

Torres Rojas, Genara

FOI#14317

From: smaher@envalliance.com
Sent: Tuesday, October 01, 2013 2:35 PM
To: Duffy, Daniel
Cc: Torres Rojas, Genara; Van Duyne, Sheree; Qureshi, Ann
Subject: Freedom of Information Online Request Form

Information:

First Name: Sharon
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Email Address: smaher@envalliance.com
Phone: 732-537-0250
Required copies of the records: Yes

List of specific record(s):

Environmental reports pertaining to Bayonne Little League Ballfield located beneath Bayonne Bridge. 122992
Letter of Notification to NJDEP 3593 Remedial Action Workplan NJDEP RAW Approval Letter 33193
Remedial Action Report dated 121494 Note - NJDEP lost this file and I cannot get it from them.

THE PORT AUTHORITY OF NY & NJ

FOI Administrator

December 17, 2013

Ms. Sharon Maher
Environmental Alliance
121 Union Avenue
Middlesex, NJ 08846

Re: Freedom of Information Reference No. 14317

Dear Ms. Maher:

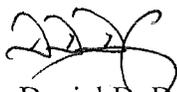
This is in response to your October 1, 2013 request, which has been processed under the Port Authority's Freedom of Information Code (the "Code") for copies of environmental reports pertaining to Bayonne Little League Ballfield located beneath Bayonne Bridge December 29, 1992, Letter of Notification to NJDEP March 5, 1993, Remedial Action Workplan NJDEP RAW Approval Letter March 31, 1993, and the Remedial Action Report dated December 12, 1994.

Material responsive to your request for the Remedial Action Report dated December 12, 1994, and available under the Code can be found on the Port Authority's website at <http://www.panynj.gov/corporate-information/foi/14317-O.pdf>. Paper copies of the available records are available upon request.

We have searched our files and have found no records responsive to the remainder of your request. Any records, to the extent that they existed, were most likely destroyed at the Port Authority's offices at the World Trade Center on September 11, 2001.

Please refer to the above FOI reference number in any future correspondence relating to your request.

Very truly yours,



Daniel D. Duffy
FOI Administrator

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New York, NY 10003
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Remedial Action Report

for the

BAYONNE LITTLE LEAGUE BASEBALL FIELDS
Bayonne, New Jersey

December 1994

Prepared for:

Port Authority
of New York and New Jersey
World Trade Center
New York, New York

REMEDIAL ACTION REPORT

for the

BAYONNE LITTLE LEAGUE BASEBALL FIELDS
Bayonne, New Jersey

DECEMBER 1994

Prepared for:

Port Authority
of New York and New Jersey
World Trade Center
New York, New York

Prepared by:

Killam Associates
Consulting Engineers
27 Bleeker Street
Millburn, New Jersey
ETKA # 232902

 Killam

This report was prepared by:

KILLAM ASSOCIATES



Ronald Meloskie
Environmental Scientist

12/2/94
Date



Richard Lovett
Geologist

12/2/94
Date

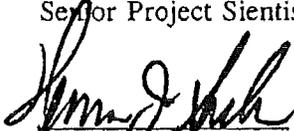
This report was reviewed by:

KILLAM ASSOCIATES



Kevin Harrigthy
Senior Project Scientist

12/2/94
Date



Dennis Suler
Vice President

12/2/94
Date

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1.0 INTRODUCTION

The remediation of lead contaminated soils at two ball fields within the Bayonne Little League Baseball Park has been completed. The purpose of this report is to document the approved Remedial Action performed during this project. Killam Associates (Killam) was retained by the Port Authority of New York and New Jersey (Port Authority) to observe and report upon the remediation of the lead contaminated soil from the two ball fields located adjacent to the Bayonne Bridge approach on the New Jersey side. Killam has been involved in environmental engineering for over 50 years. A brief qualification package of Killam Associates experience in similar projects is provided in Appendix A. The property on which the two fields are located is owned by the Port Authority but is utilized and maintained by the City of Bayonne. The Bayonne Little League Baseball Park is located on the corner of West First Street and J.F. Kennedy Boulevard in Bayonne, New Jersey. A site location map and site plan are provided in Appendix B as Figure 1 and Figure 2, respectively. The remediation of the site was conducted as part of the New Jersey Department of Environmental Protection (NJDEP) voluntary clean-up program. The clean-up of the contaminated soil was performed in compliance with NJDEP Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

The two fields that were remediated consisted of a full playing field (Field 1) and a practice infield (Field 2). Lead levels in the soils ranging from 146 to 1270 parts per million (ppm) were detected along the right foul line of Field 1 and along the base lines and right foul line of Field 2 during the Remedial Investigation (RI) conducted by Port Authority. A Remedial Action Workplan (RAW) for the ball fields was presented to and approved by the NJDEP in March of 1993. The RAW was amended and approved by the NJDEP in May 1994. The initial RAW proposed the excavation of the contaminated soil and was implemented in April 1993 (Field 1) and from December, 1993 through May, 1994 (Field 2). The completion of the remediation in Field 2 was delayed due to adverse weather conditions early in 1994. The excavation phase of the project occurred over a cumulative period of 9 days. The remedial work was performed by

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Staff Engineer Maintenance and Construction (SEMAC), the construction division of Port Authority. The amended plan which recommend the capping of Field 2 with clean material was proposed after industrial fill was discovered during the excavation of the lead contaminated soil. The capping of the field was performed by Rossini Contracting Corporation of Mount Vernon, New York. The restoration activities occurred over a cumulative 15 day period. Third party observation of the remedial actions was performed by personnel from Killam. Killam was present for a cumulative total of 6 days during the excavation remedial phase of these activities which included the initiation of the excavation work, periodically during the continuing phases of excavation and present at the completion of the excavation of the soils. Killam was present partially or entirely every day during the restoration phase of the project. All post-excavation soil sampling was performed by the Materials Division of Port Authority and was submitted to Princeton Testing Laboratory for analysis. These efforts are discussed in greater detail in the following sections of this report.

2.0 SITE HISTORY

The Bayonne Bridge was first opened in 1931 and connects Bayonne, New Jersey and Port Richmond, Staten Island. The land under and adjacent to the bridge and the approach is owned by the Port Authority. The portion of this property which was remediated is currently used by the City of Bayonne for Little League Baseball fields and is currently known as the Bayonne Little League Baseball Park. According to a representative from the City of Bayonne Parks Department, the fields were constructed in 1990. Review of Sanborn Fire Insurance Maps (Sanborn Maps) from 1950, 1979 and 1988 of the subject site, indicated that site was a vacant lot. In response to a growing concern over the former use of lead based paint on the Port Authority bridges, the Port Authority began a voluntary program of testing soils in the areas adjacent to their bridges. The soil sampling conducted at the two baseball fields indicated that soils within certain areas were contaminated with lead.

3.0 PHYSICAL SETTING

The subject site is located on the eastern side of the approach to the Bayonne Bridge at the southernmost limits of the City of Bayonne, New Jersey. The site can be accessed via First Street and J.F. Kennedy Boulevard in Bayonne. The property encompasses approximately 0.5 acres of land and includes the two baseball fields and a 3,000 square foot asphalt paved section with spectator seating located between the two fields. The entire section is enclosed by a chain link fence. Figure 1 is a composite of portions of the U.S.G.S. Jersey City and Elizabeth, NJ-NY 7.5 minute topographic quadrangles showing the site's location (refer to Appendix B).

3.1 Land Use

As previously mentioned, the site is utilized by the Bayonne Little League. Prior to use as baseball fields the area was an undeveloped grassy area. Field 1 was constructed over the existing soils by first placing a filter fabric membrane, then 6 inches of top soil. The field was finished with grass sod and a clay-soil mixture along the base paths. Field 2 was constructed utilizing only the existing soils. A filter fabric membrane and additional fill, as used in the construction of Field 1, was not utilized.

3.2 Surrounding Land Use

The site is bordered to the northeast by First Street beyond which lies a residential area. To the southeast, the site is bordered by a parking lot and other Little League fields. To the southwest is located a park and playground and further to the southwest is the Kill Van Kull waterway. The property is bordered on the northwest immediately by the elevated approach of the Bayonne Bridge. Further to the northwest is the General Cable Corporation Assoc., a manufacturer of rubber insulated wire cables, which has been listed on the Sanborn Maps from 1942 through 1991. Further northwest lies Newark Bay.

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3.3 Soils

The soils in the area of the site are classified as Urban Land. Urban Land is an area which has been extensively developed and is used for residential or commercial purposes. The construction of roads, buildings, residences and other structures have either obscured or altered the original soils making them difficult, if not impossible, to identify.

3.4 Geology

The subject area of Bayonne is situated in the Triassic Lowland subdivision of the Piedmont physiographic province which comprises the eastern half of northern New Jersey. This province is characterized by northeast-southwest trending ridges and valleys with varying depths to bedrock usually greater than 10 feet and often greater than 40 feet. The bedrock in this area consists primarily of sandstones, conglomerates and diabases. Resting unconformably on the bedrock surface are unconsolidated deposits of stratified glacial Pleistocene deposits.

Generally, the geology of the site consists of glacial drift material consisting of a heterogeneous mix of soil and rock fragments ranging in particle size from clays to gravels. These soils were deposited by a meltwater stream or settled from suspension in a quiet body of water adjoining a glacier. The major constituent of the drift deposits in this area is sandstone particles which generally give the soil a reddish tone.

