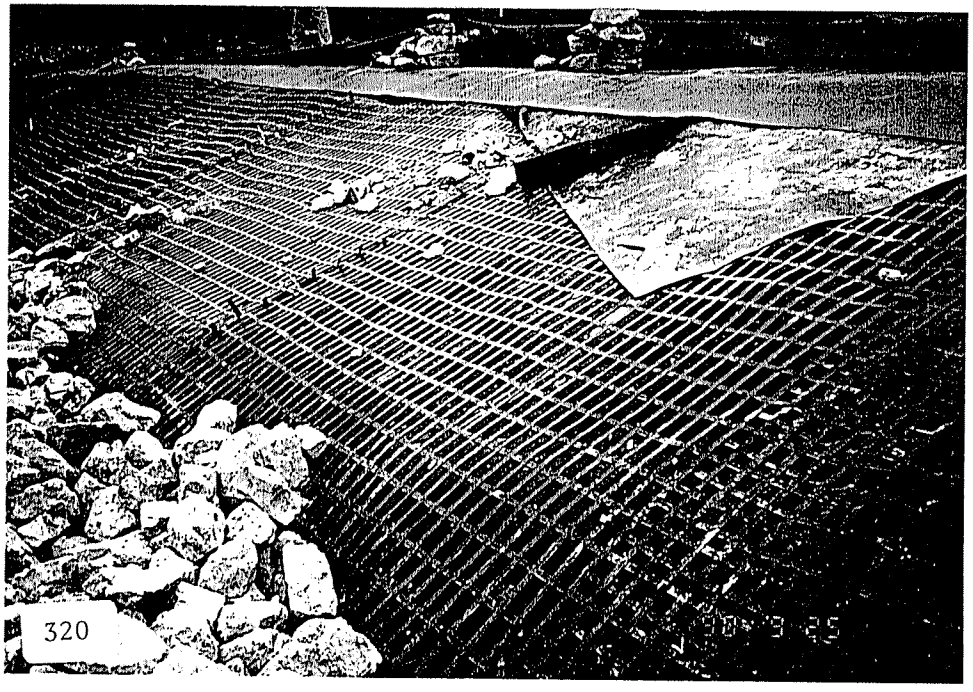
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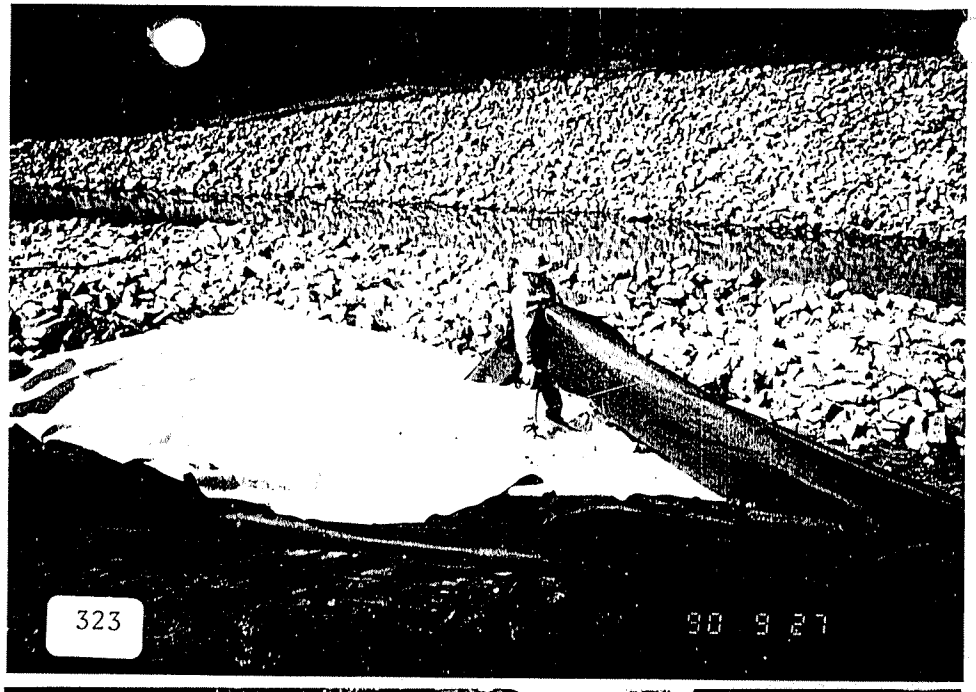
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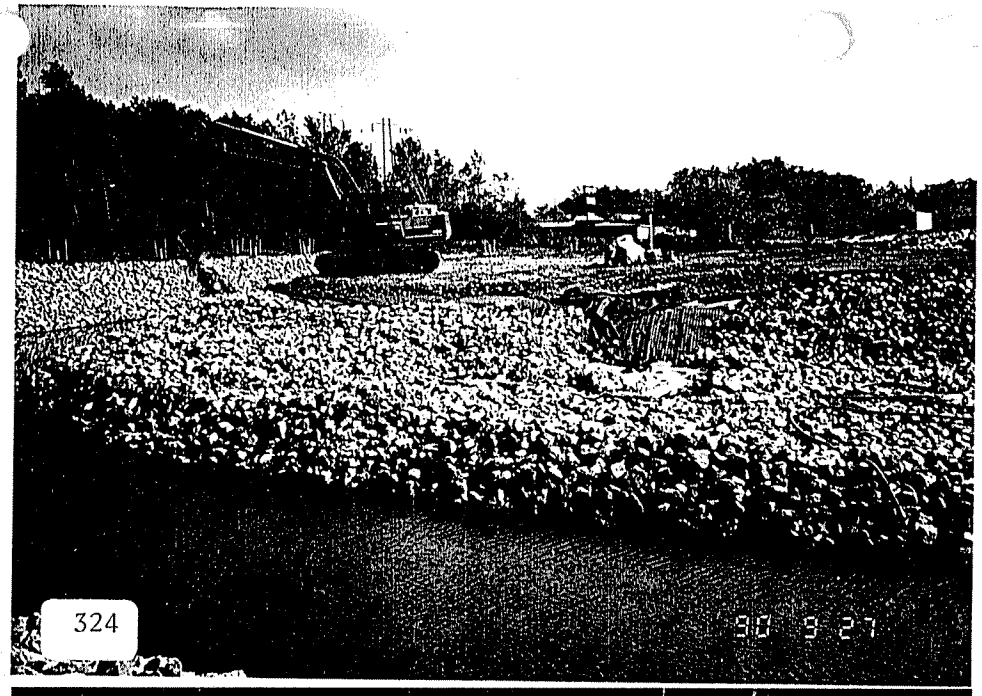
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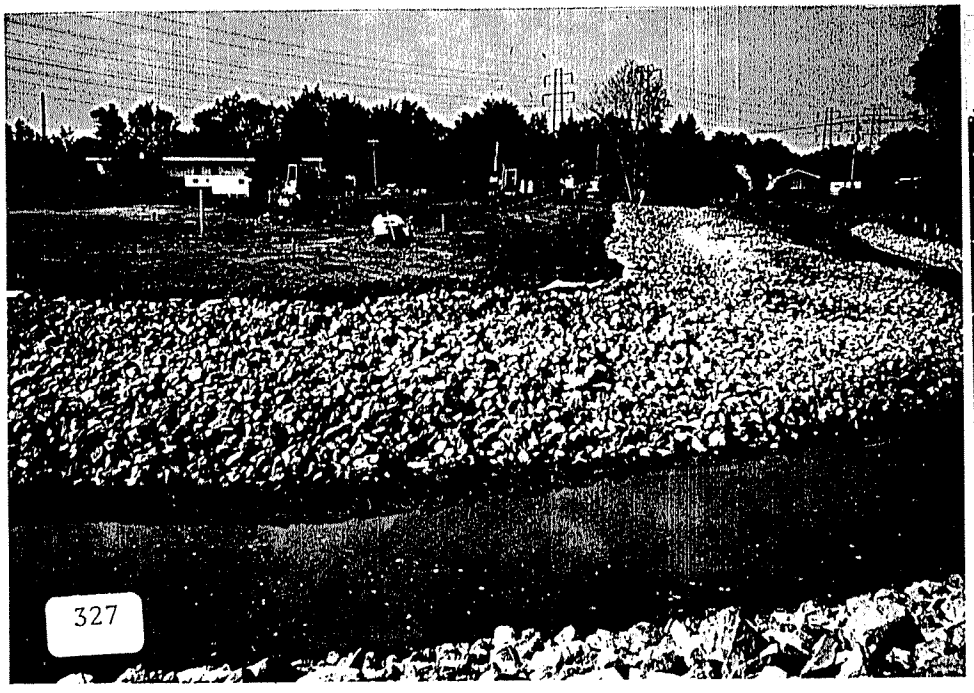
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