3.5 Hydrogeology

No ground water investigation was performed and therefore no direct information as to the ground water flow direction is available. However, two surface bodies of water are adjacent to the site. The Kill Van Kull is located to the south and the Newark Bay is located to the west. Taking this into account along with the regional topography, the flow direction of ground water would be expected toward the south/southwest to the Kill Van Kull and the Newark Bay.

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3.6 Topography and Drainage

The site slopes slightly from the northern border (First Street) to the south/southwest border (Kill Van Kull waterway). Drainage from the site is expected to flow towards the Kill Van Kull waterway. A review of the National Wetlands Inventory Map indicates that the area approximately 200 feet to the south/southeast is a documented wetlands area (E2FL- Estuarine, Intertidal, Flat).

3.7 Surface Water Bodies

Local surface water bodies near the site include Kill Van Cull waterway which lies approximately 200 feet to the south and Newark Bay which lies approximately 1500 feet to the west of the site. The Kill Van Kull waterway connects Newark Bay to Upper New York Bay. All of these are tidally influenced water bodies.

4.0 SITE INVESTIGATION

4.1 Background

In late summer 1992, as the result of reports of contamination by sandblast grit containing lead paint chips at New York City bridge structures, the Port Authority initiated its inspection of bridges (i.e. Bayonne Bridge, Goethals Bridge, Outerbridge Crossing, and the George Washington Bridge) for the presence of sandblast grit potentially contaminated by lead base paint. These grit residues result from repeated and periodic paint removal operations associated with normal bridge maintenance. The Port Authority assigned crews to clean-up (by vacuuming) the sandblast grit. Following the removal of the grit, the Port Authority initiated preliminary soil sampling for possible lead contamination at locations adjacent to Port Authority property or on Port Authority property utilized by the general public. The Bayonne Little League Fields were identified as a potential area of concern.

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Initial samples (BBNJ-1 through BBNJ-3, refer to Table 1 and Figure 3A of Appendix C) obtained from the ball fields indicated lead in soils from 146 to 1270 parts per million (ppm). Based upon these results and preliminary discussions with the NJDEP, additional sampling was performed to delineate areas with elevated lead levels and to determine background levels of lead in this area.

4.2 Preliminary Assessment

Pursuant to N.J.A.C. 7:26E-3.3 a site investigation was conducted to determine the extent of lead contamination at the subject site. On December 29, 1992 the Port Authority presented the NJDEP with a "Letter of Notification" that the Port Authority was undertaking a program to determine lead levels adjacent to the Bayonne Bridge. Soil sampling was conducted in accordance with N.J.A.C. 7:26E-3.4 and 3.5. Soil samples (BBNJ 1A through 3D, refer to Table 1) were collected at random locations within the ball field areas. Soils were sampled in accordance with the NJDEP "Field Sampling Procedures Manual". Additionally, "Background" soil samples (BBBG-1A through BBBG-10B, refer to Table 2 and Figure 3A of Appendix C) were also obtained along the southeastern edge of Field 1. Summary tables provided in Appendix C display results of soil samples.

Sampling of Field 1 indicated that elevated lead levels were located along the right field foul line in a strip approximately 10' by 40'. Sampling of Field 2 indicated that elevated lead levels were located in the base paths, the pitcher's mound, and along the right foul line of the field. Background samples indicated that the lead concentrations in the top 3 " of soil averaged 590 ppm and the average for the 6" to 9" depth averaged 375.6 ppm. The overall average of the top 12" of soil was found to be 482.8 ppm. Sample results for both fields are included in Tables 1 through 4 of Appendix C. A sample location map is included as Figure 3 of Appendix C (analytical results are shown in Figures 3A through 3D).

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All soil samples were analyzed for total lead by an EPA certified laboratory, Princeton Testing Inc. utilizing the EPA approved method SW-846 6010. All results are reported as mg/kg, dry weight (1 mg/kg = 1 ppm).

4.3 Planned Remedial Action

On March 5, 1993 the Port Authority submitted to the NJDEP a Remedial Action Workplan (RAW) for the two baseball fields. The RAW proposed to remediate the top 12" of soils on the baseball fields to less than (<) 500 ppm (based upon the average of the background samples) by excavating and removing the contaminated soils and restoring the areas with clean soil and new sod. The RAW was approved with conditions by the NJDEP in a letter dated March 31, 1993. The approved RAW required the remediation of the top 6" of soil to <100 ppm lead unless the area is covered by sod or asphalt, in which case <500 ppm is acceptable. The RAW further required that soils between 6" and 12" in depth be remediated to <500 ppm. The approved remediation was limited to the top 12" of soil as any potential contamination below this depth was not felt to be attributable to painting operations. Additionally any potential contamination below 12" would not pose a health risk to the general public. A Memorandum of Agreement (MOA) was subsequently entered into between the NJDEP and the Port Authority in July of 1993, pursuant to N.J.S.A. 13:1D-1 et seq. (etc.).

5.0 SITE REMEDIATION

5.1 Remediation of Lead Contaminated Soil

On April 26, 1993, SEMAC began excavation of the lead contaminated soil from Field 1. A strip of soil approximately 10' by 40' was excavated to a depth of 12" and the soil was stockpiled within the fenced-in area located under the Bayonne Bridge. Post-excavation field screening conducted by the Port Authority, using the Spectrace 9000 XRF analyzer (X-ray fluorescence survey instrument), determined that additional excavation of soil was needed along

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the northern side of the excavation and an additional 10' x 20' area was excavated. Post-excavation sampling, conducted by Port Authority in accordance with the post-excavation soil sampling protocols in N.J.A.C. 7:26E, determined that soil lead levels were in compliance with the cleanup standards established for this project (as described above). The area was then backfilled with clean fill and covered with a layer of sod, as proposed. Figure 4 provided in Appendix D shows the approximate limits of the areas of remediation. Photographs depicting the areas before, during and after completion of the remediation are provided in Appendix E.

During the remedial activity it was also determined that the area between the two baseball fields was not entirely asphalt-paved as originally believed. Consistent with the provisions of the RAW, the area was completely paved in lieu of performing excavation of this area.

On December 2, 1994, excavation of the Field 2 began. Excavation of the right field foul line (adjacent to the bridge span), all of the base paths and the pitcher's mound was performed to a depth of 12" and the top 3" of the infield was also removed. The excavated soil was stockpiled under the bridge in the same location as the excavated soils from Field 1. The initial excavation was completed on December 14, 1994. Post excavation screening was also conducted by the Port Authority, using the Spectrace 9000 XRF analyzer and based upon the screening results, soil samples were obtained for laboratory analysis. All post excavation sampling was conducted in accordance with the post excavation soil sampling protocols in N.J.A.C. 7:26-E. See Table 5 and Figure 4A of Appendix D for post excavation sample results.

The results of the post-excavation sampling (samples EP-1 through EP-14, sidewall samples, and EI-1 through EI-8, base of excavation samples) indicated seven "hot spots" in which soil lead levels were greater than 500 ppm. Additional excavation was performed along the perimeter of the initial excavation in the locations of five of these hot spots. Of the two other elevated areas, the locations (Sample EI-7, pitchers mound area, and Sample EI-5, Third Base area) had already been excavated to the required excavation depth of 12".

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The additional excavation of the five elevated areas was performed in May of 1994 (refer to Figure 4B). However during the excavation of one location (Right Field area), industrial fill material (furnace or boiler slag) was discovered. Following the discovery of the industrial fill in this area it was determined that further excavation would not have a positive impact on the remedial effort, therefore excavation activities were terminated. In order to provide an overall beneficial remedial action and ensure the protection of the general public, the Port Authority presented an alternate Remedial Action Workplan to the NJDEP. The alternative RAW proposed to: (1) backfill the previously excavated areas to the existing grade with clean fill; (2) cover the entire field with DeWitt® Weed Barrier, a permeable filter fabric specified by Port Authority and approved by NJDEP; (3) "cap" the entire field with 6" of virgin top soil; and (4) sod the entire area.

The proposed placement of the filter fabric will prevent the migration of contaminants upward and the capping of the field with clean soils will prevent direct contact between persons utilizing the baseball field and the remaining contaminated soils. The alternate plan was presented to NJDEP via telephone and in a letter dated May 25, 1994, and subsequently approved by the NJDEP.

Prior to capping the field, post excavation samples were obtained to document the remaining concentrations at the five locations. The results of these samples (BB-100 through BB-108, see Figure 4B of Appendix D) indicated that the only one location contained a lead concentration greater than 500 ppm (see location of sample BB-102). This sample was taken from the area in which the industrial fill was located.

The capping of the baseball field, refer to Figure 4C, commenced on May 24, 1994 and was completed on June 13, 1994. This work was performed by Rossini Contracting Corporation. As previously stated, the 3,000 square foot area between the two baseball fields was asphalt-paved.



5.2 Waste Classification and Soil Disposal

The excavated soils were stockpiled on the asphalt paved area located beneath the arch abutment of the Bayonne Bridge. The soil stockpiles were placed on and covered with six millimeter plastic and canvas tarps. The stockpiles were surrounded with hay bales to prevent migration of the lead contaminated soils and to hold down the plastic and canvas. This area is surrounded by a nine foot chain linked fence and secured at all times.

Waste classification analyses conducted by the Port Authority determined that the lead contaminated soil was classified as ID #27, non-hazardous industrial waste. The soil is to be disposed of as non-hazardous waste at an industrial waste landfill.

6.0 CONCLUSIONS

Based on the information generated to date and the remediation activities proposed, the remediation of the Bayonne Little League Baseball Fields has been completed. The previously identified lead contaminated soils in the two baseball fields have been delineated and the approved Remedial Action Workplan was implemented. Except for location (sample B13-102) on Field 2, taken at a location in which unknown industrial fill was discovered, the lead contaminated soil has been excavated to a depth of 12" and/or the concentration of total lead in the top 12" is less than 500 ppm. Finally, Field 2 has been capped in accordance with the procedures approved by the NJDEP.

APPENDIX A
Qualification Package



Profile

Introduction Since its founding by Elson T. Killam in 1937, Killam Associates has grown from a four person sanitary and hydraulic engineering practice to a large, diversified engineering and environmental consulting firm with eleven offices in four states. This growth, as well as a large portion of the firm's current business, is primarily due to long-term relationships and referrals from satisfied clients.

Staffing Killam's staff includes professional engineers and environmental scientists with expertise in a variety of disciplines, technical personnel, construction coordinators, and facility operators, supported by certified state-of-the-art environmental laboratories, extensive computer resources, and highly trained field personnel for surveying and environmental testing and monitoring.

Client Profile Killam Associates has provided engineering planning, design and construction services to government agencies, authorities, utilities, and industries for decades. The growth in demand for environmental services to meet the needs of the legal, financial, transportation, real estate, institutional and commercial sectors has contributed to Killam's development into a full-service consulting firm.

Consulting Areas

- Municipal Wastewater Management
- Water Supply Management
- Stormwater Management
- Industrial Waste Management
- Hazardous Waste Management
- Environmental Site Assessment
- Hydrogeology/Storage Tank Management
- Solid Waste Management
- Air Quality Management
- Wetlands/Ecological Studies
- Coastal Resources Management
- Site Development Engineering
- Municipal Engineering
- Mining Environmental Services
- Ancillary Services



Profile

Recognizing the increased interest in and need for identification, investigation and remediation of environmental hazards, Killam Associates founded a dedicated Waste Management Division in the early 1980's. It now consists of about 60 full-time professionals including civil and environmental engineers, geologists and hydrogeologists, environmental scientists, biological and hazardous waste experts. Areas of specialization include:

- Hazardous Waste Management
- Solid Waste Management
- Environmental Site Assessments/Audits
- Air Quality Management
- Asbestos Management
- Hydrogeology/Storage Tank Management
- Wetland Assessment/Ecological Studies

The Division's staff is supported by other members of the firm, as determined by specific project needs. The availability of personnel from associated disciplines represents a valuable resource to the Waste Management staff, facilitating the effective resolution of related issues which may arise on any given job.

Killam's assignments typically encompass initial planning and feasibility studies; evaluation and development of remedial alternatives; environmental assessment and monitoring; cost-effective analysis; preliminary and detailed design; preparation of plans, specifications, and bid documents; and construction supervision, including cost tracking, detailed evaluation of change orders and field activities oversight.

Killam has successfully completed a variety of hazardous waste remedial projects which have included removal and treatment of contaminated groundwater, site encapsulation and bioremediation. Typical projects include design of leachate control facilities for a hazardous chemical landfill, siting and landfill expansion design, and numerous studies evaluating solid waste disposal alternatives including resource recovery and disposal of oily wastes. Killam's solid waste experience includes feasibility studies, siting studies, facility design, environmental impact statements, and permitting assistance.



Waste Management Division

Profile

continued

As a result of the NJ Environmental Cleanup and Responsibility Act of 1984, Killam has assisted numerous industrial clients, financial institutions, law firms and insurance firms with real estate transfers. Site audits to determine type and severity of contamination and the development of remedial alternatives are performed to ensure compliance and reduce client risks and liability.



Profile

The Hazardous Waste Management Group consists of professional and technical staff members with extensive experience in the specific hazardous waste disciplines. The group works on hazardous waste projects with assistance from staff from other specialized disciplines as required.

Killam's hazardous waste assignments encompass part "B" permit applications, closure plans, assessment of site conditions; monitoring of site air, soil, and water quality; assessment of site regulatory status; evaluation of remedial options and alternatives; planning and design of remedial actions; specification of cost-efficient and timely corrective measures; interface with environmental regulatory agencies; assistance in contractor selection; and oversight and field monitoring of contractor performance.

Killam is undertaking or has completed work at twelve Superfund sites, and has completed studies at numerous industrial sites involving hazardous materials remediation. The range of studies has included the following: undeveloped sites with buried wastes (drummed and lagooned), sites with extensive spent chromium ore deposits, sites heavily contaminated with petroleum hydrocarbons, PCB contaminated sewer systems, closed landfills with documented asbestos and priority pollutant contamination, methane gas hazards in buildings, sites with groundwater contamination due to leaking underground storage tanks, and enclosed buildings with a wide range of waste materials (priority and non-priority organics).

Resources for supplementing this work include complete site surveillance equipment (terrain conductivity, organic vapor analysis), complete Level B (supplied air) safety equipment (both tethered and self-contained), support vehicles, and an in-house laboratory. The laboratory has certified facilities for metals (AA) and priority pollutant analysis (GC and GC/MS). Killam also maintains complete computer facilities including a Prime minicomputer, more than 50 IBM-compatible personal computers, and a comprehensive technical software library for groundwater modeling, interfacing with the National Library of Medicine, Hazardous Substance Data Banks, and other computer databases.

Members of the hazardous waste staff receive annual training in appropriate health and safety procedures. The staff is equipped and OSHA trained to work in environments requiring Protection Levels of B, C, or D. Killam maintains an inventory of protective equipment, sampling equipment, hydrogeologic and geophysical instrumentation, and field portable survey equipment.



Representative Projects

New Jersey Highway Authority
Various Locations, NJ

Several bridge locations along the southern portion of the Garden State Parkway were contaminated by sand blast grit containing lead based paint by the bridge painting contractor. Killam was retained by the Authority to monitor the investigation and remediation and advise the Authority. Killam recommended the emergency cleanup procedures at one location that was a listed priority by the NJDEP. These procedures were utilized in the Cleanup of five additional locations.

Global Landfill Site Investigation/Closure
New Jersey First, Inc.
(Administrator)
Old Bridge, NJ
(Superfund Site - NPL #297)

Killam was retained to prepare a closure plan for this 60 acre Superfund site in Old Bridge, NJ. Prior to completion of the closure plan, the NJDEP received information suggesting that drums had been buried at the landfill. Killam conducted a geophysical survey, followed by a controlled exploratory excavation in a 6.5 acre area of the site, confirming the presence of buried drums containing hazardous materials.

As part of the first phase of the Superfund process, Killam prepared a Feasibility Study to determine the need for On-Site Controls and to evaluate alternatives to provide them at Global prior to the completion of a comprehensive RI/FS. The Feasibility Study defined the nature of contamination and assessed health and environmental risks based on available monitoring data, defined remedial action objectives, screened remedial technologies for potential use at Global, and developed and evaluated several alternatives for implementing on-site controls.

Specifically, the study evaluated off-site disposal, in-situ treatment, alternate capping methods and their impacts on slope stability, leachate and gas management options and measures for stormwater management and site security.

Remedial Investigation and Feasibility Study
Goose Farm
Plumstead Township, NJ
(Superfund Site - NPL #244)

This is one of the original Superfund sites evaluated in New Jersey. It was used as a disposal site for hazardous chemical wastes during the 1960s and early 1970s and showed evidence of drummed and free-flowing wastes. Killam was retained by NJDEP to perform an RI/FS.

A interim cleanup program consisted of the removal of all waste containers, removal of grossly contaminated soils, and installation of a groundwater treatment and recovery system. The extent of groundwater contamination from the surficial aquifer was evaluated and soil contamination addressed through test borings.



Representative Projects

continued

- Remedial Investigation and Feasibility Study
Goose Farm
Plumstead Township, NJ**
(Superfund Site - NPL #244)
continued
- Off-site migration and possible effects on receptors were evaluated through an extensive program of potable well, leachate, stream sediment and surface water testing. The results of the field investigation were compiled, analyzed and evaluated. Alternative remedial actions were screened and a conceptual design prepared for the final site cleanup.
- Ford Motor Company
Assembly Plant
Mahwah, NJ**
- Killam was retained for the development of engineering drawings and specifications for contaminated soils removal and for the design of groundwater treatment facilities. After examination of existing site treatment equipment, it was decided that an existing sanitary treatment facility along with two cooling towers could be modified to strip the volatile organics from groundwater prior to discharge to the Ramapo River. Construction of the groundwater treatment facility was completed within 15 months. Since start-up, the plant is consistently exceeding a rate of 99% volatile organics removal, well beyond the NJDEP requirement of 95%. The use of existing facilities which otherwise would have been abandoned provided a cost effective, timely, and unique approach to the cleanup problem. In 1987 Killam was awarded the New Jersey Consulting Engineers Council Honor Award for Engineering Excellence for this groundwater treatment project.
- Former Cooper Biomedical
Site
Freehold, NJ**
- This facility manufactured pharmaceutical products including enzymes and medical diagnostic reagents. Killam implemented the requirements of the ECRA law and developed a RCRA facility closure plan. Following site investigations, a plume of groundwater contaminated with chlorinated organic solvents was defined. Killam developed and employed a groundwater flow model to determine the type, size, and extent of a groundwater recovery system. Killam supervised the installation of a wellpoint recovery system. To date over 8 million gallons of contaminated groundwater have been recovered.
- PJP Landfill Investigation
Jersey City, NJ**
(Superfund Site - NPL #1065)
- Killam conducted a remedial investigation to evaluate the nature of landfilled and buried materials on this 85 acre Superfund site. Full and empty drums were on the surface and the site was burning or smouldering. Eleven borings and five monitoring wells were installed. Soil and waste samples were analyzed for priority pollutants and dioxin. Due to the fires and unknown nature of the waste, all field personnel donned Level B and/or C protective clothing. Continuous health and safety monitoring was performed.