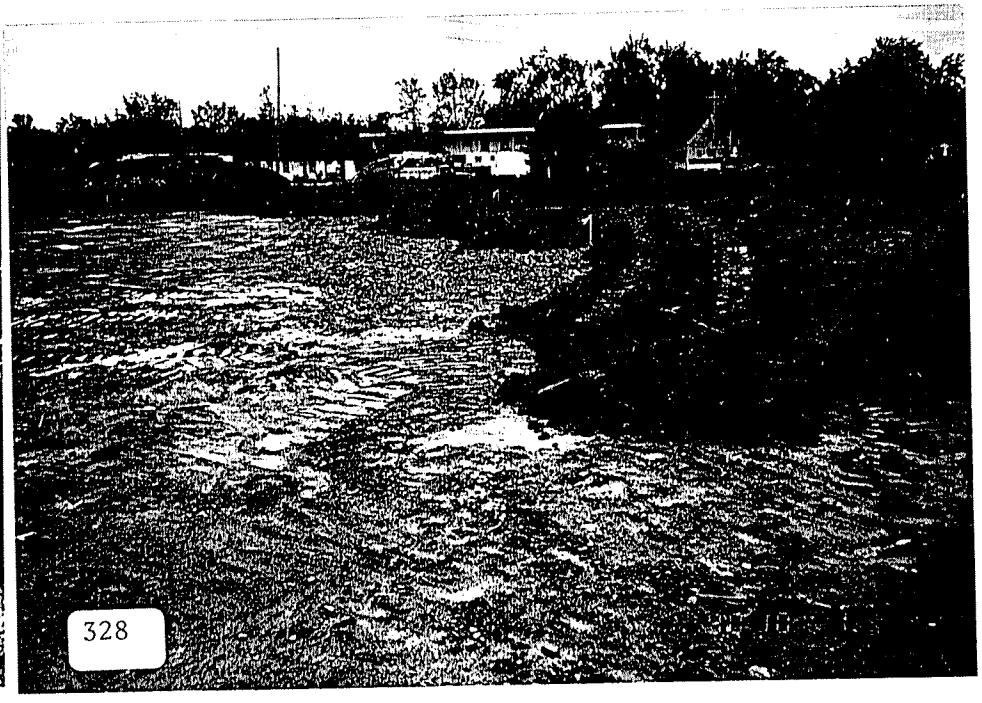
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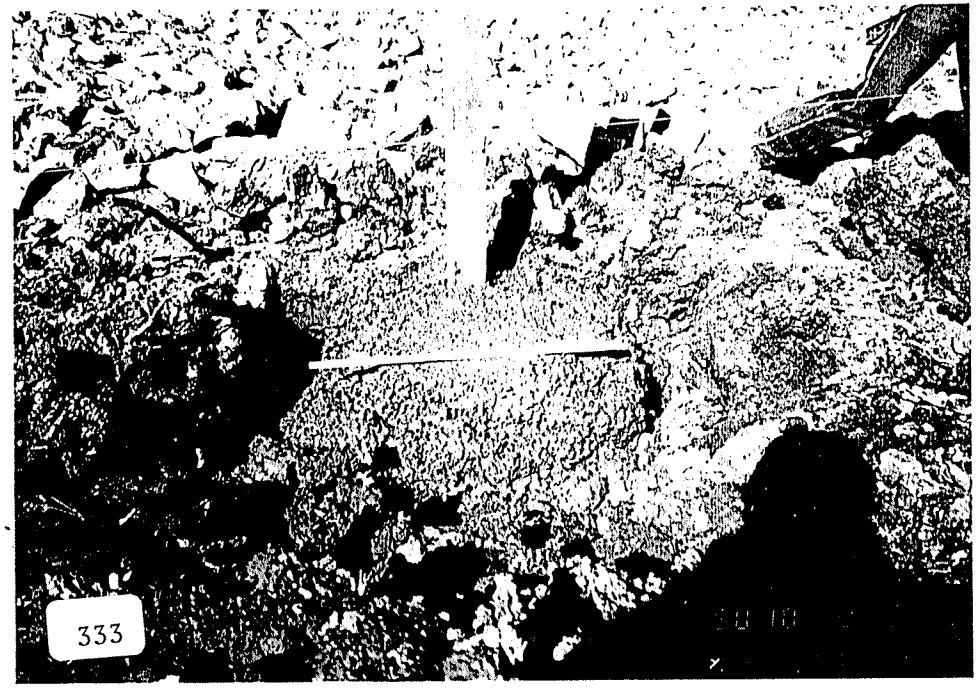
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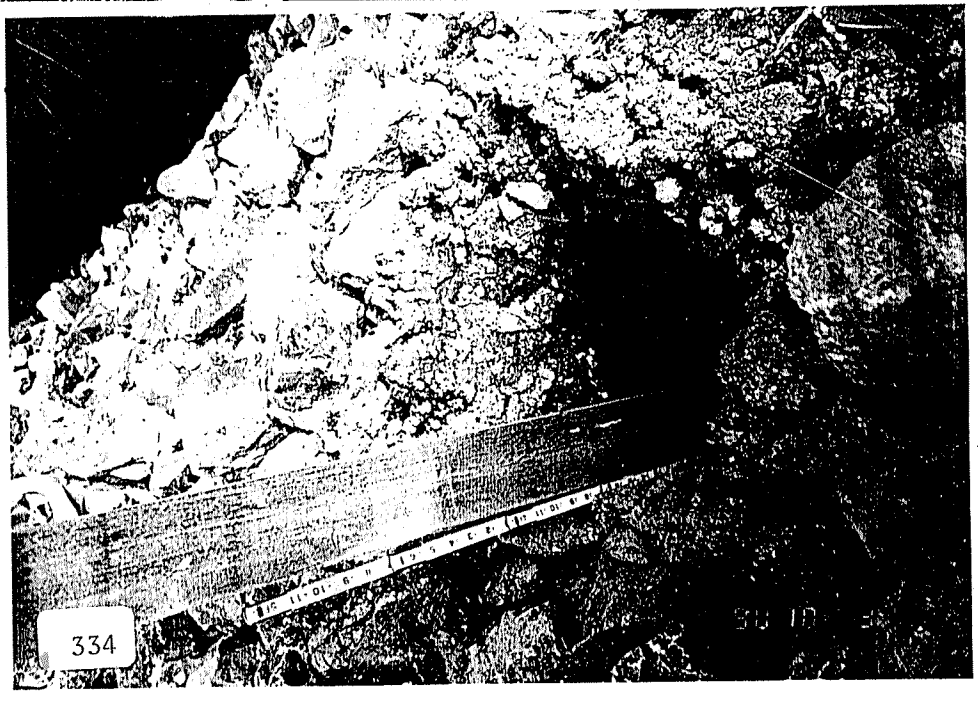
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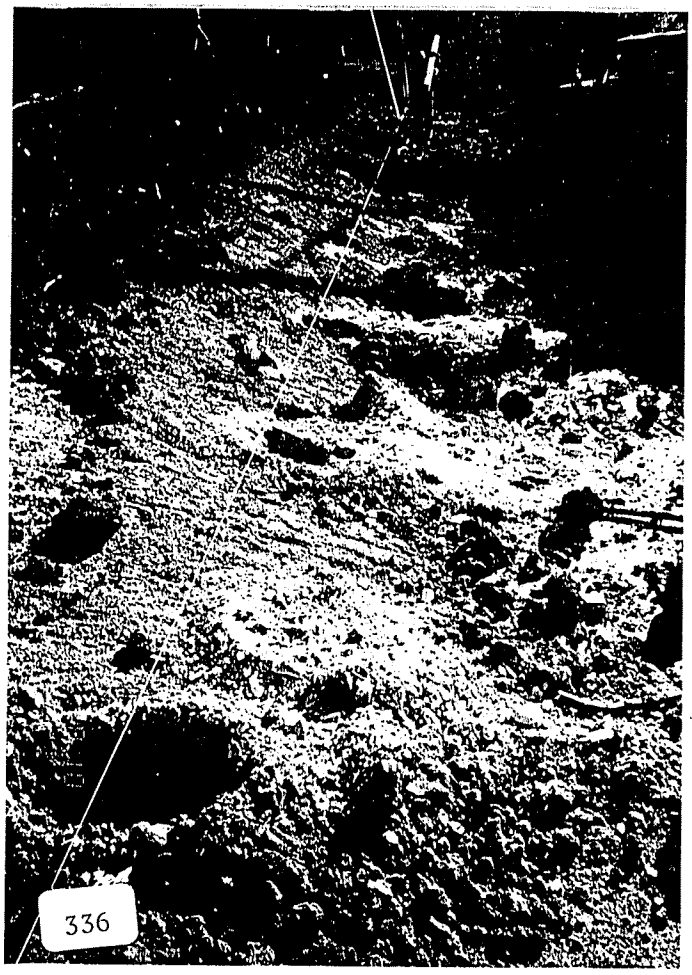
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