Hazardous Waste Management

Representative Projects

continued

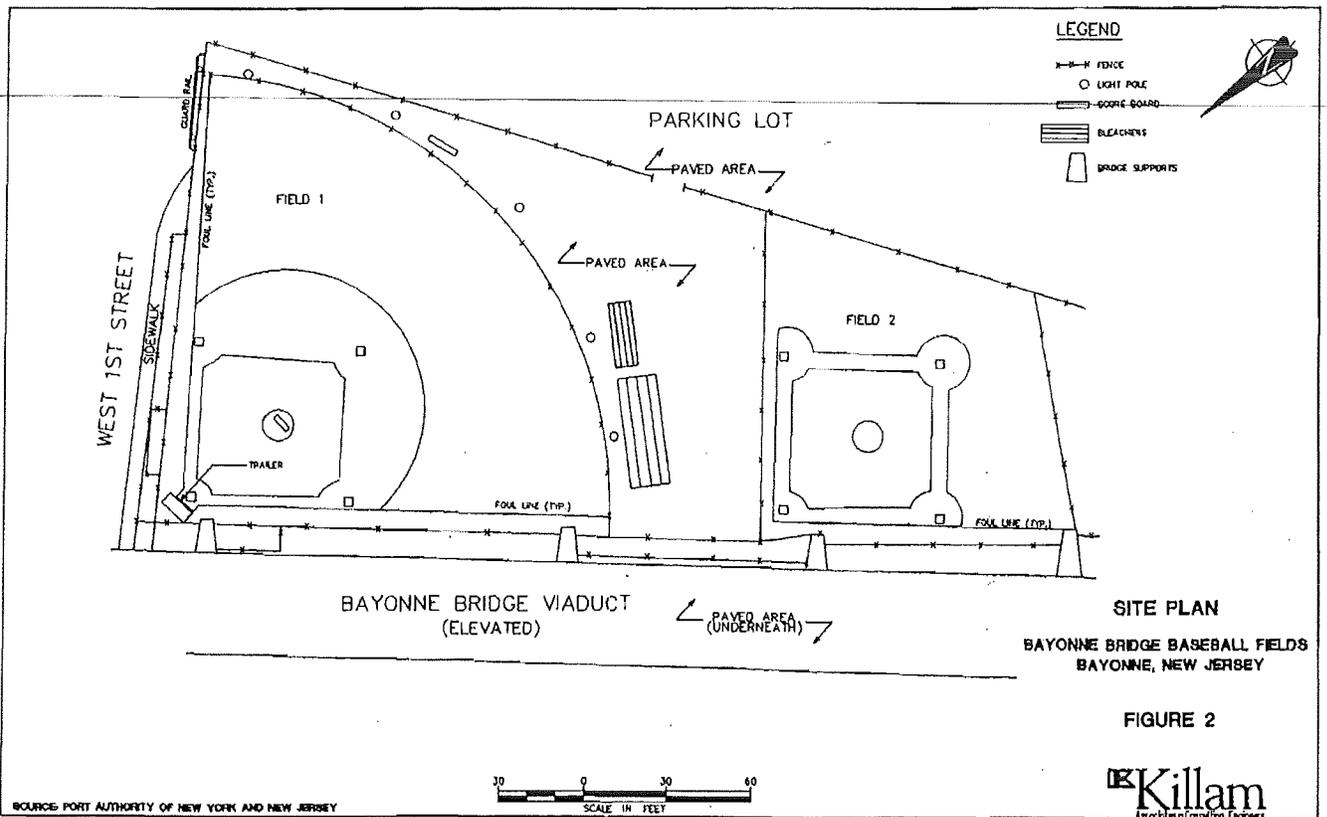
CPS: Madison Industries Killam was retained to review the present remedial plan for this
Perth Amboy, NJ site in order to evaluate potential impacts on the Runyon
watershed, which contains Perth Amboy's water supply.
(Superfund Site - NPL #10) Groundwater contamination from this Superfund site (volatile
organics and heavy metals) is migrating off-site and
endangering the Perth Amboy potable supply wells.

Killam is evaluating current developments in this case and is
advising the City and its legal counsel regarding this situation.
The City is seeking higher levels of wellfield protection by
influencing the regulatory process or by legal remedies.

**Remedial Investigation/
Feasibility Study** These sites, among the original New Jersey Superfund sites,
Spence Farm Site & were the subject of detailed remedial investigation/feasibility
Pijack Farm Site studies (RI/FS) performed by Killam. Wastes disposed at the
Plumstead Township, NJ sites over a period of several years included metals (including
antimony and beryllium), organic solvents, PCB and oxidizing
agents. The remedial plans included drum removal, site
(Superfund Site - NPL #307 & regrading, groundwater treatment, and site encapsulation.
#353)

Tidewater Bailing Killam was retained to assist this facility in their efforts to
Newark, NJ comply with state and federal directives to remediate the site.
This site is an active scrap metal yard and recycler dating back
to the 1920s which formerly accepted transformer shells. A
chemical company previously operated on this site. Oil
contaminated soils were found to contain PCB; groundwater
and soil contamination on an adjacent community recreational
area and stadium was discovered and this site was implicated as
the origin. Killam developed an interim corrective measures
plan for the facility as well as an overall remedial plan for the
site.

APPENDIX B
Figures 1 & 2



APPENDIX C
Soil Sample Results
Tables 1 through 4
Figures 3 through 3D

TABLE 1
SUMMARY OF SOIL SAMPLE RESULTS
FOR TOTAL LEAD
 Bayonne Bridge, Bayonne New Jersey
 Sampling Date: April 6, 1993

Sample ID No.	Sample Depth (inches)	Ground Covering	Results (ppm)	Cleanup Criteria Approved by NJDEP		
				0 - 6" Depth 100 ppm	0 - 6" Depth* 500 ppm	6 - 12" Depth 500 ppm
BBNJ-1	6	Bare	611	✓		
BBNJ-1	12	-	777			✓
BBNJ-2	6	Sod	1270		✓	
BBNJ-2	12	-	517			✓
BBNJ-3	6	Sod	432		✓	
BBNJ-3	12	-	146			✓
BBNJ-1A	6	Sod	223		✓	
BBNJ-2A	6	Macadam	516 ⁽¹⁾		✓	
BBNJ-2B	6	Sod	297		✓	
BBNJ-2C	4	Sod	671 ⁽¹⁾		✓	
BBNJ-2D	4	Sod	345		✓	
BBNJ-3A	4	Bare	8.3	✓		
BBNJ-3B	4	Bare	10	✓		
BBNJ-3C	4	Bare	7.4	✓		
BBNJ-3D	4	Sod	59.4		✓	

Notes:

- * Soils covered by sod (grass) or macadam.
- ✓ Indicates the applicable Cleanup Criteria.
- █ Indicates exceedance of the established Cleanup Criteria.
- ⁽¹⁾ The average of samples from this area is below the Cleanup Criteria.

TABLE 2
SUMMARY OF BACKGROUND SOIL SAMPLE RESULTS
FOR TOTAL LEAD
 Bayonne Bridge, Bayonne New Jersey
 Sampling Date: February 18, 1993

Sample ID Number	Sample Depth (inches)	Results (ppm)
BBBG-1A	0-3	782
BBBG-1B	6-9	455
BBBG-2A	0-3	340
BBBG-2B	6-9	276
BBBG-3A	0-3	465
BBBG-3B	6-9	333
BBBG-4A	0-3	764
BBBG-4B	6-9	878
BBBG-5A	0-3	360
BBBG-5B	6-9	355
BBBG-6A	0-3	316
BBBG-6B	6-9	101
BBBG-7A	0-3	838
BBBG-7B	6-9	307
BBBG-8A	0-3	792
BBBG-8B	6-9	397
BBBG-9A	0-3	656
BBBG-9B	6-9	306
BBBG-10A	0-3	587
BBBG-10B	6-9	348

TABLE 3
SUMMARY OF SOIL SAMPLE RESULTS
FOR TOTAL LEAD
 Bayonne Bridge, Bayonne New Jersey
 Sampling Date: April 6, 1993

Sample ID No.	Sample Depth (Inches)	Ground Covering	Results (ppm)	Cleanup Criteria Approved by NJDEP		
				0 - 6" Depth 100 ppm	0 - 6" Depth* 500 ppm	6 - 12" Depth 500 ppm
BB 4/6 1A	0-6	Bare	516	✓		
BB 4/6 1B	6-9	-	169			✓
BB 4/6 2A	0-6	Bare	188	✓		
BB 4/6 2B	6-9	-	266			✓
BB 4/6 3A	0-6	Bare	118	✓		
BB 4/6 3B	6-9	-	785			✓
BB 4/6 4A	0-6	Sod	14.8		✓	
BB 4/6 5A	0-6	Sod	303		✓	
BB 4/6 5B	6-9	-	557 ⁽¹⁾			✓
BB 4/6 6A	0-6	Sod	211		✓	
BB 4/6 6B	6-9	-	351			✓
BB 4/6 7A	0-6	Sod	38.3		✓	
BB 4/6 8A	0-6	Sod	19.5		✓	
BB 4/6 8B	6-9	-	<5.6			✓
BB 4/6 9A	0-6	Sod	15.8		✓	
BB 4/6 10A	0-6	Sod	8.0		✓	
BB 4/6 11A	0-6	Sod	10.2		✓	
BB 4/6 12A	0-6	Macadam	72.0		✓	
BB 4/6 13A	0-6	Macadam	51.5		✓	
BB 4/6 13B	6-9	-	317			✓
BB 4/6 14A	0-6	Macadam	163		✓	
BB 4/6 14B	6-9	-	303			✓
BB 4/6 15A	0-6	Sod	13.1		✓	
BB 4/6 16A	0-6	Sod	19.5		✓	
BB 4/6 17A	0-6	Sod	13.0		✓	
BB 4/6 18A	0-6	Sod	156		✓	
BB 4/6 18B	6-9	-	303			✓
BB 4/6 19A	0-6	Bare	937	✓		
BB 4/6 19B	6-9	-	340			✓
BB 4/6 20A	0-6	Sod	449		✓	
BB 4/6 20B	6-9	-	122			✓

Notes:

- * Covered with sod (grass) or macadam.
- ✓ Indicates the applicable Cleanup Criteria.
- █ Indicates an exceedance of the established Cleanup Criteria.
- ⁽¹⁾ The average of samples from this area is below the Cleanup Criteria.

TABLE 4

SUMMARY OF SOIL SAMPLE RESULTS
FOR TOTAL LEAD

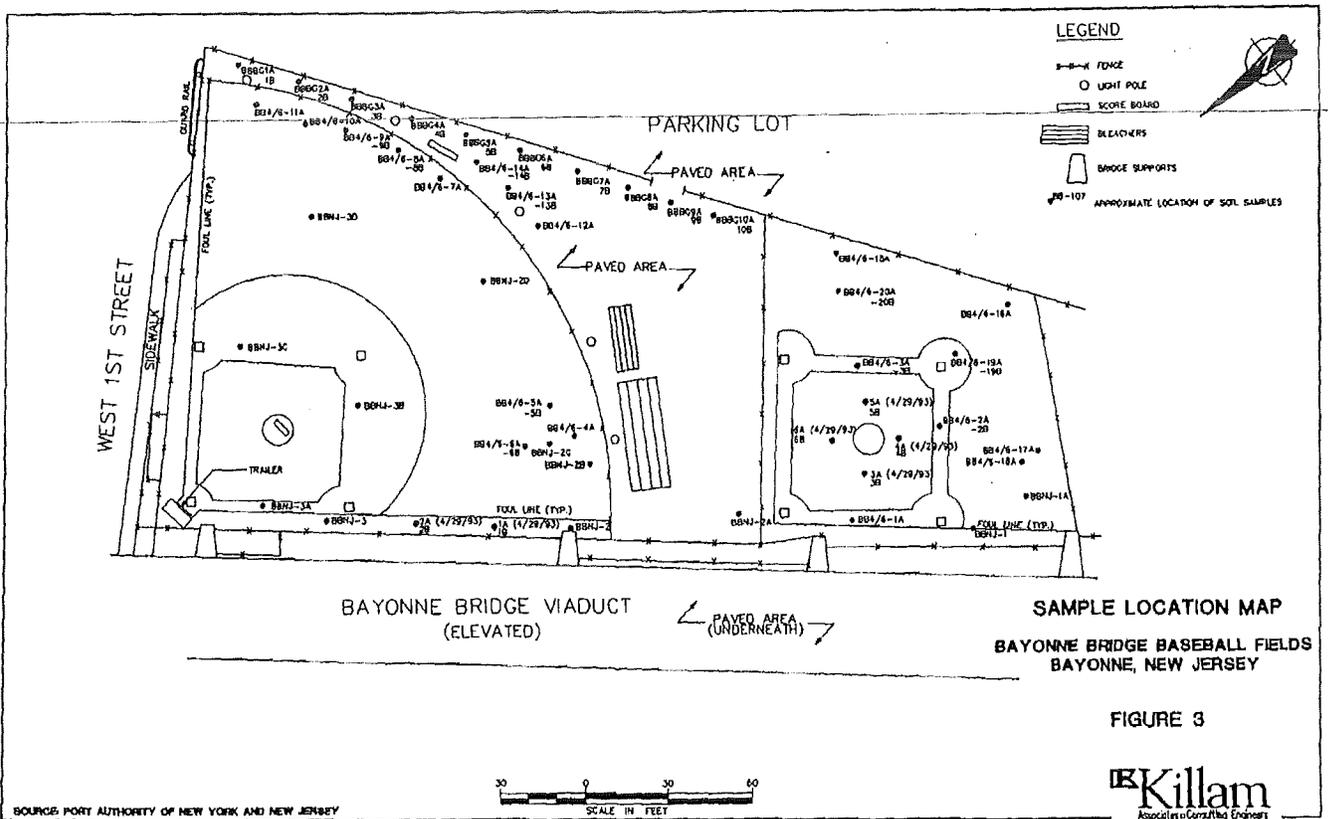
Bayonne Bridge, Bayonne New Jersey

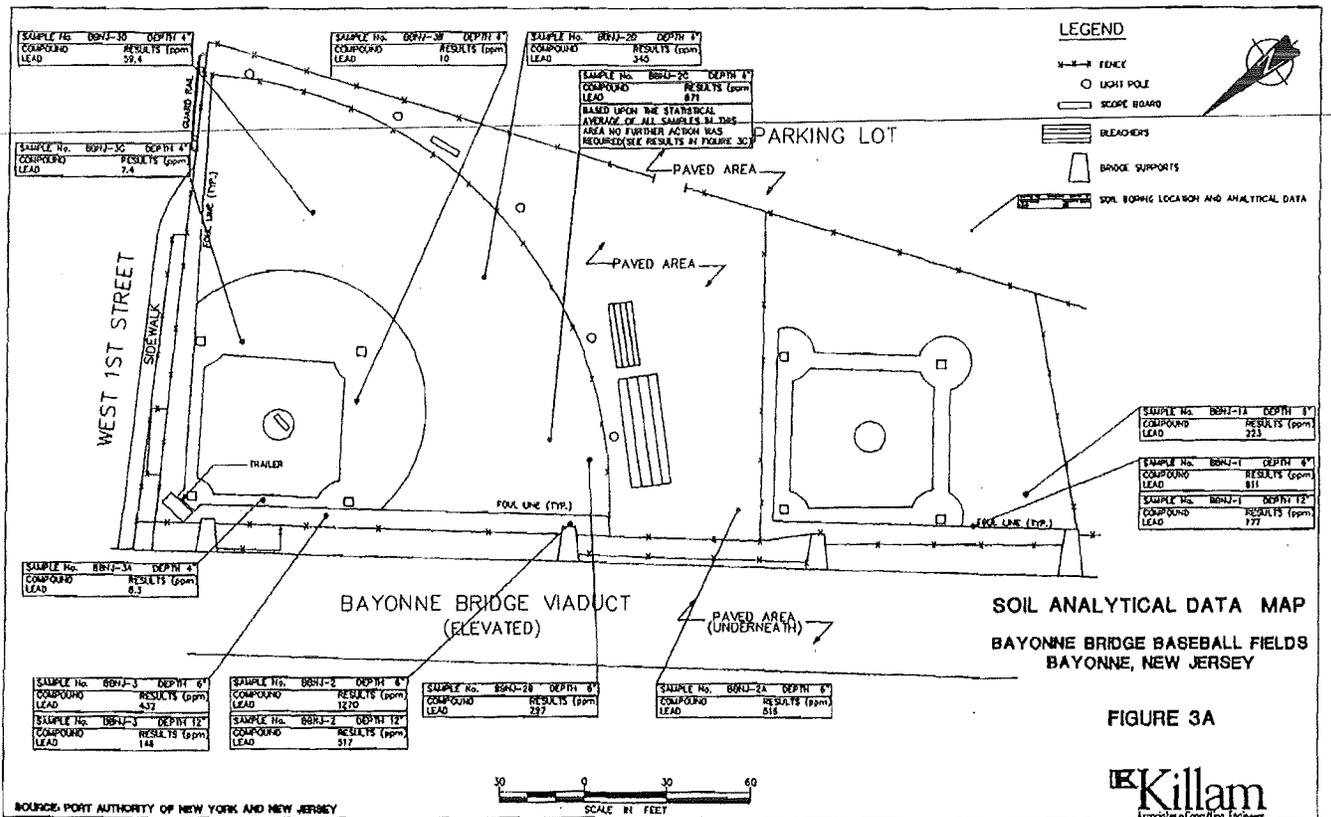
Sampling Date: April 29, 1993

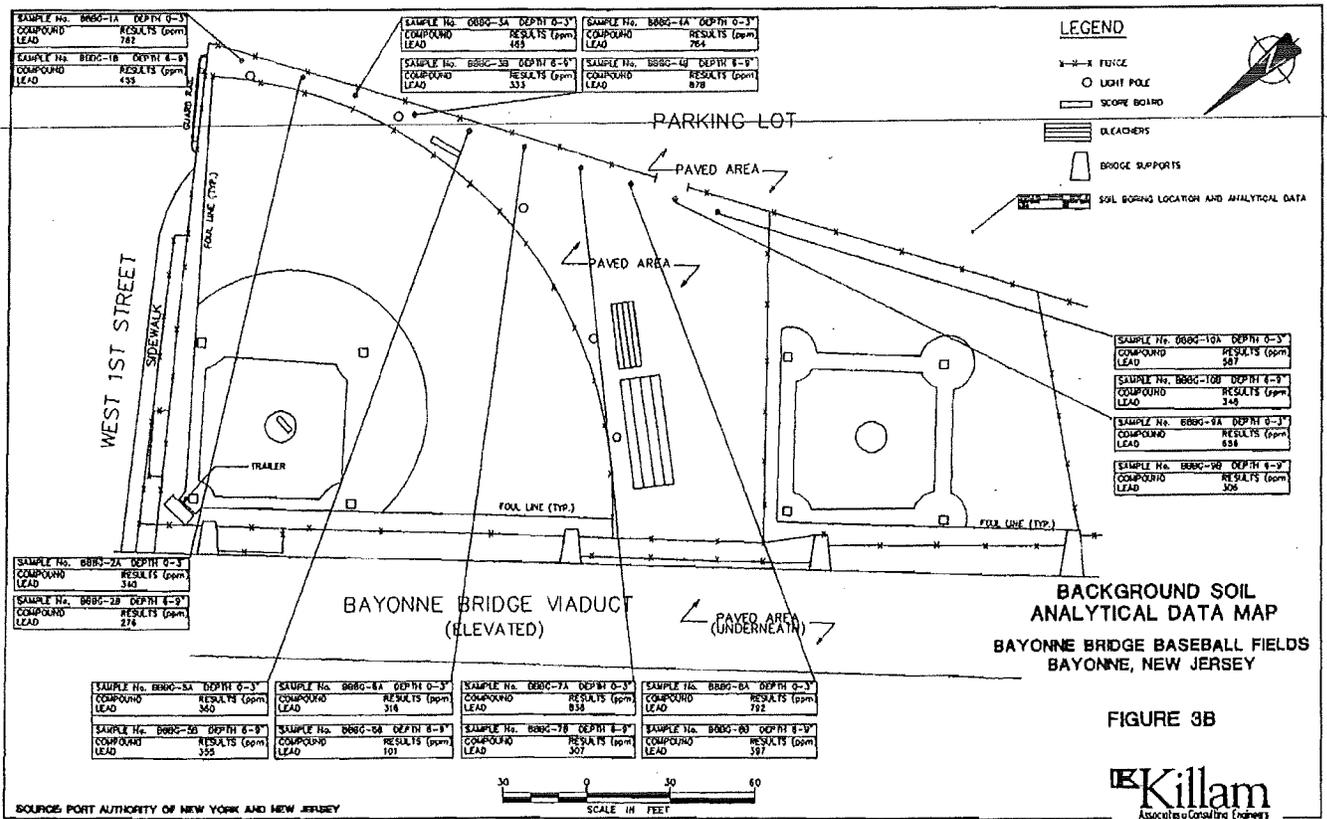
Sample ID No.	Sample Depth (inches)	Ground Covering	Results (ppm)	Cleanup Criteria Approved by NJDEP		
				0 - 6" Depth 100 ppm	0 - 6" Depth* 500 ppm	6 - 12" Depth 500 ppm
1A 4/29/93	6	Sod	408		✓	
1B 4/29/93	12	-	2000			✓
2A 4/29/93	6	Sod	623		✓	
2B 4/29/93	12	-	< 5.6			✓
3A 4/29/93	6	Sod	476		✓	
3B 4/29/93	12	-	510 ⁽¹⁾			✓
4A 4/29/93	6	Sod	855		✓	
4B 4/29/93	12	-	289			✓
5A 4/29/93	6	Sod	141		✓	
5B 4/29/93	12	-	165			✓
6A 4/29/93	6	Sod	424		✓	
6B 4/29/93	12	-	467			✓

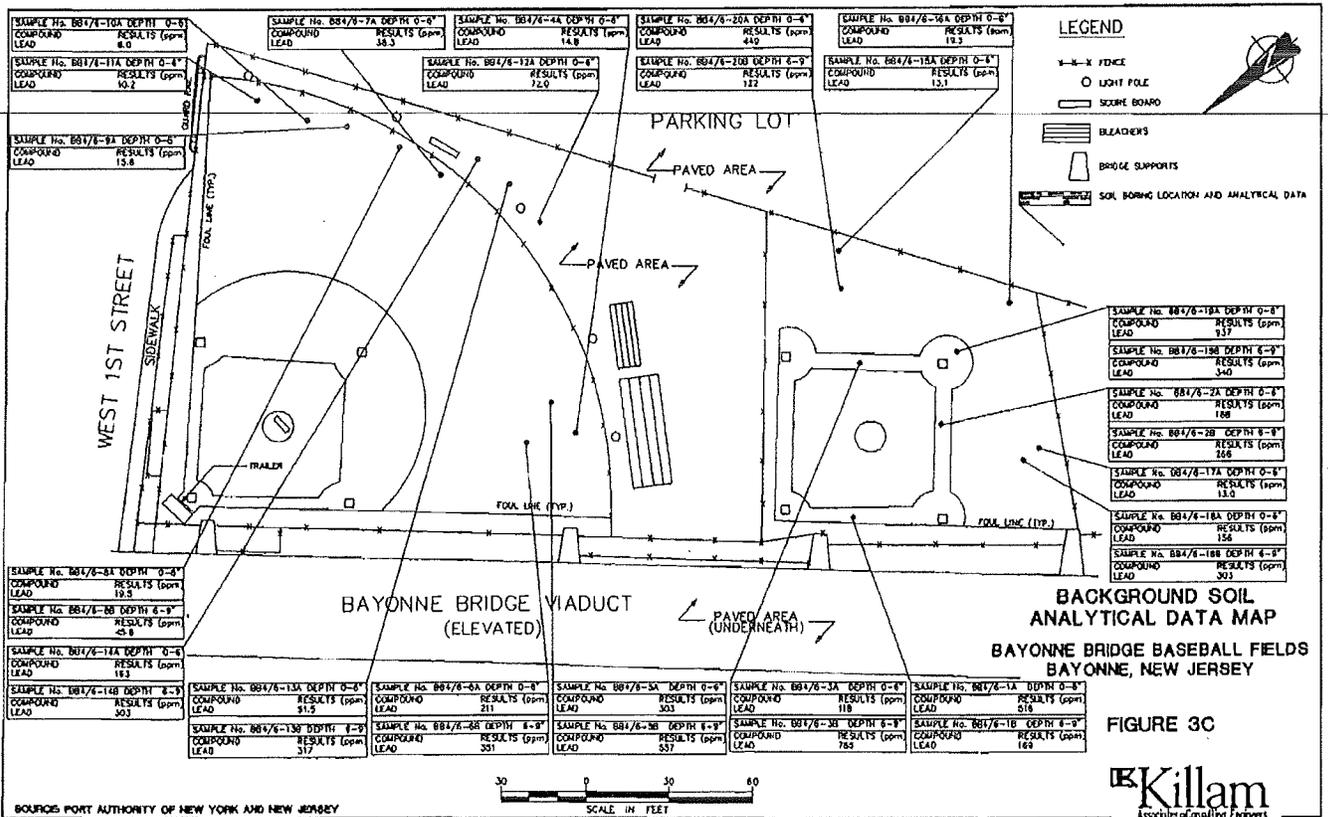
Notes:

- * Covered with sod (grass) or macadam.
- ✓ Indicates the applicable Cleanup Criteria.
- █ Indicates an exceedance of the established Cleanup Criteria.
- ⁽¹⁾ The average of this area is below the Cleanup Criteria.









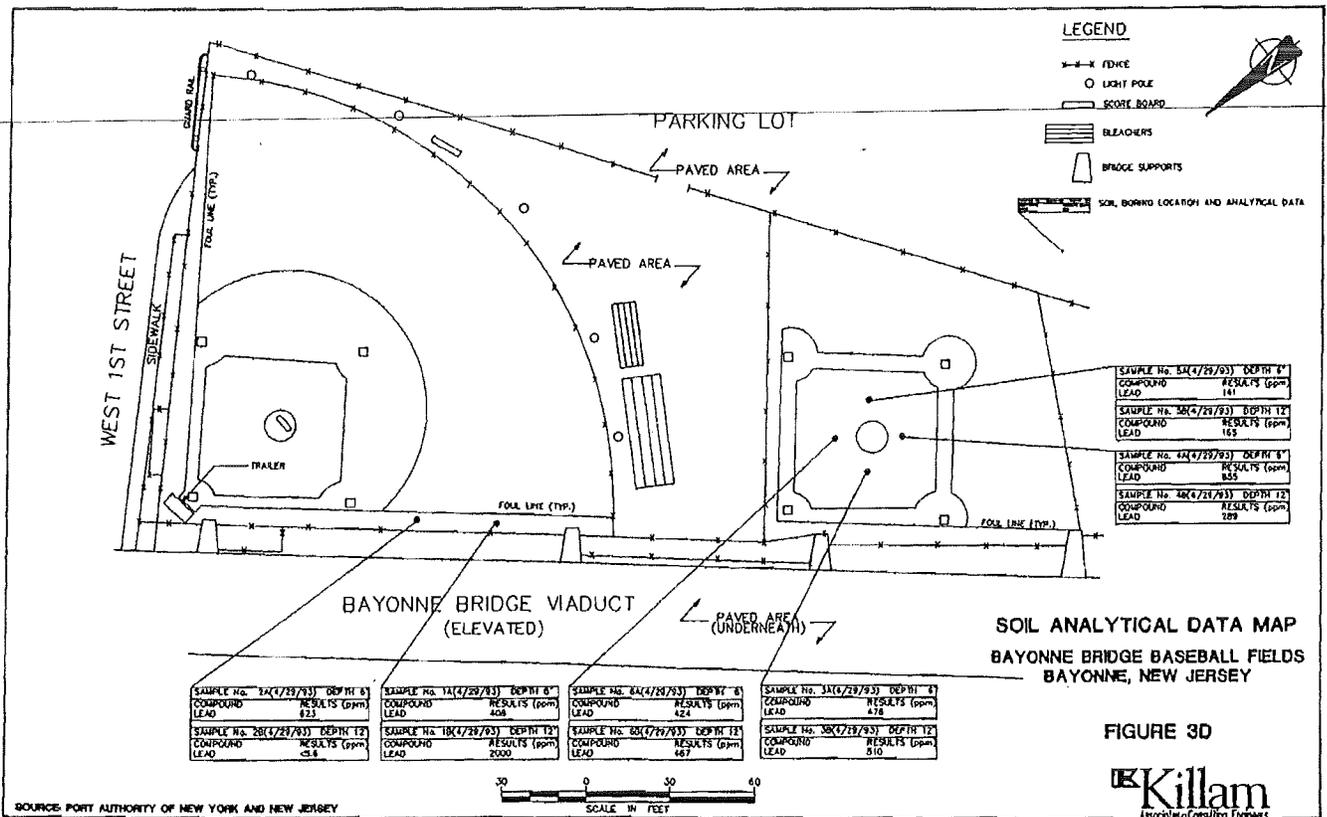


FIGURE 3D



APPENDIX D
*Post-Excavation
Soil Sample Results
Table 5
Figures 4 through 4C*

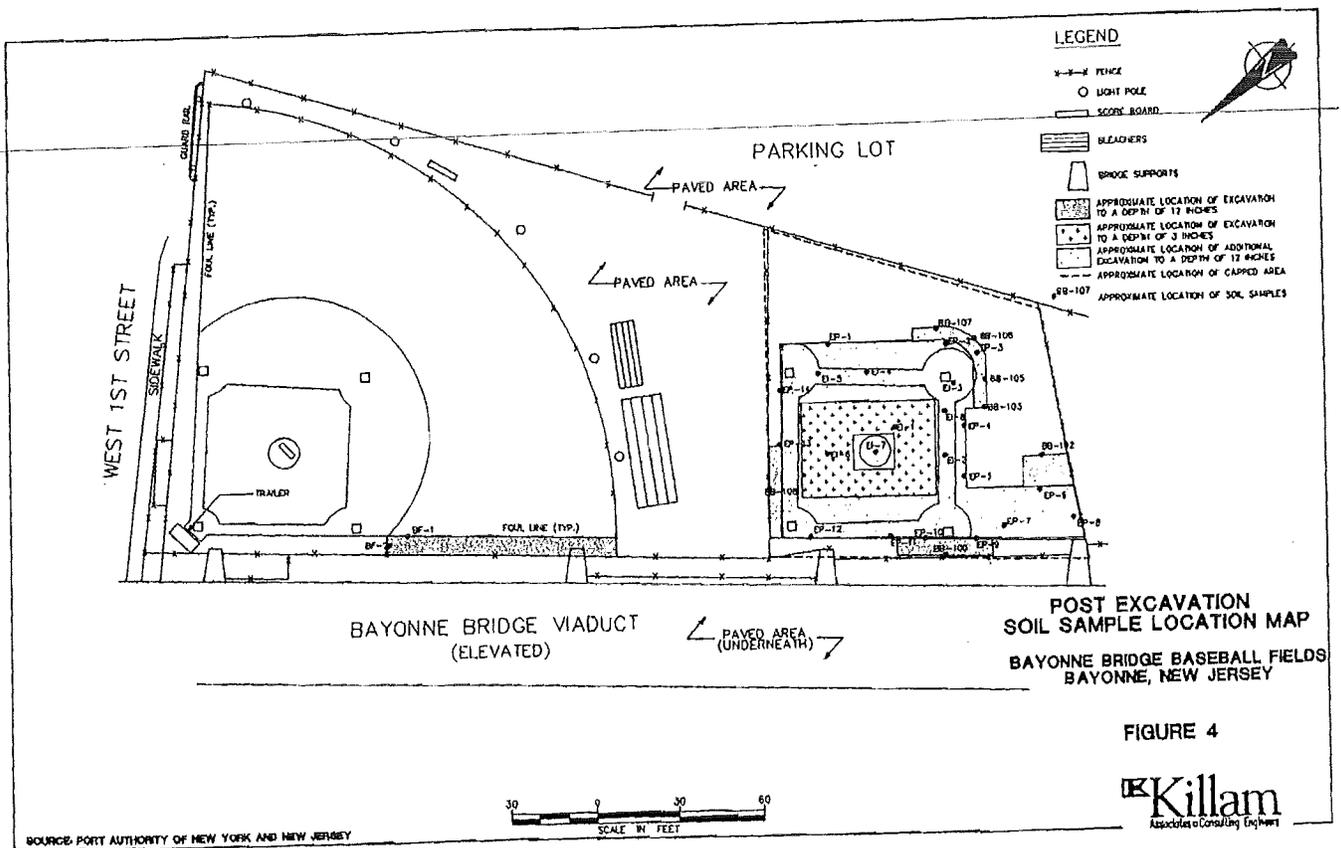
TABLE 5

POST EXCAVATION SAMPLE RESULTS
Bayonne Bridge, Bayonne New Jersey

Sample ID #	Ground Covering	Results (ppm)	Cleanup Criteria Approved by NJDEP		
			0 - 6"* Depth 500 ppm	3 - 6" Depth 500 ppm	> 12" Depth NA
EP-1	Sod	351	✓		
EP-2	Sod	564	✓		
EP-3	Sod	529	✓		
EP-4	Sod	116	✓		
EP-5	Sod	382	✓		
EP-6	Sod	597	✓		
EP-7	Sod	297	✓		
EP-8	Sod	342	✓		
EP-9	Sod	312	✓		
EP-10	Sod	664	✓		
EP-11	Sod	66	✓		
EP-12	Sod	321	✓		
EP-13	Sod	595	✓		
EP-14	Sod	448	✓		
EI-1	Sod	458		✓	
EI-2	Sod	422			✓
EI-3	Sod	89.6			✓
EI-4	Sod	295			✓
EI-5	Sod	740			✓
EI-6	Sod	125		✓	
EI-7	Sod	5,170			✓
EI-8	Sod	449			✓
BB-100	Sod	196	✓		
BB-102	Sod	608	✓		
BB-103	Sod	384	✓		
BB-105	Sod	198	✓		
BB-106	Sod	222	✓		
BB-107	Sod	338	✓		
BB-108	Sod	486	✓		
BF-1	Sod	277	✓		
BF-2	Sod	504 ⁽¹⁾	✓		

Notes:

- * Covered with sod (grass) or macadam.
 - ✓ Indicates applicable Cleanup Criteria.
 - "EI" First Phase samples obtained at the base of the excavation (> 12 inches).
 - "EP" First Phase samples obtained along the perimeter of the excavation (0 - 6 inches).
 - "BB" Second Phase samples obtained along the perimeter of the excavation (0 - 6 inches).
- All samples taken on Field 2 except samples BF-1 & BF-2 which were obtained along the perimeter of the excavation (0 - 6 inches) of Field 1.
-  Indicates an exceedance of established Cleanup Criteria.
- ⁽¹⁾ The average of samples from this area is below Cleanup Criteria.



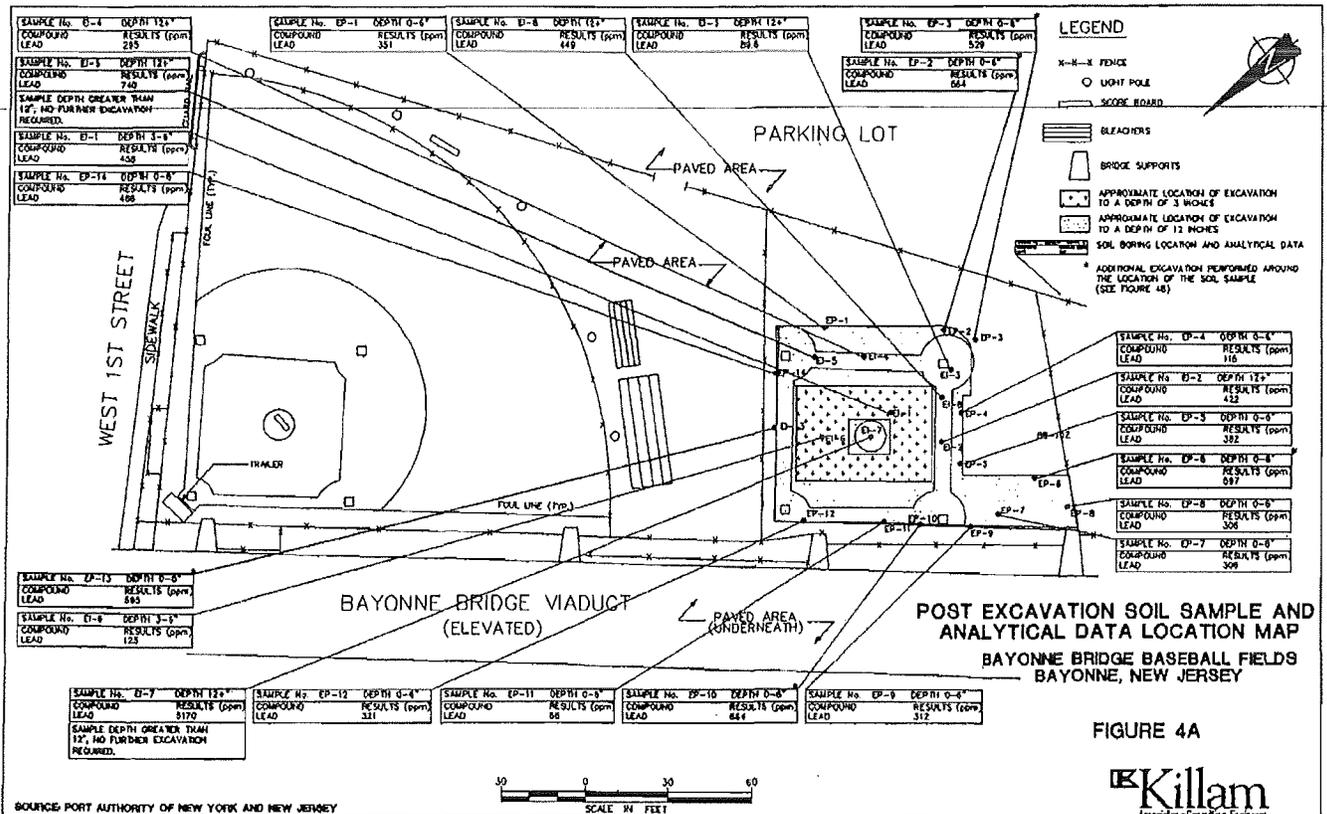


FIGURE 4A



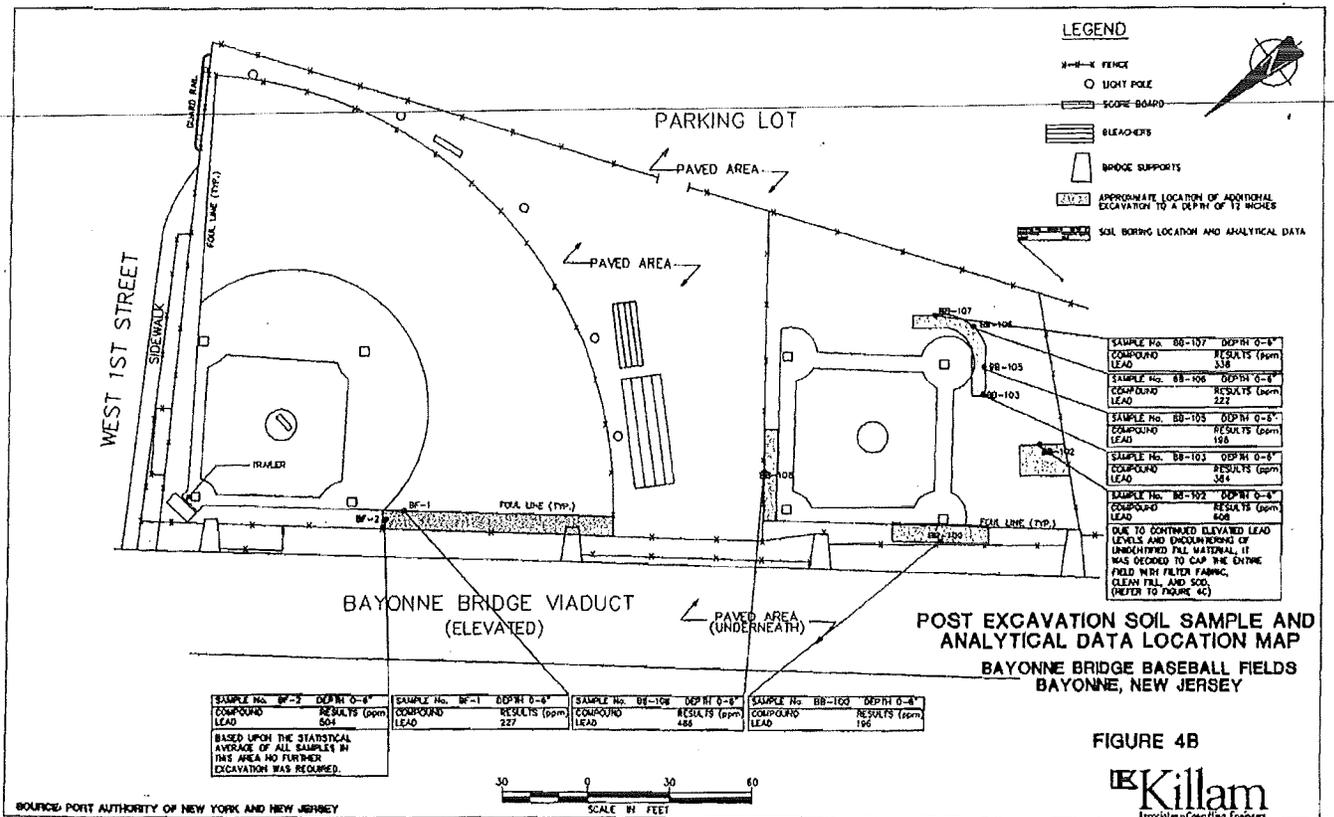
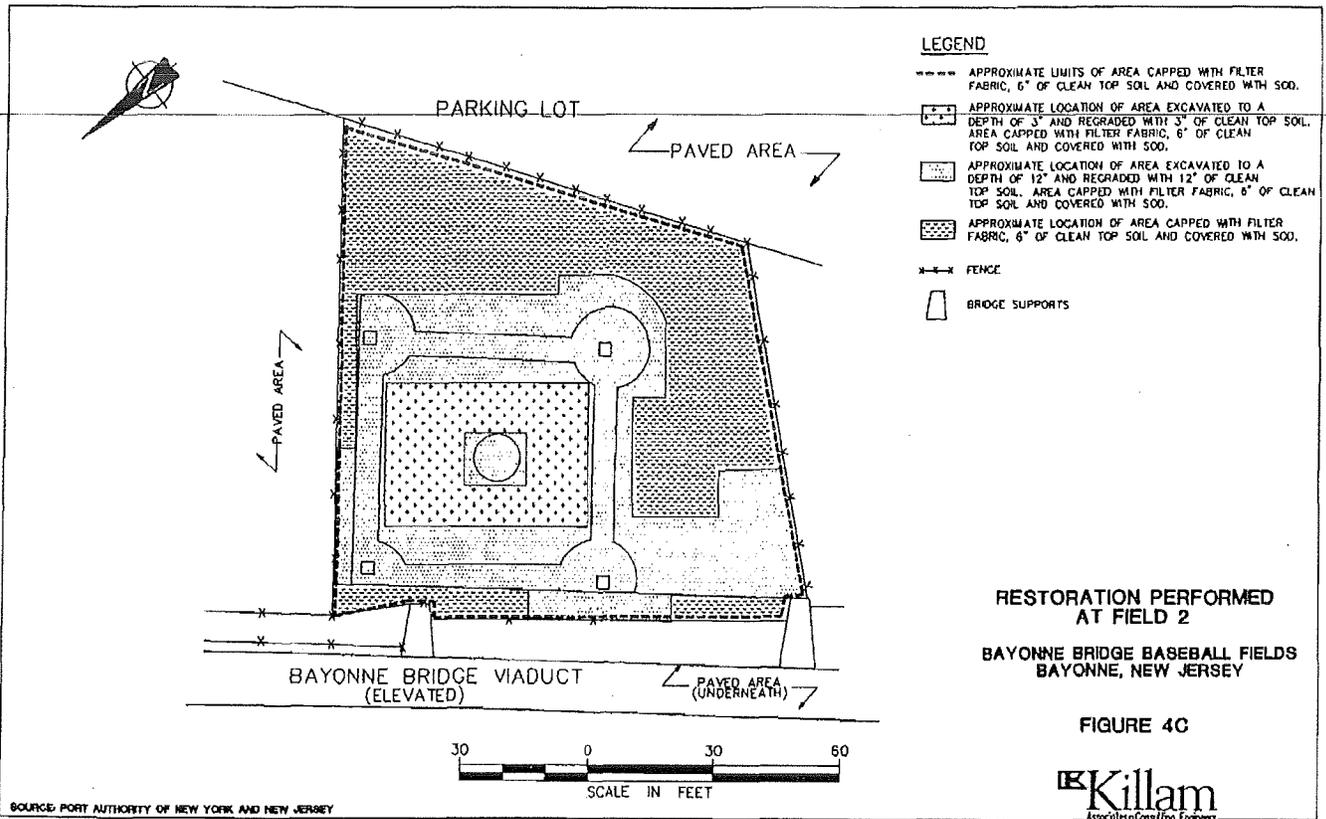


FIGURE 4B





LEGEND

- APPROXIMATE LIMITS OF AREA CAPPED WITH FILTER FABRIC, 6" OF CLEAN TOP SOIL AND COVERED WITH SOO.
- [Cross-hatch pattern] APPROXIMATE LOCATION OF AREA EXCAVATED TO A DEPTH OF 3" AND REGRADED WITH 3" OF CLEAN TOP SOIL. AREA CAPPED WITH FILTER FABRIC, 6" OF CLEAN TOP SOIL AND COVERED WITH SOO.
- [Dotted pattern] APPROXIMATE LOCATION OF AREA EXCAVATED TO A DEPTH OF 12" AND REGRADED WITH 12" OF CLEAN TOP SOIL. AREA CAPPED WITH FILTER FABRIC, 6" OF CLEAN TOP SOIL AND COVERED WITH SOO.
- [Diagonal line pattern] APPROXIMATE LOCATION OF AREA CAPPED WITH FILTER FABRIC, 6" OF CLEAN TOP SOIL AND COVERED WITH SOO.
- x--- FENCE
- [Square symbol] BRIDGE SUPPORTS

**RESTORATION PERFORMED
AT FIELD 2
BAYONNE BRIDGE BASEBALL FIELDS
BAYONNE, NEW JERSEY**

FIGURE 4C

Killam
Associates Consulting Engineers

SOURCE: PORT AUTHORITY OF NEW YORK AND NEW JERSEY